FLORIDA 2000 REPORT OF ACCOMPLISHMENT

I. TABLE OF CONTENTS

A. Florida State Major Programs by number and title
B. Florida Hatch projects by number and title
C. Cover pages with four year projections for multistate, Integrated research and Integrated extension sections (VI, VII, VIII)

(Updated March 1, 2001- Final)

Goal 1. An Agricultural Production System That is Highly Competitive in the Global Economy

A. Overview

a. Extension and Research Results

Florida's agriculture is unique and relies heavily on high-valued agricultural crops such as citrus, vegetables, greenhouse and nursery ornamental plants, and sugarcane to a much larger extent than other states. The state's agriculture was challenged by many of the same forces that confronted U.S. agriculture, but many of the problems were felt more intensely. Market, public and political pressures to be competitive are unrelenting. Many of the countries competing for the U.S. and world markets with Florida producers have very weak economies and are under enormous pressure to export to the U.S. and limit their imports. Reduced barriers to trade resulting from trade agreements such as NAFTA have contributed to increased competition.

Changing U.S. government policies toward agriculture and trade have greatly enhanced risks facing agricultural producers, resulting in a need for more risk management practices and strategies. Research and Extension programs presented to producers and growers, as well as agriculture related businesses, have emphasized the importance of an overall financial and risk management plan. Technologies, especially biotech and information technologies are rapidly advancing and can provide a competitive edge in world markets. Molecular biology research is a priority and helps in the search for solutions to difficult problems. This research, coupled with extension programs in Florida, has contributed to increased quality of tropical and subtropical forages that will improve animal performance and productivity. Other work represents an effort to alleviate the detrimental effects of ethylene on quality of ornamental crops during shipping and handling. Still other work looks at finding solutions to disease problems. For example, tomato genes that are turned on in a plant and their response to disease are being studied. These genes, once identified, will be prime candidates for genetic engineering to help the host plant fight off the disease-causing organisms. Management of citrus tristeza diseases and bacterial spot disease of pepper and tomato are other examples of disease control research with genetic engineering. Recent Hatch funded research in strawberry cultivars has advanced UF/IFAS strawberry breeding another cycle. This work led to development of new strawberry cultivars that should help Florida maintain its dominance in the U.S. winter strawberry market. These are just a few examples of how research and extension might improve the quality of Florida agricultural products.

As computers connected to the Internet become more accessible to the state population (almost every library in Florida now offers free access to the Internet), Florida citizens have instant access to knowledge and information produced by UF/IFAS. Information technology based research and applications are implemented in virtually every department of Florida IFAS. Some of the most relevant systems are: **1**) **FAWN**, a real-time weather information source that is used by many constituents for a variety of applications, including freeze protection, home and landscape irrigation scheduling, medium-term climate prediction based on El Niño, emergency management, and others. **2**) A Distance Diagnostic Information System (**DDIS**), consisting of a website and a database that allows identification of plants, animals and diseases by IFAS experts using digital photography. For example, beneficial and harmful insects can be identified within minutes, saving farmers crucial time needed to prevent crop damage. **3**) **EDIS** (Extension Digital Information Source) is a massive on-line public warehouse containing thousands of publications on hundreds of subject areas. In addition, numerous CD-ROMs and other software

that contain databases, management tools, and educational materials were produced and delivered to the general public.

As we enter the 21st century, a key issue with agricultural research and extension development is the need to positively focus on the small farmer and farm families. Traditionally, these underserved groups have not had equal access and participation in programs and training often designed to assist large producers and agribusiness. Also, a main issue identified by stakeholders is that profitability from traditional crops on small-scale farms is poor. Florida A&M University's 1890 Program is doing research on alternative crops such as Scotch bonnet hot peppers and animal production such as meat goats, designed specifically for the small farm. Included in this type of research are several value-added products that can further increase the farmers profit and partially replace income being lost through the removal of tobacco as a crop in the region.

Florida is home to many types of invasive plants. These plants impact the environment in a negative way by reducing the biodiversity of the native plant and animal community. Research and educational programs are on going to reduce these plants. For example, the Tropical Soda Apple interferes with range and beef cattle production. Research and extension education programs are providing information on methods of biological control using host-specific natural enemies as an alternative to expensive and ecologically disruptive large-scale mechanical removal and herbicide applications.

Florida has also suffered from the wide-scale displacement of commercial fishermen. Research and extension programs have been implemented to develop alternative business opportunities. One area of interest is clam production. Qualitative benefits center on the increased ability of the clam farming community to sustain their shellfish aquaculture-based economy and an increased optimism for the future of these communities in the wake of fishing restrictions and bans.

b. Successes

In the past years the major constraints to production systems (extension, mixed forage, and intensive) were a dependence on purchased inputs and an inefficient use of natural resources that resulted in low-profit margins for goat producers. Realizing this situation, the research extension program initiated non-formal education programs on sustainable goat production practices with two hundred and twenty-five (225) producers. One hundred and twenty (120) made use of pastures, browse, crop residues of diseases, less subsequent treatment of antibiotics that created additional costs and contribute to antibiotics residues in animal food products. The result was fewer incidences of parasites, and therefore reduced use of antibiotics. Adoption of these sustainable production practices resulted in greater profitability and competitiveness for small goat producers.

Because of warmer temperature and extended growing season, the lower southern U.S. is highly conducive to the production of Scotch Bonnet hot pepper as a crop. Thus, farmers in the test demonstrations have produced, harvested and marketed several hundred pounds in Florida and Georgia. With prices in the region ranging from $1.50 to $2.00 per pound, these farmers have realized incomes of up to $20,000 per acre for hot peppers sold as fresh fruits.

In today's water shortages and drought conditions, it is imperative that the industry be prepared for what the future holds. A committee of cross commodity crops was formed to proactively create a BMP's manual for foliage, floriculture and woody ornamental growers. The first draft was achieved and will be reviewed several more times before being presented to the water management districts. This serves two main purposes–it allows the industry to initiate a

conversation with the regulators and it shows they care about the environment and conserving our water resources.

Agriculture is recognized as a major player along with domestic residential and industrial water use. For example, St. Johns Water Management District is beginning to see agriculture as one of the solutions to the water story for the future in Central Florida. Protection of the water, both surface and subterranean, may have its salvation in agriculture. CFLAG is working with Water Conserve II on water conservation by reusing treated domestic wastewater to raise forage crops, recycling nutrients, the post treatment of domestic waste, and the urban audience.

In one county, the objective was to increase all dairy milk production by 500 pounds. In the year 2000 the average milk production per cow has increased from 16,200 pounds to a new record of 16,775 pounds. This objective was achieved.

Demonstration of new grass planting technology resulted in successful establishment of demonstration plantings. This new method will result in considerable savings in labor cost for producers. Labor needs have been reduced from 5 individuals to 1 individual in the planting process.

After almost two years of negotiations by phone and electronic mail, the Cuban government allowed representatives of Florida IFAS to travel to Havana to discuss a sugarcane project. The willingness of Cuban academics to sit down with us and consider a collaborative research/extension project is a real success story since joint projects with the United States are generally not even considered.

This year, an unknown peel injury caused significant losses to fresh citrus fruit after packing and shipping. Through collaboration with FMC FoodTech, Florida IFAS faculty were able to determine that quaternary ammonia residue on plastic surfaces of fruit bins and accidental spraying of the fruit itself caused this disorder. Through experiments, IFAS faculty demonstrated what concentrations of quaternary ammonia caused the injury and provide recommendations to packinghouses of how to reduce or eliminate the problem. Using the new packinghouse e-mail "new alert" list that IFAS developed, extension and research were able to quickly disseminate the information to packinghouses. Packinghouse operators reported back that as they were looking at this unknown peel disorder, our e-mail came through explaining to them what they were seeing and how to prevent the problem. Subsequent reports also were sent out through the Packinghouse Newsletter, posted on IFAS Citrus Resources Web Site (www.fcprac.ifas.ufl.edu) and Post harvest Web Site http://postharvest.ifas.ufl.edu), and material was sent to county citrus agents to educate grove managers on the importance of turning off the top manifolds to their quaternary ammonia spray stations so that fruit was not sprayed.

c. Benefits

As a result of Hatch funded research trials testing weed management in vegetable crops in flatwood soils with a select group of growers, almost every major tomato, pepper, and strawberry grower in west central and southwest Florida has plans to conduct his own on-farm trials during spring of 2001. These trials will consist of Telone products with herbicides or other fumigant alternatives and the use of virtually impermeable film mulch in combination with one-half rates of methyl bromide. Thus, growers will gain valuable experience with selected alternatives and will begin to better understand herbicides and how to apply them properly. Additionally, the use of virtually impermeable films will allow them to continue using methyl bromide in those fields where it is most needed. This knowledge will be essential to maintaining profitable farming operations.

Adoption of sustainable agriculture practices enable the one hundred twenty (120) meat goat producers to reduce feed cost on an average of $425/breeding unit and health cost on an average of $180/breeding unit. This

translates into savings of $51,000 for feed cost and $21,600 in health cost for 120 producers. Increased profitability improved the competitiveness of goat producers to improve breeding, feeding, health and management practices. Benefits of stakeholders include: (1) research, education and extension activities to improve animal production efficiency, agricultural profitability and competitive position of small and resource farmers positively impacted and increased the decision making skills of the end users as the go through lifelong learning, and (2) innovative collaborations and partnerships with stakeholders/end-users built sustainable solutions to agricultural and rural problems and forged partnerships for the future.

IFAS research and extension faculty have written a fact sheet that describes the FAWN weather system and a method to predict minimum temperature on a freeze night. By using the minimum temperature prediction described in this article, growers can determine whether they need to operate micro sprinklers during borderline freezes. If they determine that the temperature will not get too cold, the savings on 100,000acres of citrus can be 2,800,000,000 gallons or over $1,031,000 for each borderline freeze that water is not run.

A Hatch funded research project has shown a number of biofungicides, including such strobilurin compounds as Quadris and the low-impact, potassium-based Armicarb 100, proved effective in reducing multiple foliar diseases in tomato, thereby providing Florida growers with new tools in their disease management arsenal.

In the first season results of a Hatch project on microirrigational technologies for protection of natural resources and optimum tests showed that water use was reduced by 50% using FES at 45 cm water table level and further reduced 50% when the water table was lowered to 60 cm. No fruit yield or quality differences were detected among treatments. Success in this project should show that the use of the fully enclosed sub irrigation system to control water table levels at 60 cm affords dramatic water savings, allows for lessening the potential for applied fertilizer loss due to elevated water table levels, and does not result in reductions of production potential.

d. Assessments

Florida is meeting performance goals that make the Florida Agricultural System in this state highly competitive in the global economy. We will continue to strive to identify stakeholder needs and to redirect research and extension programs as necessary to meet these needs.

Critical Need Program 1. Food Crops and Crop Production

KEY THEME: Adding Value to New and Old Agricultural Products

a. Brief Description of Activity: SMP FL107

The strawberry industry in Florida is valued at about $160,000,000. The industry is concentrated in the Dover area, but some strawberry production is found from Homestead to the panhandle of Florida. A major accomplishment of some Extension faculty this year was developing the advanced testing program of strawberry selection from Dr. Craig Chandler's breeding program. Five numbered selections were tested with two numbered selections named, 'Fl Festival' and 'Earlibrite'. One function has been to establish a statewide strawberry extension program. This was done in several ways; one was to establish a strong working relationship with the Florida Strawberry Growers' Association and two, to assist them in production programs.

b. Impact/Accomplishment Statement

Established good working relations with Executive Directors Strawberry Growers' Assoc., Dr. Chip Hinton.

Worked with strawberry producers in North Carolina. Worked with Strawberry Growers' Association Board of Directors on production problems as well as safe use of pesticides. ***Tim Crocker***

c. Source of Federal Funds: Smith-Lever
d. Scope: Extension Multi-State and Integrated
NC

KEY THEME: Agricultural Competitiveness;

a. Brief Description of Activity: FOS-03741

In view of increasing evidence that blueberries possess important phytochemicals, studies were initiated based on Florida-grown cultivars. Twelve cultivars and breeding lines were obtained at various stages of maturity. Berries were partitioned into skin, seed, and flesh fractions. Oxygen radical absorbance capacity (ORAC, trolox equivalent, te/g), total anthocyanin (TA, mg/kg), and total phenolic (TP, mg/kg) analyses were performed on the fractions and whole berries. In ripe blueberries ORAC value in the skins were 3 to 10 times higher (~ 48 te/kg) than in the flesh (~6 te/kg). Seed values were more variable, ranging from 6 te/kg to about the same as in the skin ~ 36 te/g). TP followed the same trends, ranging from 3 to 13 times higher in the skins. In contrast, TA's were exclusively in the skins, 4500 to 8000 mg/kg. ORAC values were generally higher in whole ripe berries than in green or immature fruit, but cultivar dependant (30 to 40 te/g) TAs were absent in green and low in immature berries compared to ripes, 1200 to 2300 mg/kg.

TPs were comparatively unchanged among maturities, 10,000 to 4,000 mg/kg, but cultivar dependant. Over all cultivars, the ripe fruit correlation between TA and TP was 0.78, whereas there was no correlation between ORAC and TA and ORAC and TP. Blueberry juice and wine were prepared from a selected cultivar employing standard extraction procedures (hot press for juice and hot press and various time on hull treatments for wine). The cited analyses and sensory data are being performed on all processing stages from whole blueberries through finished and stored juice and wines. Attempts to establish the bioavailability of blueberry phytochemicals by an in vivo assay using mice comparison with in vitro analyses is the focus of work in progress.

b. Impact/Accomplishment Statement

These data are being shared with an IFAS blueberry breeder, Dr. Paul Lyrene, who supplied fruit in 2000 and will provide comparable samples during the 2001 season. The results will result in blueberry breeding lines with an improved phytochemical profile. Subsequently, breeding selections for release to commercial growers will have a more positive health image and competitive market potential compared to existing blueberry cultivars and other fruits.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

Critical Need Program 2. Value Added Agriculture and Sustainable Agriculture

KEY THEME: Innovative Farming Techniques

a. Brief Description of Activity: SMP FL101

A major effort in our extension and research program has been in the area of conservation tillage of all major row crops (corn, peanut, cotton, soybean) grown in the Southeast. Erosion problems, both water

and wind, are a real concern on the erodible sands of the Coastal Plains when intensive tillage is practiced. Most of the research in the southeast shows significant yield increases if the compaction layer is broken, which is a layer from 6-14 inches deep. This layer is normally broken through deep plowing or ripping. When soils are loosened then deep and heavy rain occurs, several tons of topsoil are lost leaving unproductive soil where the topsoil was lost and at the bottom where sand accumulated. Many of these fields have deep gullies that are hard to get equipment across. Over the past 10-15 years equipment was adapted for "strip till" planting that is no-till plus in-row sub soiling. We were able to develop management practices and then publications from data collected from research and demonstration plots. With the event of Roundup Ready crops and other new products, the main concerns of no-till or strip-till planting of crops were eliminated. Until 1993, no more than about 5% of the growers in the southeast were using strip tillage to plant their crops. At that time, cotton acreage was beginning to increase dramatically. The measurable goal was to increase the use of conservation tillage or strip till planting from 5% of the acreage to 50% of the acreage in 5 years.

b. Impact/Accomplishment Statement

Because we had extensive data on strip till cotton management practices and were noted as leaders in this area, we teamed up with industry (especially Monsanto and KMC, but many others), Natural Resource Conservation Service, and other organizations to promote strip tillage, use of cover crops, and other practices associated with conservation tillage. Several state and regional meetings were held during the winter of 1993 to target cotton growers. In 1994 and 1995 several growers who had switched to strip tillage were on these programs telling about their successes and problems. The number of acres switching to conservation tillage increased dramatically, going from about 5% in 1993 to as much as 70% by 2000. Farmers found out that they could save soil, oil, and toil and decrease overall cost of production. Long-term sustainability is insured by saving our natural resources and short-term profits of $22 to $55 per acre have been realized by the change from conventional tillage to conservation tillage practices on cotton. With Florida and the southeast producing about 2.1 million acres, a 15-fold increase in conservation tillage usage by farmers has resulted between $15.8 and $34.6 million savings to growers in the southeast region alone. During the past two years (1998-2000), we have concentrated on showing the advantages of strip till planted peanuts. Peanuts have had the most intensive tillage operations of any of the southern row crops. Many university faculty also recommended turning land prior to planting peanuts to bury plant litter that might harbor disease. Years of teaching necessity of deep tillage had to be overcome. We again were part of the team that worked with the conversion of cotton to conservation tillage. Our research over the last several years has shown reduced disease pressure, less virus pressure and generally equivalent yields with strip-tilled peanuts planted into a small grain cover crop. Florida Extension had about 20 years of experience from our programs to draw on to put together a total management package for conservation till-planted peanuts. ***David Wright***

c. Source of Federal Funds: Smith-Lever

d. Scope: Multi-State Extension
AL, GA

KEY THEME: Sustainable agriculture

a. Brief Description of Activity

“An enterprise analysis of nutrient handling systems of at least fifteen Florida dairies is ongoing. Data was collected during 2000 and will continue into 2001 that will determine; (1) the degree of balance of nutrients of large dairies, (2) the investment cost of new nutrient handling equipment, and (3) operating costs of the systems. These dairies were chosen so as to represent dairies of differing sizes, structures and regions within Florida. A preliminary summary was reported to Extension faculty that participated in the S-275 annual meeting. They represented animal science, agricultural engineering and biological engineering areas. This group of processionals from around the nation work on solutions of problems challenging animal concentrated feeding operations.

b. Impact/Accomplishment Statement

It is expected that the ultimate report will show significant progress of dairies in making their farms environmentally sustainable and good stewards of their property. ***Russ Geisy***

c. Source of Federal Funds: Smith Lever
d. Scope: Multi-State Integrated
GA

KEY THEME: Diversified/Alternative agriculture

a. Brief Description of Activity: SMP FL265

Florida A&M University Extension Program evaluated over 5 alternative crop enterprises over the period. These included; hot pepper (*Capsicum chinense*), Sorrel (*Hibiscus* sabdariffa), Vegetable amaranth (*Amaranthus sp.*) and pigeon pea (Cajanas *cajan*.). The hot pepper project " A HOT ROW TO Grow " which included on-farm demonstrations, on-station studies and market development were carried out at state and county levels. Three workshops and one field day were conducted to expose farmers to production, management and marketing strategies for this crop.

b. Impact/Accomplishment Statement

Twenty-six individual farmers and two cooperatives participated in the on-farm demo projects. Some 9,000 seedlings were produced and distributed among the participants. Market survey identified over 25 existing markets for the produce showing weekly needs for several hundred pounds of fresh pepper. Farmers have reported profitable income ranging from $4,000.00 to $20,000.00 per acre. On-station studies to evaluate mulch system as an alternative production technique showed that grass and legume clippings can be effective materials for use in producing the crop.

c. Source of Federal Funds:

Evan-Allen
Center for Cooperative Agriculture Programs (CCAP)
SARE
State of Florida

d. Scope: State Specific

KEY THEME: Agricultural Competitiveness; Agricultural Profitability; Small Farm Viability

a. Brief Description of Activity: ENY-03694

Fifty peanut genotypes plus Coan, a new cultivar release with Meloidogyne arenaria race 1 resistance were tested in a root-knot nematode infested farm site. Only one genotype had a rating of less then 5 (rating of 3.2), based on a 0 to 10 scale with 0 = no galls, ...10 = 100% of roots, pods, and pegs galled. The rating for Coan was 4.7. All other genotypes had gall ratings over 5.

b. Impact/Accomplishment Statement

The release of a peanut cultivar with good to excellent resistance to the peanut root-knot nematode would be a major advancement for peanut farmers who have little opportunity for long-term rotation because of lack of land or have a need to stay near an irrigation well. Coan shows a great deal of promise as the first cultivar that has root-knot nematode resistance incorporated within the germplasm,

however much work needs to be done to ensure that the resistance will hold against Florida populations of the peanut root-knot nematode.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

Critical Need Program 3. Forest and Natural Resource Enhancement

Although there are projects and programs ongoing in this area, there are no Hatch or Smith-Lever projects occurring at this time**.**

Critical Need Program 4. Fundamental Plant Sciences

KEY THEME: Plant Production Efficiency

a. Brief Description of Activity: AGR-03706

In theory, pollen genotype selection in higher plants is known to be more effective than sporophytic selection being practiced and is certainly more efficient in terms of time, labor and money. Genetic differences in the differential transmission of alleles by the pollen grains were found in the test species, sesame, indicating that pollen genotype selection should be considered as a supplement to the standard sporophytic selection. However, many genetic and environmental factors including haploid pollen genotype, diploid pistil genotype, temperature at pollination, pollen and pistil development and vigor of the donor, as well as the interactions must be critically analyzed since they alter the relative transmission rates. The impact and manipulation of these factors and their interactions are being examined. In addition, the application of various growth stimulants/retardants during pollen germination and growth through the pistil is being studied to determine if the transmission of various favorable alleles by pollen grains can be altered and increased.

b. Impact/Accomplishment Statement

Pollen genotype selection will improve plant-breeding programs when more reliable and predictable techniques to increase the transmission of desirable alleles become available through plant reproductive research.

c. Source of Federal Funds: Hatch
d. Scope: State specific

Critical Need Program 5. Plant Genetic and Germplasm Enhancement

KEY THEME: Plant Germplasm

a. Brief Description of Activity: AGR-03726

1. Non-dormant Alfalfa Trials
Established 17 entries of non-dormant alfalfa cultivars in November of 1999 under rain-fed conditions for evaluation. There were 3 reps of each entry. Plots were harvested once in March, 2000 but stands were lost to drought and repeated deer grazing.

2. Established lablab bean and velvet beans on half-acre plots and evaluated for summer legumes that may be incorporated in corn for silage or cut for hay.

b. Impact/Accomplishment Statement

Non-dormant alfalfa cultivars did not persist under prolonged severe drought and continuous grazing by deer at Ona despite the application of lime and fertilizer. Presently, we cannot recommend alfalfa as an alternative winter annual. Lablab and velvet bean stands were lost because of drought and grazing by deer.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

KEY THEME: Adding Value to New and Old Agricultural Products;

a. Brief Description of Activity: AGR-03713

Completed additional regional testing of FLMR7 red clover population and initiated seed increase for potential cultivar release. All data appears to support cultivar release. A cultivar release advisory committee will be requested in 2001.

b. Impact/Accomplishment Statement

This new population has enhanced root-knot nematode resistance and productivity over Cherokee.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

KEY THEME: Plant Germplasm; Plant Genomics

a. Brief Description of Activity: PLP-03496

A. A second avirulence gene, avrXv4, has been cloned from a tomato race 3 strain of Xanthomonas campestris pv. vesicatoria and sequenced. The avirulence gene, which induces a hypersensitive reaction in Lycopersicon pinnellii LA716, has a high degree of homology to the avrRxv and avrBst genes.

B. An avirulence gene, which was cloned last year from a pepper race 6 strain, induced a hypersensitive reaction in Capsicum pubescens PI 235047 and also in tomato. Based on preliminary data, it appears that the avirulence gene was determined to be similar to avr3-2, which is found in pepper strains and which interacts with the BsP in tomato. A mutant strain was identified that induced an HR in tomato, but which caused a compatible reaction in pepper genotype PI 235047. It appears that a mutation has occurred in the avirulence gene that affects the reaction in pepper, but not tomato. This would indicate that the activity of this avirulence gene within the two genotypes is associated with a different region.

C. A new insertion element was identified in group C strains of Xanthomonas campestris pv. vesicatori, which was inserted in the avrXv-3 gene and rendered them virulent on the corresponding resistance gene (i.e., Xv-3). Mutation experiments are currently being conducted in plants to determine mutation rates.

D. The role of avrXv-3 in eliciting the hypersensitive reaction was further characterized and determined to be induced in planta and in Xvm2 medium that is effective in inducing hrp genes. The gene was determined to be constituitively expressed when placed in a hrpG* strain where the hrp system is constituitively expressed. The avirulence gene was also placed in two mutant strains, hrpG- and hrpXv-, in which it was not expressed. This indicates that the avrXv-3 gene is controlled by the hrp system and is the first avirulence gene to be identified as being regulated by the hrp system.

E. Characterization of a tomato race 3 strain that has mutated and become virulent on Xv-3, a resistant gene effective against tomato race 3 strains. Strains characteristic of tomato race 3 were identified that were unable to induce a hypersensitive response in the tomato line, 216, which contains the resistance gene, Xv-3. A set of primers designed to amplify the avrXv-3 gene were used to amplify DNA from this atypical strain. The PCR product was larger than the characteristic product. The product was sequenced and found to contain an insertion element within the avirulence gene. This element was also found in other tomato race 3 strains that were isolated the last several years. The mutation apparently did not result from selection pressure from tomato varieties being grown which contained the resistance gene, Xv-3. Interesting, these strains with virulence on the genotype containing Xv-3 were avirulent on pepper. Previously, we had determined that the avrXv-3 gene conferred avirulence on Xv-3 and also pepper. Currently, we are determining the mutation rate of this strain lacking a functional avrXv-3 gene for virulence on pepper to determine if we can identify a second avirulence gene in the tomato race 3 strain.

b. Impact/Accomplishment Statement

No impact at this time

c. Source of Federal Funds: Hatch
d. Scope: State Specific

Critical Need Program 6. Citrus and Other Fruit Crops

KEY THEME: Tropical Agriculture

a. Description of Activity: SMP FL111

The purpose of this program is to provide horticultural and agricultural education to commercial and sometimes backyard tropical and subtropical fruit growers of Dade, Broward, Collier, Lee and other South Florida counties. Topics of this program include improved cultural practices; new tropical fruit crop species or cultivars, irrigation, spacing, pruning and decreased taxation through land use and conservation and economic stability. Sustainability of the tropical fruit industry as affected by regulations, crop insurance, internal and foreign competition, marketing and other factors must be considered. Another very important purpose is to provide unbiased scientific information to the clientele or agencies. There are about 15,000 acres of tropical fruits in South Florida including limes and pummelos, but excluding other citrus. Most of the acreage (13,000) is in Miami-Dade County, but there is some in Lee, Collier and Palm Beach counties. The tropical fruit industry is valued at $77 million with $154 million of total induced sales. There are about 900 orchards in Miami-Dade County. Many of the commercial and urban clientele are novices with minimal to no experience in agriculture. Many grove owners do not depend on grove earnings as their main source of income. Information on tropical fruit is limited for some fruits and very limited for others. Other issues/problems include: increased regulations on water use and quality and increased flood danger. There is a need to find alternative markets, new crops/cultivars and/or uses, and for publications on new crops and to revise and update already existing publications. Urban sprawl is taken over agricultural lands and incentives are needed to keep this land in agriculture. Extension faculty are presenting programs in all of these areas.

b. Impact/Accomplishment Statement

Some examples of impacts include: There were 90 tensiometers installed in groves. Each grower installed a set of 6 and a 12" tensiometers. These growers (40, covering 250 Ac.) have confidence in them and, after visits/phone conversations, say they are saving 1/3-1/2 the amount of energy. Growers said they have cut watering by 30-50%. They have also reduced the amount of fertilizer because of

leaching prevention. There are now 427 acres under tensiometers. At least thirty growers were able to get agricultural tax exemption, even in small groves (1-3 Acres) with tax savings of 40-70%. By talking to these growers before they planted, Extension faculty prevented many mistakes such as wrong species, wrong spacings, wrong location, etc. Attendants to the cultural practices workshops are now much better informed thus increasing their efficiency and economic stability. The 1,321office and field visits in the South Florida area at $25 each amounted to $33,025 in grower savings. At $10 each phone consultation (2,529) growers saved $25,290 and with 1,174 samples processed at $25 each, growers saved $29,350. This represents an $87,665 savings for growers. There were over 30 new grove owners that installed high volume or microsprinkler systems. There were 4 programs on irrigation. A total of 90 tensiometers were installed by old/new grove owners.

Thirty new or potential fruit growers received a packet for new growers. They were asked to read the information and return or call to explain subjects they still had doubts. These 30 growers proceeded to plant their groves as discussed, and recommended by the agent. They were also able to get agricultural tax exemption–a 30-70% savings in property taxes.

There were 30 programs on cultural practices (fertilizers, pruning, propagation, crops, etc.) for growers. A total of 1,861 clients attended the programs. Forty-four to eighty-one percent of the growers (819-1,507) when surveyed were not familiar with the cultural practices discussed in the programs. From 54-100% of the growers (1,005-1,861) responded they will use the practices discussed in the programs, i.e. most growers are now pruning their trees from a young age using hand, mechanical/hydraulic tools and hedgers/toppers, 100% (12) carambola growers will use some kind of mulch in their groves to improve tree condition in the winter and obtain early season production. Lychee-longan growers learned that all chelated iron forms for alkaline soils could be used to correct iron deficiency. Attendants to the to the commodity workshops were able to see new cultivars or learned more about existing ones. Horticulturists from 18 different Caribbean countries were trained in general concepts of tropical fruit production and propagation. They also were trained in growing avocados, mango, guava, `Tahiti' lime, carambola, jackfruit and passionfruit.

There were 134 attendants to the Post Harvest / Marketing Workshops. Of these, 5-15% (7-20) experienced moderate fruit post-harvest losses (avocado, lime, mango, mamey, etc.) while 20-80% (27-107) experienced severe post harvest losses (carambola, lychee, papaya). Seventy-seven percent (103) will use the information presented in their operations and 90% (121) will use the refrigeration information and post-harvest treatments in their operations. Only 12% (16) did gift shipping and more marketed through the Internet. After the presentations, 86% (115) will consider marketing their own crop; only (52%, 70) were doing it before the presentation. Lack of knowledge and time and too much work were common reasons for not marketing their own crops. From 44-56% (59-75) will apply the information in the programs in evaluating alternative crops and marketing channels and in developing a strategic marketing plan and a web page in their operations. ***Carlos Balerdi***

c. Source of Federal Funds: Smith-Lever
d. Scope: Integrated Extension

KEY THEME: Agricultural Profitability; Tropical Agriculture; Plant Production Profitability

a. Brief Description of Activity: FTP-03700

In collaboration with Gene Albrigo, a series of experiments, funded by FCPRAC, was conducted in 97-99 and 98-2000 to evaluate methods available for controlling cropload in citrus. I conducted trials on a block of Navel and of Ambersweet that flower profusely but usually carry only modest croploads. The following treatments were applied: 1) GA application during late December-early Jan. to reduce floral initiation, 2) urea application during late December-early Jan. to enhance strength of flower buds that develop, 3) application of GA during flowering to enhance fruit set, and 4) application of micronutrients during flowering to enhance fruit set. The experiment was designed as a factorial combining all winter

treatments (plus a non-treated control) and all postbloom treatments (plus a non-treated control). Hypotheses tested were: 1) reduction of flower number through reducing floral initiation will increase actual numbers of fruit set because fewer resources will be wasted on unwanted flowering (this has been reported for Navel in Spain), 2) application of urea will significantly enhance fruit set by increasing the flower size and enhancing early fruit sink-strength, and 3) bloom treatments with GA and nutrients will enhance cropping.

In 97-98, Ambersweet flowering was reduced by 40%, increasing fruit/tree by 65% and increasing boxes/tree by 47% with a single winter application of GA. It appears that reducing flowering does conserve resources and enhances cropping. In the IR navel block, a single winter GA application reduced flowering by 49%, increased fruit size and fruit /tree (both only at p=.10), and increased boxes / tree by 22% . Winter application of urea did not affect flowering, but did increase fruit / tree and boxes / tree, presumably by increasing the bud strength. In 98-99, winter GA applied to Ambersweet significantly increased cropping while bloom GA significantly decreased fruit/ tree, however, cropping was very poor even with the best treatment. Because of warm conditions in December, we were concerned that flower induction might be delayed, and we also sprayed some Ambersweet at the end of January. These trees produced 275 fruit / tree vs. only 25 fruit / tree in non-treated controls. Time of GA treatment affected time of bloom as well as final crop. Navel in 1998-99 had many fewer flowers, produced a very large crop (6 boxes per tree in controls), and winter GA actually reduced cropping. More heavily flowering Navel trees in a neighboring block displayed increased cropping following winter GA. It appears that treatments to influence flower induction and differentiation show promise for enhancing yield in heavily flowering, light cropping blocks, but effectiveness will depend on environmental conditions and their effects on flower induction. A new model for predicting effect of temperature on floral induction, under development by Albrigo, should assist us in timing our treatments for best effect.

Gene Albrigo and I received funding from FCPRAC for 2000-2001 to further explore the potential for using GA to enhance cropping in citrus varieties. GA3 (20 grams / acre plus 0.05% Silwet) has been applied at three timings (mid Dec, early Jan, late Jan) to Late Navel, Valencia, Minneola, and Ambersweet. At the middle timing, we applied two additional rates of GA (10 and 15 grams / acre). Data on defoliation, flushing, flowering, and cropping were taken on all blocks. Flowering was significantly reduced by all GA treatments in Minneola and Ambersweet (reduced by 50-80%) with little effect in Valencia and Late Navel except for the January 12 treatment. Time of flowering was greatly altered by GA sprays except in Late Navel, with early treatments delaying flowering and late treatments accelerating bloom. Harvest data were collected on Ambersweet, but not yet analyzed, while other varieties will be harvested in 2001. ***Note: This is one of 8 tests going on under FTP-03700. The others can be seen on the web page. URL provided on the content page of this federal report.***

b. Impact/Accomplishment Statement

Manufacturers of GA are working to include this use on their labels for citrus. Valent Biosciences has obtained Section 18 for January application of GA to Ambersweet this year. Many growers treated limited acreage to reduce flowering and enhance cropping, as permitted by current GA. In many blocks, cropping has been increased by 20-50% by reducing excessive flowering.

c. Source of Federal Funds: Hatch
d. Scope: State specific

KEY THEME: Tropical Agriculture; Sustainable Agriculture

a. Brief Description of Activity: HOS-03278

roject began in 1982 and has been involved in determining optimum cultural practices for young citrus trees. The project has been summarized in an article for HortReviews,"Growth, Development, and Cultural Practices for Young Citrus Trees", 1999, Vol. 7, pp. 319-372.

b. Impact/Accomplishment Statement

This project developed the most widely used method of cold protection for young citrus trees and has allowed citrus growers to reduce fertilizer application rates and costs by fifty percent.

c. Source of Federal Funds: Hatch
d. Scope: State specific

Critical Need Program 7. Green Industry (Turfgrass/Horticulture)

KEY THEME:

a. Brief Description of Activity: ENH-03544

b. Impact/Accomplishment Statement

Approximately 50% of Florida nurseries are located within one mile of urban centers. Thus, the production of plants utilizing environmentally compatible production practices is crucial. The accomplishment of these objectives will provide nursery operators with basic information needed to meet environmental guidelines of the future. ***Tom Yeager***

c. Source of Federal Funds: Hatch
d. Scope: Research Integrated

KEY THEME: Adding value to New and Old Agricultural Products

a. Brief Description of Activity: SMP FL105

Ornamental plants are an integral part of home and commercial landscapes. Commercial container production of landscape plants in the south began in the late 1950s, and Florida currently ranks second nationally in gross sales with an estimated wholesale value exceeding 1.3 billion dollars. There are more than 7,000 nurseries in Florida that produce more than 90% of plants in containers on more than 5,000 hectares. Fertility management is highly variable and, in most cases, fertilizer is used excessively. New technology in nutritional management has been developed through research. Since fertilizer is a controllable cost for the grower, the long-range goal of this extension program is to develop efficient fertility management programs and to disseminate this information to growers of container-grown ornamentals in Florida. These programs can reduce plant production costs and fertilizer runoff, the latter of which pollutes natural waters. A Interdisciplinary project with Agricultural and Biological Engineering Department faculty member D. Haman is underway to develop prototype water saving containers and water saving irrigation methods for the nursery industry. Results of project should result in overhead irrigation efficiencies of 75% needed to meet current permitting criteria. Information is disseminated to Florida clientele through workshops. The workshops are conducted in host counties with help of county extension faculty. Each county faculty leads the pesticide part of the BMP workshop while state faculty lead the irrigation and nutrition parts. Participants in the irrigation workshops are able to test the irrigation application uniformity of their irrigation systems between the first and second day of the workshops.

b. Impact/Accomplishment Statement

These educational workshops conducted by cooperative extension are resulting in a 15-20% reduction in quantity of water applied per acre and an 8-10% reduction in fertilizer applied per acre at container nurseries in ten counties. Extension faculty designed and developed workbooks for statewide BMP workshop and statewide effective irrigation workshop. Because of their work, faculty have received grants from FDEP to conduct extension workshops on BMPs and from Southwest Florida Water Management District (SWFWMD) to conduct workshops on irrigation application efficiencies. These grants have facilitated the development of educational resources that include a notebook of handouts. FDEP also provides the SNA BMP handbook to each participant at the BMP workshops. ***Tom Yeager***

c. Source of Federal Funds: Smith-Lever
d. Scope: Extension Integrated

KEY THEME: Home Lawn and Gardening, Also Urban Gardening

a. Brief Description of Activity: SMP FL127

Low income and others benefit from growing vegetables for home use in many ways: social, economic, nutritional, and personal satisfaction. For the purpose of my Extension work, I do not include market gardens to be within the scope of my outreach programs; however, these gardeners who grow for sale of their produce do benefit from many of IFAS Extension activities, such as meetings, mass media releases, and publications.

In Florida, over one million individual gardeners grow at least some of their fruits and vegetables consumed at home. These vegetables are grown most often in traditional backyard plots, averaging 300 sq. ft. in size. However, other growing **methods include community gardening plots, container gardens, and large rural gardens. With an average retail value of all produce grown at $1.00 per sq. ft. and there being 300,000,000 sq. ft., the total value is estimated to exceed $300,000,000. The total value nationwide is said to be a "$17 billion non-industry."**

Florida's vegetable gardeners are located in all 67 counties, ranging from the rural to large urban centers. Community gardens account for less than 1 percent of gardens, but provide needed opportunity in low-income areas. Container gardens are everywhere throughout the urban areas, and provide consumers needed herbs, specialty, and salad crops. Organic gardens constitute only about 10% of all gardens, but most gardeners are quick to utilize any organic techniques that work. Most counties are using standard educational activities that involve Master Gardeners in answering public inquiries through phone, office, and clinic consultation. Mass media are employed effectively for this audience due to the large numbers growing gardens. In this regard Extension work consists mainly of keeping gardening information alive and dispensable for County utilization through publications, meetings, personal contact, and other related activities. In 2000, Extension faculty worked most directly with Master Gardeners to benefit these urban and home gardeners statewide. Several of the more aggressive counties are more pro-active and focused on continuing or establishing community and demonstration gardens in targeted economic and geographical areas, including schools and blighted neighborhoods, to maximize educational impacts with those people in greatest need. Here are some of the most outstanding county programs in 2000: Duval--with the use of federal Urban Gardening funds first allocated in 1978-9, staff and MGs work with: a) 19 community gardens having 190 plots on 300,000 sq. ft. valued at $.60 per sq, ft, or $180,000; b) 20 school gardens on approximately 5 acres, mostly social value; and c) 250 home gardeners on 10 acres with production value of about $300,000. Overall, the total Duval program amounted to 4,000 participants reached, who grew about $500,000 worth of fresh, nutritious vegetables and herbs. Other counties with major Urban Gardening programs in 2000 were Dade (highlighted by its Police supported community garden in a crime-ridden section of Miami); Hillsborough and its Suitcase City community garden and high-profile demonstration gardens; and Orange County, Broward County, Lake County, and others. Project SOAR in Palm Beach County reached hundreds of school children, teaching them gardening (non-4-H).

b. Impact/Accomplishment Statement

Some Impacts include the following: Miami's inner-city community garden run by MGs and supported by the
Miami city police reduced crime and brought improved community pride to one of the city's most disadvantaged areas. Each of Jacksonville's 20 community plots established by Duval Extension is a success story within itself. Common folks have learned to rise above their personal deficiencies to succeed with the task of growing a portion of their own food supply, while cooperating with others in accomplishing common goals.

Other Impacts:
a) Crime was reduced in the ghettos of Miami due to community gardening,
b) School Gardening, Palm Beach County's SOAR project, taught discipline and fundamentals such as Math and science; such was the case in all school gardens example Duval.
c) Primary impacts were made in social areas (increased community pride). ***Jim Stephens***

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME: Ornamental/Green Agricluture

a. Brief Description of Activity: ENH-03544/ FL105–BMP Development

Initiated revision of "Best Management Practices, Guide for Producing Container-grown Plants." This handbook culminated years of research conducted throughout the southeast. The handbook was published by the Southern Nurserymen's Association and is sold by the nursery industry. Currently coordinating research for development of greenhouse BMPs. Co-coordinator of Container Nursery Water Management Group composed of Environmental Horticulturists and Agricultural Engineers, whose focus is improving container nursery irrigation application efficiency. We received the first major funding from the nursery industry for a project of this type and have submitted one patent application. ***Tom Yeager***

b. Impact/Accomplishment Statement
Information from research program is implemented via demonstration and dissemination of results to commercial nurseries utilizing FL105 priorities. Co-coordinator of Container Nursery Water Management Group composed of Environmental Horticulturists and Agricultural Engineers, whose focus is improving container nursery irrigation application efficiency. We received the first major funding from the nursery industry for a project of this type and have submitted one patent application.

c. Source of Federal Funds: **Hatch/Smith-Lever**
d. Scope: Integrated Research and Extension

KEY THEME: Innovative Farming Techniques; Agricultural Profitability

a. Brief Description of Activity: LAL-03759

Elevated microsprinklers proved to be particularly effective in protecting trees in 1989. Tests have been set up to determine how high jets can be positioned and still be effective. Information on this technique is of particular interest to growers, for it offers an effective method to speed up recovery significantly after a major freeze.

b. Impact/Accomplishment Statement

This program has led to the expansion in use of microsprinkler irrigation and demonstrated the effectiveness of microsprinklers in frost protection. In the past 15 years, microsprinkler irrigated citrus acreage has increased by more than 600% to 500,000 acres. This program contributed to that expansion by demonstrating the important factors that influence microsprinkler effectiveness. This program also demonstrated improved frost protection effectiveness by showing the benefits of elevated microsprinklers. Every time there is a moderate to severe freeze, microsprinkler irrigation saves the citrus industry over $60,000,000. That impact comes directly from information developed by this program. The frost that hit south Florida in January, 1997 and winter 2000-01proved again that growers who used microsprinklers benefited their trees, while those who did not (because of lack of water or other reasons) suffered significant cold damage.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

KEY THEME: Tropical Agriculture;

a. Brief Description of Activity: APO-03523

A. Determine epidemiological importance of classification groupings of the major phytopathogenic bacteria and fungi.
B. Examine the etiology and ecology of newly described bacterial and fungal pathogens.
C. Determine the efficacy of chemical and biological control agents for foliage crops.
D. 4) Examination of plant species, varieties and cultivars for disease resistance.

b. Impact/Accomplishment Statement

The Florida ornamental industry has a wholesale value of over 1.4 billion dollars. Nearly 400 million dollars of this production is in tropical foliage plants. The research conducted has a direct benefit to this industry. Each year faculty conduct research on agro-chemicals, cultivar resistance, and do cooperative research with plant breeding programs in IFAS. Information gained from this research is disseminated to growers, extension and DPI agents via trade journals and by an extensive statewide lecture series. Basic research into genetic relationship of both fungal and bacterial pathogens are also conducted, this information is published in refereed journals. Although the impact of the research is hard to translate into specific dollar amounts, the applied research does provide growers with valuable information regarding disease controls that will provide cost savings to the industry.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

KEY THEME: Ornamental/Green Agriculture

a. Brief Description of Activity: ENH-03544

Achieved state and national recognition for nursery BMPs. Initiated revision of "Best Management Practices, Guide for Producing Container-grown Plants." This handbook culminated years of research conducted throughout the southeast. The handbook was published by the Southern Nurserymen's Association and is sold by the nursery industry. Currently coordinating research for development of greenhouse BMPs. Co-coordinator of Container Nursery Water Management Group composed of Environmental Horticulturists and Agricultural Engineers, whose focus is improving container nursery irrigation application efficiency. We received the first major funding from the nursery industry for a project of this type and have submitted one patent application.

b. Impact/Accomplishment Statement

Approximately 50% of Florida nurseries are located within one mile of urban centers. Thus, the production of plants utilizing environmentally compatible production practices is crucial. The accomplishment of these objectives will provide nursery operators with basic information needed to meet environmental guidelines of the future.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

Critical Need Program 8. Improved Grazing Systems in Animal Production

KEY THEME: Grazing Agricultural Profitability

a. Brief Description of Activity: SMP FL102

The purpose of FL102 is to help producers/users of forage to maintain and improve their knowledge base concerning the production and utilization of forages. This includes keeping them informed of the latest production technology, as well as maintaining their knowledge of routine production practices such as how to properly apply plant nutrients so as not to contaminate surface and ground water. This program can be of use to all land owners and others who have grazing livestock or utilize grazing lands for other purposes such as the disposal of municipal effluent and residuals. There are 11.5 million acres of grazing lands in Florida. FL-102 is a long-term Extension program. Current Situation: Forage produced in Florida is the major source of nutrition that drives the beef cattle industry and to a large extent the dairy industry in Florida. Lack of adequate nutrition is one of the major problems in the beef industry for most classes of beef animals. Cows may fail to re-breed, replacement heifers may develop too slowly and also have trouble re-breeding after their first calf, and weaning weights of calves may be lower than their potential–all due to an inadequate supply of forage of acceptable quality. At the present time, interest is increasing in the use of certain legumes (to increase pasture quality and reduce energy/nitrogen input), in forage testing and in the adoption of new higher yielding, higher quality forage species. Ranchers need to optimize utilization of native range through proper range management practices such as burning, chopping, controlled grazing, and judicious use of feed supplements during the winter. Beef calf prices are uncertain. The cost of fertilizer and other inputs for a beef enterprise continue to increase. Increased efficiency in the use of fertilizer and other production inputs will be needed. By FY2003, some improvements (5%) may be realized due to improvement in forage programs. Some dairies are using silage either purchased or homegrown. Several are growing and using low-energy grass silage. By FY2003, it is expected that more dairies (90%) will be growing and harvesting some type of forage crop due to the need to control or recycle the nutrients in manure. Due to low milk prices and high grain prices, some "grazing dairies" will be developed whereby the producer significantly increases the use of pasture as a source of feed (nutrients) for the milking herd. A small increase in the number of dairies (5%) planting improved, high-quality forage for dairy replacement heifers is expected. Extension faculty are working with beef producers to increase their knowledge of proper native range and/or improved pasture management practices. Beef producers are increasing understanding about stored forage or accumulated pasture growth either on improved pastures or native range to supply an adequate quantity during the winter; As well as how they can be supplement with cool season annuals where feasible or with purchased supplements. Producers are also attending education programs to learn about the use of more pasture legumes where they are adapted in order to improve forage quality and also save input cost of nitrogen fertilizer. Dairy producers using pastures as their primary source of nutrients for the milking herd are receiving knowledge through extension faculty concerning proper pasture management practices and pasture utilization. Dairy producers through Extension intervention are growing and using more high quality silage crops. These are being grown also to provide a means to recycle nutrients in manure in order to help alleviate the potential problems with pollution. Forage producers would be knowledgeable concerning environmental issues and the way and means of integrating their forage production and utilization goals with environmental goals.

Significance of Change: Lower cost to produce a calf. Lower cost per pound of milk produced. More sustainable livestock enterprises. Publication and distribution of the "Florida Forage Handbook" has provided a complete source of information about Florida forages and forage management practices for our clientele. Publication of fact sheets and putting them on the World Wide Web provides a readily accessible source of information. Publication of a monthly newsletter provides timely information to county faculty for use in their newsletters to local clientele. "Forage Testing to Improve Forage Quality": The forage testing submission form was revised and updated. Clientele who participate in this program know the feed value of the forages their cattle are consuming and are better able to determine if nutritional supplementation is needed to meet their animal production goals. " Maintenance of Forage Fertilization Recommendations": This program provides producers with suggestions on how to best fertilize their pastures and hay fields for economic optimum production. "Introduction of New and Improved Forages" This program helps clientele choose the best forage for their situation. "Guidence for Environmental Engineers": Assistance and guidance is provided to Consulting "Environmental Engineers" concerning the development of manure and other nutrient management programs. This mainly relates to the uptake and removal of certain nutrients by forage plants. This work helps prevent the contamination of surface and ground water with phosphorus and nitrogen.

b. Impact/Accomplishment Statement

Demonstration of new grass planting technology resulted in successful establishment of demonstration plantings. This new method will result in considerable savings in labor cost for producers. Labor needs have been reduced from 5 individuals to 1 individual in the planting process. ***Carol Chambliss***

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

Critical Need Program 9. Understanding the Physiological Basis of Animal Disease, Pests Reproduction, Growth and Well Being

KEY THEME: Animal Health; Animal Production Efficiency

a. Brief Description of Activity: AGE-03508

This project dealt with development of improved ventilation and cooling methods for livestock housing. Studies included projects dealing with dairy, poultry and swine housing. Dairy studies involved cooling systems for freestall housing. Poultry studies dealt with ventilation and cooling systems for layer and broiler housing. Swine studies involved the effects of heat stress on nutrition and a development of a model of swine growth. During the last year, calf growth rate and rectal temperatures were measured for dairy calves housed in wooden and metal roofed calf hutches and under an open sided barn. Analysis indicated that calf performance was best under the open sided barn. No significant differences were observed among calves housed in wooden and metal roofed hutch types.

b. Impact/Accomplishment Statement

Losses caused by heat stress are a major problem for livestock producers in states such as Florida with warm or hot, humid climates. Several studies conducted during this project resulted in improved ventilation and cooling methods for livestock production.

c. Source of Federal Funds: Hatch
d. Scope: Multi-State

Critical Need Program 10. Genetic Enhancement of Agriculturally Important Animals

Although there are projects ongoing in this area, there are no Hatch projects at this time.

Critical Need Program 11. Aquaculture

KEY THEME: Aquaculture

a. Brief Description of Activity: SMP FL132

a. Program purpose: To develop, test and demonstrate technical procedures and determine economic feasibility of transferring remote setting technology from the Pacific Northwest molluscan shellfish industry to the clam aquaculture industry in Florida. This would ensure a reliable and consistent supply of high quality and inexpensive clam seed to growers, thus fostering an emerging aquaculture industry by eliminating a seed shortage that limits sustainability. This program is expected to evaluate whether post-set seed clams can be obtained from a remote hatchery and successfully settled and reared to 1 and 5 mm sizes by Florida clam nursery operators at a lower cost than commercially available seed of the same size. b. Current situation: Clam farming has developed rapidly and has become a major aquaculture industry in Florida and the southeastern United States. Annual clam seed plantings in the state have significantly increased in the past decade from an estimated 23 million in 1989 to over 300 million in 1997, with intentions in 2000 exceeding a half billion. One of the foremost concerns of growers is a consistent supply of nursery seed, which represents 50% of a clam producer's operating expenses. There are about 10 private-sector hatcheries in the state, with most recently developing as a result of vertical integration within a larger parent operation. This type of hatchery development produces redundancy of fixed, investment and operational costs which increases the overall cost of clam seed to all, the vertically integrated businesses and the growers who purchase seed from them. Since the profile of the industry is dominated by small businesses, the concept of larger volume hatcheries seems plausible by freeing existing hatcheries of laborious nursery maintenance through a division of labor. Private-sector, land-based nurseries have become operational over the past 3-4 years. Currently, 70 such facilities are located in Florida. At these facilities, seed, purchased from hatcheries at sizes as small as 1 mm, are nursed to a plantable size of 5-6 mm in upwellers and raceways where natural seawater high in salinity and food (microalgae) is pumped through the system. The problem of adequate clam seed availability can partially be solved by establishing more land-based nurseries. This applied research and extension program will contribute to solving the problem by testing and adapting remote setting technology, which has not yet been evaluated nor utilized by the clam industry.
During the 1970s, the oyster industry in the Pacific Northwest also faced critical seed shortages. The advent of remote setting techniques provided a division of labor between the hatchery operator and the oyster farmer. Competent pediveligers are hatchery produced, refrigerated, and then shipped via overnight delivery to growers who pour the larvae into setting systems containing cultch to produce seed for their farms. It has become standard practice over the past two decades for most oyster and clam growers in Washington, Oregon and British Columbia to purchase larvae at $120-100/million, rather than 1-5 mm seed at $15-5/thousand seed. As a result, commercial hatcheries have evolved into high-volume larval rearing facilities capable of producing billions of Pacific oyster and manila clam pediveligers annually. This program is funded through the Florida Sea Grant Core Program for 2000-1, in collaboration with Louisiana State University's Office of Sea Grant Development. Shellfish aquaculture has developed rapidly in Florida as well as in other states in the southeast. Adequate seed availability is a major concern to this industry and has, in recent years, faced critical shortages. Remote setting of clam seed may allow growers to become less dependent upon traditional seed sources and help ensure a greater chance of success by incorporating another step in their existing business. This would enhance the continued economic viability of clam farming, a significant and growing sector of the region's economy and, ultimately, further economic development by creating more infrastructure to support this industry.

b. Impact/Accomplishment Statement

This program is expected to result in further technical, economic and qualitative benefits to the clam farming community and the rural, coastal communities in the primary growing areas of Florida. Technical benefits include documentation of producing field plantable seed by using remote setting techniques; extension of results, through demonstration and observation, to other clam growers the technology of remote setting seed clams; and, evaluation of the economic feasibility of incorporating remote setting in business operations providing a more reliable and consistent supply of relatively less expensive clam seed. Economic benefits include potential decreased costs in procuring seed by individual farmers; increased opportunities to successfully implement business plans; increased net return to the clam grower and, enhancing the attendant economic impact of the shellfish aquaculture industry in Florida. Qualitative benefits center on the increased ability of the clam farming community to sustain their shellfish aquaculture-based economy and an increased optimism for the future of these communities in the wake of fishing restrictions and bans**.**

c. Source of Federal Funds: Smith-Lever
d. Scope: Multi-State Extension
GA, LA

KEY THEME: Aquaculture

a. Brief Description of Activity: SMP FL132

With equipment on loan from the UF Tropical Aquaculture Lab and field assistance from the DACS Shellfish Environmental Assessment Section, extension staff and growers, deployed 2 water quality monitoring systems at lease areas, one in Levy County and one in Dixie County during 2000. These data loggers provided continuous information on water temperature, salinity, pH, and dissolved oxygen. Resulting monthly data was posted at extension offices and provided to growers upon request. Extension faculty identified an appropriate funding source and partners, both agency representatives and department faculty, and assisted growers in submitting a proposal to the U.S. Department of Agriculture (USDA), Initiative for Future Agriculture and Food Systems Program/ Precision Technologies, for the adoption of remote sensing technologies for the Florida clam culture industry. Extension faculty acting as a member of the water quality enhancement committee of the Dixie County Aquaculture Task Force, requested the Suwannee River Water Management District (SRWMD) to give intermediate and final reports onto the Task Force on a RNA-ribotyping study funded by the District and conducted by the UF Family Youth and Community Sciences Department faculty. This study involved a sampling protocol that can be used to determine sources of nonpoint bacteriological pollution. Extension faculty gave presentations to the Levy County Board of County Commissioners and to the Governing Board of the SRWMD on the economic impact of the clam aquaculture industry to Levy County and the potential impact that proposed development projects may have on ambient water quality conditions. This information was solicited by these governing bodies in consideration of acquiring critical coastal properties.

b. Impact/Accomplishment Statement

The inadequacy of water quality data that was available to clam growers became apparent this year with the implementation of a pilot crop insurance program. The policy clearly places the burden of proof on the insured grower for providing substantive evidence pertaining to crop losses. Data loggers were borrowed and placed on one lease area in each of Levy and Dixie Counties. The resulting water quality data was used not only for documenting crop losses associated with salinity increases or low dissolved oxygen levels, but also led growers to begin looking at preliminary trends in environmental conditions related to clam production. The benefits of continuous monitoring were realized. This led to the urgent need of acquiring real-time water quality monitoring systems for the clam aquaculture industry. Partnerships were formed with state agency representatives and faculty from several departments and a funding initiative was targeted. When news came this fall that the CLAMMRS (Clam Lease Assessment, Management, and Modeling using Remote Sensing) project was funded at over $860,000

for a 4-year period by the USDA, the response by industry was overwhelming. This project will allow for the first relevant commitment made by IFAS researchers and extension to boost clam farm productivity. ***Leslie Sturmer***

c. Source of Federal Funds: **Smith-Lever**
d. Scope: State Specific

KEY THEME: Risk Management

a. Brief Description of Activity: SMP FL132

1) In collaboration with representatives from the Department of Agriculture and Consumer Services (DACS) Bureau of Seafood and Aquaculture Marketing and the DACS Division of Aquaculture, as well as faculty from the Department of Food Science and Human Nutrition (Otwell and Rodrick), Florida Extension organized and hosted the 4th Annual Hard Clam Industry Meeting with a focus on product quality and marketing issues. This year, over 60 members of the industry, primarily wholesalers, from across the state participated in the meeting held at the UFTREEO Center in Gainesville. During this full day meeting, instructed the attendees on the chronology of the acclimation studies that began in 1996 and the pursuing regulatory process that was initiated in 1998. The program also included a report from the DACS on marketing efforts over the past year and a **discussion on red tide relaying. An invited speaker with over 20 years of technical and distribution experience in shellfish gave a global perspective on marketing, packaging and quality trends in this industry. The foremost issue addressed in this meeting was the need for an industry validation of the dry tempering process and the DACS's proposed language for incorporating the acclimation process into rule. Funding support for this meeting came from a grant procured through the USDA Risk Management Agency.**

b. Impact/Accomplishment Statement

1) Through the continuance of focus meetings, now conducted over 4 years, have provided a forum in which industry members, primarily wholesalers, may interact with appropriate university faculty and state agency representatives on marketing and product quality issues affecting their businesses. 2) Five (5) processing plants interested in tempering this summer did so by participating in an industry validation. Results of this study are to be used by industry to verify that tempered product entering commerce is as safe as non-tempered product and does not pose a public health risk. A complete report is in the process of being compiled and will be made available to industry members (see County Major Program 606 for 2001). 3) The DACS Division of Aquaculture, which now oversees all shellfish regulatory activities in the state, identified dry tempering as an alternative process for clams and included it in the Comprehensive Shellfish Control Code, Chapter 5L-1.1013, F.A.C. This culminates almost 5 years by Extension faculty of evaluating acclimation and handling alternatives to improve shelf life of clams harvested during summer months and pursuing regulatory approval. 4) Nine (9) shellfish wholesalers in the Big Bend area have been approved, through an application process, by the DACS Division of Aquaculture to incorporate dry tempering into their processing regime. By integrating this step-down acclimation process prior to placement of live clams into customary refrigerated storage, clams harvested from subtropical waters are able to adjust, increasing survival by several days during the summer months. 5) Residents of Levy County, as well as the Big Bend area, became more aware of a new seafood product being grown in their own coastal waters, thereby increasing the probability that they select clams when buying seafood for home preparation or when eating out.

c. Source of Federal Funds: Smith-Lever
d. Scope: State specific or multi-state?
GA, MA, MO, SC, VA

Critical Need Program 12. Develop and Integrate Nutritional Knowledge to Enhance Animal Production

KEY THEME: Animal Production Efficiency

a. Brief Description of Activity: ANS-03659

Studies in which the profile of dietary non-neutral detergent fiber (NDF) carbohydrates (NFC) fed to lactating dairy cattle were shifted from primarily starch to sugars and neutral detergent-soluble fiber, showed alteration in milk composition, including milk protein. To begin to determine the basis for the differences in performance among the feedstuffs, in vitro fermentations of the predominant NFC were performed, and yield of trichloroacetic acid-precipitatable crude protein (TCACP) was determined. TCACP offers an estimate of microbial crude protein yield. Isolated bermudagrass NDF (bNDF), and 60:40 blends of bNDF and sucrose (Suc), citrus pectin (Pec), or corn starch (Star) were fermented in vitro with mixed ruminal microbes for 24 hours, with destructive sampling at 4-hour intervals. Substrates were adjusted so that all fermentations contained similar amounts of organic matter. Among the NFC, maximal yield of TCACP of both Pec and Suc fermentations were less than that of Star. The forms of the regression curves of TCACP and time of fermentation for Suc and bNDF were cubic, whereas those for Pec and Star were quartic. Yield of TCACP varied by hour with Suc, Pec, and Star achieving peak yields at 12, 12 or 16, and 16 hours of fermentation, respectively. In ration formulation, ruminal fermentation of the variety of NFC have been considered to yield similar amounts of microbial protein. Factors that affect metabolizable nutrient supply become a major issue as we attempt to define how diets meet animal requirements. Differences among NFC in microbial protein will alter the metabolizable nutrient supply to the animal. Recognition of differences in microbial protein yield among NFC will allow nutritionists to more accurately supplement dairy cattle diets to meet nutrient requirements, and minimize nutrient excretion.

b. Impact/Accomplishment Statement

Dairy cattle rely on microbial protein from rumen fermentation to meet a large part of their daily protein requirements. Recognition that microbial crude protein yields differ across sucrose, pectin, and starch will allow nutritionists to formulate dairy cattle diets to more accurately meet animal protein requirements for production while minimizing nutrient excretion.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

KEY THEME: Animal Production Efficiency

a. Brief Description of Activity: ANS-0572

Studies in which the profile of dietary non-neutral detergent fiber (NDF) carbohydrates (NFC) fed to lactating dairy cattle from corn meal or byproduct feed sources were shifted from primarily starch to sugars and neutral detergent-soluble fiber, showed alteration in milk composition, including milk protein. To begin to determine the basis for the differences in performance among the feedstuffs, in vitro fermentations of the predominant NFC were performed, and yield of trichloroacetic acid-precipitatable crude protein (TCACP) was determined. TCACP offers an estimate of microbial crude protein yield. Isolated bermudagrass NDF (bNDF), and 60:40 blends of bNDF and sucrose (Suc), citrus pectin (Pec), or corn starch (Star) were fermented in vitro with mixed ruminal microbes for 24 hours, with destructive sampling at 4-hour intervals. Substrates were adjusted so that all fermentations

contained similar amounts of organic matter. Among the NFC, maximal yield of TCACP of both Pec and Suc fermentations were less than that of Star. The forms of the regression curves of TCACP and time of fermentation for Suc and bNDF were cubic, whereas those for Pec and Star were quartic. Yield of TCACP varied by hour with Suc, Pec, and Star achieving peak yields at 12, 12 or 16, and 16 hours of fermentation, respectively. In ration formulation, ruminal fermentation of the variety of NFC have been considered to yield similar amounts of microbial protein. Recognition of differences in microbial protein yield among NFC will allow nutritionists to more accurately supplement dairy cattle diets to meet nutrient requirements, and minimize nutrient excretion.

b. Impact/Accomplishment Statement

Dairy cattle rely on microbial protein from rumen fermentation to meet a large part of their daily protein requirements. Recognition that microbial crude protein yields differ across sucrose, pectin, and starch will allow nutritionists to formulate dairy cattle diets to more accurately meet animal protein requirements for production while minimizing nutrient excretion.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

Critical Need Program 13. Potential of Alternative Livestock for Florida's Economic Enhancement

KEY THEME: Small Farm Viability - Small Farms and their Contributions to Local Economics

a. Brief Description of Activity: SMP FL261

alist from Florida A&M University and University of Florida are collaborating on a project to develop high quality value-added goat meat processed products in an effort to enhance the marketability of live goat sand goat meat. The development of value-added products can create new markets for farmers through innovative systems and enterprise development. Research is currently in progress to complete consumer acceptance evaluations, nutritional profiles, and profit analysis for both products.

b. Impact/Accomplishment Statement

far, two goat meat processed products have been developed. The products include a fermented goat meat stick referred to as "Cabrito Snack Sticks" and a smoked goat meat sausage referred to as "Cabrito Smoked Sausage." The data revealed that the Cabrito Snack Sticks were similar in protein content to commercially available meat snack sticks. The fat content of the Cabrito Snack Sticks was at least 20% lower than that reported for the commercially available products***. (Claude McGowan)***

c. Source of Federal Funds: Evans-Allen
d. Scope: State Specific

KEY THEME: Small Farm Viability

a. Brief Description of Activity

The Southern Commercial Rabbit Producers Association (SCRPA), a statewide group the CED helped to organize in 1995, has evolved into a strong educational and promotional organization. SCRPA has approximately 90 members throughout Florida and neighboring states. ***Odegaard, Wayne M.***

b. Impact/Accomplishment Statement

SCRPA publishes a monthly newsletter and has established a rabbit processing plant in Ocala. Agents throughout the state are becoming more involved in planning and conducting the annual SCRPA conference. The SCRPA is now able to operate independently with occasional Extension support**.**

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

Critical Need Program 14. Economic Competitiveness

KEY THEME: Agricultural Competitiveness

a. Brief Description of Activity: SMP FL103

The focus of this extension program is to help producers improve productivity and profitability through improved reproduction, breeding management and more astute marketing of their production. A major part of Extension effort in 2000 has been to organize and conduct the first bull tests and sales in the new facilities at the NFREC-Marianna. In addition the program, cattle and equipment at the Chipley Beef Demonstration Unit were moved to Marianna and the Chipley location phased out. Another major effort has been to organize a distance education extension program "Basics of Beef Production" to be conducted early in 2001. The six-week course will consist of 6 1hour presentations via satellite and an additional hour presented locally. The goal of this program is to improve the basic beef production knowledge of the many novice and small producers around the state.

b. Impact/Accomplishment Statement

Numerous surveys of Florida beef producers consistently show calf crop weaned in the range of 70% across the state. Data from cooperating ranches indicates that young cows (2-4 years) and old cows (+10) have lower pregnancy rates than 5 to 10 year old cows. Nutrition and body condition at calving are a big factor in the failure of these cows to breed. A lack of understanding of the reproductive process and the tools available to manage a herd for a high reproductive performance (defined as weaned calves) contributes to the low weaning rate. At the same time markets for our calves are changing and the industry needs to know what the market is currently seeking, how our calves fit and how this might change in the future. Sire selection utilizing tools like EPDs are making it easier to secure genetics that will allow producers to produce better adapted and more marketable calves. ***Bob Sands***

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME: Animal Genomics; Animal Production Efficiency

a. Brief Description of Activity: 03074/SMP FL103

Effect of Single Trait Selection for Marbling on Productivity of a Cow Herd. Selection line steers graded one quality grade higher than control line. There was no difference in the weaning weight or the hip height of the calves produced in the herd.

b. Impact/Accomplishment Statement

Under the conditions of this study, selecting bulls to improve carcass quality did not have a negative impact on the productivity of the cows. ***BOB SANDS***

c. Source of Federal Funds: Smith Lever
d. Scope: Integrated

KEY THEME: Animal Production Efficiency

a. Brief Description of Activity: VME 03125/SMP FL103

Frequency of Deworming Growing Cattle on Pasture During the Winter

b. Impact/Accomplishment Statement

Deworming steers and heifers in the fall improved gains 15 pounds compared to untreated controls. However, deworming growing cattle more than once during the winter feeding period did not result in consistent improvements in performance in these trials and would not be cost effective in most situations. ***Bill Kunkle***

c. Source of Federal Funds: Smith-Lever
d. Scope: Extension Integrated

KEY THEME: Risk Management; Plant Production Effieiency; Managing Change in Agriculture

a. Brief Description of Activity: IMM-03571

Collaborated with Ron Muraro (CREC) and Robert Rouse (SWFREC) to update and expand yield database through the 1999/2000 harvest season. Study involves 12 commercial growers, who are cooperating by providing production data from 103 citrus blocks. The study accounts for more than 7,000 acres of commercial citrus. Most data are from Hamlin and Valencia blocks on either Swingle or Carrizo rootstocks. The yield-age profile has been extended to 13 years. Two papers were prepared from the study. An overview paper was written and presented at the annual Fla. State Hort. Soc. Meeting in Orlando, Florida, July 2000. A second paper discussing the economic value of high-density plantings was prepared and will be presented at the annual Southern Agricultural Economics Association meeting in Ft. Forth, Texas, January 2001.

A $15,000 grant was awarded to Ron Muraro and myself from the citrus research box-tax committee (FCPRAC). The grant will fund development of a spreadsheet model that will help growers analyze alternative tree replacement strategies.

A $15,000 pre-proposal to the FCPRAC by Ron Muraro and myself was to extend the current yield study in southwest Florida to the Indian River and Central Ridge production areas. If successful, this grant will fund the multi-county citrus agents in helping to collect yield data from new cooperating production managers.

b. Impact/Accomplishment Statement

Study results are providing citrus growers with benchmarks of citrus yields for southwest Florida growing conditions. Some growers have commented that the study results have already helped them develop more realistic production forecasts and helped target attention to production performance of individual blocks. Study results are also being used by agricultural economists in FRED and FDOC to help adjust the state's citrus production forecasting models.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

Critical Need Program 15. Agricultural Risk Management

KEY THEME: Risk Management

a. Brief Description of Activity

Florida Extension faculty are extensively involved with helping the Florida citrus industry understand how to use the futures and options market for risk management decisions. Faculty have made several presentations on the subject and also publish a monthly article in Citrus & Vegetable Magazine discussing the value of these tools for risk management and describe how they might be used.
A series of seminars was also presented to help growers develop a better understanding on how to manage risk. The presentations from these meetings was published on the IFAS EDIS network. The presentations included:

1. "Citrus Marketing Alternatives". Bartow, Florida. Part of the Managing Risk in Citrus Seminar.
2. "Citrus Marketing Alternatives". Wauchula, Florida. Part of the Managing Risk in Citrus Seminar.
3. "World Citrus Situation". Wauchula, Florida. Part of the Managing Risk in Citrus Seminar.
4. "Citrus Marketing Alternatives". Tavares, Florida. Part of the Managing Risk in Citrus Seminar.
5. "Citrus Situation - World Overview". Tulare, California. Presentation made at the invitation of the Citrus Research Board at their Growers' Educational Seminars
6. "Citrus Situation - Domestic Overview." Tulare, California. Presentation made at the invitation of te Citrus Research Board at their Growers' Educational Seminars.
7. "Citrus Situation - World Overview". Santa Paula, California. Presentation made at the invitation of te Citrus Research Board at their Growers' Educational Seminars
8. "Citrus Situation - Domestic Overview." Santa Paula, California. Presentation made at the invitation of te Citrus Research Board at their Growers' Educational Seminars. ***John Van Sickle***

b. Impact/Accomplishment Statement

More than 200 people attended the various workshops in Florida on risk management. Approximately 500 people attended the seminars in California. The Florida workshops gave the attendees information so that they could understand how futures markets can be used to manage risk. Exposure to the markets and the strategies for using these markets in risk management helped these growers understand how they can manage marketing risk in the citrus industry. The workshops in California gave producers information about the global citrus market that they could use in making plans for their operations.
The articles that were published in the Citrus and Vegetable Magazine provided strategies that growers and processors can use in managing risk in their operations. Citrus & Vegetable Magazine is published in Shawnee Mission, Kansas and has a circulation that reaches throughout the world. These articles have helped growers to understand these markets and how to take steps in using the markets to manage their marketing risks.

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME: Risk Management

a. Brief Description of Activity

North Florida agriculture survived the severe financial problems of the 80's. "Survivors" are not only producers but also lenders. The rules of the game are now different for both. Risk considerations have become more important in both camps. Programs presented to producers and extension personnel have emphasized the importance of an overall financial and risk management plan. Record keeping emphasis has encouraged producers to keep field record, enterprise records, cash flows and the financial records required by lenders. Various microcomputer programs have been utilized to assist producers. FINPAK (a financial performance and planning aid) has been made available to agents and producers and Extension faculty have served as state coordinator. Extension faculty also assisted in developing FARM MANAGER and FAST FIVE that are programs to help producers plan, evaluate, maintain financial records, and manage for risk. ***Tim Hewitt***

b. Impact/Accomplishment Statement

c. Source of Federal Funds: Smith-Lever
d. Scope: **State Specific**

KEY THEME:

a. Brief Description of Activity

Market awareness has increased in North Florida for producers and extension personnel. The use of forward pricing continued to increase. Producers have become more aware of market alternatives and many now utilize market information. Outlook information has been delivered to producers periodically. An outlook newsletter was produced by Extension faculty with next year's projections included which is utilized by producers in their planning decisions. Many programs have been presented on using the futures market as a risk reduction tool. Mostly because of size and the lack of knowledgeable commodity brokers, the use of futures has not been a major alternative. However, with the establishment of options for agricultural products, this has changed. ***Tim Hewitt***

b. Impact/Accomplishment Statement

Programs on using options for pricing commodities have been delivered, and as knowledge increases, more producers are using the futures market. Overall, producer awareness of the importance of market knowledge has increased and the profit potential has been strengthened by keeping abreast of outlook information and knowing the various alternatives available

c. Source of Federal Funds: Smith-Lever
d. Scope: **State Specific**

KEY THEME: Risk Management

a. Brief Description of Activity

Extension faculty hosted and participated in the Clam Crop Insurance School, sponsored by the National Crop Insurance Services, held in Cedar Key. Extension faculty instructed 42 reinsured company field supervisors and loss adjustors on current technology used in the clam aquaculture industry and production risks. As part of the 2-day program, Extension faculty organized and participated in a round-table discussion during which 7 invited shellfish experts in the fields of biology, physiology and pathology, provided the audience with information on tolerances and susceptibility of clams to the losses covered in the policy. Also gave a tour of the industry to the attendees.
4) Extension Faculty met with an aide and attorney from Congressman Allen Boyd's office, providing them with a tour of the clam aquaculture industry and an overview of the pilot crop insurance program. Also provided a forum for growers to meet with them and comment on the program's performance.
5) Organized, hosted and participated in a focus workshop which facilitated an exchange of information between 39 clam growers involved in the pilot program and USDA/RMA insurance specialists. Updates on the policy and improvements on certain provisions were the focus of this meeting held in Cedar Key.
6) Compiled a letter documenting crop losses associated with abnormal high salinities in the coastal waters of Dixie County that affected the majority of clam crops in that county. Provided this justification to 2 reinsured companies. ***Sturmer, Leslie N.***

b. Impact/Accomplishment Statement

1) Negative effects on clam production experienced by growers in Dixie County during the spring and summer related to the La Niña weather phenomenon as well as hurricane damage experienced by some

growers in Levy County in the fall, affirmed that the pilot insurance program can provide important financial protection to the clam aquaculture industry. Over 100 claims were made and approved this year. In spite of the fact that not all of these claims qualified for a payment, indemnity (loss) payments of about $1,020,000 were made to growers in these counties.
2) By Extension facilitating an exchange of information among growers, USDA/RMA insurance specialists and insurance providers, the optional unit provision in the policy was clarified in a special bulletin released by the Federal Crop Insurance Corporation in August. Confusion over this provision had become controversial and may have led to growers' dissatisfaction with the pilot program. This clarification allows growers to insure parcels within the same high-density lease area independently of each other. Further, additional improvements in the policy during the pilot phase were identified. Changes in the field nursery coverage will be implemented in crop year 2002.
3) The pilot program was continued for the crop year 2001. To date, 124 growers, representing about 40% of the clam growers in the eligible counties, enrolled in the crop insurance program for the second program year. This represents about 55% of those who did so in the first program year.

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

Critical Need Program 16. Agricultural Information Technology

KEY THEME: Information Technologies Managing Change in Agriculture

a. Brief Description of Activity: SMP FL103

National Beef Infobase–The Beef Infobase is a multi-disciplinary, multi-state effort to develop a selected collection of extension publications (handbooks, fact sheets, bulletins, etc.), research reports, conference proceedings and industry information relating to beef production. An Extension committee oversees this project.

b. Impact/Accomplishment Statement

Version 1 of the Beef Infobase was released in January 2000 and includes over 1100 publication from 35 states. Beef Infobase version 1.2 containing over 1500 publications was recently released. It contains electronic copies of the documents facilitating rapid text search and printing. It is available on CD-ROM or on the World Wide Web. The Beef Infobase was developed by a group of extension specialists and industry representatives across the U. S. A USDA grant was used to provide initial support for this project and continuing support is anticipated thru sales and industry support. A Florida Faculty member co-chairs the national committee overseeing this project. ***Bill Kunkle***

c. Source of Federal Funds: Smith-Lever
d. Scope: Extension Multi-State
35 states across U.S., Agriculture Universities, Animal Science Specialists

KEY THEME: Information Technologies; Weather and Climate

a. Brief Description of Activity

The major effort by Extension with FAWN for 2000 has been to improve the web site, develop management tools and complete the system. With internal Extension funding an applications/data base manager was hired. The web site was changed to make it more efficient and easier to use. Some features were added to make the site a link to other areas of specific interest such as hurricanes, cold, drought, etc. An Extension In-Service training session was held to feature the addition of long term climate information to the web site. A Weather School was put together with the Ag Weather Task

Force. According to the members of the Ag Weather Task Force, FAWN has had a million dollar impact on agriculture through more informed production, harvesting and marketing decisions. The example below is just one example of the impact from FAWN. There has been no major attempt to document the overall impact, but feedback from non agricultural users indicate substantial use and value. The National Weather Service (NWS) has used the data when evaluating fire risks; emergency management has used the data when making decisions regarding potential risks from weather events. No doubt there are many more that we are aware of and have no way of determining the impact. The example below provides an example of the value of FAWN.

Brunt Minimum Temperature Tool

This tool utilizes sunset air and dew point temperature to estimate minimum temperature the following morning. On November 22 and 23, 2000 temperatures dropped into the upper 20's in the northern area of central Florida. Citrus growers using Brunt were able to gain enough confidence in the forecast to not turn on cold protection systems. Both nights were excellent radiation events and FAWN clearly showed the strong inversion that was present. This information showed growers that even though temperatures close to the ground were in the low 30's, the temperature at 30 feet was 10F to 15F warmer and thus it was highly unlikely any additional substantial drop would occur next to the ground. As a result irrigation systems were not turned on to protect citrus. ***Jjackson 101edact***

b. Impact/Accomplishment Statement

There were approximately 50,000 acres involved. Using this acreage at cost of $14.17 to pump an acre inch (from Economic Information Report 98-3) and irrigation rates of 2100 gallons per hour (gph) for citrus the following numbers can be generated.

50,000 acres X 2100 gallons/acre/hour X 1.5 hours = 157,500,000 gallons water saved

$14.17 per acre inch X 157,500,00 = $82,658 saved on those two nights.

It is clearly evident that billions of gallons of water and millions of dollars will be saved though the use of FAWN. As more sophisticated tools are developed, FAWN will have a significant role in impacting the Florida economy and environment. This system receives about 30,000 hits per year and averages over 1,000 on nights when freezes are expected.

c. Source of Federal Funds: Smith-Lever

d. Scope: State Specific

KEY THEME: Agricultural profitability

a. Brief Description of Activity

International trade and agricultural policy are issues that require constant attention within the agricultural industry. Several publications and presentations have been made to elevate the understanding of growers and policy makers within the Florida agricultural industry. A web site has also been maintained by Extension as part of this program. The Market Information System is a market news site that organizes data published by the USDA. This site `http://mis.ifas.ufl.edu/~market/` has been available for several years. ***John Van Sickle Edact***

b. Impact/Accomplishment Statement

It is one of the premier market news web sites. It received almost 1,000,000 hits in 2000

c. Source of Federal Funds: Smith-Lever

d. Scope: State Specific

KEY THEME: Information Technologies

a. Brief Description of Activity: SOS3640

Southern Region Watershed Resources Management- Develop a database of georeferenced research and extension publications, projects and programs jointly with Water Quality Research, Education, and Extension Coordinators from Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas. ***Art Hornsby***

b. Impact/Accomplishment Statement

Used by people across the United States to study watershed resources

c. Source of Federal Funds: Smith-Lever
d. Scope: Extension Multi-State
AL, AR, FL, GA, KY, LA, MS, NM, NC, OK, SC, TN, TX

Critical Need Program 17. Pest/Disease

KEY THEME: Plant Health;

a. Brief Description of Activity: DOV-03586

Twenty-six different fungicide treatments/schedules were evaluated for control of Botrytis fruit rot on strawberry. It was found that treatments with weekly applications of captan or thiram were the most effective in controlling the disease. Supplemental late season applications of Elevate provided the best control of Botrytis fruit rot. The timing of bloom applications for control of Botrytis fruit rot was evaluated by treating individual flowers. It was found that flowers need to be treated with fungicides within 7 days of opening for effective control. For the second season in a row, powdery mildew, caused by Sphaerotheca macularis, was controlled equally well with weekly applications of sulfur, benomyl, and myclobutanil. The population structure of Collectotrichum gloeosporioides and C. acutatum from strawberry was evaluated and it was found that C. gloesporioides is highly polymorphic and the variation is due to sexual recombination. The C. acutatum were highly clonal and appear to reproduce asexually. The population structure and pathogenicity of Collectotrichum gloeosporioides from weeds and isolates was further evaluated. Weed isolates were as genetically diverse as strawberry isolates but formed a separate clad apart from strawberry isolates in a dendrogram. This suggests that weed isolates of C. gloeosporioides in Florida do not play a role in the epidemiology of Collectotricum crown rot.

b. Impact/Accomplishment Statement

No impact at this time

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

KEY THEME: Innovative Farming Techniques

a. Brief Description of Activity: MON-03303

A trap was developed and tested to detect stink bugs in pecan and other crops. The trap is deployed on the ground and is cheap and easy to make. The trap catches both male and female stink bugs of many species. A pheromone is available for Euschistus spp. and the trap is most effective for this stink bug genera. However, it also catches about 15-20 other species of Pentatomidae, both phytophagous and predacious species, Coreidae and predacious Reduviidae. The trap provides information on the number of stink bugs moving into pecan from outside the orchard and the number of resident stink bugs inside

the orchard. Stink bugs may move into pecan in high numbers and damage nuts at anytime of the year. However, stink bug damage in pecan occurs most often during drought conditions in late season when irrigated pecans provide a ready source of food.

b. Impact/Accomplishment Statement

The Florida stink bug trap is one of the only traps available for monitoring stink bugs. Because of stink bug behavior, the trap provides the best information on the timing of movement of stink bugs into and out of pecan and other crops. Used with an aggregation pheromone that catches both male and female Euschistus spp., the trap may also be used by organic growers and gardeners to suppress stink bug numbers and damage in vegetables and other crops.

c. Source of Federal Funds: Hatch
d. Scope: Multi-State Research

Critical Need Program 18. Weed Management

KEY THEME: Managing Change in Agriculture; Sustainable Agriculture

a. Brief Description of Activity: BRA-03416

Methyl bromide alternatives technology transfer in vegetable crops is an extension component of Project 3416.

tion: methyl bromide sales and usage were cut to 25% of 1994 levels during 2000 and as of January 1, 2001, there will be a further reduction to 50%. This phase out of methyl bromide is resulting in price increases and declines in availability of the soil fumigant that has become the backbone of plastic mulch cultured vegetable crops. The importance of methyl bromide to the vegetable industry cannot be overstated. Growers are increasingly anxious to receive solutions or alternatives to methyl bromide and need help learning how to use these alternatives in order to remain productive and competitive.

Objectives: demonstrate to growers 1) the most effective chemical alternative programs (consisting of soil fumigant and herbicide) to methyl bromide for soilborne pest control, 2) the proper selection of herbicides based on expected weed pests and the application procedures for herbicides in these programs, 3) the most effective application procedure for Telone products in order to not only retain efficacy but also to minimize impacts of PPE requirements, and 4) inform growers about herbicide and fumigant options, and other matters relative to alternatives for methyl bromide.

Procedures: These objectives were met by conducting research on the experiment station and field demonstration studies on commercial farms with growers who are considered industry leaders. Experiment station research focused on new discoveries or methodologies, whereas on-farm studies involved applications with commercial equipment to demonstrate the applications of these practices under real world conditions. Studies on the experiment station and on farms consisted of not only herbicide and Telone product trials, but also virtually impermeable film mulch that greatly reduces emissions and enhances methyl bromide activity by increasing the effective concentration (retention time x dose). At least ten demonstrations trials were conducted on tomato, pepper and strawberry during 2000. Growers learned first hand what options worked and how to apply them properly. Presentations also were given to grower and industry audiences at one local, regional and statewide meetings, one private consultant sponsored Crop Consultant

Certification Training, and international conferences including the International Methyl Bromide Alternatives Conference and the International Weed Science Society Congress.

Procedures: These objectives were met by conducting research and field demonstration studies on commercial farms with growers who are considered industry leaders. These studies involved applications with commercial equipment to determine the limitations of selected herbicides and fumigant alternatives and to demonstrate the applications of these practices under real world conditions. Studies consisted of 3 herbicide trials and 4 herbicide/soil fumigant trials that were started in 1999 and completed in 2000 and one herbicide/soil fumigant study that was initiated in 2000 and will be completed early in 2001. Growers learned about these options by viewing the field trials on their farms or another grower's farm. Presentations also were given to grower and industry audiences at one local meeting, one statewide meeting involving administrators from the USDA, ARS, one private consultant sponsored Crop Consultant Certification Training, and international conferences including the International Methyl Bromide Alternatives Conference and the International Weed Science Society Congress.

b. Impact/Accomplishment Statement

As a result of these trials with this select group of growers, almost every major tomato, pepper, and strawberry grower in west central and southwest Florida has plans to conduct his own on-farm trials during spring of 2001. These trials will consist of Telone products with herbicides or other fumigant alternatives and the use of virtually impermeable film mulch in combination with one-half rates of methyl bromide. Thus, growers will gain valuable experience with selected alternatives and will begin to better understand herbicides and how to apply them properly. Additionally, the use of virtually impermeable films will allow them to continue using methyl bromide in those fields where it is most needed. This knowledge will be essential to maintaining profitable farming operations.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

KEY THEME: Invasive Species Program; Invasive Species

a. Brief Description of Activity: AGR-03594

Hydrilla, the most invasive submersed aquatic weed in Florida, was introduced in approximately 1960 and now costs about $15M annually for control. This plant reproduces solely by vegetative means. It produces vegetative buds in response to short day length (<13 hours) at the end of underground rhizomes. These buds are commonly termed tubers. Hydrilla, under ideal conditions of warm winter temps and shallow water, may produce over 1,000 tubers/m2 annually. These propagules become the basis of survival and long-term re-infestation of a water body. Hydrilla out competes native species through its ability to photosynthesize under lower light levels compared to native species and forms dense monocultures in shallow, as well as deep water, where native species are unable to grow (light limited). Improved hydrilla management can only occur by managing hydrilla tubers in some manner. Questions posed during the conduct of this research included: If hydrilla is capable of producing 1,000 tubers/m2 annually, why do we only find 200-600 tubers/m2 in ponds in which hydrilla has grown unmanaged for 5, 10 or 20 years, not 10,000-20,000 tubers/m2 ? Why do tubers, when collected from in situ conditions, sprout at 90%+ rates, but apparently never achieve this sprouting rate under natural conditions? If tubers form in the soil at some depth regulated by redox potential as commonly believed, why do we find more tubers at shallower depths in sandy hydrosoils, whereas in organic soils, with lower redox potentials, tubers are found with a more random and generally deeper distribution? Finally,

at what rates do tubers typically sprout? Do herbicide treatments or other management practices stimulate sprouting, and what role does endogenous abcissic acid and gibberellins play in tuber dormancy/sprouting?

Research on this project shows that upon initial infestation, hydrilla may produce several hundred tubers/m2/year, however after establishment, hydrilla shades itself out with much less attachment to the hydrosoils and fewer tubers are produced due to fewer stems (loci) growing from the hydrosoil. After removal of tubers from the reducing conditions found in the hydrosoil for as short as 30-60 minutes exposure to oxidative conditions, tubers sprout at nearly 100% rates. It is hypothesized that ABA is oxidized to lower endogenous levels by exposure to oxidative conditions and the ABA/gibberillin balance changes to promote sprouting.

Redox potential does not regulate depth of tuber formation. Under reducing conditions, tubers form at the end of positively geotrophic rhizomes when an obstruction (pebble, hardpan, piece of wood) is encountered. Thus, under sand hydrosoil conditions, most tubers are found on top of a clay hardpan (4-10 cm), whereas in peat soils, rhizomes penetrate deeper (10-20 cm) and form tubers at the limits of rhizome growth (up to 26 cm observed in the studies) or upon encountering an obstruction.

In pond studies, tubers typically sprout at 1-3% of their population/month with peak sprouting noted (for 3 years) at 3-6%/month during the October-November period. When winter temperatures are cold (<15C) sprouting probably does not occur and further, management practices such as contact herbicide treatments do not stimulate, additional sprouting as was commonly believed. Studies conducted with exogenous ABA, gibberellins and other growth regulators suggest that endogenous ABA/gibberellin balance regulates tuber sprouting. Oxidative conditions reduced ABA levels, so it appears that redox, ABA and gibberellins interact in some manner to regulate sprouting.

b. Impact/Accomplishment Statement

A better understanding of tuber formation and sprouting will lead to more effective control measures.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

KEY THEME: Invasive Species

a. Brief Description of Activity: FTL-03620

1. Occurrence and nature of weed populations in Florida turfgrass Basketgrass, Oplismenus hirtellus, were reported as a turf weed problem in central Florida. Samples are being cultivated for possible herbicide evaluation. Old World diamondflower, Hedyotis corymbosa, continues to be misidentified as the monocot doveweed, Murdannia nudiflora, so a trade magazine article was written to hopefully straighten out the confusion. Another trade magazine article was written to compare tropical signalgrass with crabgrasses, which are frequently confused, and alert the industry to the seriousness of the latter two weeds in both bermudagrass turf on golf course as well as in St. Augustinegrass sod.

2. Competitive strategies of weeds in the managed landscape Dollarweed (Hydrocotyle umbellata) is the most serious weed pest of St. Augustinegrass, and St. Augustinegrass (Stenotaphrum secundatum) is the most widely used turf species in Florida, especially in lawns. A belief widely stated without documentation is that reducing irrigation also reduces dollarweed infestation in turf. To evaluate the relationship of irrigation management and dollarweed infestation, an 0.2-ha site was planted with sprigs of dollarweed and plugs of St. Augustinegrass. The weed and the turfgrass have now been brought into a uniform population, and the 24 irrigation zones will be programmed in replicates to provide treatments ranging from excessive irrigation to droughty conditions. The plan has been modified to have eight replicates of only three treatments, and split-block fertilization treatments have also been

initiated, making this a factorial nonherbicidal management study. The null hypothesis is that variations in irrigation strategy (amount and frequency) have no effect on dollarweed infestation, measured as a percent canopy area from digital imagery. It is not known whether a single drought is more effective than moderate irrigation year-round. This is a two- or three-year experiment.

3. Discovery and use of herbicides and other agents for weed and vegetation management

a. Timing of preemergence herbicides prior to perennial ryegrass overseeding of fairway turf. Two experiments were completed, at Oak Tree Golf Course and Fort Lauderdale REC, to evaluate the safety of applying pre-emergence herbicides shortly before perennial ryegrass overseeding of bermudagrass fairway turf. Experiments were established involving 11 weekly applications of dithiopyr, pendimethalin, and rodiamine at label rates, followed by overseeding with perennial ryegrass at 41.5 g per square meter (8.5 pounds per thousand square feet). Stand establishment was evaluated visually and based on seedling counts, to determine the safety period for overseeding, following the last pre-emergence application. Dithiopyr and pendimethalin were safely applied at label rates within 5 to 7 weeks prior to overseeding, but prodiamine was not safely applied anytime between 0 and 10 weeks prior to overseeding. Practical decay curves based on nonlinear regression showed that the breakdown of prodiamine is about one-half as fast as dithiopyr and pendimethalin.

b. Timing of pre-emergence and postemergence herbicides after overseeding. Successive plantings of perennial ryegrass (20- to 67-days old) were treated with dithiopyr, pendimethalin, oryzalin, rodiamine, surflan, metribuzin, and ethofumsate. Herbicides were applied at three rates, 0.5x x, 1 x, and 2 x, where x=labelled rate. Perennial ryegrass injury varied by herbicides and rates, but age of planting was more important than rate of application in explaining the level of injury.

c. Control of torpedograss with quinclorac Torpedograss. (Panicum repens) is a persistent weed of turf and ornamentals and is spread by rhizomes. Seed production probably does not occur in Florida. Quinclorac was registered in Florida in 1999 for control of torpedograss at rates of application one-half the efficacious rate based on research of McCarty. Two experiments were continued at separate golf courses, Eagle Trace, and Palm Aire, involving rate of application, split applications, and adjuvants. There was no advantage in weed control from one adjuvant compared with another, even in comparison to using no adjuvant. (Previous work had shown that tank mixtures with diclofop-methyl, MSMA, and other herbicides provided no advantage.) Quinclorac more effectively ($P < 0.05$) controlled torpedograss in bermudagrass (Cynodon spp.) turf on golf courses when applied in three or four split applications than in one or two applications. (Each set of applications totaled 2.2 Kg a.i./ha.). Despite the initially excellent (80%) reduction of torpedograss canopy using quinclorac, within 12 months the torpedograss stands had regained at least 50% of canopy lost. It appears that multiple years of application must be used to control torpedograss with quinclorac.

d. Management of tropical signalgrass on golf course fairways. A series of experiments for control of tropical signalgrass on golf courses was concluded. MSMA alone, with or without adjuvant, was the only product that was effective for selective postemergence control of tropical signalgrass in bermudagrass turf.

e. Management of tropical signalgrass on the sod farm. Six experiments were conducted at Woerner Turf in Palm Beach County involving both pre-emergence and postemergence herbicides for control of tropical signalgrass. The only approach that is effective at preventing the spread of the weed in new sod fields involves both pre-emergence and postemergence herbicides. Either oxadiazon (Ronstar WSP) or pendimethalin (Pendulum) can be applied 8 days after plug planting, and there is significant early postemergence weed control, about 80%. Metalochlor (Pennant), which is currently used as a pre-emergence herbicide for tropical signalgrass control, was mediocre, with less than 40% control. Asulam (Asulox) must follow within about two weeks after pre-emergence application, to catch seedlings that escape. A second asulam treatment is necessary. Ethofumesate does not improve efficacy in tank mixture with asulam. Low rates of asulam (1/3 the label rate) are nearly as effective as higher rate applications; therefore it appears that the most reasonable strategy is repeated low rate applications.

f. Management of mixed weed populations. Sedge chemicals imazaquin (Image) and halosulfuron (Manage) and metribuzin+MSMA are the only chemicals that are effective in removing green kyllinga from bermudagrass turf. However, removal of late season (February) green kyllinga exposed the soil to

invasion from tropical signalgrass, therefore one should manage the weeds that will become a problem several months later.
g. Phenoxy herbicide combinations with carfentrazone for broad-leaf weed control. Six experiments were conducted with mixtures of 2,4-D, carfentrazone, dicamba, MCPP, and other chemicals for control of difficult broad-leaf weeds such as alligatorweed, Alternanthera philoxeroides, and Old World diamondflower, Hedyotis corymbosa, as well as less difficult weeds such as dollarweed, Hydrocotyle umbellata. In general, mixtures with little or no MCPP were safe for use on St. Augustinegrass and were highly effective against broad-leaf weeds, except for southern sida, Sida acuta, and Richardia grandiflora.

b. Impact/Accomplishment Statement

Herbicides and adjuvants are sometimes applied needlessly because there is no research basis for a particular treatment, and turf managers find that existing herbicide techniques are not effective, so they will try new combinations in the hope of finding something that works. Although such attempts sometimes result in good hypotheses, they often lack adequate controls and are not systematic. Adaptive herbicide research will take some of the uncertainty out of chemical application and should consequently reduce the total amount of chemicals used in the environment.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

KEY THEME: Invasive Species

a. Brief Description of Activity: JAY-03620

Quinclorac was evaluated for torpedograss (Panicum repens) management in hybrid bermudagrass turf. Three sequential applications (0.56 kg/ha) of a sprayable formulation at 21-day intervals, or a mixture of quinclorac at 0.8 kg/ha plus diclofop at 0.75 kg/ha applied twice, provided 85 to 90% control. A granular formulation (quinclorac Impregnated fertilizer) applied three times (0.56 kg/ha each) at 21-day intervals provided 90 to 95% control, suggesting that a significant portion of the applied quinclorac is absorbed through the roots and rhizomes of the torpedograss. Mowing just prior to quinclorac application did not reduce torpedograss control compared to a one-week interval between mowing an application. In addition, level of nitrogen fertility had no impact on quinclorac activity. CGA 362622, a new herbicide being evaluated in warm-season turfgrass, provided 85% control of torpedograss and 85 to 90% purple nutsedge control with minimal damage to hybrid bermudagrass.

b. Impact/Accomplishment Statement

Torpedograss is a serious weed problem in hybrid bermudagrass. Quinclorac offers effective control of this pest when used in a series of sequential applications. Mowing and fertility level appear to have little impact on quinclorac activity. CGA 362622 may offer control of both torpedograss and purple nutsedge, two serious perennial weed problems in turfgrass.

c. Source of Federal Funds: Hatch
d. Scope: State specific

Goal 2. A Safe and Secure Food and Fiber System

A. OVERVIEW

a. Extension and Research Results

There is growing concern about the quality and safety of the food supply. The impact of foodborne illness in the U.S. is estimated at over 10 million infections annually, 9,000 deaths, and more than $5 billion in social and medical costs. The majority of foodborne illness is caused by microbial contamination in homes and commercial eating establishments. Only 5% is linked to processing environments.

Although typical cases of illnesses are relatively mild and self-limiting, severe and chronic foodborne diseases do occur in persons with compromised health. The population size of this high-risk group continues to increase in U.S. society as a result of the Acquired Immunodeficiency Syndrome (AIDS) epidemic, new medical treatments that support chronically ill patients, an increasingly elderly population, and growing infant and child daycare facilities, plus new pathogens and scenarios for food contamination including increased importation of foods. With these changes, food safety educational programs have been identified by Florida stakeholders as an essential component of future efforts to reduce health risks for the compromised, as well as the general public.

Additional factors that compound foodborne risks include new emerging pathogens, unique scenarios for contaminating foods, and different vectors for disease. Examples are salmonella in eggs and poultry, listeria in dairy products and meats, campylobacter in poultry, E. coli O157:H7 in ground beef, and risks associated with new food technologies (e.g. ready-to-eat meals) and innovative forms of packaging. Consequently, food handlers, food growers, food processors, and health professionals must be informed through education of these hazards and the ways to reduce risk. In the meantime Florida has ongoing research, including one Hatch project looking at new methods for controlling microbes on the cut surfaces of produce, which are needed for prolonging the life and assuring the wholesomeness of the product through sanitation in post harvest handling practices. At the same time, Florida extension is involved in a multi-state program that reduces microbial risks in fruits and vegetables with good agricultural practices.

Surveys show that many consumers are more concerned about chemical additives in foods than the greater risk posed by microbial contamination. This contradiction partly results from a lack of accurate information about food-associated risks. Extension educational programs are being implemented by IFAS to discuss the risks from pesticides and other additives, but are also explaining the greater microbial risk and how to prevent it.

Recently, there has been some media attention that has drawn greater public interest toward food safety. Articles and television programs on Mad Cow disease has made the public more aware of the correlation between herd health and food safety, since many of the foodborne hazards originate on the farm or with animals. Based on these concerns, Extension faculty at FAMU have developed a new state major program in Florida called “Herd Health and Food Safety” that will deal with issues on herd health. The impact of sound herd health practices to improve food safety would also benefit producers in areas of productions, efficiency, and cost-effectiveness, as well as decreasing the number of cases of foodborne disease.

In recent years, and in the near future, the food industry is facing increased visibility in regard to food safety and more stringent demands for food-quality programs that have led to federal and state regulations including: nutritional labeling requirements, environmental regulations, microbiological testing programs, and federally mandated inspection programs based on Hazard Analysis and Critical Control Point (HACCP) principles. While these are federally mandated regulatory programs, the major share of the burden of implementation is at the state level where primary licensing occurs. Many are coordinated efforts through the Florida Cooperative Extension for expanded statewide training, consultations, and assistance that is done through SMP FL110 and SMP FL312. These programs represent the coordinated multidisciplinary effort of team members from Cooperative Extension, as well as teaching and research faculty, and will feature involvement of students through expansion of food industry/student internship programs.

Through consolidation of training efforts in HACCP, food processing, food quality and other areas, these major programs have the potential to greatly enhance the level of expertise within the food industry, as well as the regulatory sector in Florida.

The food safety issue will continue to be one that will need to be addressed by Florida IFAS.

b. Successes

Florida dairy farmers have become aware of risks associated with Mycobacterium paratuberculosis and its relationship to Johne's disease in calves. Through information gained from extension, several farmers are participating in a tracking study and have initiated on-farm pasteurization of milk for calves.

Through the active role of providing HACCP training and information to fresh squeezed citrus juice manufacturers and packinghouse personnel, food-borne illness from these products was prevented. In addition, the industry is prepared to meet the upcoming federal HACCP mandates.

c. Benefits

Florida extension faculty conducted 6 national Train-the-Trainer courses in Sanitation Control Procedures for Seafood Processing and graduated over 100 qualified, certified trainers across the nation. This standard sanitation-training course for industry and inspectors for domestic and imported seafood is in place, with expectation to graduate over 10,000 participants by 2002.

d. Assessment of Accomplishments

Educating the public and preventing outbreaks of foodborne illness in a state that has more than 16 million residents and 40 million visitors annually from around the world is a monumental task. This is not a need area that will be easily or permanently solved. Florida has had some reduction of foodborne illness in the last two years, and part of this decrease is because of the research projects and educational programs studied, developed and implemented by IFAS faculty. IFAS will continue to work on strategies in this area to provide a safe and secure food system. (NOTE: Florida is not presently working on a safe and secure fiber system, although FAMU expects to develop programs in this area in the next few years.)

Critical Need Program 19. Reduction of Physical, Chemical, and Biological Negative Components Introduced into Human and Animal Foods

KEY THEME: Food Quality and Protection Act Implementation

a. Brief Description of Activity: SMP FL312

Conducted 6 national Train-the-Trainer courses in Sanitation Control Procedures for Seafood Processing March-June 2000

b. Impact/Accomplishment Statement

Graduated over 100 qualified, certified trainers across the nation. Standard sanitation training course for industry and inspectors for domestic and imported seafood is in place with 2002 expectation to graduate over 10,000 participants. ***W. Steven Otwell***

c. Source of Federal Funds: **Smith-Lever**
d. Scope: **Integrated Multi-State**

KEY THEME:

a. Brief Description of Activity: SMP FL272 (1890)

Food-borne illness and animal health continue to be major concerns throughout our population. In a state that is comprised of many immunocompromised individuals in form of the elderly and the young, this issue will continue to be of paramount importance. Nationally there are an estimated 76 million cases of food-borne illnesses accounting for over 375,000 hospitalizations per year with approximately 5,000 reported deaths. There is a direct correlation between herd health and food safety, since many of the food borne hazards originate on the farm or with animals. The impact of sound herd health practices will also benefit producers in areas of productions, efficiency, and cost effectiveness. The food safety issue will continue to be one that will need to be addressed by consumers, processors and producers of consumable goods. The extension program can be a major contributor to combating food safety and herd health problems.

b. Impact/Accomplishment Statement

New state major program, no impact at this time

1 Source of Federal Funds: Evans-Allen
1 Scope: State Specific

KEY THEME: Food Handling; Food Quality

a. Brief Description of Activity: ABE-03456

Project objective was to develop mathematical models for the analysis, design, and optimization of thermal processes used in food preservation through the use of computer simulation. Results from the 5-year life of the project can be summarized by the following accomplishments: 1) Development of new improved methods for determining thermal inactivation kinetics of bacterial spores exposed to dynamic temperature heat treatments. 2) Development of mathematical heat transfer models capable of predicting internal temperature response to external temperature variations in packaged foods exhibiting conduction and convection modes of heat transfer in containers of any size and shape. 3) Incorporation of these models into recently developed thermal process simulation software for predicting internal product temperature and lethality in response to process deviations with canned food products exhibiting a wide range of heating characteristics. 4) Demonstration of intelligent on-line computer control of canned food sterilization processes making use of the thermal process stimulation model. This control system would be capable of automatically extending process time to compensate for any unexpected temperature deviations that might occur during the scheduled process while delivering the precise target level of sterilization required without unnecessary over processing.

b. Impact/Accomplishment Statement

This project has introduced thermal process simulation software to the food canning industry that will result in increased safety assurance of sterilized canned foods to the consuming public at high quality and low cost, as well as improve manufacturing efficiency and global competitiveness of the industry.

c. Source of Federal Funds: Hatch
d. Scope: Multi-State Research

Goal 3. A Healthy, Well Nourished Population

A. OVERVIEW

a. Extension and Research Results

Health care is a primary concern for people in the state of Florida because Floridians spend approximately $45 billion on health care (AHCA). Many of these health-care costs can be reduced if Floridians adopt healthier lifestyles and if they seek and receive care at the appropriate time. High-teen birthrates and high-infant mortality rates continue to be a concern in Florida. In 1996, the teen birthrate in Florida was 37 births per 1,000 females age 15-17, compared with 34 births per 1,000 females age 15-17 for the U.S. as a whole (1999 Kids Count). In 1996, the infant mortality rate in Florida was 7.4 per 1,000 live births, compared with 7.2 in the U.S. (Florida Vital Statistics). Pregnant teens, especially younger teens as well as preteens, are more likely than more mature women to experience health problems during pregnancy and to have low birth weight babies. Although teen pregnancy occurs among all socioeconomic groups, teens from limited resource families are more likely to lack adequate prenatal care and to have low birth weight babies. They are also at high risk of dropping out of school and either relying on public assistance or working in a minimum wage job.

Florida's citizens have the highest cancer rates in the country, related at least in part to a large elder population. Cancer is the second leading cause of death, accounting for almost one in every four deaths in 1997 (Florida Vital Statistics). Diet appears to play a role in the etiology of several types of cancer. Incidence and mortality rates are higher among African Americans than among Caucasians or Hispanic Americans for some forms of cancer.

Cardiovascular diseases are consistently the leading cause of death in the state, accounting for almost one in every three deaths in 1997 (Florida Vital Statistics). Risk factors for heart disease and stroke, including hypertension, elevated serum cholesterol, and obesity are related to diet, exercise, and other lifestyle factors. African Americans are at high risk of developing hypertension and have a higher incidence of obesity and diabetes than Caucasian or Hispanic Americans.

In Florida in 1996, 24% of children lived in poverty, compared with 20% in the U.S. Twelve percent of children experienced extreme poverty in 1996, compared with 9% in the U.S. (1999 Kids Count). Studies show that living in poverty is detrimental to children of all ages, as well as their parents. Hungry children are two to three times more susceptible to health problems than non-hungry children. There are more children health problems (low-birth weights, developmental and growth delays), school problems (lower scores, poor attendance), and more family stress under these circumstances of poverty (William T. Grant Foundation: Research Briefs). Even short periods of under nutrition can affect children's behavior, cognitive development and future productivity. Lack of proper nutrition among children can manifest in a number of ways, including growth failure, physical weakness, high susceptibility to anemia, and lead poisoning (Center on Hunger, Poverty and Nutrition Policy at Tufts University). In the midst of an abundant food supply, a significant proportion of the population continues to experience hunger or food insecurity, lacking food in sufficient quantity and quality for adequate nutrition. 11.5% of households in Florida reported experiencing insecurity; 3.8% reported experiencing moderate hunger; and 1.5% reported experiencing severe hunger (USDA-FNS data). Florida ranks number 10 in states with food insecure households. (The percent of households that are food insecure in Florida is 11.5%, over the U.S. average of 9.7%). The existence of these conditions in the poor population costs the taxpayers through medical care costs, and costs the individuals through lost learning and earning power. Nutritional risk factors increase proportionately with poverty levels, as do nutrient imbalances resulting from poor eating habits. Five of the ten major causes of death have been directly related to dietary factors: diabetes, heart disease, stroke, atherosclerosis, and some types of cancer (Florida Statewide Public Health Information Network, 1998). Providing food or food stamps through food

assistance programs is not the total answer to the problem. Many families receive this assistance but lack the knowledge to make wise food choices and the skills to stretch the food resources to feed the family for the entire month. Through the Family Nutrition Program (FNP), Florida Cooperative Extension, in cooperation with the Florida Food Stamp Program, provides educational intervention in food and nutrition for current food stamp recipients, individuals and families. The purpose of the Food Stamp Program is to ensure that needy families have the resources to purchase an adequate supply of nutritious foods. Of the total Florida population for FY98, Food Stamp Program participants were 1 in 10. Approximately 48% of food stamp recipients in Florida are children and 10% are people 65 years or older. With shrinking budgets and increasing social hardships, the Family Nutrition Program is a critical element in the ongoing effort to educate low-income families, allowing them to increase nutritional awareness and intake on a fixed or limited budget.

The FNP targeted audience varies based on priority needs and identified resources as determined by each participating county. The FNP program is designed so that each county can reach the broad scope of economically disadvantaged people who are at risk of hunger, food insecurity and poor nutrition. These audiences include youth, battered women, homeless persons, migrant workers, teen mothers, senior citizens, families with and without young children, various ethnic groups, persons with disabilities, people who are unable to find employment, and working people with low incomes who are eligible for or participating in the Food Stamp Program. Hunger and food insecurity are public policy issues addressed throughout the state by way of community leaders, grass-roots organizations, federal and state agencies outreach, policymakers, and other stakeholders.

In North Florida, the nutrition and health of families is being influenced by limited Resources, financial instability, an increase in the number of female-headed households with low incomes, a high rate of illiteracy, and a lack of information regarding basic Nutrition and Health principles. The nutritional needs of pregnant teens and pregnant females with limited resources are of great concern since they are at greater risk of having low birth weight infants than females of higher socio-economic status. The nutritional needs of older adults are also of great concern since they may also have limited resources with which to make food-related decisions.

Health related programs are designed to reach a large diverse population and to appeal to a wide variety of audiences. They can be adapted for use with persons of different ethnic backgrounds. Some materials are provided to county faculty in Spanish.

b. Successes

The Florida A&M University Family Resource Management Extension Specialist and two county-based program assistants conducted a nutrition program that used the Food Guide Pyramid and the Dietary Guidelines as a basis for teaching meal planning. Because of limited staffing, nutrition seminars were conducted in a 3-county area that included Leon County, Gadsden County, and Wakulla County. All at-risk and hard-to-reach age groups were targeted since they all present special nutrition challenges. Four hundred senior citizens attended 60 nutrition seminars. Two hundred twenty-five recognized the food guide pyramid and were able to use it in developing a meal plan. One hundred recognized the effects of sodium in the diet. Six hundred women form the WIC program attended 127 nutrition seminars where they learned the importance of breakfast for themselves and their children, basic nutrition, ways to stretch food dollars, and how to choose healthy snacks for themselves and their children. As a result of these seminars, 50 clients indicated that they recognized the importance of providing for themselves and their children, 76 indicated that they intended to provide breakfast on a regular basis, 25 shared knowledge of ways to stretch food dollars with others attending the seminars, and 100 indicated that they understood how excess sodium in the diet affects the body. Over 300 youth in after-school community-based programs, 4-H groups, and other community

programs also attended nutrition seminars. As a result of their participation in the seminars, 260 increased their knowledge of how to choose healthy snacks and the role of exercise in a healthful lifestyle.

For FY2000, thirty (30) counties actively participated in the Family Nutrition Program. The implementation of the Family Nutrition Program is done through one-time presentations, in-depth teaching, and social marketing. Each county program is unique to the needs of the community. FNP educational activities are presented to audiences in public schools, health department waiting areas, senior meal sites, health fairs, and public libraries, among others.

c. Benefits

The benefit of the nutrition education program to stakeholders is that participants indicated that they would use information from the nutrition seminars to improve individual and family meal planning practices. Improved diets and adoption of recommended lifestyle practices, such as incorporation of exercise into lifestyles, are expected to result in improved health for participants.

In developing and supporting health lifestyles programs, extension faculty work with and/or utilize materials from the Food and Drug Administration, USDA, National Heart, Lung, and Blood Institute, National Cancer Institute, American Cancer Society, and many other agencies and organizations. County faculty work closely with numerous local organizations and agencies as they implement health lifestyles programs. These consistently include health departments, schools, libraries, local American Cancer Society, American Heart Association, and other similar organizations, hospitals, Healthy Start coalitions, volunteer organizations, and others.

For FY2000 there were 317,431 nutrition contacts through one-time presentations. Three-thousand, four-hundred and twenty-eight (3,428) individuals participated in in-depth programs in public schools, teen parenting programs, and senior programs. Three-thousand and ninety five (3,095) individuals completed pre and post tests.

For FY2000, thirty (30) counties actively participated in the Family Nutrition Program. The implementation of the Family Nutrition Program is done through one-time presentations, in-depth teaching, and social marketing. Each county program is unique to the needs of the community. FNP educational activities are presented to audiences in public schools, health department waiting areas, senior meal sites, health fairs, and public libraries, among others.

d. Assessment of Accomplishments

This goal has met its immediate requirements but will continue to strive to help Floridians to be healthier and better nourished.

Critical Need Program 20. Improving Human Health and Nutrition

KEY THEME: Scientific Basis for Optimal Health; Multicultural and Diversity Issues; Human Health

a. Brief Description of Activity: SMP FL271

Estimates are that by 2015 there will be more African Americans in the state of Florida than in any other state. This will cause major changes in the health status of minorities and underserved because aggregate demographic shifts cause social, economic and political problems. Advancement in technology and education alone will not rectify the problems for poor health as a major issue for

minorities and the underserved because the main focus has been placed on nutrition. A clear assessment of which sickness and disease pose the highest threat to this particular population has not been accurately assessed. In addition, identification of thematic sources of information, knowledge, and beliefs held by youth, minorities, elderly and rural citizens concerning the origin of major illness has not been explored.

The future of small farmers, minority farmers and the underserved population depends on having the ability to recognize sickness and disease and tap into the appropriate resources for care. Research, educational and extension programs must be geared towards understanding the culture of sickness, illness and disease in these populations. Many small farmers, minority farmers and underserved have limited or no resources for health care. The way in which sickness, illness and disease is assessed and treated must be understood in order to improve their quality of life. Once health beliefs are understood behaviors can be examined to determine how to best educate this population about those illness and disease that pose the highest threats. ***Sheila Jeffers***

b. Impact/Accomplishment Statement

No impact at this time. This is a new SMP that began in January 2001

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME: Human Nutrition; Modifying Food Intake Behavior;

a. Brief Description of Activity: SMP FL511

For FY2000, thirty (30) counties actively participated in the Family Nutrition Program. The implementation of the Family Nutrition Program is done through one-time presentations, in-depth teaching, and social marketing. Each county program is unique to the needs of the community. FNP educational activities are presented to audiences in public schools, health department waiting areas, senior meal sites, health fairs, and public libraries, among others.

b. Impact/Accomplishment Statement

For FY2000 there were 317,431 nutrition contacts through one-time presentations. One-time program participants are asked to complete a five-question client satisfaction survey. Two-hundred and twenty-nine (229) of 230 participants completing the survey reported that the presentation met their needs. One-hundred and ninety-seven (197) participants reported that they plan on making dietary changes as a result of participating in this nutrition presentation.

Three-thousand, four-hundred and twenty-eight (3,428) individuals participated of in-depth programs in public schools, teen parenting programs, and senior programs. Three-thousand and ninety five (3,095) individuals completed pre- and post-tests.

(a) 2,125 participants reported making improvements in their diets.

(b) 378 demonstrated increase in knowledge by correctly identifying the food groups and accurately mentioning the number of servings recommended for each food group.

(c) 912 participants reported improving food selection practices by increasing the use of a shopping list and meal planning.

(d) 82 participants reported improving food budgeting practices.

(e) 1,070 participants reported an increase in food safety knowledge and skills, especially in hand washing practices.

In the area of program marketing, 195,773 additional contacts were generated through food and nutrition articles in newspapers and newsletters. Twenty-one thousand, three hundred, and forty- four (21,344) additional contacts were generated through displays in WIC clinics, health department waiting areas, Food Stamp offices, county libraries, county schools, and county fairs***. Isabel V—***

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME: Human Health

a. Brief Description of Activity: SMP FL511

The purpose of the Improving Health and Reducing Disease Risk of Floridians program (called Improving Health in this report) is to assist Floridians in making healthy lifestyle choices that can reduce their health risks. People with limited resources in both rural and urban communities, and others at particularly high risk, will be targeted. Lifestyle can significantly influence risk for diseases that are the leading causes of death in Florida, and helping Floridians make healthier lifestyle choices can reduce health risks, improve quality of life, and reduce health care costs. Improving Health is a long-range program that can be adapted to address emerging health issues. Current Situation: Health care is a primary concern for people in the state of Florida. Floridians spend approximately $47.7 billion annually on health care or approximately $3,100 for each of Florida's 15.3 million residents (AHCA). This represents over 15% of the total gross state product, the third highest in the nation. Almost half of the expenditures are from Medicare, Medicaid, and other public sources. Many of these health care costs can be reduced if Floridians adopt healthier lifestyles and if they seek and receive care at the appropriate time. Florida's citizens have the highest cancer rates in the country, related at least in part to a large elder population. Cancer is the second leading cause of death, with 37,813 deaths occurring in 1997 (Florida Vital Statistics). Smoking is associated with approximately 30% of cancers, and diet appears to play a role in the etiology of several types of cancer. Incidence and mortality rates are higher among African Americans than among Caucasians or Hispanic Americans for some forms of cancer. Excess cancer deaths appear to be related both to increased risk factors and lower use of early detection tests and other preventive measures. Cardiovascular diseases are consistently the number one cause of death in the state, with 59,525 deaths occurring in 1997, including 49,539 from heart disease and 9,986 deaths due to strokes (Florida Vital Statistics). Risk factors for heart disease and stroke, including hypertension, elevated serum cholesterol, and obesity, are related to diet, exercise, and other lifestyle factors. African Americans are at high risk of developing hypertension and have a higher incidence of obesity and diabetes than Caucasian or Hispanic Americans.

b. Impact/Accomplishment Statement

Participants in *Improving Health* programs are adopting a healthier lifestyle or reducing a specific risk behavior. Examples of behavior changes include: a) decrease dietary fat; b) increase consumption of whole grain foods; c) increase fruit and/or vegetable consumption; d) adopt or improve a personal exercise program; e) practice breast or testicular self-examinations as recommended; f) have their blood pressure checked if necessary; g) have their blood cholesterol checked if necessary; h) some participants with hypertension reduce their blood pressure; I) some participants with hypercholesterolemia reduce their blood cholesterol levels.

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME: Human Nutrition; Scientific Basis for Optimal Health; Multicultural and Diversity Issues;

a. Brief Description of Activity: SMP FL262 (1890)

The Family Resource Management Specialist from Florida A&M University, two county program assistants, representatives from community groups and representatives from targeted clientele collaborated to develop a nutrition, diet and health program designed to reach underserved potential clientele.

b. Impact/Accomplishment Statement

Four Hundred senior citizens attended 60 nutrition seminars. Two hundred twenty recognized the Food Guide Pyramid and the Dietary Guidelines in developing a meal plan for themselves or their families. One hundred participants recognized the effects of sodium in the diet. Six hundred women from the women, Infants and Children's program (WIC) attended 127 nutrition seminars where they learned the importance of breakfast for themselves and their children, basic nutrition, ways to stretch food dollars, and how to choose healthy snacks for themselves and their children, 75 indicated that they intended to provide breakfast on a regular basis for themselves and their children, 24 shared their knowledge of ways to stretch food dollars, and 100 indicated that they understood how excess sodium affects the body. Over 300 youth in after-school, 4-H and other community programs also attended nutrition seminars. As a result of their participation in the seminars, 260 increased their knowledge of how to choose healthy snacks and the role of exercise in a healthy lifestyle. *Diana Edlow*

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME: Human Nutrition; Human Health

a. Brief Description of Activity: FRE-03660

Research faculty are developing methodologies and estimating the relationships among consumers' awareness, knowledge and attitudes about food, nutrition and health; the quality of diets; food attributes; food programs; and economic variables. 3. To analyze the effects of economic and socioeconomic factors on food demand and consumption behavior. The primary involvement in demand estimation this year involved extending the Florida Model of demand from a cross-sectional model to a time-series model. Next, we intend to estimate this model using informational fitting.

b. Impact/Accomplishment Statement

None at this time

c. Source of Federal Funds: Hatch
d. Scope: State Specific

Critical Need Program 21. Fiber-Related Products (Textiles and Apparel) and Businesses for Protection, Social, and Economic Enhancement

None at this time. FAMU expects to add this area within the next five years

Goal 4. Greater Harmony Between Agriculture and the Environment

A. Overview

a. Extension and Research Results

The Institute of Food and Agricultural Sciences at the University of Florida and Florida A& M University recognizes the interdependency of natural/agricultural/human based systems and addresses the various aspects of these systems in their research projects and extension programs. Most programs are multi-faceted in nature, making it difficult to strictly compartmentalize the project into one area (e.g., water quality, soil conservation, marketing, regulation, etc.). For example, the overall objectives of the State Major Extension Program focusing on the Practices for Sustainable Agronomic Crop Production in Florida is, "to provide up-to-date information on varieties, management, pest controls strategies and economic analysis of agronomic crops grown in Florida and to evaluate alternate crops to keep them competitive, and to improve the standard of living of all Floridians through environmental stewardship." Beyond this particular State Major Extension Program, other research and extension projects provide information and assistance in related areas such as agricultural law and community development/planning. Thus, UF/IFAS is able to provide comprehensive research and extension programs related to achieving greater harmony between agriculture and the environment.

In addition to the multi-faceted nature of the research and extension programs, UF/IFAS offers a diverse array of programs and on going projects to meet Florida's complex and varied natural systems needs, as well as the needs of rural and urban communities. The growing urbanization of the state has brought to the forefront the role agriculture plays in our state. Through the stakeholder generated activities of UF/IFAS, the importance of agricultural lands have been substantiated. The research indicates agricultural lands provide critical wildlife habitat and open space; maintain water quality through the use of best management practices; maintain soil and air quality; and serve as a critical buffer zone between the urban areas and natural systems. One Hatch research project on “Dynamics and Interactions of Patchily-Distributed Species” will give IFAS a better understanding of the effects of landscape structure on the dynamics of wildlife populations as a basis for effectively managing wildlife species that are patchily distributed, either naturally or as a result of human-induced fragmentation of landscapes. A better understanding of wildlife and their habits is crucial to their continued existence. Likewise, maintaining Florida's natural ecosystems and open spaces are vital to the state's tourist industry and to the quality of life presently enjoyed by Florida’s residents.

Florida agriculture also is challenged by competing demands for land and water resources and an ever-increasing need to be compatible with the state's sensitive natural resources and environment. Net population growth adds about 650 people per day to the state. The number of regulations, laws, rules, and ordinances continues to increase and many of them restrict agriculture in one way or another. Meeting the requirements of these restrictions ranks high among growers and other stakeholders as constraints on production adding cost to production and, thereby diminishing the competitive position of Florida producers. Extension State Major Program FL115 is an innovative effort to bring farmers and regulators together in a spirit of working together to solve problems and minimize negative economic consequences. Behavioral changes are already occurring as dairy and vegetable growers are working to improve the information exchange with regulators and find better solutions to problems that impact communities and the environment.

b. Successes

A full-scale constructed wetlands and overland flow system has been installed at a large dairy near Tampa to treat runoff and lagoon effluent. This dairy farm has been in operation at this location since 1943. Urban encroachment, including US 301, I-4 and Sligh Avenue, has slowly reduced the land area on this farm to 38 acres. Scraped manure is exported from the farm to a commercial composting company, but storm water runoff from the dairy farm has been a continuing problem. With the Tampa Bypass Canal nearby, the dairy farm was required to do something about the storm water by the Hillsborough County Environmental Protection

Commission. With funding from the Florida Department of Environmental Protection (EPA 319 funding), IFAS assisted in a constructed wetlands and overland flow system at the dairy farm. Water quality is being monitored in the system to ensure that the system is working properly and to learn more about the use of these systems in Florida on other dairy farms.

UF/IFAS administration and faculty realized the impact of the Nutrient Management Education Core Group and have started to depend on the Core Group to coordinate several activities within IFAS. The Dean for Extension has charged the Group to provide input into the prioritization of EPA Section 319 funds being administered by Florida DEP. As a result, the members of the Core Group began interaction and have decided to hold an interagency meeting where producer/industry representatives will be present helping prioritization of the DEP Watersheds and BMPs for demonstration projects.

Over 50 percent of the egg producers in Florida are on a program to reduce fecal phosphorus and nitrogen. Extension faculty hope to increase this amount and also increase the degree of dietary restriction to further improve results.

Small-scale farmers and limited resource citizens in rural areas have not been traditionally targeted for programs addressing issues relative to the environment and water quality. SMP FL269 developed by FAMU extension specialists seeks to provide this audience with updated information that they can understand and be encouraged to adopt. The information being developed and the mobile laboratory specifically addresses the underserved and underrepresented in the state. Therefore, in this capacity the program can be accepted as successful. By visiting these citizens in their homes and holdings to teach them about protecting their water resources has significantly improved the efficiency of the program.

The Florida House Learning Center Project in Sarasota, Florida was the culmination of 10 years of work, including 6 years of operating the resource-conservation demonstration-education facility that has become a model for the nation. Community outreach includes private sector (Eco-Smart Homes, Sorrento Cay and River Forest) enterprises that are putting the Florida House technology into the market place in a big way. Louisiana State University is presently launching their "La-House" project patterned after the Florida House. In September, 2000, Clemson Extension opened their reconstituted historical house in Charleston, S.C. aided by Florida extension faculty also. Florida IFAS faculty also have assisted colleagues in Salt Lake City, Hillsborough County, and several other counties in Florida in similar projects that are underway.

c. Benefits

Many anglers in the recreational fishery are now practicing "catch and release" fishing and have adopted some of the practices that were learned at educational programs presented by Florida extension marine agents. Circle hooks are becoming more popular every day for a wider variety of species. The venting tools have also become very popular for releasing undersized reef fish. More anglers are limiting their kill, rather than killing their limit.

IPM is being implemented in 2/3 of all school districts throughout Florida. Already one district has reported a savings of $2 million in legal fees and liability.

Adoption of urban pest management strategies developed by IFAS researchers and results of educational efforts by extension faculty have resulted in a shift from widespread use of toxic sprays to biorational approaches that affect only the target pests. This urban pest management program has been profiled by scientists, science writers, and politicians as the most dynamic scientific discoveries to benefit the public.

There are over 1400 irrigated golf courses in Florida and many are candidates for reclaimed irrigation water. The use of reclaimed water for golf course irrigation is being promoted and studied by IFAS researchers as an alternative to potable water sources. Their research demonstrates the utility of turf to effectively reduce N concentrations in reclaimed water to below the limit for the current safe potable water standard. Reclaimed water can be used in conjunction with routine N fertilization on bermudagrass grown on sand soils without appreciable N leaching. Therefore, reclaimed waters can be used as an alternative water source, reducing pressures on sometimes limited potable water resources. The identification of appreciable N leaching during the brief grow-in phase of golf course construction constitutes an environmental concern and warrants further research to elucidate management strategies to reduce N leaching during establishment.

An in-depth, statewide evaluation program called Environmental Landscape Management in Florida has been developed to determine landscape practices used by Florida residents. Prior to an ELM-related presentation, a pre-test is given to ascertain customers' knowledge of environmentally sound landscape management practices. Three to six months after the presentation, a sample of those customers is contacted and asked to complete a post-test designed to determine which ELM practices have been adopted.

Demonstrated through a research study that different animals respond to the same landscape at different scales. These findings have important implications for reserve design and ecosystem restoration and are being used to develop strategies for effective multi-species management.

d. Assessment of Accomplishments

Water quality, environmental protection, and sustainability of the natural resource base are items of concern to Florida stakeholders. In the area of water quality, for example, agricultural, industrial, household and other hazardous chemicals; urban storm water runoff; and erosion sedimentation are causing both point and non-point pollution of ground and surface water. Due to the fact that 50% of the nation's drinking comes from aquifers, it is imperative that efforts be made to protect and maintain this important natural resource. This is especially true in Florida, where approximately one-third of landforms are wetlands and the drinking water is mostly drawn from shallow underground aquifers. In fact, over 90% of Florida's drinking water comes from the state's aquifer systems, which in some areas are only 10 feet below a very karst surface. The state's increasing population, now almost 16 million, continues to put a high demand on available water resources such as water. In 1990, for example, some 7,530,000 gallons of fresh water were withdrawn daily for domestic and other uses. Approximately 63% of this was groundwater. IFAS Research and Extension is meeting the goals to improve water quality and the availability of potable water within the state.

Due to poor soil fertility and high incidence of insects and pathogens, farmers and homeowners continue to apply pesticides and fertilizers to their crops, lawns, and gardens, often at higher than recommended rates in order to guarantee high yields and enhance aesthetic quality. In fact, according to *Florida Statistical Abstracts* 1992, from July 1990 through June 1991, approximately 2 million tons of fertilizers were applied to crops and landscapes in the state by large- and small-scale farmers and homeowners. It was common practice for small-scale farmers in north Florida, for example, to apply up to 1,000 lbs./acre of inorganic fertilizer to field corn. Tomato producers at the same time apply nitrogen fertilizers at rates more than double that recommended by the Extension Service. The high seasonal rainfall occurring in Florida (average 55 inches annually), coupled with the very sandy soils, readily facilitates leaching and/or runoff of chemicals to become pollutant of water resources. Efforts are being made to preserve and protect Florida's water quality, as well as other natural resources. Research and education to improve the understanding of the relationships between chemical

usage, landscape degradation, preservation of water, and environmental quality continues to be a priority of IFAS.

Critical Need Program 22. Precision Agriculture

KEY THEME: Precision Agriculture; Biological Control; Integrated Pest Management

a. Brief Description of Activity: SMP FL131--DDIS

With Florida First funding, at least 24 counties are now equipped with microscopes, and all with cameras for using DDIS. During 2000, presented 5 In-Service Training events, Peanut Short Course, and FAEP presentation on using DDIS. Developed numerous materials, presentations and publications. **Larry Halsey**

b. Impact/Accomplishment Statement

As DDIS moved from pilot to full implementation, effectiveness was assessed. Analysis of use (ver 1.1) by reviewing e-mail traffic and DDIS samples, spring, 2000. Successful outcomes were noted and nature of images (photo content and technical quality) was qualitatively evaluated. Of 67 DDIS inquiries, there were: 22% positive, 27% tentative, 51% negative identifications or diagnoses. Majority were addressed to PDC-NFREC/QCY and Herbarium. Samples originated from 15 agents. Five agents with 5 submissions constituted 70% of samples and of non-negative outcomes. Photo quality in many cases was poor, indicating significant need for training in photographic technique. DDIS team developed two instructional presentations that were presented at ISTs during 2000, and scheduled for others in 2001: Getting the Image (Halsey) and Processing the Image (Fletcher). Photo content, technique and image post-processing runtime tutorial presentations and FAQs were added at DDIS web site. DDIS featured in Furrow Magazine (John Deere, national circulation) in November. Article anticipated in mid-January, 2001 in Farm Journal, based on interviews in 2000. State and National awards and honors for DDIS have been received.

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME: GIS/GPS; Precision Agriculture

a. Brief Description of Activity: SMP FL130--Precision Ag/GIS

Technologies for precision agriculture applications such as GIS, GPS, and VRT are often expensive. Techniques have not been validated for Florida cropping conditions. Extension and research faculty and began a project to establish a foundation appropriate to north Florida crops and sites upon which early precision agriculture applications may be built, especially field and soil fertility mapping. Faculty are currently evaluating sampling design and methods for intensive fertility mapping as basis for variable rate (precision or prescription) fertilizer application. The project employs a Trimble Ag132 DGPS (Differential Global Positioning System) C-band receiver (replacing in September 2000 the L-band Omnistar receiver originally acquired from NFREC) mounted on a Kawasaki Mule with a ruggedized laptop and SST Field Rover logging software to map fields and to select grid sample points. Samples are analyzed by UF/IFAS/ESTL. Site and soil data are mapped to ESRI ArcView GIS. Data are presented as interpolated surfaces using ESRI Spatial Analyst following data transformations to re-project using Blue Marble calculator, but initial fields were visually reviewed as nominal fertility groupings. So far, some 30-40 fields on 12 farms in Jefferson County, 4 farms in Madison, 1 in Leon and two fields at SVREC have been mapped. Low-cost, low-tech variable rate application of P_2O_5 was made to one early field. Mapped fields are now provided to USDA-NRCS field office to supplement

Conservation Plans. Leach and Runoff ratings from county soil survey are provided as maps to farm managers to assist in pesticide and fertility applications to limit water quality loss. **Larry Halsey**

b. Impact/Accomplishment Statement

These early trials employing geospatial technologies serve as pilots/demonstrations of precision agriculture. The modest early experience prepares the agent to assist farmers, consultants, and other agents or agencies in sample design for soil fertility mapping and other spatial tools as precision agriculture evolves. Development and validation of locally appropriate sampling is necessary, and will follow in subsequent cropping seasons.

c. Source of Federal Funds: Smith-Lever
d. Scope: Integrated Extension

KEY THEME: Precision Agriculture

a. Brief Description of Activity: SMP FL108

Crop oversupply, international competition and some grove abandonment have pressured Florida citrus growers to reduce production inputs and increase production efficiency in order to maintain viable profit margins. Strategies for improving production efficiency include the development of decision information systems to plan complex grove operations, especially those affected by seasonal variations in temperature. Workshop: Decision Information Support for Citrus (DISC)b and Related Citrus Management Software.

b. Impact/Accomplishment Statement

Twenty growers representing approximately 65,000 acres evaluated citrus management software, volunteered to test developing programs for timing of copper sprays for disease management, and indicated such programs could reduce spraying and related production costs. ***Jim Ferguson***

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME: GIS/GPS; Improved Pest Control

a. Brief Description of Activity: SOS3460-2

Impact of Uncertainty in Spatial Modeling of Pesticide Leaching

b. Impact/Accomplishment Statement

This research developed a means of quantification of uncertainty in spatial modeling from Shanon entropy concepts used in the communication industry related to uncertainty of signal transmission. This research is the first, or among the first, to elaborate a quantitative method to assess uncertainty of model results using GIS and pesticide transport modeling. ***Art Hornsby***

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

Critical Need Program 23. Organic Agriculture

KEY THEME: Organic Agricultural Production and Processing Methods; Niche Market; Organic Agriculture

a. Brief Description of Activity

Organic Citrus Production - Coordinated/moderated 1/2 day workshops on organic citrus production practices.

b. Impact/Accomplishment Statement

Organic Citrus Production - 40 growers indicated they would consider organic certification for their groves in terms of developing an alternative market niche to improve their returns***. James Ferguson***

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME: Organic Production and Processing Methods: Organic Agriculture; Integrated Pest Management

a. Brief Description of Activity

Growing Vegetables Using the Organic Method. Two hour course was designed to present information on what to do when gardening to produce quality vegetables using minimum amounts of pesticides.

b. Impact/Accomplishment Statement

Of those answering 86% said they gained knowledge; 86% said they would be doing something differently (86% would now hill; 86% would now look for natural predators before spraying; 86% would learn to live with some pests rather than spraying; 100% would improve organic matter before planting; and 100% would pick least toxic materials when spraying was necessary); and 86% said they would be sharing information learned in the workshops with others. ***Ray Zerba***

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

Critical Need Program 24. Sustainable and Environmentally Safe Management of Soil Resources

KEY THEME: Soil Quality;

a. Brief Description of Activity: SOS-0 3460-1

Background Concentrations of Trace Metals in Florida Surface Soils. Developed statewide assessment of environmental base-line concentrations for 12 heavy metals using GIS, soil classification and laboratory data.

b. Impact/Accomplishment Statement

Demonstrated that the natural presence of heavy metals can be associated with soil sub-orders, and that a single concentration value cannot represent background levels in soils. ***Art Hornsby***

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME:

a. Brief Description of Activity: FTL-03925

Approximately 2000 heat-tolerant bacteria (primarily Bacillus types) and streptomycetes will be evaluated for activity against Rhizoctonia solani, a pathogen associated with the damping-off disease complex of numerous hosts. The bacterial isolates have already been collected. Two antibiosis screening methods will be used. First, bacterial isolates will be grown on 1/5 strength potato dextrose agar (1/5 PDA) for 5 days. After killing the bacteria with chloroform, a thin layer of 1/5 PDA, containing a suspension of the red yeast Rhodotorula rubra, will be poured over the agar plate. Inhibition of fungal growth will be measured after 3-5 days. In the second and third methods, the bacterial isolates will be grown in shake flasks, in both minimal and rich fermentation broths. After filtration, the filtrate will be placed in wells of a 1/5 PDA plate inoculated with R. solani. Plates will be monitored for inhibition of the fungus. Isolates that exhibit fungal inhibition in at least one of the assays will then be screened in planta. Impatiens wallerana will be the host plant. Bacterial isolates will be grown in the appropriate medium in shake flasks. Flask contents will be incorporated into the soilless medium prior to planting and then inoculated with R. solani. Plants will be monitored for disease development and phytotoxicity. The appropriate controls will be implemented and a chemical standard will be used for comparison. Evaluation of biological seed treatments will be conducted on cotton, snap beans, and wheat in standardized experiments coordinated through Mississippi State University. Biocontrol agents will be quantified in Florida at the time the seed is delivered to and planted by each cooperator.

b. Impact/Accomplishment Statement

No impact at this time

c. Source of Federal Funds: Hatch
d. Scope: Research Multi-State
MISS

KEY THEME: Soil Quality; Biological Control

a. Brief Description of Activity: ENY-03798

An experiment is being conducted to determine the length of time P. penetrans remains viable in the absence of its root-knot nematode host and to determine whether a root-knot nematode suppressive soil will remain suppressive without growing root-knot nematode susceptible crops. The field site selected was located near Williston, Florida. The field had a history of severe root-knot disease on peanut beginning in the 1960's and the disease continued to cause economic losses to peanut yield through the mid-1980's. Thereafter, root-knot disease diminished. Suppressive soil tests identified P. penetrans endospores in very high numbers in the soil and large numbers of the root-knot nematodes females were infected by this nematode parasite. Beginning in summer of 1970, peanut was grown and winter cover crops of rye, hairy vetch (through 1989), wheat (1990), or weed fallow were grown. In 1992, the wheat plots were planted with Tifton 9 Pensacola bahiagrass, the hairy vetch plots were planted with rhizomal peanut, and the weed fallow plots remained as weed fallow plots. Each fall the entire area was mowed and the fallowed plots were disked and planted with rye. Each plot is 30 ft wide by 125 feet long and replicated 10 times. Each plot was sampled in the winter of 1999 and the suppressiveness of the soil to the peanut root-knot nematode was bioassayed in the laboratory. The entire area was disked and deep plowed January 1999, and all plots planted with peanut in April 1999. The population densities of M. arenaria, and P. penetrans are being monitored. Low levels of root-knot nematodes survived over the 9-year period. Greater numbers of root-knot nematodes survived in the weed fallowed plot then in either the Bahiagrass or rhizomal peanut plots. Very low levels of P. penetrans persisted, but the numbers appear to be increasing with the increase in root-knot nematodes.

b. Impact/Accomplishment Statement

Information being attained will give us important information on the survival ability of Pasteuria penetrans and its long-range impact on root-knot nematodes infestations. We are not sure what happens to soils that reach a high level of nematode suppressiveness due to P. penetrans. We hope to show that the soil remains suppressive even when rotated to nematode nonhost crops and then returned to a susceptible crop, such as peanut.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

KEY THEME: Soil Quality; Water Quality

a. Brief Description of Activity: SOS-03274

Projects included 'Minimum Flow and Levels Criteria for Florida Lakes'; 'Soil Investigations at the UF-Natural Area Teaching Laboratory'; 'Genesis of Carbon Sequestration in Subtropical Spodosols'; 'Soil Contamination in Stormwater Retention Basins'; 'Ecological Inventory of the Apalachicola National Forest'; 'Soil Characterization Data for St. Johns River Water Management District on the Internet'; 'Pedological Investigations at Pine Acres - Phase 1'; 'CEC Activity Classes as Related to Soil Taxonomy'; and 'Explorations using Ground-Penetrating Radar'. Hydric soil indicators and hydrologic data will be applied to Lowery Lake to determine the minimum surface flow. The research project in the Osceola National Forest continues to study the genesis of carbon sequestration in Spodosols with double spodic horizons. Access wells in E, Bh, Bw/E and B'h horizons and water wells to 2 m were installed in 8 rows from the uplands to a wetland. Water samples and depths to the water table are taken and measured as necessary. A stormwater retention basin was selected on the UF campus to study soil contamination (hydrocarbons and heavy metals) associated with run-off from paved parking lots. Soils data for St. Johns River Water Management District are being prepared so that it can be accessed on the Internet. Soil characterization data were used to reclassify soil series as to CEC Activity Classes at the Family-level of Soil Taxonomy. It was determined that many soil series belong to more than one activity class. Investigations with GPR were conducted in cooperation with NASA and the Pound Human Identification Laboratory, as well as various geo-engineering and archaeological applications.

b. Impact/Accomplishment Statement

This project emphasized the importance of soil and water as related to environmental quality and land-use issues. Many of the research projects completed or those continued have a great influence on the wise use of Florida's soil and water resources.

c. Source of Federal Funds: Hatch
d. Scope: State Specific

Critical Need Program 25. Integrated Pest Management/Biological Pest Management

KEY THEME: Improved Pest Control; Integrated Pest Management; Biological Control

a. Brief Description of Activity: SMP FL112

Ornamental Plant Production & IPM in Florida increases the use of an interdisciplinary approach to insect and disease management that emphasizes frequent monitoring and effective integration of cultural, mechanical, biological, genetic and chemical control methods, in order to improve the production capabilities of growers. Growers must increase their efficiency in production to keep up with the increasing number of changes due to circumstances beyond their control. There is a need to increase

the awareness of using IPM strategies for overall pest control. Increases in pest resistance, in chemical costs, in public concern over environmental risks, coupled with fewer pesticides being re-registered increases the need for alternatives to conventional pest control methods. They must be informed of the most up-to-date and technological equipment and production improvements in order to compete in the market place. Growers are facing changes in the industry in terms of fertilizer levels allowed, pesticide label changes, water quality and use. Losses due to pests can account for 10% to 20% of total production volume. The extremely low or non-existent threshold for damage of this type on crops necessitates research and development of models for application of IPM techniques on ornamental crops. Research and models are shared with clientele through many programs including Scout Training classes. This is the fifth IPM Scout Training class in central Florida, a cooperative program done by Orange & Lake counties, it is an intense 4 days of training. To insure quality instruction, class size was limited to 25 of which there were 25 participants. Twelve of them said they were scouting weekly or bi-weekly at the beginning of the class. The biggest improvement was seen in record keeping either record keeping was started or record keeping systems were improved. The importance of scouting and its impact on being environmentally friendly are increasing and the need for this program continues to grow. This class enjoys a waiting list from year to year. This same class was requested to be presented in Cairo, GA home of a large nursery production area and was attended by 2/3 Georgia growers and 1/3 north Florida growers. Registration was limited to 20 and the class ran with 22 attendees. Classes were taught by both Florida and Georgia specialists and both Florida and Georgia Extension agents.

b. Impact/Accomplishment Statement

The impact from the scouting class and the one-on-one consultations with those interior landscape companies willing to experiment with biologicals is use of less chemicals in the environment. The interiorscape companies report a 60% decrease in the use of pesticides in their accounts where the predators have been released. Growers are still reporting a 10-40 percent decrease in chemicals used at their nursery. Actions by the EPA resulting in pesticides being put on the endangered species list have verbalized the importance of scouting and early detection of pest problems in order to increase their arsenal of control choices. ***Liz Felter***

c. Source of Federal Funds: Smith-Lever
d. Scope: Multi-State Extension
GA

KEY THEME: Improved Pest Control Food Quality and Protection Act Implementation; Pesticide Application

a. Brief Description of Activity: SMP FL122

The Pesticide Applicator Training (PAT) Program is a federally mandated program. The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) requires pesticides classified as restricted use by the U.S. Environmental Protection Agency (EPA) to be used by or under the direct supervision of a certified applicator. While EPA has established standards for the certification of pesticide applicators, the applicator certification program has been delegated to the states. The Florida Department of Agriculture and Consumer Services (FDACS) is responsible for administering the state applicator certification program.
Applicator training programs conducted by the State Cooperative Extension Services have been established by a joint agreement between EPA, the U.S. Department of Agriculture (USDA) and the State regulatory agencies. The Florida Cooperative Extension Service provides applicator training programs and certification examinations in all 67 counties. County pesticide trainers are responsible for coordinating and conducting pesticide training programs in their counties. Education on safe, effective and legal use of pesticides is delivered through programs delivered at meetings and workshops, autotutorial programs, self-study manuals, and fact sheets.

In Florida pesticide applicators must be certified and licensed to use restricted use pesticides; however applicators who perform pest control (application of pesticides in or on structures and to the turf and ornamentals associated with the structures must be licensed to apply any pesticide. About two/thirds of the licensed pesticide applicators renew their certification and license every 4 years while the others renew annually. Recertification is accomplished by re-examination or by receiving continuing education credits for attending approved educational programs. Programs with topics on pests, pest management, application technology, pesticide safety, laws, labeling, and protection of the environment can be approved for credit.

The PAT Program was originally established to prepare pesticide applicators to meet certification requirements to use restricted use pesticides; however most pesticide regulations apply to all users of pesticides, whether they use restricted or non-restricted use pesticides. With the increase in regulation of pesticides and public concern about their use, there has been an increased need and demand for education for all pesticide applicators. Personal and environmental safety with pesticides are not exclusively certified applicator issues, but pertain to all users of pesticides. Florida specific issues include ground and surface water protection, applicator, agricultural worker and public safety, knowledge of and compliance with regulations, prevention of mix/load site contamination, disposal of pesticides and empty containers. In 1996/97 the misuse of agricultural pesticides for home pest control emerged as a serious problem in several states. While it is not known to be a current problem in Florida, a renewed effort needs to be made to inform and educate homeowners/dwellers on safe and proper use of pesticides. Florida's applicator education program needs to address all of these issues and direct its programs to all persons who use pesticides.

b. Impact/Accomplishment Statement

The PAT program in Florida is responsible for administering most of the certification examinations required by laws administered by the Florida Department of Agriculture. County offices administer the examinations. The Pesticide Information Office grades the exams and sends the results to FDACS for processing. In 2000, county offices administered 6,401 exams in 18 categories. This number does not represent the number of individuals that took exams. Individuals may take more than one exam (more than one category) and some retake exams if they do not pass them on the first try. Individuals may take exams to get a license/certification for the first time or to renew a license. Some applicators do not obtain a license after taking exams. We are not able to separate these individuals. During the same period FDACS reported 3,231 applicators were licensed and 25,407 applicators recertified. FDACS reports that a total of 520 training programs were approved for re-certification credit making available 4,555 hours and Continuing Education Unites for applicator recertification. The Florida Cooperative Extension Service offers approximately 75% of the hours of training and credits approved for recertification credit. ***Norm Neisheim***

c. Source of Federal Funds: Smith-Lever

d. Scope: State Specific

KEY THEME: Improved Pest Control, Food Quality and Protection Act Implementation; Pesticide Application; Integrated Pest Management

a. Brief Description of Activity

Implementation of Integrated Pest Management in Schools. The extension program is primarily designed to support county agents in communicating with clientele about urban pest management. The program generates fact sheets, manuals, slide sets, videos, and other materials to support agent efforts. This past year, 3 school IPM workshops were held for school employees and a southeast regional web site was upgraded to a national site to provide School IPM information. Also, the fourth Southeast Pest Management Conference was held at the University of Florida for pest control operators.

b. Impact/Accomplishment Statement

All school districts have now attended a regional IPM workshop, and county agents were trained in 16 counties. They received information about how to implement IPM in schools. The Southeast Pest Management Conference was a 3-day conference that had 200 attendees. Urban pests account for most pesticide use in Florida and the USA. Consequently, emphasis has been on educationally programs to reduce unnecessary use of pesticides and least toxic approaches to pesticides. Pesticide use in schools has been a special concern because children are more susceptible to pesticides than adults. IPM is being implemented in 2/3 of all school districts throughout Florida. Already one district has reported a savings of $2 million in legal fees and liability. ***Phil Koehler***

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME: Biobased Products; Improved Pest Control; Integrated Pest Management

a. Brief Description of Activity

Public education about urban pest management**.** An estimated 5 billion dollars per year are spent to control household pests in the U.S. Past control technologies have resulted in widespread insecticide resistance, and the public has been faced with the choice of greater exposure to toxic pesticides used to kill resistant insects or living with intolerable infestations that cause allergies, contaminate food, and transmit disease. IFAS research and extension programs has been oriented to reduce insecticide exposure by developing and educating Florida residents about safe, effective alternatives for control of household pests. New technologies developed at the University of Florida, such as, biological and biorational strategies involving insect hormone mimics, cockroach repellents, unique-action traps, and baits, have the potential of reducing human exposure to pesticides. These developments have revolutionized the concept of urban pest control and must be communicated to the public to be broadly used and accepted.

b. Impact/Accomplishment Statement

Adoption of urban pest management strategies as a result of educational efforts has resulted in a shift from widespread use of toxic sprays to biorational approaches that affect only the target pests. This IFAS urban pest management program has been profiled by scientists, science writers, and politicians as the most dynamic scientific discoveries to benefit the public. Press releases of this research have run worldwide. Florida IFAS faculty have appeared on ABC Nightline, NBC Today Show, NBC, CBS, CNN, SIN, and ABC nighttime news and news briefs to discuss urban pest management. This research and extension program has been cited by state and federal legislators in their newsletters as significant benefits to the taxpayer. ***Phil Koehler***

c. Source of Federal Funds: Smith-Lever
d. Scope: Extension Integrated

KEY THEME: Improved Pest Control; Biological Control; Integrated Pest Management

a. Brief Description of Activity: QUN-03364

s were successfully solicited from government agencies and industry. Experiments were conducted on tomato, pepper, and cabbage. Presentations were made at a grower field day, an in-service training, commodity meetings, and professional society meetings. Data was included in nonrefereed extension articles and in refereed journal articles.

b. Impact/Accomplishment Statement

tional, broad-spectrum, highly toxic insecticides have heavy environmental and worker safety risks. The efficacies and environmental benefits of new, biological insecticides are being determined in this research.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

KEY THEME: Biological Control;

a. Brief Description of Activity: FTL-03504

Cotton and snap bean were selected for a multi-year, multi-state regional (southeastern United States) research project to evaluate the efficacy of both commercial and experimental bacterial and fungal biological control agents for management of damping-off diseases. The goal for this portion of the project was to determine viability and stability of biological agents after application to seed. The biological seed treatments used included: 1) Bacillaceae bacteria, 2) non-Bacillaceae bacteria, 3) the fungus Trichoderma, and 4) the fungus Beauveria bassiana. Seed assays were conducted to evaluate the following application factors: short-term (< 3 months) stability after seed treatment; quality (i.e., isolate purity); compatibility with chemical pesticides and other biocontrol agents; and application uniformity between years and plant species. For the bacterial treatments, the Bacillaceae genera (Bacillus and Paenibacillus) had the greatest population of bacteria per seed, the best viability over time and the best application uniformity across years and seed type. The non-Bacillaceae genera Burkholderia and Pseudomonas had the least viability and uniformity. Although Beauveria bassiana was only evaluated one year, the seed fungal populations were high and uniform. The seed fungal populations and uniformity for the Trichoderma isolates were more variable, except for the commercial product T-22. However, this product was contaminated with a Streptomyces isolate in both years it was evaluated. The study demonstrated that Bacillaceae can be mixed with Trichoderma isolates or with numerous pesticides to provide a complete pest control/growth enhancement package.

b. Impact/Accomplishment Statement

This information provides researchers with data on biological seed treatment stability in general (fungal vs. bacterial; gram-negative bacteria vs. gram-positive bacteria), and on individual seed treatments.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

Critical Need Program 26. Animal Waste Management

KEY THEME: Agricultural Waste Management; Nutrient Management; Grazing

a. Brief Description of Activity: SMP FL106

Publication and distribution of the "Florida Forage Handbook" has provided a complete source of information about Florida forages and forage management practices for our clientele. Publication of fact sheets and putting them on the www provides a readily accessible source of information. Publication of a monthly newsletter provides timely information to county faculty for use in their newsletters to local clientele. "Forage Testing to Improve Forage Quality": The forage testing submission form was revised and updated. Clientele who participate in this program know the feed value of the forages their cattle are consuming and are better able to determine if nutritional supplementation is needed to meet their animal production goals. " Maintenance of Forage Fertilization Recommendations": This program provides producers with suggestions on how to best fertilize their pastures and hay fields for economic optimum production. "Introduction of New and Improved

Forages" This program helps clientele choose the best forage for their situation. "Guidance for Environmental Engineers": Assistance and guidance is provided to Consulting "Environmental Engineers" concerning the development of manure and other nutrient management programs. This mainly relates to the uptake and removal of certain nutrients by forage plants. This work helps prevent the contamination of surface and ground water with phosphorus and nitrogen. ***Carol Chambliss***

b. Impact/Accomplishment Statement

This work helps prevent the contamination of surface and ground water with phosphorus and nitrogen.

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME: Agricultural Waste Management;

a. Brief Description of Activity: SMP FL106

The activities involved in this program are both reactive and proactive. The reactive situations generally involve environmental situations stemming from manure management. If manure is not managed correctly the poultry farm can have both odor and housefly problems. The proactive activities are involved with applied research studies. For the last two years some Extension and research faculty have been involved with a temperature mapping project to look at ambient temperatures inside of newer high-rise layer facilities with deep stack manure management. This activity has been funded by the Florida Poultry Federation. These types of studies are important because of the amount and type of new housing built since 1997. The time allotted for reactive situations activities can be as little as a few minutes on the telephone, one or more farm calls or as much as weeks and months.

b. Impact/Accomplishment Statement

The real success in Activity 1 is due to learned and teachable techniques on how to manage cage layer manure. Extension's associate in this activity, Dr. Hogsette, U.S.D.A. will agree that the success that Extension has had in the reduction of incidents associated with house flies over the last few years is directly related to increased knowledge of manure management. Extension may be having an impact in the fly control area that has not been considered. For the last three years Florida egg producers have been voluntarily testing their farms and flocks annually under the direction of Dr. Gary Butcher for the presence of Salmonella enteritidis. In the last two years the USDA has been doing similar type testing across the U.S. Including Florida. In Florida the samples have all been negative whereas they have found positive samples in other parts of the country. In the Northeast, 17% of the samples have been positive. Why are Florida results more favorable than in other parts of the country? Chuck Smith, head of the Florida Poultry Federation suggests the answer is because he believes that Florida egg producers do a better job of controlling Salmonella enteritidis vectors including house flies and rodents than some other parts of the country. ***Roger Jacobs***

c. Source of Federal Funds: Smith-Lever
d. Scope: Multi-State Integrated

KEY THEME: Agricultural Waste management;

a. Brief Description of Activity: SMP FL106

Educational program: All dairies in Lafayette County were surveyed to determine educational needs of local dairy farmers. The dairy improvement team provided statewide programs to improve business management practices. In addition, the Extension faculty worked closely with local and federal agencies on the PL-566 project. This is a voluntary federal cost-share program that dairy farmers can

participate in to improve existing waste management systems. All 26 dairy farmers have signed up to participate in this program. The agent co-hosted the Annual Suwannee Valley Fall Forage and Equipment demonstration on a local dairy that had recently completed a Best Management Plan under this program. Additional program efforts include evaluating Hay storage methods with funds provided by dairy checkoff and an Alfalfa Grazing Plot was established. Agent assisted state specialist on these projects. Additional activities include coordinating Forage Quality study and Texas A&M Economic panel with local Dairy farmers to determine baseline data***. Chris Vann***

b. Impact/Accomplishment Statement

Despite the instability of the dairy industry state and nationwide, Lafayette County continues to hold its own in Dairy numbers and increase in cow numbers that in turn is increasing the need for animal waste management.

c. Source of Federal Funds: Smith-Lever
d. Scope: State specific

KEY THEME:

a. Brief Description of Activity: ABE-03596

Construction was completed on a research/demonstration waste management system on a 1600 cow commercial dairy farm near Zephyrhills, Florida. The system includes a sedimentation basin, holding tank, mechanical screen, tangential flow separator, plate clarifier and a large horizontal drum composter. The drum composter has a volume of 115 cubic yards. The objective is to recover as many solids as possible from the wastewater and produce a potting media (peat substitute) that can be sold to the plant nursery businesses in the area. The design flow rate is 600 liters per minute. Screened solids at 70 to 75% moisture content have been successfully composted in the drum composter in three days, but additional curing time is required prior to utilization as a potting media. The temperature in the curing piles has consistently stayed above 63 degrees Celsius for over 30 days, increasing the likelihood of weed seed and pathogen destruction. Preliminary tests on the potting media have been very encouraging. The tangential flow separator and plate clarifier removed 16% of the total solids from the effluent from the mechanical screen without the addition of chemical flocculants or coagulants. The total solids content in the discharge from the clarifier thickener was increased from 8,200 mg/L to 19,000 mg/L. Studies on the effect of chemical additions, such as aluminum and iron compounds, to enhance nutrient removal in the plate clarifier have begun. Addition of bulking agents to the thickened solids is being considered to lower the moisture content sufficiently for the material to be added to the drum composter.

b. Impact/Accomplishment Statement

Plant nurseries in the project area have shown a high level of interest in using this material as a substitute for native peat in potting media mixtures. Thus, mining of peat would decrease and the plant nurseries could benefit from a peat substitute that was free of plant pathogens and nematodes. The sale of potting media would also provide income to the dairy farm to offset waste handling costs. Nitrogen and phosphorus would also be exported from the farm, minimizing potential surface and groundwater impacts.

c. Source of Federal Funds: Hatch
d. Scope: Multi-State Research

Critical Need Program 27. Water Resources

KEY THEME: Water Quality; Nutrient Management

a. Brief Description of Activity

Improve irrigation application and fertilizer use efficiency Florida nurseries. Long-term objectives will be facilitated by educational programs conducted by cooperative extension personnel and will result in a 15-20% reduction in quantity of water applied per acre and an 8-10% reduction in fertilizer applied per acre at container nurseries in ten counties. Each year participating container nurseries will reduce quantity of irrigation water applied by 4% as a result of: changing irrigation frequency or run time, using cyclic irrigation, or implementing management strategies such as grouping plants by irrigation requirements, irrigating according to water holding capacity of the container media, using rain shut-off devices, monitoring amount of irrigation applied, or improving irrigation system. The amount of fertilizer used will be reduced by 2% as a result of monitoring nutritional levels in the container and applying fertilizer only when needed. Educational programs conducted by cooperative extension personnel and will result in a 15-20% reduction in quantity of water applied per acre and an 8-10% reduction in fertilizer applied per acre at container nurseries in ten counties. Designed and developed workbooks for statewide BMP workshop and statewide effective irrigation workshop. Extension faculty have received grants from FDEP to conduct extension workshops on BMPs and from the Southwestern Florida Water Management District (SWFWMD) to conduct workshops on irrigation application efficiencies. These grants have facilitated the development of educational resources that include a notebook of handouts. FDEP also provides the SNA BMP handbook to each participant at the BMP workshops. The workshops are conducted in host counties with help of county extension faculty. Each county faculty leads the pesticide part of the BMP workshop while State Faculty lead the irrigation and nutrition parts. Participants in the irrigation workshops are able to test the irrigation application uniformity of their irrigation systems between the first and second day of the workshops.

b. Impact/Accomplishment Statement

In ten counties, the four-year programmatic effort will result in an 8% increase in acreage of microirrigated container nurseries, thereby reducing water consumption when compared to the use of overhead irrigation. Improved irrigation scheduling, irrigation runoff recovery systems to recycle water, and use of nonpotable water (reclaimed water), will improve efficiency of water use and provide an additional water savings. The impact of programmatic effort will result in a 20% reduction in water use and an 8% reduction in fertilizer use with a 4% increase in nutrient monitoring. ***Tom Yeager***

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME: Water Quality; Recycling; Soil Quality

a. Brief Description of Activity: FLA-LAL-03492--Microirrigation of Horticultural Crops in Humid Regions

b. Impact/Accomplishment Statement

Research has shown that reclaimed water can be safely and effectively used to irrigate citrus. Reclaimed water use on citrus and edible crops has increased to 15,221 acres, a 75% increase in 8 years. This increase in reclaimed water use can be attributed, in part, to our research findings at Conserv. Given Florida's water shortages and our present drought, reclaimed water use will continue to increase. Studies on soil water movement have given us a better understanding of ridge citrus soils. This, along with our studies on soil measuring devices (Enviroscan, tensiometers, and resistance blocks), will help improve Extension recommendations on irrigation management. ***Larry Parsons***

c. Source of Federal Funds: Smith-Lever

d. Scope: Integrated extension

KEY THEME: Sustainable Agriculture; Water Quality; Energy Conservation; Weather and Climate

a. Brief Description of Activity: FLA-LAL-03759–Freeze Damage and Protection of Horticultural Species

Studies were continued to determine the effects of microsprinkler emitter height on amount of freeze protection of 8-year-old citrus trees. Microsprinklers of different volume output and spray pattern were mounted at heights of 20, 60, 90, and 120 cm inside the tree canopy. No freezes of any consequence occurred in 1999-2000. Because temperatures were not cold enough, there was no tree damage and no differences were found among the treatments. Accomplishments from the life of this project showed that emitters elevated to heights of 60 or 90 cm protected more of the canopy. Trees with elevated microsprinklers recovered more rapidly after a freeze and returned to better production sooner than trees with emitters near ground level. There is a risk of ice loading and limb breakage if emitters are elevated too high, but elevation to a moderate height improved citrus freeze protection. An aid for predicting minimum temperatures on freeze nights by the Florida Automated Weather Network (FAWN) was described. A symposium on Citrus Frost Protection and Cold Hardiness featuring 9 speakers was organized at the International Society of Citriculture Congress. Latest results on freeze research were presented. Freeze injury symptoms were also shown and described in the Compendium of Citrus Diseases.

b. Impact/Accomplishment Statement

This program has led to the expansion in use of microsprinkler irrigation and demonstrated the effectiveness of microsprinklers in frost protection. In the past 15 years, microsprinkler irrigated citrus acreage has increased by more than 600% to 500,000 acres. This program contributed to that expansion by demonstrating the important factors that influence microsprinkler effectiveness. This program also demonstrated improved frost protection effectiveness by showing the benefits of elevated microsprinklers. Every time there is a moderate to severe freeze, microsprinkler irrigation saves the citrus industry over $60,000,000. That impact comes directly from information developed by this program. The frost that hit south Florida in January, 1997 and winter 2000-01proved again that growers who used microsprinklers benefited their trees, while those who did not (because of lack of water or other reasons) suffered significant cold damage. ***Larry Parsons***

c. Source of Federal Funds: Smith-Lever
d. Scope: Integrated extension

KEY THEME: Water Resources; Sustainable Agriculture; Recycling; Energy Conservation; Weather and Climate

a. Brief Description of Activity: SMP FL411

The objective of this program is to provide information on irrigation management, reclaimed water use, and freeze protection. Water shortages, increased regulations on water use, and lowering of groundwater levels have all led to the encouraged use of reclaimed water. Water management by agriculture is of critical importance in a rapidly growing state like Florida. Water Conserv II is the largest reclaimed water agricultural irrigation project of its type in the world and it is leading the way in demonstrating how reclaimed water can be used in Florida. Growers reduce groundwater withdrawals by using Conserv reclaimed water. This helps recharge the aquifer and is a significant water conservation method. Extension faculty helped organize and lead a research program that has led to the widespread use of microsprinkler irrigation for citrus frost protection. Microsprinkler irrigation has replaced nearly all other forms of citrus frost protection in Florida, and our research led the way. Extension is a major player in an ongoing irrigation project that shows effects of reclaimed water on

citrus performance. Our research has helped make Water Conserv II, the largest agriculture irrigation reclaimed water project of its type in the world, successful for the growers, Orlando, Orange County, and the environment.

b. Impact/Accomplishment Statement

Since Conserv II started, use of reclaimed water in Florida has increased to 15,221 acres of edible crops (Reuse Inventory, May, 1999, DEP). This represents a major reduction in groundwater withdrawals in these areas. Conserv has the most complete research background of any reclaimed water project in peninsular Florida. The implementation and engineering design of Conserv received the American Society of Consulting Engineers Grand Conceptor Award. Hillsborough and other counties are increasing their use of reclaimed water because of water shortages**.** ***Larry Parsons***

c. Source of Federal Funds: Smith-Lever
d. Scope: Integrated extension

KEY THEME: Multicultural and Diversity Issues; Water Quality; Literacy

a. Brief Description of Activity: SMP FL412

An informal, oral survey of several Florida Cooperative Extension directors, and discussions with the extension programs assistant dean and acting director of home economics, showed that there is a great need for extension materials for low-literacy and illiterate adults in the state. Extension faculty develop water quality educational materials that can be understood by adult poor readers (5th grade comprehension level) from existing Farm*A*Syst and Home*A*Syst publications (IFAS Bulletins 305 and 314). Production of the proposed materials helped meet the need, to show how farm owner/operator and homeowner activities may contribute to nonpoint source (NPS) pollution and help rural residents become better environmental stewards, thereby reducing their contributions to NPS pollution. Educational materials were developed and tested with a target audience.

b. Impact/Accomplishment Statement

Program materials are being used are being used in the Middle Suwannee River Basin as a part of the Suwannee Partnership. Two full-time paraprofessionals are working one-on-one with rural residents of the basin to educate them about the impact of their activities around farms and homesteads affect water quality. Florida extension received ASA Extension Certificate of excellence for the videotapes and web site produced in this project**.** Requests for project materials have received from extension specialist from Kentucky, North Carolina, Iowa, and Mississippi. Water quality coordinators from Arkansas, Oklahoma, Texas, Tennessee, Alabama, Mississippi, New Mexico, Georgia, South Carolina, North Carolina, and Virginia have received copies of the CD IFAS Clean Water for use in their states. A professor of public health at the University of Texas is using the KYWWC material in an outreach/practicum with his students in areas along the Texas-Mexico border to improve health conditions in these areas. These materials are also being used in Brazil in environmental education efforts in the urban fringe of rapidly growing cities. ***Art Hornsby***

c. Source of Federal Funds: Smith Lever
d. Scope: Multi-State Extension
AL, AR, GA, KY, LA, MS, NM, NC, OK, SC, TN, TX, VA

KEY THEME: Multicultural and Diversity Issues; Water Quality; Literacy

a. Brief Description of Activity: SMP FL269

Florida A&M Extension Program continued. On-farm demonstration and on-station research projects to provide farmers with information that will allow them to make effective discussion in carrying out practices that are water-quality enhancing. The projects dealt with the development of best management practices (BMPs) in staked tomato and field corn production. In staked tomato production variable nitrogen rate and cover crop usage were researched and demonstrated to farmers and others. For field corn production, variable spatial arrangement and nitrogen rate were the applied techniques. Extension Program also established a 'mobile drinking water laboratory', which monitored privately owned rural shallow drinking water wells for nitrates, pathogen and pH. This activity provided non-traditional small farmers and rural residents with on-site relevant information relative to the quality their domestic and drinking water. The result of the monitor exercise was then presented to the homeowner, along with the relevant advice. The occasion also provided an opportunity to educate these citizens about their input and relationship with the quality of their drinking and domestic water supply.

b. Impact/Accomplishment Statement

In the staked tomato demonstration the cover crops proved to be effective in taking up soil residual nitrogen thereby preventing it from leaching to ground water. The corn production studies showed that multiple application of nitrogen rate was effective in preventing nitrate leaching compared to single application. In terms of the cover crop demonstration, a field day was held on 04/01, attended by 32 persons including students, NRCS personnel, and county extension agents. In Jackson County where the project was launched, to date approximately 252 homes involving 2,128 persons were visited. *Cassel Gardner*

c. Source of Federal Funds: State of Florida and USDA CSREES and NRCS
d. Scope: State Specific

KEY THEME: Water Quality

a. Brief Description of Activity: BRA-03832

This 3-year study is being conducted to determine the impact of irrigation system and water table level on irrigation water requirements and fruit production for subirrigated fresh market tomatoes. The use of the fully-enclosed subirrigation (FES) system (which utilizes microirrigation tubing to convey water for water table level maintenance) is compared to conventional seep (ditch-conveyed irrigation) at two water table levels (45 and 60 cm). The first season results showed that water use was reduced by 50% using FES at 45 cm water table level and further reduced 50% when the water table was lowered to 60 cm. No fruit yield or quality differences were detected among treatments. The first season results showed that water use was reduced by 50% using FES at 45 cm water table level and further reduced 50% when the water table was lowered to 60 cm. No fruit yield or quality differences were detected among treatments.

b. Impact/Accomplishment Statement

Success in this project should show that the use of the fully enclosed subirrigation system to control water table levels at 60 cm affords dramatic water savings, allows for lessening the potential for applied fertilizer loss due to elevated water table levels, and does not result in reductions of production potential.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

Critical Need Program 28. Interactions Among Agriculture Biosystems, Weather and Climate

KEY THEME: Weather and Climate; Global Change and Climate Change; Sustainable Agriculture

a. Brief Description of Activity:

Extension faculty worked with Disaster Preparedness and Recovery Design Team Leader, Vet School, Agriculture Program Dean and Educational & Media Services office to provide livestock owners in flooded areas information on care and protection of animals in areas flooded by hurricane Irene in Miami-Dade County. Press releases with this information were distributed to all radio and television stations in south Florida, including Hispanic stations. Extension faculty have prompted a organizational meeting of a large animal committee based on Broward County model.
B. Conducted extensive disaster assessment of agriculture areas flooded by October 3-4 no-name storm and the December 3-4 localized tropical disturbance, resulting in approximately $219 million and $13 million in losses to potato and sweet corn crops, respectively, not including farm labor losses. Documented flooding, with Farm Service Agency, to crops, canal levels. Over the past two years the Miami-Dade County Extension Director as been appointed as a representative for agricultural interests in the Local Mitigation Strategy, a state and county community-wide effort to minimize losses from natural disasters. Extension faculty recently gave agriculture losses overview to Governor's South Florida Flooding Working Group meeting with 150 attending.

b. Impact/Accomplishment Statement

Most recently, Cooperative Extension's role in disaster assessments has raised the level of awareness by county government as to the economic impact that it has on the community and the need for better flood protection. ***Don Phybas***

c. Source of Federal Funds: Smith-Lever
d. Scope: State specific

KEY THEME: Land Use; Global Change and Climate Change; Natural Resources Management; Wetlands Restoration and Protection;

a. Brief Description of Activity: JAY-03204

Rapid reestablishment of the fragmented dune system is essential for many wildlife and plant species and protection of coastal structures against storm surge. Planting storm-uprooted sea oats appears to be an important unexplored restoration technique. Experiments were conducted to assess percent tiller emergence from replanted Sea oats rhizomes after exposure to salt water, air exposure of 1, 3, 5, 7, and 11 days and reburial in pots (watered) or on the beach (with or without supplemental water). Sea oats rhizomes uprooted by Hurricane Georges (1998) were experimentally planted. In addition, the utility of biodegradable materials and the optimum fence orientation for rapid sand accumulation was assessed in a secondary dune position. Effect of season of planting on growth and survival of nursery grown plants of sea oats and bitter panicum transplanted in association with sand fences was also evaluated. Wood and Geojute material sand fences in three orientations were installed at six sites. Sand accumulation associated with these fence material/orientation combinations and non-fenced controls was quantified twice a year (1996-99). Geojute performed well for approximately 8 months with no significant differences in accumulation between materials for most positions. However, the material degraded rapidly and accumulated sand was lost. Eighteen months after installation, Geojute no longer had significantly more accumulated sand than the controls. For wood fences, sand accumulation did not differ significantly among fence configurations at most distances from the fence. Through time, the straight conventional-wood and perpendicular-wood fence treatments had consistently higher sand accumulation values compared to unfenced controls. While survival of transplanted sea oats and bitter panicum was not effected by season of planting, growth for spring plantings was greater than growth of fall plantings. For uprooted and salt water exposed sea oats rhizomes, tiller emergence generally declined with increasing length of exposure and decreasing size of rhizome. Across the three years of

the study, tiller emergence from treated rhizomes varied considerably (0-80%). Mean tiller emergence for rhizomes exposed for 7 days varied from 0 - 40%. After 11 days of exposure with no supplemental water but 12 cm of rainfall, beach planted rhizomes had 20% emergence. Percent emergence of rhizomes replanted 5 days after uprooting by Hurricane Georges ranged from 32-48%. Thus, reburial within 3 -7 days after a storm without supplemental water and up to 11 days with supplemental water or adequate rainfall is a viable restoration technique. Softwood cuttings of Ceratiola ericoides Michx were successfully propagated using a perlite-vermiculite substrate. An improvement of root quality (increased root number and root length) was achieved with the application of a synthetic auxin containing 1,000 to 5,000 ppm NAA. Pinebark-based production substrates were suitable for the production of Ceratiola ericoides.

b. Impact/Accomplishment Statement

This information will assist public agencies and private landowners in barrier island dune restoration following hurricanes.

c. Source of Federal Funds: Hatch
d. Scope: State Specific

KEY THEME: Weather and Climate; Water Quality; Sustainable Agriculture

a. Brief Description of Activity: LAL-03759

Elevated microsprinklers proved to be particularly effective in protecting trees in 1989. Tests have been set up to determine how high jets can be positioned and still be effective. Information on this technique is of particular interest to growers, for it offers an effective method to speed up recovery significantly after a major freeze.

b. Impact/Accomplishment Statement

This program has led to the expansion in use of microsprinkler irrigation and demonstrated the effectiveness of microsprinklers in frost protection. In the past 15 years, microsprinkler irrigated citrus acreage has increased by more than 600% to 500,000 acres. This program contributed to that expansion by demonstrating the important factors that influence microsprinkler effectiveness. This program also demonstrated improved frost protection effectiveness by showing the benefits of elevated microsprinklers. Every time there is a moderate to severe freeze, microsprinkler irrigation saves the citrus industry over $60,000,000. That impact comes directly from information developed by this program. The frost that hit south Florida in January 1997 and winter 2000-01proved again that growers who used microsprinklers benefited their trees, while those who did not (because of lack of water or other reasons) suffered significant cold damage.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

Critical Need Program 29. Environmental Quality in a Changing Landscape

KEY THEME: Energy Conservation; Water Quality; Land Use; Nutrition Management; Integrated Pest Management

a. Brief Description of Activity: SMP FL114

The demand for home gardening information increases steadily as the population continues to grow and Florida becomes more urbanized. Most people moving to Florida are not familiar with Florida's plants

or growing conditions. This problem is further compounded by our limited water supply, abundant supply of insects and diseases and increased energy cost for landscape maintenance. This Extension program focuses on these newcomers. Extension faculty place special emphasis on environmentally friendly landscaping (Enviroscaping) which teaches home gardeners and professional landscapers how to design and maintain energy and resource efficient landscapes, which reduces costs, saves energy and protects the environment.
Educational activities--Extension faculty involved with State Major Program FL114 (Environmental Landscape Management), presented programs that teach a holistic approach to landscape design and management that conserves our natural resources and protects the environment. The program uses a multi-media approach–including print and broadcast media, videotapes, slide sets, publications, displays and demonstrations–to reach residents and landscape professionals.

b. Impact/Accomplishment Statement

Adoption by Florida residents of such practices as using the proper amount of water for irrigation, using the lawn as an indicator for the need to irrigate, grouping plants by water needs, using slow -release fertilizers, using less fertilizer to reduce pruning, applying nitrogen at the proper rate, avoiding the fertilization of established trees, adoption of environmentally friendly pest control, reduced pesticide usage. ***Robert Black***

c. Source of Federal Funds: Smith-Lever
d. Scope: State specific

KEY THEME: Land Use; Natural Resource Management; Energy Conservation; Water Quality; Nutrient Management; Improved Pest Control

a. Brief Description of Activity

The overall goal and purpose of this program is to establish and promote horticulturally sound guidelines for environment-friendly management of landscapes in Florida collectively called "Environmental Landscape Management" (ELM). These guidelines integrate landscaping practices for pollution prevention, energy conservation, water conservation, pest control, enhancement of wildlife habitat, and landscape waste recycling with other horticulturally sound principles of landscape design and management in a holistic approach.
This program is aimed at teaching the 9 basic principles designed to reduce the amount of time spent in landscape maintenance; water needed to maintain an acceptable landscape; chemicals (both pesticides and fertilizers) needed for that landscape's maintenance, and a reduction of energy input (fossil fuel -- in the way of gas and that needed to produce fertilizers/pesticides) through the use of environmentally sound maintenance practices. Encourage homeowners to adopt ELM practices that will reduce non-point source pollution of the Indian River Lagoon. Florida Yards and Neighborhood Program participants will demonstrate practice adoption by completing survey when they initiate contact with the program and after several months of participation. Assist homeowners and landscape industry personnel with adoption of practices. Conduct public seminars or tours to demonstrate ELM practices. Change in adoption of practices indicates success of the program. Evaluate and report results obtained.

b. Impact/Accomplishment Statement

FYN Professional Schools: Provide training in ELM to commercial landscape industry personnel. These professionals will assist extension staff and volunteer Yard Advisers to transfer ELM/FYN concepts to property owners. ***Daniel Culbert***

c. Source of Federal Funds: Smith-Lever
d. Scope: State specific

KEY THEME: Riparian Management; Water Quality; Natural Resource Management; Wetland Restoration and Protection

a. Brief Description of Activity: SMP FL114

An educational grant of $286,000 was granted to the University of Florida and the St. Johns River Water Management District to show residence in northeast Florida how to create and maintain landscape practices to help reduce non-point source runoff and protect the waterfront. The Florida Yards, Neighborhoods and Ponds Program began in August of 1998 and concluded in December of 2000, and included six counties (Clay, Duval, Flagler, Nassau, Putnam and St. Johns) in northeast Florida that comprised the lower basin of the St. Johns River Watershed.

b. Impact/Accomplishment Statement

Educational materials were developed and provided to each of the counties for adaptation and use according to their individual parameters. The purpose of the educational materials was to provide a measure of programmatic and informational consistency while recognizing horticultural, climatic and demographic differences between the participating counties. ***Ray Zerba***

c. Source of Federal Funds: Smith-Lever
d. Scope: State specific

KEY THEME: Wildlife Management; Water Quality; Endangered Species; Land Use

a. Brief Description of Activity: SMP FL114

Ecosystem Conservation in Urbanizing Landscape. Currently 118 wildlife species are legally listed as endangered, threatened, or species of special concern. Florida is second in the contiguous 48 states in the number of federally listed plants and another 49 species that have not been reviewed by the formal listing process have been found to be in just as much jeopardy of extinction as the legally listed species. Half of all Florida's non-marine vertebrates are declining in number. Millions of acres of native habitats and half the State's original wetlands have been converted into resort areas, residential subdivisions, roads, shopping centers, and other urban development-related land uses. Over 150,000 acres of agricultural lands in Florida are transformed annually into urban lands. Wildlife needs are being addressed mostly on a site by site basis with little effort to maintain ecological integrity of natural systems. As urban communities expand, taking over land previously occupied by native wildlife specie, the population of those species must change to adapt to the new carrying capacity limits being imposed upon them. During this transition stage, there will be inevitable people/wildlife encounters/adjustments that will be problematic. While nothing can be done to reverse this, there are sound concepts that can be taught/implemented which will aid the establishment of those species which can co-exist within an urban setting and help to lessen the stress and speed the eventual population readjustment of those specie types which are not able to co-exist with urban development.
This program is aimed at taking advantage of the current "in fad(?)" that living with birds, and butterflies is a good thing. Its intent though is to show that while we might want more of these things to visit our backyard, it's important to have a complete understanding of what we are doing when we encourage more birds and butterflies. There are such things as caterpillars, pest birds, and collateral specie that will also be attracted to the landscape enhanced to attract more birds and butterflies. In addition, there are well-meaning things being done to help urban wildlife that in fact do them harm (bird baths that aren't cleaned leading to disease epidemics; bird feeders that are not regularly cleaned leading to moldy feed and digestive problems for visiting birds; birdhouses which are not properly ventilated leading to unnecessary heat stress for young nestlings, etc.). The goal of this program is to enlighten the homeowner about the do's and don'ts when it comes to enticing urban wildlife to backyard habitats.

b. Impact/Accomplishment Statement

Presentation was designed to present information on Landscape enhancements which would encourage more urban wildlife to take up residence in the backyard habitat in a manner that allows humans and wildlife to coexist in a positive way. ***Ray Zerba***

c. Source of Federal Funds: Smith-Lever
d. Scope: State specific

KEY THEME: Energy Conservation; Water Quality; Wildlife Management; Natural Resource Management

a. Brief Description of Activity: SMP FL113

Sustainable Community Development (FL 113) contributes directly to four of the ***Florida First*** imperatives: (1) Water Management, Quality and Allocation, (2) Managing Urban, Rural and Human Impacts on Natural and Coastal Ecosystems and Resources, (3) Human Resource Development: Families, Children, and Communities and (4) Public Policies. The program contributes to the university's goal of providing Florida citizens with state of the art knowledge to manage our natural resource base and build economically productive, environmentally sound and socially just communities to ensure the long-term sustainability of Florida's natural and human resources. Florida's Sustainable Community Development extension program addresses these issues through educational programs that train building contractors, real estate brokers and agents and home buyers to promote and invest in homes that reduce energy, water and non-renewable resource use and that conserve wildlife and natural habitat. A focus on building contractors and real estate agents and brokers reduces the scope of the mass education effort require: convincing one major contractor to incorporate energy-saving features in the home at the time it is built reduces lifetime energy consumption while simultaneously reducing the amount of public education aimed at the home owner that must be conducted.

Extension's programming to reduce unwanted impacts must include a holistic focus that includes environmentally sound home and landscape development and management. It must also address as many as possible of the audiences that influence home and landscape development and management processes. We have identified six clientele groups: (1) planners, policy makers, regulators and others who establish the framework within which communities are developed and managed, (2) building design, construction, and landscape industry professionals, (3) professional property managers, (4) the home service industry, (5) vocational teachers and institutions who train individuals to work in the building trades, landscape management, property management, and related fields and (6) homeowners and renters.

Addressing these multiple audiences and the wide range of subject matter content needed is difficult for county Extension faculty. Our approach has been to develop a series of "stand alone" educational programs. These educational programs are based on an interactive, participatory adult learning model. These programs capitalize on expertise available at the University because individual subject matter specialists are responsible for the content of each module in the program. IFAS specialists use their experience and knowledge in how to develop adult education programs and professional educational materials to put this information together in an attractive, interesting, effective training program. We depend on our county faculty's experience and knowledge as adult educators for successful program delivery. The advantage of our approach is that statewide faculty do not have to travel to each county to deliver the program. At the same time, county faculty with relatively little prior experience or expertise in the specific subject matter area can serve as facilitators for the local training sessions because the participatory learning model is used, materials are thoroughly tested prior to release, and each module contains all of the technical information needed in a video and written format.

b. Impact/Accomplishment Statement

The fourteen credit course for licensed contractors was delivered to 42 groups of contractors in 31 counties in 2000. About 600 contractors participated in the programs. Eighty-two partner organizations

from the public and private sectors co-sponsored these programs. Two new modules were developed in 2000, one on lighting and one on window treatments. These are advanced units. The fourteen credit course for real estate agents and brokers was delivered in four counties in 2000. Buy Green and Save, a three hour educational program for home buyers, was presented in 24 counties to over 500 home buyers. Sixty-one partner organizations co-sponsored these programs. As a result of this training, contractors report that they do change their practices. For example, in Alachua County there is now an "Energy Star Only" Parade of Homes. Some contractors around the state have gone to a system of guaranteed maximum heating and utility bills. Other contractors and real estate companies are involved in sponsoring developments where all homes must meet certain criteria in terms of the content covered in these modules to be allowed in the development. ***Marilyn Swisher not smith***

c. Source of Federal Funds: Smith-Lever
d. Scope: state specific

KEY THEME: Natural Resources Management

a. Brief Description of Activity: ENA-03543

Strength of branch attachment in Acer rubrum L. was related to the diameter of the branch relative to the diameter of the stem to which the branch was attached measured directly above the branch. Linear correlation coefficients ranged from 0.7 to 0.96 between branch:stem diameter ratio and load required to separate branches from stems. Slopes of the lines describing this relationship increased with branch diameter. Presence of included bark in the union significantly reduced the load required to separate the branch from the stem. Codominant stems were far easier to split apart than branches that were small relative to stem size. This information has implications for arborists climbing trees and will help guide development of pruning objectives.

b. Impact/Accomplishment Statement

Presence of included bark in the union significantly reduced the load required to separate the branch from the stem. Codominant stems were far easier to split apart than branches that were small relative to stem size. This information has implications for arborists climbing trees and will help guide development of pruning objectives.

c. Source of Federal Funds: Hatch
d. Scope: State Specific

Critical Need Program 30. Enhancement of Environmental Quality in Animal Production

KEY THEME: Nutrient Management

a. Brief Description of Activity: ANS-03596

Additions of alum (Al2(SO4)3), ferric chloride, and polyacrylamide solutions were tested in the laboratory for their effectiveness to increase nutrient removals, especially phosphorus (P), by sedimentation from flushwaters with 1% dairy manure solids. Alum and ferric chloride significantly affected TS recovered, pH, and amounts of P, TKN, K, Ca, Zn, Cu, Mn, and Na remaining in the effluent as compared with control sedimentations without additives. Effects on P removals were greatest with removal curves best fitting a quadratic polynomial (r2 = .96 for P). However, the linear regression coefficients for P with a linear only model (r2 = .93) were considered to be good estimates of average removal rates (4.0 mg P removed/mmol Al+3 for alum, 5.36 mg P removed/mmol Fe+3 for ferric chloride). Polyacrylamide treatments were not different from control sedimentations at the concentrations tested. Field studies tested 0, 0.9, and 1.8 ml/L additions of alum solution (4.4% Al by

weight) to dairy manure flushwaters (.33% TS and 41 mg P/L) that previously had been subjected to sedimentation and screening. Management scenarios tested, utilizing 4100 L tanks, were single-fill (batch), 3-fill continuous flow, and 6-fill continuous flow. Removals of 11 to 17 mg P/mmol Al+3 added (0.9 ml alum/L) were higher than in the laboratory experiment. All removal efficiencies in laboratory and field experiments with either alum or ferric chloride were well below theoretical efficiency of one millimole of P (31 mg) precipitated as phosphate with one millimole of Al+3 or Fe+3 but lower efficiencies are expected when organic compounds are present that can bind these ions. These studies demonstrated that reduction of P in dairy manure wastewaters to low levels is possible with additions of alum or ferric chloride solutions. However, the economics of these procedures did not appear favorable.

b. Impact/Accomplishment Statement

Farms that can utilize most manure nutrients on farm, but must export a specific amount of manure P to balance a mandated farm P budget may be able to sequester the required amount of P with a prescribed amount of flocculant for later export. The economics of using flocculants to solve marginal nutrient management problems may make this technology more affordable on some farms.

c. Source of Federal Funds: Hatch
d. Scope: Multi-State Research

Critical Need Program 31. Nutrient Management

KEY THEME: Nutrient Management; Water Quality; Riparian Management

a. Brief Description of Activity: SMP FL412

An interagency Suwannee River Basin Nutrient Management Work Group was formed with leadership from Florida Extension and Research, the Florida Department of Agriculture and Consumer Services (FDACS), the Florida Department of Environmental Protection (FDEP) and the Suwannee River Water Management District (SRWMD) in response to increasing levels of nitrate in waters of the basin. The goal of the work group is to work with all parties to foster voluntary use of BMPs that reduce nitrate levels in waters of the basin. IFAS faculty participated in the SRBNMWG technical task force on commercial fertilizers to develop an assessment of the impact of application of commercial fertilizer on groundwater and springs in the Middle Suwannee Basin. They also participated in meetings with the public and farming community to describe a voluntary program to implement interim management practices with the goal of reducing excess leaching of nitrate to groundwater. Florida extension faculty participated in the Outreach Committee to design and deploy educational events and workshops to educate the intended audiences of the volunteer program. ***Art Hornsby***

b. Impact/Accomplishment Statement

Suwannee River Partnership program staff are using extension water quality educational materials to educate rural residents about how their actions impact the quality of water in the basin.

c. Source of Federal Funds: Smith lever
d. Scope: State specific

Goal 5. Enhanced Economic Opportunity and Quality of Life for Americans

A. OVERVIEW

a. Extension and Research Results

Florida has a large and growing population with a diverse economy. The key to Florida's future is to maintain the quality of life and a viable economy for its citizens. Community environmental sustainability is one of the major challenges facing Florida. The following data show the importance of reducing the environmental impacts or urban development on Florida's ecosystems and natural resource base. While Florida's net population increases is 2% per year, three counties rank among the six fastest growing counties in the US. Florida's top three counties include Flagler, Hernando, and Osceola Counties with growth rates of 207.7%, 148.5% and 141.9%, respectively, since 1980. It is estimated that Florida's population increases by 450 people per day and that 450 acres of forested land are cleared each day. Approximately one-third of Florida's upland forest have been cleared for urban growth and agriculture. If even 10% of the forested land that is cleared each day is subjected to a construction which reduces habitats destruction and loss of native species, negative impacts on over 150,000 acres of land would be prevented over a ten-year period.

Florida communities need local leaders who can work with boards, commissions, government agencies and not-for-profit organizations. The availability of local leaders is a prerequisite to economic development and provides a means to achieve sustaining communities. Effective leadership facilitates economic development through collaboration, partnerships, and coalition building. SMP FL 513, Building Community Leadership for Economic Development and Public Issues Education is a Florida extension program designed to improve the well-being of urban, rural and nonmetro Floridians by: (1) enhancing community economic vitality through developing a cadre of local leaders who will focus on community uniqueness, resources and potential, (2) analyzing demographic, social and economic attributes of communities to help leaders and residents better understand their strengths and weaknesses and opportunities for economic development, (3) building human capacity of urban and rural residents for participation in labor force and entrepreneurial activities (4) improving the ability of local leaders to conduct the process of establishing informed public policy through issues education.

Economic opportunity in Florida is greatly dependent on small business development. Many small business enterprises are started each year and although some are still in operation after five years, most are not. The entrepreneurs that start small business enterprises need education and training if they are to remain viable. These small business owners are encouraged through extension education and training programs available in their community. Local coalitions often work in partnership with exist to help assist and help small business owners get the necessary education to survive and grow. Several Florida State Major programs have been designed to improve small business development.

In addition to economic opportunity, the quality of life in Florida is determined by the economic well-being of its families. First and foremost, Florida families need affordable housing. Adequate housing is the most costly item in the average family budget. Typically, more than a third of a Florida's family combined income is required to cover house payments or rent, furnishing, utility and repair costs. Although home ownership is often less costly than renting, families often have difficulty buying a home because of poor money management and credit use practices. The Sadowski Affordable Housing Act is providing funds ($250,000/county/year/minimum) for all Florida counties to provide affordable housing. The use of the funds is determined by partnerships in each county that include the private sector of building contractors and bankers, not-for-profit organizations, and the constituents to whom the program is directed. Besides housing, SMP FL 270, an 1890 program provides educational opportunities for community residents to improve their economic and social well being by

utilizing existing grass-root community organizations as a mechanism for delivery and receipt of services related to community development activities.

The concern with the transition of Florida's youth to the world of work is not unique to this state. The workplace through the United States is undergoing dramatic shifts. There are rapid changes in technology and an expanding need for an educated, flexible and multi-skilled workforce. Over the course of the next 15 years, over 80 percent of all new jobs will be produced in the service sector. Few will be created in the goods producing sector, the industry that served as the economic foundation of many communities, particularly rural ones. Because many of these service jobs tend to require more education and skills, communities and individuals, particularly Florida's rural youth, are faced with fewer and fewer career opportunities. Using programs related to joint SMPs 201/701 (1890 and 1862 programs) Florida youth receives the preparation they need for the world of work.

In Florida communities there are over three million children under 18 and in 1992, more than 23 percent of these children lived in poverty. Poor children are more likely to be undernourished, to receive inadequate heath care, and live in an environment that threatens their health and safety. The increase in women's labor force participation results in more young children being cared for at least part of the day by someone other than a parent. Working parents want good quality childcare in their absence, but this is often not available for low-income parents. Consequently many parents leave their children in less than adequate care in order to continue to work or they leave the labor force in order to take care of young children but struggle to provide their families' basic needs. In Florida nearly two-thirds of women with a child under the age of 6 are in the labor force and approximately 77% of mothers with children under 18 works outside the home, resulting in more children in daycare or staying home alone. New legislation is moving welfare recipients into the workforce, but only a small fraction of welfare recipients' new jobs pay above-poverty wages. Role overload and stress due to both work and family responsibilities, lack of adequate and affordable childcare, and limited resources are compromising families' well-being. Using strategies developed through SMP FL515, Successful Parenting/Family Development in Florida, Extension professionals are working with families to help improve coping skills of newer working families who previously received welfare and increase their knowledge of how to achieve and maintain self-sufficiency, balance work and family and select quality child-care and after-school programs.

b. Successes

The UF/CES has been a leader in bringing this program to Florida and to Cooperative Extension in other states. For example, Cornell began a program based on Florida's experience. (In late 1999 this program was terminated because the service delivery area in the state was divided to exclude New York City.) Michigan State also offers the FastTrac program and connections have been established with this program. For example, the Florida Master Instructor trained their instructors in summer of 1999.

The extension program conducted hands-on classroom sessions in the World of Work to over six thousand youth. They were taught developing good self-esteem, personal hygiene, how to keep and maintain a job, social skills, personal grooming, and job interviews (mock sessions). As a result of this training, one-thousand eight-hundred fifty (1,850) of these students now have part-time jobs with industry, agencies, organizations, services and with the school system.

This is a high school enrichment program development and funded by the National Endowment for Financial Education (NEFE) and conducted by the Extension Service nationwide. This program has been in use in Florida for the past 6 years. Enrollment per year averages 7,000 to 8,000 students. Each fall every high school principal in Florida is contacted by this specialist and a follow-up contact made by county offices. Extension agents and teachers provide the

instruction. Target audience: high school students. Pre- and post-tests document increased knowledge gain (average increase of 40 points on a scale of 100). A national survey by NEFE in 1999 found students who participated in the program saved more and has less indebtedness as adults. They were more financially secure. The number of schools participating in Florida in 2000 increased from 123 to 157.

c. Benefits

An agreement has been made with USDA Farm Services Agency to allow FastTrac II to be used as fulfillment for the financial management requirement for the loan program for farmer loan applicants. This connection will help recruitment among farmers and agribusiness operators.

The world of work training program that the youth were involved in enabled them to maintain their jobs longer than those youth who were not in the program.

The Money Wise series was forwarded to Jump Start in 1998, an educational organization that reviews financial management and consumer education material and evaluates them for inclusion on a recommended list for schools nationwide. Money Wise was reviewed and is listed on Jump Start. Schools from 44 states have requested permission to use the Money Wise series.

This program has been used several years by south Florida counties with migrant worker groups in busses transporting hourly workers. It also is used for group meetings. Each year 12 to 15 counties use the program. They report groups of 12-30 people per attendance. Attendants report increased knowledge and a follow-up evaluation in 1997 found 68% of those without credit were able to obtain an unsecured card following their classes. This program was developed jointly with Dr. Nayda Torres who did the translating, and we worked cooperatively on the content. The program was chosen for a national award in 1995 and parts of it were aired on a national teleconference in 1996. Three states copied and adapted the bylines on the tape for use in their states in 1998. The program is used by counties teaching basics of credit and in some counties with the affordable housing programs. In 2000, it was used by 6 counties.

d. Assessment of Accomplishments

Florida has met Goal 5 requirements, but will continue to strive to reach more of the population's needs in this area.

Critical Need Program 32. Community Economic Development

KEY THEME: Consumer Management; Promoting Housing Programs

a. Brief Description of Activity: SMP FL510

Housing is the most costly item in the average family budget with more than a third of a family's combined income, typically, required to cover payment/rent, furnishings utility and repair costs. Even though home ownership is often less costly than renting families often have difficulty buying a home because of poor money management and credit use practices. Between 1989 and 2000, 87.6% of all new jobs will be in the service sector with generally low pay and few benefits. This can only exacerbate the existing problems. In Marion County the median price of homes is $83,160, but based on incomes, the average family can afford to own a house worth about $40 to $45 thousand. This amounts to an affordable housing crisis. Advisory members identified this as a high priority area and one where resources are needed. The Sadowski Act in Florida has provided some funds to assist with affordable housing in the SHIP program. How the funds are used will be determined by "partnerships" which will

include people from the building community, bankers, social workers, Extension, etc. The program is designed to assist with closing costs and down payments. These clients often have credit problems, a poor understanding of money management, little knowledge of how to work with lending agencies and other home-buying professionals, or how to qualify and apply for a loan. Once a home has been purchased or "re-habed", it is important for people to have the knowledge and skills to protect the value of their home. In Marion County for example, an educational component is a requirement in the process of obtaining funds through SHIP. Extension is seen as the source for this unbiased education and has again received the approval of the county to administer the educational portion of this program. Clients are screened and selected by a consortium of SHIP staff and bankers, then sent to Extension, when pre-approved, for the educational classes. ***Marcia Zabor***

b. Impact/Accomplishment Statement

These efforts resulted in Marion County this past year:
- **92** SHIP loans closed this year
- **$ 960,633** SHIP funds loaned for down payment and closing costs
- **$ 4,833,745** a total appraised value of SHIP loans closed for housing purchased
- **$1,414,450** appraised value of rehabilitated homes purchased
- **$35,000** generated in impact fees alone, which help pay for county infrastructure
- **$7,900** in SHIP monies budgeted for Home Ownership Classes (for Extension) for 2000. This money is used to purchase notebooks and for printing of materials for classes or equipment as needed.

There have still been no defaults with Extension graduates since the program began in 1992.

c. Source of Federal Funds: Smith-Lever
d. Scope: State specific

KEY THEME: Jobs/Employment; Supplemental Income Strategies; Workforce preparation--Youth and Adults; Children, youth and families at risk

a. Brief Description of Activity: SMP FL513

Over 64,000 Floridians face the difficult transition from welfare to unsubsidized employment. The problem is especially daunting when individuals have significant barriers to employment. Almost half of all welfare recipients will no longer receive cash assistance, or Temporary Aid to Needy Families (TANF) by 2002. This puts long-term welfare recipients, who are generally poorly educated with low skills and little job experience at a disadvantage to become self-sufficient.

The Institute of Food and Agricultural Sciences (IFAS) at the University of Florida has undertaken a training initiative with a Welfare to Work (WtW) grant from the Florida Department of Labor & Employment Security (FDLES). Under this initiative, the IFAS statewide Cooperative Extension Service network is delivering training programs designed to help move hard-to-serve welfare recipients into unsubsidized employment and economic self-sufficiency.

1. JobStart: (E.B. Bolton). JobStart is designed to provide participants with a portfolio of skills related to seeking and retaining a job. Participants learn the importance of developing a positive attitude towards work, as well as the specifics of developing and implementing job search strategies.
2. Elder Companion: (L.Cook). The Elder Companion program trains participants to provide high-quality care for Florida's elder citizens. Training includes sensitivity to aging, as well as how to provide assistance with daily living activities. Home management services and the role of the home companion for older adults are also covered in the training sessions.
3. Food Safety: (J. Jimenez and M. Tamplin). The Food Safety training program gives participants the essential skills for obtaining entry-level positions in the food service industry. Topics covered during training include safe food storage, safe cooking and handling practices, personal hygiene in the food service industry work place and proper cleaning and sanitizing procedures.
4. Horticulture-Seeds to Success: (J. Morden, J. Easton, and J. Garguilo). The Seeds to Success training program prepares participants for entry-level positions in nurseries, home garden centers and grounds

maintenance. Training includes plant handling, water management, insect identification, plant propagation and safety skills.).
5. Horticulture-Green Futures: (S. Anderson, B. Owens and L. Trenholm). The Green Futures training program prepares participants for entry-level positions in grounds maintenance. In addition, the participant will develop the skills and practices necessary to provide lawn care service. Training includes plant handling, water management, insect identification, plant propagation and safety skills. ***Elizabeth Bolton***

b. Impact/Accomplishment Statement:

The Cooperative Extension Service of the University of Florida's Institute of Food and Agricultural Welfare to Work Initiative is operating in nine of the 24 Regional Workforce Boards with funding support from the Florida Department of Labor (currently Agency for Workforce Innovation). As of December 31, 2000, 316 welfare transition participants have been taught by one of the cadre of trained instructors that deliver the educational programs. Of those participants, 91 are working in jobs related to the training they received with another 13
pursuing education such as a GED, master food server certification or community college degrees.

c. Source of Federal Funds: Smith Lever
d. Scope: State Specific

KEY THEME: Community Development; Promoting Business Programs

a. Brief Description of Activity: SMP FL270 (1890)

Business Development Specialist worked with community individuals to develop home based businesses. The objective was to develop educational programs for these individuals to plan and develop businesses that can be implemented for their homes. These programs were presented at group meetings and workshops.

b. Impact/Accomplishment Statement

Two home-based businesses were developed as a result of extensions educational programs. *Jenaya Anderson*

c. Source of Federal Funds: Economic Development Administration
d. Scope: State Specific

KEY THEME: Agricultural Financial Management; Supplemental Income Strategies; Impact of Change on Rural Communities
a. Brief Description of Activity: SMP FL 273 (1890)

A statewide program: Small Farms and Rural Development

- Utilizing an holistic, multi-disciplinary, and participatory approach to the sustainable development of small farmers/farm workers/farm families: linking key program components from
    - Florida A&M University College of Engineering Sciences, Technology and Agriculture
    - Departments across Florida A&M University
    - Community collaborators.
- Emphasizing participatory assessment of needs, goals, priorities in the development of conferences, workshops, training, short courses, and distance learning programs.
- Targeting the small farmer/farm worker/farm family: i.e. Hispanics, Black Americans, Native Americans, Women, and other minorities.

Narrative and numerical methods will be used to systematically examine and evaluate program results. Meta-ethnography and qualitative computer software will be used to provide insight into how the farmers are participating, rate adoption of alternative technologies/messages, participation percentages; define and determine key projects; and project effectiveness.

b. Impact/Accomplishment Statement
No impacts at this time. This is a new SMP.

c. Source of Federal Funds: Evans-Allen
d. Scope: State specific

KEY THEME: Jobs/Employment

a. Brief Description of Activity: FRE-03488

tudy examined the family impacts of the Florida net ban that outlawed the use of commercial entanglement nets in state waters. Data were previously collected in personal interviews with 44 commercial gill net fishing families who had participated in research conducted several years before the net ban. This year we focused on changes in various aspects of the household economy, including fishing operations, nonfishing employment, and household labor. Most men had continued to fish and had developed means of staying in the industry, such as shifting to other species. Regarding their fishing operations, men had significantly reduced their time operating the boat and supervising crew, and as a group they were spending about half has much time on the water. However, they had significantly increased their time in record keeping, sales, and marketing, suggesting that they were spending more time locating new markets for their products. As a group, these men significantly increased their time in nonfishing employment, adding other jobs to their economic portfolio. The largest concentration was in construction and repairs, but men worked in a variety of jobs. Women, on the other hand, had not significantly changed their involvement in fishing operations or in nonfishing employment. Already working full time, they did not significantly increase or decrease their hours after the net ban. Most women were employed in services, suggesting that there were few other employment opportunities that women were qualified for in their communities, or that they found jobs that would allow them to remain flexible so they could continue to support husband's fishing as needed. Furthermore, both men and women claimed that women were primarily responsible for doing and administering most household tasks and perceived little change in men's involvement after the net ban. However, men were more likely than women to say that some activities were shared or that they were responsible. These findings show that commercial fishing families had altered their labor in very few ways by the time we interviewed them two years after the net ban. Where changes were made, men were primarily the ones to make them because their work was most directly impacted by the net ban. These findings support the rigidity perspective on the household division of labor. This theory proposes that even in times of economic stress, the division of labor is little altered because it is structured around men's production goals and needs. The highly masculine nature of commercial seafood production and the carefully constructed division between sea- and land-based activities does not lend itself to women assuming responsibility for work at sea while men pursue nonfishing employment as has been the case with farming families during the farm crisis. Rather, fishing wives serve as a reserve army of labor by obtaining nonfishing employment to support their husband's involvement in seafood production, and continue to observe a traditional division of labor at home.

b. Impact/Accomplishment Statement

No impact at this time

c. Source of Federal Funds: Hatch
d. Scope: State Specific

KEY THEME:

a. Brief Description of Activity: FRE-03599

Research into farmland valuation this year has focused on estimation of von Thunen and urbanization effects. This research was completed in cooperation with Richard Nehring at the USDA/ERS. In addition, we submitted an NRI conference proposal for a conference on emerging issues affecting the valuation of farmland.

b. Impact/Accomplishment Statement

No impact statement at this time. New project

c. Source of Federal Funds: Hatch
d. Scope: State Specific

Critical Need Program 33. Family and Consumer Sciences (Quality of Life)

KEY THEME: Consumer Management; Family Resource Management

a. Brief Description of Activity: SMP FL512

High School Financial Planning Program. Even though we now have a period of high employment and economic prosperity, Floridians (as with the nation) face major financial risks. Consumer debt is an all time high. Savings are at a negative .05%. Many families are one paycheck from severe financial problems. Bankruptcy is at an all-time high, yet most families have more than one income-earning member. Alternative credit sources flourish, such as title loans, payday loans, and rent-to-own. Credit cards are issued to marginal and at-risk credit applicants. Young people are developing attitudes and skills relating to money management that will last a lifetime. U.S. teens have a combined income of $103 billion (1998) and spend an average of $3,500 each year. 10% use their parents' credit cards and 25% of 18-19-year-olds have their own cards. Most teens lack the money management skills. Few realize the value of a credit record and the impact it will have on their adult life.

This is a high school enrichment program developed and funded by the National Endowment for Financial Education (NEFE) and conducted by the Extension Service nationwide. This program has been in use in Florida for the past 6 years. Enrollment per year averages 7,000 to 8,000 students. Each fall every high school principal in Florida is contacted by an extension state specialist and a follow-up contact made by county extension faculty. Extension agents and teachers provide the instruction. Target audience: high school students. ***Mary Harrison***

b. Impact/Accomplishment Statement

Pre- and post-tests document increased knowledge gain (average increase of 40 points on a scale of 100). A national survey by NEFE in 1999 found students who participated in the program saved more and have less indebtedness as adults. They were more financially secure. The number of schools participating in Florida in 2000 increased from 123 to 157.

c. Source of Federal Funds: Smith-Lever

d. Scope: Extension Multi-State

CO

KEY THEME: Family Resource Management; Consumer Management

a. Brief Description of Activity: SMP FL512

In 1996 the Attorney General of Florida (Butterworth) heard about an Extension money management program for Florida youth. He was impressed with the impact of the program and called the university to locate its source. He offered a small grant. The program, Money Wise, was developed by Extension state specialists in 1997 and reviewed by the Attorney General's Department. It is a school enrichment program, grade specific from Kindergarten-grade 1 through high school. It consists of 5 newsprint publications (student workbooks) and two teacher guides. The grant funds paid for first printing of the publications. Extension has continued to print the materials each year since. The program is distributed through county offices to schools that request the materials to be taught in their classes. ***Mary Harrison***

b. Impact/Accomplishment Statement

The Money Wise series was forwarded to Jump Start in 1998, an educational organization that reviews financial management and consumer education material and evaluates them for inclusion on a recommended list for schools nationwide. Money Wise was reviewed and is listed on Jump Start. Schools from 44 states have requested permission to use the Money Wise series. When the publication was first introduced, even before it was promoted, requests for 146,000 student workbooks were received within 3 weeks. Use has continued to be very high, ranging from 135,000 to 150,000 students per year. Up to 60 counties have participated in this program each year. In 2000, schools in 57 counties parties participate reaches 136,217 students.

c. Source of Federal Funds: Smith-Lever
d. Scope: Extension Multi-State
Washington, D.C.

KEY THEME: Family Resource Management;

a. Brief Description of Activity: SMP FL512

Florida consumers are over extended in credit use. They have grown up with the "instant gratification" concept. Most, do not know how to develop and follow a spending leaks and to distinguish the differences between wants and needs. As one caller expressed his plight, he said, "I don't know where my money goes. I should be living comfortably on what I make but I'm one step away from bankruptcy. I've been married 30 years and I've never made a budget. All I have is debt." A 7 lesson series was developed to teach money management. It was made available for county faculty, to use with their county residents. The lessons, written by an Extension specialist, were put on a disk so the lessons could be made available over the Internet using a county access code or sent by e-mail to those who register. When participants completed one lesson, the following was sent. On- sight workshops were also offered. The program series could also be delivered on-sight as workshops, or “lunch and learn”. The series may be offered as a regular mail-out course for those preferring that delivery method. A teacher guide and evaluation component was developed. All 35 agents attending in-service training in 1997 received training and the complete program packet of materials. Counties continue to use this program and it is a part of a national program generated by cooperating states.

b. Impact/Accomplishment Statement

During 1998 several counties set up the program and in 1999 three counties set up special web sites to teach county employees. Eighteen other counties used the material as lunch and learn lessons and 5 additional for special programs. Counties are continuing to use the program this year. All participants reported increased savings and reduced indebtedness. Three fourths of participants report developing their first budget and following it for three months. In 2000, 12 counties reported using the propose as a learn by mail program. A total of 95% reported reducing their debts by more than 15%. ***Mary Harrison***

c. Source of Federal Funds: Smith-Lever

d. Scope: State specific

KEY THEME: Multicultural and Diversity Issues; Family Resource Management

a. Brief Description of Activity: SMP FL512

This is a packaged program, easy to use. It contains 8 leaflets in both, English and Spanish. The leaflets are line- by-line translation so that businesses can use these materials when teaching English to Hispanics employees. A Florida Extension state specialist wrote and directed the development of a videotape to use with the program. The tape is available in both Spanish and English. The program is used with a wide variety of audiences. The program also contains a cassette tape in both English and Spanish. Tapes are played to provide information as workers commute to and from work. The target audience is immigrants, especially Hispanics and others without a clear understanding of credit. This program has been used several years by south Florida counties with migrant worker groups in busses transporting hourly workers. It also is used for group meetings. ***Mary Harrison***

b. Impact/Accomplishment Statement

Each year 12 to 15 counties use the program. They report groups of 12-30 people per attendance. Attendants report increased knowledge and a follow up evaluation in 1997 found 68% of those without credit were able to obtain an unsecured card following their classes. This program was developed jointly with Dr. Nadya Torres who did the translating and worked with other Extension state specialists cooperatively on the content. The program was chosen for a national award in 1995 and parts of it were aired on a national teleconference in 1996. Three states copied and adapted the bylines on the tape for use in their states in 1998. The program is used by counties teaching basics of credit and in some counties along with affordable housing programs. In 2000, it was used by 6 counties.

c. Source of Federal Funds: Smith-Lever
d. Scope: Extension Multi-State
Presently there are 32 states participating in the program.

KEY THEME: Aging; Consumer Management; Family Resource Management

a. Brief Description of Activity: SMP FL512

Many Floridians (especially elderly women) live on low fixed incomes. They have great difficulty "making ends meet financially" and maintaining an acceptable life style. They do not know how to "stretch the dollars" through efficient management and the wise use of available resources. A series of leaflets are used for discussion and handouts at workshops, clubs and group meetings. A videotape that demonstrates one elderly women's shopping skills and money saving practices is used with group meetings. The tape, with discussion breaks was written and developed using a Manatee County resident who lives successfully on a very limited amount of money. The discussion breaks in the video generated strong discussions on a personal level. The program is now being used as port of training programs in counties facing job loss.

b. Impact/Accomplishment Statement

During the past three years this program has been used in 40 counties. During 2000 it was used in 12 counties to conduct special programs for low-income elderly. The program has been copied in three states and one state used parts of the video in its money 2000 production.

c. Source of Federal Funds: Smith-Lever
d. Scope: Extension Multi-State
GA

KEY THEME: Parenting; Conflict Management; Children, Youth, and Families at Risk

a. Brief Description of Activity: SMP FL515

Parenting workshops were offered to parents of preschoolers, teen parents, parents of middle school students, elementary school parents, parents of teens, childcare employees, and grandparents parenting grandchildren. Subject matter covered included developmental stages, parenting styles, nurturing parenting skills, effective communication, positive discipline, conflict resolution, and stress management. Extension agents networked with other agencies serving at-risk youth and families in order to provide parent education classes for existing groups of parents that would have otherwise been difficult to reach. Cooperating with Head Start, Family Literacy, WAGES, DRILLS, Elder Care Services, and multiple programs with DISC Village enabled agents to be more readily accepted by minority audiences and streamlined marketing efforts. Positive Parenting classes were taught for parents of students referred to special alternative education programs because of incidents of abuse, neglect, delinquency, or other at-risk factors and parents in residential drug rehabilitation programs.

b. Impact/Accomplishment Statement

The post-pre questionnaires that were completed after each session indicated 83% of the parents gained knowledge about parenting their children more positively. The following are some of the replies to the question *What will you do differently?* "Following through with limits, and letting my child help set limits." "I will encourage them more." "Set more reasonable limits." "Be consistent." "I will set limits and consequences in a positive way, and not say no constantly." "Use 'I' messages." "...give choices." "Not yell as much." "Stop calling her names and start spending more time with her." "Focus on the strengths of the child instead of the negatives." "Not try so hard to control." "I will try not to order her around." "Don't be a dictator." "I will try harder to speak respectfully, use 'I' messages, and explain how I feel." The responses indicate that many of the parents were able to identify at least one aspect of their parenting behavior that has had an adverse effect on the behavior of their children and what changes they can make to improve the parent-child relationship. ***Betty Miller***

c. Source of Federal Funds: Smith-Lever

d. Scope: State specific

KEY THEME: Energy Conservation; Consumer Management; Hazardous Materials

a. Brief Description of Activity: SMP FL510

In the 2000 program year, a total of 3515 persons were reached by personal teaching contact in 17 major programs in this area. Four were in the area of household equipment and energy conservation. Nine were in home revitalization and furnishings or universal design education, and four were in environmental education.

The nine programs in home revitalization and furnishings education focused on analyzing cost vs. value in home revitalization projects, on concepts of basic home furnishings education such as how to maximize the decorating dollar through do-it-yourself projects, through good planning and selection of durable furnishings, more effective space use management, the use of color and design principles, window treatments, lighting products and techniques, and how to recycle and reuse furnishings to reduce waste.

The four programs in household equipment and energy conservation focused on criteria for making household equipment selections, how to correctly use and maintain equipment in the home, especially those used in food preparation, energy conservation, cookware selection and compatibility with equipment, techniques of using processing equipment and time and energy management techniques.

The four programs in environmental areas consisted of classes on building green, indoor air quality, household hazardous waste management, and control of moisture and mildew problems in the home.

Educational opportunities ranged from lectures, demonstrations, an agent-developed home study course as well as study courses put together with IFAS materials, teaching-learning activities, home assignments, slide presentations, educational displays, agent prepared handout materials, and IFAS publications. Duska Dorschel

b. Impact/Accomplishment Statement

A total of 3515 people were reached by personal contact or by study courses. Evaluations were conducted with 838 people. Evaluations involved knowledge and skill gained as well as anticipated change. The home furnishings study course evaluation is of knowledge and skill gain as well as financial savings.

c. Source of Federal Funds: Smith-Lever
d. Scope: State specific

KEY THEME: Family Resource Management; Consumer Management; Promoting Housing Programs

a. Brief Description of Activity: SMP FL267 (1890)

The specialist from Florida A&M University, county program assistants, representatives from community groups developed a family resource management program that consisted of seminars designed to reach underserved clientele with information on financial goal setting, development of corresponding spending plans, credit management and understanding the difference between wants and needs and how wants and needs are influenced by advertisements.

b. Impact/Accomplishment Statement

Sixteen seminars were held for 100 first-time homeowners. As a result of these 100 percent of these families were able to determine their income, keep financial records for a period of time, develop and savings/spending plan, read a credit report, and develop a debt reduction plan. As a result of these families participating in this program, 20 were able to receive funds from the SHIP program for necessary repairs on their homes. *Diana Edlow*

c. Source of Federal Funds: Smith-Lever
d. Scope: State Specific

KEY THEME: Conflict Management; Children, Youth and Families at Risk; Parenting

a. Brief Description of Activity: FYC-03782

Work has been completed on the CDC-funded Violence Prevention Project titled The Jacksonville Child Care Families Initiative. Data collection was completed during the past year, data has been analyzed, and a final report has been submitted for review. New projects have been initiated that are designed to examine the effectiveness of a school-based/school-linked model of mental health service delivery for at-risk children in a rural school district. Specifically, these projects are examining mental health utilization patterns in these rural communities as they relate to the provision of school-linked mental health services to children in grades K-12. A related project examines the effectiveness of school-linked mental health interventions in terms of reducing aggressive, violent, and delinquent behavior. A third project in the series examines the perception of high school students regarding the provision of mental health services in a school-based model of care. Specifically, students have been surveyed regarding the perception of stigma for such services, their fears regarding the hypothetical provision of such services, and their perceptions for such services.

Institutional Review Board approval has been sought and accepted for each of the before mentioned projects and data collection is well under way in each project. In terms of the study examining students' perceptions of school-based mental health care, data collection has been completed and data entry and analysis is projected for the coming year.

b. Impact/Accomplishment Statement

Results of the Violence Prevention Project titled The Jacksonville Child Care Families Initiative revealed that the project was quite successful in improving childcare workers' knowledge of developmental expectancies as compared to the control groups. Additionally, the study revealed that program activities significantly increased parents' participation in childcare center events thus increasing their senses of bonding with the activities of the children in these centers. However, the data suggest that the project produced more mixed results regarding the reduction of aggressive, anti-social behavior in pre-schoolers. While trends in the data suggested children's aggressive behavior increase over the length of the project (regardless of whether they were in the control group or treatment groups, there is moderate evidence to support the argument that active treatment served to limit this expansion of aggressive and ant-social behavior as compared to the increases seen in the control group. Additionally, the home visiting treatment component also garnered limited support to use as a protective strategy against reductions in children's self-esteem and reciprocal increases in mood/emotional problems at this age. All in all, subject attrition and challenges in the consistent delivery of the treatment strategies have limited the impacts of the project. However, the results of this study provide preliminary evidence to support earlier childhood interventions for reducing aggressive and anti-social behavior and increasing parent involvement in children's self-esteem related to academic pursuits.

Work on this project has also lead to several professional publications. This faculty member has authored chapters on violence among children and African-American parenting strategies in the book Parenthood in America. Additionally, he has written a review article on the prevention of violence in adolescents for the web-based journal titled Lifescape. He has published one peer-reviewed article on academic/community collaboration for preventing juvenile violence in the American Journal of Preventive Medicine. He has another peer-reviewed article in press that relates to school-based approaches to preventing violence in the journal Professional Psychology: Research and Practice. His work on this project has also lead to the publication of papers presented at two national meetings related to treatment dropout characteristics of the study sample and parental locus of control in at-risk families. His work has also served as background for a paper Family Impact of the Groundfish Crisis presented at Elise B. Newell Seminar Series at the University of Florida. These proceedings are currently in press. Finally, this faculty member's work on violence has lead to an extension publication titled Violence Among Children: Recent Trends, which summarizes up-to-date information on prevention strategies for violence and delinquencies and practical knowledge for parents and caregivers to consider when preventing aggressive and violent behavior in their children. This faculty member's work in violence has also lead to four presentations at national meetings on issues varying from violence prevention strategies to help-seeking characteristics of families referred to school-based mental health service programs. Finally, this faculty member's work on the prevention of mental disorders and violence in rural areas through school-based prevention programs was used as a basis for a chapter titled, "Rural Social Service Systems as Behavioral Health Delivery Systems" in Behavioral Healthcare in Rural and Frontier Areas: An Interdisciplinary Handbook.

c. Source of Federal Funds: Hatch
d. Scope: Integrated Research

Critical Need Program 34. Youth and Human Development

KEY THEME: Youth Development/4-H; Character/Ethics Education;

a. Brief Description of Activity: SMP FL712/212

4-H vegetable gardening. Florida youth benefit from gardening and related activities Most are reached through 4-H, as the primary youth club of extension. However, some Extension related efforts are outside 4-H, such as FFA, SOAR, and specialty groups like Duval Urban Gardening. Reaching youth benefits not only the youth of our state but through their influence, the adults of the community.

b. Impact/Accomplishment Statement

Impacts on Florida's youth were huge in 2000; however, most are subjective impacts like character building and increased self-imagery. Areas like Liberty City have experienced reduced crime attributed to youth involvement in community gardens, according to Miami Police. Others in the neighborhoods, just by seeing something positive going on near once neglected street lots, tend to back away from those areas to push drugs and "hang out". The actual value of produce grown by youth is difficult to measure, for the formulas applied to adult gardens do not translate to youth gardens due to the success factor. For example, adult gardens have been shown to yield on average about $1.00 per Sq. Ft. Youth gardeners are inexperienced so their yield quiet often is about half that. The main benefits are not reached until these youth grow up and become serious breadwinners and gardeners. Other life skills, such as reading, writing, reporting, mathematics, logic, cooperation, and evaluation (judgment) are enhanced through gardening and related activities. Finally, youth who grow their own produce gain a real sense of appreciation for the commercial production of food crops and the supply system. They become appreciative of plant science research such as genetic engineering, which leads to their financial support when they become legislators and other community leaders. ***Jim Stephens***

c. Source of Federal Funds: Smith-Lever
d. Scope: State specific

KEY THEME: Youth Development/4-H; Agricultural Financial Management; Conflict Management; Other- Life skills

a. Brief Description of Activity: SMP FL711/211

The science of living things, especially animals, can be an important component in the lives of young people. With living things, youth can acquire scientific and technical competencies as well as life skills that enable them to be and become productive citizens. A myriad of activities and events and training programs are available at the club, county, district, state, regional, and national levels. There are literally hundreds of these in the animal sciences area alone, and when combined with related programs and areas opportunities are countless. One example is Strategies for Resolving Conflict. One Extension agent shared conflict resolution concepts and strategies with 85 Block & Bridle officers at their National Block & Bridle Convention.

b. Impact/Accomplishment Statement

Based on input from other state specialists, SMP FL711 membership was totally revised and new members added to reflect all areas of the state, various programming areas in animal sciences, Ag teacher representation, industry representation and an array of state specialists. ***Ed Johnson***

c. Source of Federal Funds: Smith-Lever
d. Scope: State specific

KEY THEME: Youth Development/4-H; Leadership Training and Development

a. Brief Description of Activity: SMP FL711/211

Southeastern Dairy Youth Retreat. This year Florida Extension faculty were responsible for coordinating the State Delegation to the S.E.D.Y. Retreat. This is an excellent 4-day program for younger members to learn about National Dairy Issues. The Agent elected to strongly encourage participation in the program after the Dairy Institute was closed due to the closing of camp facilities. This is a regional effort by VA, NC, SC, GA and FL 4-H Dairy Extension staff.

b. Impact/Accomplishment Statement

There were 12 students from Florida that attended the 2000 retreat in South Carolina.

c. Source of Federal Funds: Smith-Lever
d. Scope: Multi-State Extension
Al, GA, KY, NC, SC, TN, VA

KEY THEME: Youth Development/4-H; Leadership Training and Development; Character/Ethics Education; Communication Skills

a. Brief Description of Activity: SMP FL714/214

County 4-H Camps" In collaboration with the 4-H County Faculty, approximately 24 weeks of camping programs are completed each year. This represents participation by 60 of the 67 County Extension programs in Florida. These camps host over 3,000 Florida youth in five-day (typical) residential camping programs that provide training in environmental education, leadership development skills, and other outdoor/ recreational skills. Typically, the county 4-H programs work cooperatively with the camp staff to select activities and implement the educational program for the youth participants.
2. "Environmental Ed-Venture Camps" A five-day session of open enrollment (i.e., open to youth in all counties) camp that provides programming in environmental education and natural resources. Three sessions were held at Camp Ocala and Cloverleaf during the summer of 2000. 4-H camp staff are responsible for the majority of programming and activities during these sessions. Additional resource people are utilized for specific educational programs.
3. "Marine Institutes" These one-week sessions are cooperatively planned and implemented with Sea Grant agents. These open enrollment programs are offered at various locations in the State. Past locations include Marineland, the Florida Keys, and Camp Timpoochee. The intent is to expose participants to the different marine ecosystems present in Florida. During the summer of 2000 two sessions were held at the Timpochee 4-H Center with a total enrollment of over 200 youth. To date twelve weeks of programming have been conducted.

b. Impact/Accomplishment Statement

Over 3,500 4-H youth participants are served each year the summer county camping programs. An additional 2,500 youth are severed each year in school-based programs at the four 4-H residential facilities. Approximately 500 adult and volunteer leaders also attend in-service programs, workshop and other training events at these facilities. ***Jerry Culen not smith***

c. Source of Federal Funds: Smith-Lever
d. Scope: State specific

KEY THEME: Youth Development/4-H; Conflict Management; Other-Health and Safety; Nutrition

a. Brief Description of Activity: SMP FL715/215

Individual and Family Resources/Health and Safety Programs For Youth focus on educational programs and resources supporting the personal growth and development of youth in areas of nutrition and fitness, health and safety, school age child care and school readiness, consumer decision making and resource management, clothing and personal appearance, and youth development issues relating to self-esteem, ability to cope and manage peer pressure, stress and conflict. ***Jerry Culen not smith***

b. Impact/Accomplishment Statement

c. Source of Federal Funds: Smith-Lever
d. Scope: State specific

KEY THEME: Workforce preparation- youth

a. Brief Description of Activity: SMP FL201

The family and consumer science agent, program assistant and county extension agent conducted fourteen (14) ninety-minute hands-on classroom sessions to twelve (12) exceptional education students with learning disabilities. The classroom sessions stressed communication and social skills, the art of listening, conflict resolution, personal grooming, stress management, and how to dress for an interview.

b. Impact/Accomplishment Statement

Six (6) of the students were able to get part-time jobs at Jefferson High School despite their learning disabilities.

c. Source of Federal Funds: none
d. Scope: State Specific

Florida's Plan for Stakeholder Input Requirements for Recipients of Agricultural Research, Education, and Extension Formula Funds

Stakeholders Guidelines For The University of Florida and Florida A&M University

Actions taken to encourage stakeholder input: The University of Florida and Florida A&M University have established a process for "receiving input from persons who conduct or use agriculture research, extension, or education." These stakeholder processes include, but are not limited to, the following:

- Florida FIRST (Focusing IFAS Resources on Solutions for Tomorrow) Conference and follow-up scheduled for Summer 2001.
- Florida Citizens' Viewpoint 1999 Survey
- Florida County Extension Advisory Committees
- Florida Ag Council, Inc.
- Departmental Advisory Committee and the Research and Education Center Advisory Committee
- Commodity Advisory Committees

Brief description and process used to identify individuals and collect input:

Florida FIRST: is a strategic, long range planning process for UF/IFAS to evaluate, review and determine future direction to better carry out its mission in support of Florida food, agricultural, natural and human resources. This initial process was accomplished through the invitation and input of over 263 Florida individuals, organizations and agencies at the Florida FIRST conference and a series of 18 area meetings throughout the state that were attended by 350 additional participants. Scientists and experts at UF/IFAS researched trends and major determinants of change in Florida's agricultural, human and natural resource subsectors. These findings were compiled into what are termed Base Papers for each subsector. Three weeks before the Florida FIRST Conference (held May 20-21, 1999 in Safety Harbor) participants received a copy of the Base Paper related to their subsector or area of expertise. (see Appendix G-- for list of names of attendees and subsectors). They also received an executive summary of all Base Papers. Participants were asked to review the papers prior to the conference and to offer feedback as well as additional needs and concerns. Following the conference the information gained was:

- used as a resource for determining UF/IFAS research and extension imperatives for the future including immediate, short-term, and long term critical need areas,
- used to complete an overall strategic plan, and
- used to help identify the future direction of UF/IFAS programs

Based on stakeholder input from this conference and area meetings, eight imperatives and four special initiatives were identified and announced by IFAS Vice-President, Dr. Michael Martin. These imperatives include:

1. Water Management, Quality, and Allocations
2. Plant, Animal and Human Protection from Pests
3. Managing Urban, Rural, and Human Impacts on Natural and Coastal Ecosystems and resources
4. Global Competitiveness of Current and Emerging Agricultural and Natural Resource Products
5. Food Technologies: Safety, Nutrition, and Product Development
6. Human Resource Development: Families, Children, and Communities
7. Producing Society Ready College Graduates in the Agricultural and Life Sciences, and Natural and Renewable Resources
8. Public Policy Issues

Special initiatives included:

1. Economic Impact Analysis
2. Assessment of State Work Situation and Outlook
3. Institutional Marketing Initiative
4. Internal Organizational Shifts

A follow-up of the Florida FIRST is scheduled for the summer of 2001. Stakeholders will have the opportunity to review the direction Florida IFAS is taking and make additional recommendations.
For additional information and to view REAL Video of Dr. Martin's speeches on Florida FIRST go to http://floridafirst.ufl.edu.

Florida Citizen's Viewpoint 1999 Survey: was a random survey of all Florida Citizens and not targeted to Extension Clientele. This Survey was developed for use as a state level telephone survey to assess citizens' perceptions of the importance of selected issues and educational needs as related to their community. The information that was gathered was generalized to the state population and to a more limited extent to the Extension districts. The issues and educational needs covered a fairly broad spectrum; however, a conscious attempt was made to keep the lists as brief and focused as possible. The total sample size was 466, and the precision level is plus or minus 5%. (Appendix F -- Preliminary Results of the Florida Citizens' Viewpoint 1999 Survey)

- **The Florida County Extension Advisory Committees:** provides direction for Extension education programs for both the University of Florida and Florida A &M University on a continual basis. Active advisory committees exist in all of Florida's 67 counties, usually at both the overall and program area levels. The committees serve as a vehicle for local citizens to participate in, influence and provide support to the planning, implementation and evaluation of Extension education programs, and the accountability for those programs. The composition of the committees consists primarily of positional and reputational leaders representing the areas of agriculture, agribusiness, natural resources, family and consumer sciences, 4-H youth, and community development. Special attention is given to the representatives of the target populations, including race and socio-economic level. Extension advisory committees are strongly believed to result in increased accuracy in identification of clientele-perceived needs, more effective decisions on program priorities and methods, and more rapid and accurate communication of program efforts and clientele feedback on both program impact and need for education and research. This committee format serves as a vehicle for local residents to participate in, influence and provide support to the planning and implementation of the Extension Education Programs.
- **Departmental Advisory Committee and the Research and Education Center Advisory Committee:** are developed in the same manner and have the same function as the county Extension Advisory committees.

- **Florida Ag Council, Inc. – is a self-nominating body comprised of over 100 organizations. A 12-member board directs it. Its purpose is to increase the accuracy in the identification of clientele-perceived needs and to assist in the decision making process relating to research, teaching and Extension priorities.**

Commodity Advisory Committees: are varies advisory groups with special emphasis on important program areas such as Florida A&M Universities program FL 261 Small Animal and Small-scale Farm Profitability and Sustainability in Florida- 1890. Of primary importance in identifying critical need areas is their Goat Program Advisory Council. Although commodity oriented, this type of advisory committee is still developed and functions using the same standards as the county advisory committees.

The 34 Florida Critical Need Areas identified under the five National Goals in the AREERA Plan of Work and Report of Accomplishment have been developed based on the state critical need areas identified by sources listed above.

Merit Review and Scientific Peer Review for Extension and Research Project Proposals
Performance Standards

And
Operational Guidelines
For
The University Of Florida and Florida A&M University

Intention: This document sets out performance standards and operational guidelines for the Florida Land Grant Universities. The intention of the document is to facilitate both Universities and all integrated, multi-institutional, and multi-state activities in complying with the provisions of the federal Agricultural Research, Extension, and Education Reform Act of 1998. Adoption of these standards and guidelines will be primarily accomplished by adoption-by-reference in the Florida Plan of Work.

Definitions: Scientific Peer Review of an individual research is defined as the evaluation of the conceptual and technical soundness of the intended activity by individuals qualified by their status in the same discipline, or closely related field to judge the worthiness of the proposal. Peer reviewers will be asked to access Extension programs through a Merit Review process whereby the quality and relevance to program goals can be analyzed for its likeliness to achieve the intended objectives and the anticipated outcomes.

Scope: The topics covered by this document pertain to research and extension proposals, projects and programs that are to be sanctioned and funded as part of the federal-state partnership in agriculture research and extension. These standards and guidelines do not apply to proposed research and extension that are subject to peer review by competitive grant agencies, peer review of extension and research publications. Thus, all research and extension projects sponsored by Florida Land Grant Colleges will have been formally merit and peer reviewed, before the expenditure of any federal funds.

Process: Prior to the initiation of any research or extension project or program that will be wholly, or in part, funded by federal formula funding, the designated review coordinator (or, in the case of some multi-institutional, regional or multi-state projects, the administrative advisor) will call for a peer review of the proposed research or extension project. A minimum of three peer scientists (i.e., individuals qualified by their status in the same discipline, or a closely related field of science) will be selected to read and provide written comments on the proposed project.

Terms of Reference: The terms of reference for the reviewers will focus their attention on questions of the quality of the proposed science, technical feasibility of the research or extension program, the validity of the approach, and the likelihood for completing the stated objectives. Other equally important comments will include relevance to the state's priorities, the degree of integration between extension and research (as appropriate),

responsiveness to stakeholders identified critical need areas, and the accuracy of any claims for multi-disciplinary, multi-institutional and multi-state collaboration.

Responsibility: All Peer and Merit review activities for proposed extension programs will be the responsibility of the individual extension program leaders. All Peer and Merit review activities for proposed research are the responsibility of the Program Dean for Research. The above designated coordinators or an administrative advisor and/or committee will be responsible for a proposed multi-state project. However, this responsibility for either research or extension may be delegated to others if deemed suitable.

Appointment of Reviewers: Peer and Merit reviewers may be selected from the same campus or from another institution or organization at the discretion of the program leader, chairman or by the delegated authority. Consideration will be given to the expenses associated with the reviewing individual proposals in the selection of peer reviewers. Additional consideration will be given to appointing reviewers who are without any apparent conflicts of interest and who are without personal or professional bias. Consideration may also be given in selecting reviewers that can protect confidential business information. The anonymity of the reviewers will not be preserved except in very special circumstances.

Documentation: Reviewers will be asked to present their finding in writing, and records of the reviewers' comments will be preserved for the life of the project, or for a period of three years in the event that a project is not initiated. Document storage will, for the most part, be electronic.

Research and Extension Projects, Events and Activities not Covered: Projects funded by competitively awarded grants, federal contract research projects, and federal cooperative agreements are not subject to these provisions, as they would be peer reviewed under other authorities.

Performance Standards: Peer or Merit review of proposed projects, events and activities is expected to provide the following performance outcomes:

RESEARCH

- increase the quality of science funded by the federal-state partnership
- better assure relevance to institutional priorities and mission
- provide more responsiveness to stakeholder needs including the underserved and under-represented populations, and
- identify more opportunities to partner with other states, regions, federal research agencies, and Extension counterparts.

EXTENSION

- Provide more responsiveness to stakeholder (including the underserved and under-represented) identified critical need issues
- Better assure relevance to institutional priorities and mission
- Increase the quality of programs, events and activities funded by the federal-state partnership, and
- Identify more opportunities to partner with other institutions, regions, states, and research counterparts

Performance outcomes from peer reviews will be monitored by the responsible extension program leader, chair or advisor through the annual process of reporting results and impacts, which is in turn part of the Plan of Work reporting requirements. Adjustments to this merit and scientific peer review process will be made as needed.

Updated March 1, 2001

Extension Merit Review of State Major Programs SMP Number: FL SMP Title: Design Team Leader(s): Design Team Members and Specialty Area/Experience: Reviewer(s): **I. Rationale**

Does the Program: Yes No N/A Clearly articulate the importance (critical 1. need) of the issue to agriculture, natural resources, and urban or rural life in the state or region. Provide the source(s) of issue identification. 2. Relate to current priorities as identified by 3. Florida stakeholders (e.g., Florida FIRST, advisory councils/committees, surveys, county faculty FAS reports).

State the current situation adequately. 4. Outline the preferred situation and the 5. potential impacts of this program. Explain the benefits of a multi-state, multi- 6. institution approach (if appropriate). Demonstrate the need for integration with 7. research (and instruction if appropriate). Explain how it relates to past work in this 8. (these) critical needs areas stated in the preferred situation. Complement existing programs (state or 9. multi-state) (if appropriate)

II. Objectives

Does the Program: Yes No N/A State clear, concise, measurable and focused clientele objectives 1) Relate objectives to expressed preferred 2) situation

III. Audience

Does the Program: Yes No N/A Clearly identify the population segment(s) that needs to be targeted. 1) Include underserved and underrepresented individuals, groups. 2)

IV. Educational Activities and Impacts

Does the Program: Yes No N/A Explain educational programs and activities for each objective. 1) 2) Describe the methods adequately to reasonably expect attainment of the objectives. Describe potential impacts for each 3) objective. Clearly state the responsibilities and work assignments of each design team member. 4) State how the results of the design team members' activities will be reported in FAS to facilitate producing reports. 5) Include in-service training activities. 6) Include the development of educational products that facilitate delivery of programs by county faculty. 7)

V. Evaluation

Does the Program: Yes No N/A 1) Include planned evaluations of the program to determine if each objective is achieved.

2) Clearly state the tools and approaches to be used (e.g., pre- and post-tests, survey 10% of audience, etc.) and the expected results (e.g., increased knowledge, modified behavior, impact, etc.). Include the best accountability indicators 3) (e.g., percent of people promising to use knowledge, percent of people modifying behavior, etc.). **VI. Comments and Recommendations** Date Program Leaders Date Design Team Leaders

5.Evaluation of the Success of Florida Multi-State and Integrated Programs

IFAS extension and research sees the need to work together for the benefit of the people of our state. Research plays an important role in scientifically finding solutions to problems. The IFAS scientific community also is responsible for anticipating future needs and discovering ways to be prepared for whatever may be looming on the horizon for agriculture, natural resources, and the human element. It is the integration of research and extension, the combining of the answers with the dissemination of this knowledge to the public, that makes IFAS such an essential organization. IFAS at the University of Florida and Florida A&M University understand this and strive to make sure that all IFAS based research results are made freely and easily available to any who might need them. It is the responsiblility of Extension faculty to develop and implement ways to reach the general public with the information requested.

In Florida there are over 700 research projects ongoing. Many of these projects are federally funded with Hatch dollars. Many extension faculty working with UF/IFAS research faculty or in multi-state programs receive Smith-Lever dollars. Florida IFAS feels that this is money well spent. In 2000, extension had over 12% of Smith-Lever funds being used in documented multi-state activities. Research had $426,175 earmarked for integrated actives from the total $3,294,000 of formula funds budgeted (See X Statistical Tables for additional information).

Florida extension is in a transition period having entered a new five year planning cycle in 1999. Results from state-wide stakeholder meetings, surveys, and other evaluation tools have brought about recent changes in state major programs and is presently seeing the implementation of some changes in the accounting and auditability structure of the extension budget. These changes have temporarily reduced the extension documented integration to 6.6% of the total federal funds budget (waiver included). Changes this year in the accounting system are projected to show more clearly how federal dollars are used for multi-state and integrated activities. Documented integrated extension programs are projected to be over 14% for the next fiscal year. Florida will also continue to encourage integrated and multi-state programs. Faculty are looking at opportunities through their professional associations and extension faculty in counties bordering other states are looking for ways to work together for the benefit of all. Florida also has their multi-state and integrated activities listed on the web at http://pdec.ifas.ufl.edu This website is well advertised within the state and has been shared with many other land-grant colleges across the country. Several new multi-state contacts have occurred through the use of this website, and state extension faculty are also more readily able to see who is doing specific types of research within the state.

Florida IFAS is also just completing a web based faculty accountability system which has been designed to more completely document multistate and integrated activities. The Program Development and Evaluation Center will be working with state faculty this year to improve their accounting practices. Impact statements and other fields on the faculty accounting system will be clearly defined and standardized over the next year. This will improve the content of the 2001 report of accomplishment and the reporting of next year's multistate and integrated activities.

2/28/01
U.S. Department of Agriculture
Cooperative State Research, Education and Extension Service
Multi-State Extension Activities and Integrated Activities

Update
March 1, 2001
(final)

Number: 1

Title: Tri-State Beef Show
Extension Personnel: Nancy G. Alexander
Department: Washington County
Duration of Program: Long Range
SMPs: FL711, FL712, FL714

Multi-State Partners: Alabama, Georgia and the Dothan Area Chamber Of Commerce.

Description of Activity: Help coordinate show information to the state of Florida for the Tri-State Beef Show that is held each March in Dothan, Alabama. Florida counties eligible to exhibit include: Holmes, Jackson, & Washington. This show is coordinated in conjunction with Extension faculty from the state of Alabama, numerous volunteers from each of the three states (Alabama, Florida & Georgia) and the Dothan Area Chamber Of Commerce.

Percent Extension Time: 1%

Impacts:

There has been an increase in interest and involvement by Florida youth because of this show.

Number: 3
Title: National 4-H Shooting Sports Program Committee: Western Regional 4-H Shooting Sports Leader Training
Extension Personnel: Dale L. Bennett
Department: Wakulla County
Duration of Program: Intermediate
SMPs: FL113, FL214, FL420, FL714, FL718

Multi-State Partners:
Alaska Extension-4-H
Arkansas Extension-4-H
Alabama Extension-4-H
Arizona Extension-4-H
California Extension-4-H
Colorado Extension-4-H
Idaho Extension-4-H
Louisiana Extension-4-H
Mississippi Extension-4-H
Missouri Extension-4-H
Montana Extension-4-H
Nebraska Extension-4-H
Nevada Extension-4-H
Oregon Extension-4-H
Michigan Extension-4-H
South Carolina Extension-4-H

Utah Extension-4-H
Washington Extension-4-H

Description of Activity: Each year the National 4-H Shooting Sports Program Committee conducts a Regional 4-H Shooting Sports Leader Training Workshop in the north, south, central, east, or west portion of the country. Approximately 20-25 states may enroll two individuals in each 4-H Shooting Sports discipline area: archery, pistol, rifle, shotgun, black powder, hunting, reloading, or coordinator. The instruction and teaching practice offered at the workshops prepare participants to become part of the instructional team that provides training to adult 4-H Shooting Sports volunteers in their home state. This year the regional workshop was conducted in Donnelly, Idaho. This agent was an instructor for the archery discipline along with another agent from Ohio. There were 13 adult 4-H volunteers from the 10 states of Washington, Alaska, Colorado, Arizona, Idaho, Oregon, Utah, Louisiana, California and Mississippi that participate din the archery training. The next training will be in August of 2001 in Lanesboro, Minnesota.

Percent Extension Time: 5%

Impacts:
- Observing the National 4-H Shooting Sports Archery match enable this agent to get valuable information on the operation of the match to prepare Florida 4-H'ers to participate in the match in 2001. Also, participants in the 2001 Archery Match will benefit from this agent's safety recommendations.

- Thirteen 4-H volunteers were certified to go back to 10 states and train 4-H volunteers to teach basic archery classes to youth. The final average test score was 96%.

- According to the 2000 Florida Annual 4-H Enrollment Report Form, 439 youths in approximately 20 counties had enrolled in the 4-H Shooting Sports Project.

- The Florida 4-H Shooting Sports Program was maintained. Bill Hill, State 4-H Shooting Sports Program Leader; Albert Fuller, Associate State 4-H Shooting Sports Leader; and this agent, Assistant State 4-H Shooting Sports Program Leader provided the leadership. We conducted six state events: Faculty 4-H Shooting Sports In-Service Training, 4-H Shooting Sports Match training, State 4-H Shooting Sports Match, 4-H Shooting Sports Congress Education Track, State 4-H Shooting Sports Camp, and State 4-H Shooting Sports Leader Training.

- The Florida Wild Turkey Federation and the Federal Cartridge Federation provided $5,000 and $800 respectively to the State 4-H Shooting Sports Program.

- H&R 1871, Inc. donated to the State 4-H Shooting Sports Program eight 20 gauge shotguns and three single shot .22 rifles for a total value of $2,500. Approximately 2,280 of 4-H Shooting Sports start-up program equipment from the National Rifle Association is pending for nine counties. Also, pending from the National Rifle Association is $3,496 to support the State 4-H Shooting Sports Camp and $2,463 to fund Florida 4-H'ers to attend the National 4-H Shooting Sport Competition in San Antonio, Texas.

- A total of 39 volunteers were certified as Florida 4-H Shooting Sports Instructors. The certifications were in the following disciplines: Archery-7; Pistol/Rifle-14; and Shotgun-18. Results from the archery pre- and post-tests indicated an overall average improvement of 60% in archery knowledge. Five volunteers were also certified as National Archery Association Level I Instructors.

- As witnessed by the instructors, 60 4-H'ers and three adults who participated in the State 4-H Congress Shootings Sports Educational Track increased their knowledge of natural resources and the safe and responsible use of firearms by an average of 25%.

- Ten or 100% of the 4-H'ers who participated in the archery instruction at State 4-H Congress gave testimonials that they increased their knowledge and skill in shooting a bow safely.

- Forty-five 4-H'ers were certified in the State Hunter Education Program that was taught at camp. The final average test score was 98%.

- As witness by the instructors, 57 4-H'ers that participate din the 4-H Shooting Sports Camp increased their knowledge and skill of the safe and responsible use of firearms by 30%.

- Ten or 100% of the 4-H Shooting Sports Instructors who participated in the State 4-H Shooting Sports Match Training gave testimonials that the training increased their knowledge of the match rules, equipment used, etc. by 100%.

- Ten counties participated in the first State 4-H Shooting Sports Match. The 68 4-H'ers that participated in the match gave testimonials that they had fun and the match was a positive experience. Each participant received a participation ribbon and additional awards were given up to 10 placings in each division.

- Twenty-nine Water Wildlife Conservationists volunteered 2,826 hours to the Leon and Wakulla County Extension Offices. Using the average wage rate of a program assistant ($7.00 per hour), this amounts to a $19,782 in-kind contribution to the Leon and Wakulla County governments.

- Forty-two youths/adults were certified in the State Hunter Education Program with the final average test score being 97%.

- Upon completion of the Hunter Education Course, 95% of the participants increased their knowledge and skills of proper natural resources management techniques and safe firearm handling by an average of 25%.

- As witness by this agent, 111 of the hunter education archery range participants increased their safe bow handling and marksmanship by at least 25%.

- Results from the Wakulla 4-H Shooting Sports Archery Leader Training pre and post-tests indicated an overall average improvement of 53% in archery knowledge. Two adults and one junior leader were certified as 4-H Archery Instructors. The two adults were also certified as National Archery Association Level I Instructors.

- As witnessed by the club leader, 12 of the 4-H Archery Shooting Sports Club members increased their safe bow handling and marksmanship by at least 25%. Three club members received awards at the State 4-H Archery Match held in Merritt Island: one won first place in the individual intermediate compound bow division; one won second place in the individual senior sighted compound bow division; and one won seventh place in the individual senior sighted compound bow division.

- As witnessed by the club leader, the archery range commands for shooting a bow and arrow improved 12 4-H Archery Club member's discipline and responsibility. Six Wakulla County youths that attended Shooting Sports Camp were recognized as safe, responsible, and disciplined marksmen.

- Seven hundred fifty dollars was raised from a 4-h Archery Benefit Shoot. The monies were used to send three 4-H Archery Club members to the State 4-H Shooting Sports Archery Match held in Merritt Island. Archery equipment also was purchased for the club.

- Two parents and one junior leader of the 4-H Archery Club were certified as State 4-H Archery Instructors.

- Two hundred ten citizens gave testimonials that the Florida Yards and Neighborhoods demonstration area increased their knowledge of how to plant low maintenance landscapes to attract butterflies and other wildlife as well as increased their knowledge of recycling, reducing, and reusing yard waste to save water, energy, time, and money.

- Sixty-six youths increased their knowledge on how to construct crafts using recyclable materials. This saved them $2-$5 on the purchase of a craft and helped to decrease the waste stream in Wakulla County.

Number: 5
Title: Coastal Living Seminars
Extension Personnel: Elizabeth R. Bolles
Department: Escambia County
Duration of Program: Short
SMPs: FL114

Multi-State Partners: Sonya Wood Mahler, Alabama, Baldwin County Extension Service

Description of Activity: Worked with Environmental and Marine Agent to conduct tours for groups on landscapes that are friendly to wildlife.

Percent Extension Time: 2%

Number: 6
Title: Wildlife Garden Tours
Extension Personnel: Elizabeth R. Bolles
Department: Escambia County
Duration of Program: Short
SMPs: FL420

Multi-State Partners:
Sonya Wood Mahler, Alabama, Baldwin County Extension Service

Description of Activity: Develop packaging science program to provide quality professionals and relevant research for the users and manufacturers of packaging. The structure of this program shall provide a no or low cost means for individuals or companies to find answers to their specific needs while supporting the educational goals of the program.

Percent Extension Time: 3%

Impacts: Reported with activities

Number: 7
Title: Horticulture Implementation Team
Extension Personnel: Elizabeth R. Bolles
Department: Escambia County
Duration of Program: Long
SMPs: NONE
Multi-State Partners:
Keith Mickler, Georgia, Grady County Extension Service
Richard Murphy, Alabama, Alabama Cooperative Extension Service
Byron Rhodes, Georgia, Thomas County Extension Service

Description of Activity: Worked with Panhandle Horticulture Agents and Specialists to plan programs. Included Agents from Georgia and Alabama.

Percent Extension Time: 4%

Number:

Title: 4-H Leader Training
Extension Personnel: Kay Brown
Department: Escambia County
Duration of Program:
SMP's:
Multi-state Partners: Nancy Darby, Alabama- Baldwin Extension Service;
Sonya Wood Mahler, Alabama – Baldwin Extension Service;
Marisa Lee-Sasser, Alabama – Escambia Extension Service
Description of Activity: Planned and implementated a 4-H Leader Training with Vicki Mullins in which two agents and three volunteer leaders from Alabama participated. Plans are being made to collaborate with other Alabama 4-H Agents who interested in developing joint 4-H leader training programs.
Percent: 10%

Number:
Title: University of Missouri College Intern
Extension Personnel: Kay Brown
Department: Escambia County
Duration of Program:
SMP's:
Multi-state Partners: Brad Greiman, Missouri – Missouri College of Agriculture
Description of Activity: College Intern from University of Missouri - Department of Agriculture Economics completed a two month summer college internship with the Escambia County 4-H program. Included corresponding with faculty from University of Missouri and planning internship program and following up with evaluation.
Percent: 10%

Number:
Title: Summer Camping Programs
Extension Personnel: Kay Brown
Department: Escambia County
Duration of Program:
SMP's:
Multi-state Partners:
Sonya Wood Mahler, Alabama – Baldwin Extension Service;
Marisa Lee-Sasser, Alabama – Escambia Extension Service
Description of Activity: Summer camping programs including week long overnight 4-H Summer Camp at Camp Timpoochee and Enviromental Day Camps at the Langley Bell 4-H Center in Escambia County. Included resource leaders and agents from Baldwin and Escambia Counties in Alabama. Provided educational programming in areas of environmental and marine science education.
Percent: 10%

Number: 6
Title: Florida/Massachusetts 4-H leadership Exchange Program
Extension Personnel: Kay Brown
Department: Escambia County
Duration of Program: Intermediate
SMP's: FL717, FL718, FL801
Multi-state Partners: Tom Waskiewicz
Description of Activity: The Florida /Massachusetts 4-H Leadership Exchange Program provided 4-H adult and youth leadership opportunities between the states for the past three years. There was an exchange of youth and adults volunteers for the annual University of Massachusetts 4-H Teen Conference and the Florida 4-H Youth Legislature. I presented to the Sate 4-H Massachusetts staff the 4-H youth and adult

volunteer programs in Florida and helped lay the ground work for the development of a citizenship program similar to Florida's 4-H Youth Legislature.

Percent: 8%

Now TERMINATED: Because of Personnel Changes

Number: 10
Title: Land Judging
Extension Personnel: Randall B. Brown
Department: Soil and Water Science
Duration of Program: Long Range
SMPs: FL214, FL714

Multi-State Partners:
James H. Stiegler, Oklahoma, OSU

Description of Activity: Land judging is a national program. Each year Florida sends its state winning 4-H and FFA teams to the National Contest, hosted by numerous organizations in Oklahoma.

Percent Extension Time: 5%

Impacts:
Several hundred youngsters and adult leaders were introduced to soil and land assessment and proper use through this educational/competitive program at the local and state levels. Spot publicity was obtained through coverage by local print media, thus bringing the program and its content (proper use of soil and land) to the attention of an unknown number of readers.

Number: FL-102
Title:Forage Production 2001
Extension Personnel: Carrol Chambliss
Department:
Duration of Program:
SMP:
Multistate Partners:
Georgia
Alabama
Description of Activity: Inservice Training for County Facutly in Forage area
Percent of Extension Time: 2%

Number: 11
Title: National Urban Task Force
Extension Personnel: Mary E. Chernesky
Department: Hillsborough County
Duration of Program: Long Range
SMPs: FL513, FL801

Multi-State Partners:
Maryland, Extension Service
New York, Extension Service
Washington, DC, Extension Service
New York, Extension Service
Iowa, Extension Service
Illinois, Extension Service
Minnesota, Extension Service

Wisconsin, Extension Service
Virginia, Extension Service
Texas, Extension Service
North Carolina, Extension Service
Aizona, Extension Service
Washington, Extension Service
California, Extension Service
Oregon, Extension Service
Indiana, Extension Service
Ohio, Extension Service
New Mexico, Extension Service
New Jersey, Extension Service
Maryland, Extension Service
Oklahoma, Extension Service
CREES-USDA, Extension Service

Description of Activity: Extension Faculty represented Florida on the National Urban Task Force and serve as Chair of the Nutrition Resources Committee and Secretary of the overall group. This is a sub-committee of ECOP. Representatives from 24 states are appointed to this committee. The focus is to gain recognition and coordination for Extension urban programming.

Percent Extension Time: 5%

Number: 12
Title: Mid-South Invitational Dairy Judging Contest
Extension Personnel: Debra (Debbie) S. Clements
Department: Okeechobee County
Duration of Program: --Intermediate
SMPs: FL711
Multi-State Partners:
Ruben Moore, Mississippi, Extension
Ray Spann, Tennessee, Extension
Kentucky, 4-H
Indiana, 4-H
Louisiana, 4-H
Virginia, 4-H
Arkansas, 4-H
Oklahoma, 4-H
Colorado, 4-H
Kentucky, FFA

Description of Activity: Assist with management of Dairy Judging Contest as well as organizing
Percent Extension Time: 1%

Number: 13
Title: Alabama National Fair Youth Dairy Judging Contest
Extension Personnel: Debra (Debbie) S. Clements
Department: Okeechobee County
Duration of Program: Intermediate
SMPs: FL711
Multi-State Partners:
Alabama, Extension
Alabama, Extension

Description of Activity: Assist with organization of contest, officiate and take reasons, provide instruction to junior participants

Percent Extension Time: 1%

Number: 14
Title: National Youth Dairy Leadership Conference
Extension Personnel: : Debra (Debbie) S. Clements
Department: Okeechobee County
Duration of Program: Intermediate
SMPs: FL711
Multi-State Partners:
Drape, New York, Extension
Bost, North Carolina, Extension
Gabbert, North Dakota, Extension
Lee, South Carolina, Extension
Fredricks, Washington, Extension
Crave, Wisconsin, Extension
Richie, Idaho, Extension
Robinson, Indiana, Extension
Farmer, Mississippi, Extension

Description of Activity: Assist with instruction during Skillathon portion of program and coordination of youth participants.

Percent Extension Time: 1%

Number: 15
Title: South Florida Fair Dairy Show
Extension Personnel: Debra (Debbie) S. Clements
Department: Okeechobee County
Duration of Program: Intermediate
SMPs: FL711
Multi-State Partners:
Georgia, Franks Farm
Pennsylvania, Dream Nole Farms
North Carolina, Isley's Dairy Farm

Description of Activity: Assist with organization and operation of Youth and Open Dairy Show, Dairy Judging Contest and Showmanship Contest

Percent Extension Time: 1%

Number: 16
Title: Florida State Fair Dairy Show
Extension Personnel: Debra (Debbie) S. Clements
Department: Okeechobee County
Duration of Program: Intermediate
SMPs: FL711
Multi-State Partners:
Tennessee, Volunteer Jersey Farm

South Carolina, Lush Acres
North Carolina, Isleys Dairy Farm
Georgia, Franks Farms
Pennsylvania, Dream Nole Farms
Georgia, Robin's Nest Farms

Description of Activity: Assist with operation of Youth and Open Dairy Show

Percent Extension Time: 1%

Number: 17
Title: North Carolina Producer Tour
Extension Personnel: Debra (Debbie) S. Clements
Department: Okeechobee County
Duration of Program: Intermediate
SMPs: FL711
Multi-State Partners:
North Carolina, Extension

Description of Activity: Developed tour and program to familiarize North Carolina producers with pros and cons of Florida agriculture

Percent Extension Time: 1%

Number: 18
Title: Eating on the Run
Extension Personnel: Judith L. Corbus
Department: Washington County
Duration of Program: Long Range
SMPs: FL511, FL512, FL515
Multi-State Partners:
Claudia W. Meadows, Alabama, Alabama Cooperative Extension System - Houston County
Judith L. Corbus, Florida, University of Florida Extension - Washington and Holmes Counties
Joan P. Elmore, Florida, University of Florida Extension - Jackson County

Description of Activity: Taught two-hour Eating on the Run class with Joan Elmore, Jackson County FCS Agent, to 50 persons in Houston County, Alabama. The purpose of the class was to teach participants ways to prepare nutritious meals on a tight time schedule. Delivery methods included agent demonstrations of six main courses, utilizing the oven, range, crock pot, and microwave oven; a brief lesson on sound nutrition principles; distribution of an 18-page booklet of recipes and time-saving food preparation tips developed by the agents; and participant sampling of the prepared foods. A demonstration on growing and using herbs also was presented by the Montgomery County, Alabama Horticulture Extension Agent in conjunction with the class. The class was a multi-county (Jackson, Washington, and Holmes) collaborative effort.

Percent Extension Time: 2%

Impacts:
- Approximately 80 adults completed an 11-question survey prior to visiting the Growing a Healthy, Happy Family Health Fair exhibits. The survey measured health, safety, and parenting practices. A follow-up survey, including a postage-paid return envelope, was mailed three months after the Health Fair to each family that had attended. The follow-up survey asked the same questions as the Health Fair survey, with an additional question asking to describe any changes made as a result of something learned at the Health Fair.

Practices include: Walking/exercise; eating more nutritious food; having a more positive attitude toward problems/stress; doing something fun; talking with a friend or family member/using support system; cutting back on work; scheduling family time.

Number:
Title: Regional Advanced Training For Restricted Use Pesticide Applicators
Extension Personnel: Michael Donahoe
Department:
Duration of Program:
SMP's:
Multi-state Partners:
Florida – Florida Cooperative Extension;
Alabama – Alabama Cooperative Extension
Description of Activity: A regional seminar was conducted to provide training for holders of restricted use pesticide licenses in Florida and Alabama. Training was provided in the categories of private applicator, agricultural row crop, ornamental and turf, right-of-way, limited lawn and ornamental, and landscape maintenance. The seminar was a joint effort of agents from Santa Rosa , Escambia, Okaloosa and Walton Counties. IFAS specialists and researchers helped in the effort. Marla Faver, Alabama Extension Agent, collaborated by provided continuing education unit approval for Alabama applicators.
Percent: 1%

Impacts: Pesticide applicators increased their knowledge of proper and safe pesticide usage. Applicators were kept up-to-date on pesticide labels and regulations and were made more aware of their responsibilities.
67 individuals were trained , tested, and licensed to apply restricted use pesticides in the various applicator categories.
150 applicators received CEUs for license renewal at grower meetings, schools and seminars.
103 applicators received training at the "Regional Advanced Training for Restricted Use Pesticide Applicators" seminar. A post-program evaluation of 50 responses showed the following: 94 percent said the information presented was accurate, up-to-date and timely; 92 percent stated that the information was relevant to their situation; 96 percent thought the information was easy to understand. Measurement of increased skills and knowledge ranged from 75 to 98 percent for the various topics presented.
Attendees at the "Runoff from Agricultural Lands" workshop and the Stormwater Task Force Committee meeting were made aware of the efforts farmers have made in recent years to reduce the effects of nonpoint source water pollution. A major by-product of the meetings was a spirit of cooperation among the different agencies sharing information on the same problem from their different perspectives. The various agencies and interests have agreed to meet on a regular basis to work together to address water quality issues.

Number: 10
Title: The Gulf Coast Farm Analysis Association
Extension Personnel: Michael Donahoe
Department: Santa Rosa County Extension
Duration of Program: Long Term
SMP's: FL120
Multi-state Partners: Steve Brown, Extension Economist, AL
Description of Activity: GCFAA. The Gulf Coast Farm Analysis Association is implemented through the Alabama Extension Service and is offered to farmers in both Alabama and Northwest Florida. The program collects and analyzes business, financial, and production data from farmers. At present, no Santa Rosa County farmers are enrolled in the Association. However, farmers not enrolled gain general knowledge about the business side of their production activities through grower meetings and newsletter articles.
Percent: 1%

Number: 20
Title: Deep South Weed Tour
Extension Personnel: Gerald R. Edmondson
Department: Okaloosa County
Duration of Program: Long Range
SMPs: FL101

Multi-State Partners:
GA.
AL
Description of Activity: Participated with Alabama and Georgia to present a Deep South Weed Tour at West Florida Research and Education Center.

Percent Extension Time: 3%

Impacts:

- The Weed Science Field Day program was attended by 48 producers and researchers from across the Southeastern U.S. This was the second year producers were invited to tour research plots to observe new herbicides, weed management in genetically modified crops and precision agriculture. Program participants indicated the opportunity to observe demonstrations and different herbicide treatments under field conditions was of tremendous benefit to them.

Number: 21
Title: Alabama/Florida Beef Cattle Management
Extension Personnel: Gerald R. Edmondson
Department: Okaloosa County
Duration of Program: Long Range
SMPs: FL102, FL103
Multi-State Partners:
Charles Simon, Alabama, Cooperative Extension

Description of Activity: A six-week series of meetings to provide producers with training on recommended health practices, handling, selection, breeding management, reproduction, nutrition, forages, and marketing. Six specialists from Auburn University, along with agents presented the six weekly programs. The text was Alabama Beef Cattle-Producers Guide.

Percent Extension Time: 25%

Impacts:

- Thirty producers attended the Alabama/Florida Beef Cattle Management Seminars held at Paxton, Florida. Eighteen course evaluations were filled out by participants. Results show 88% of respondents rated the course as excellent on how helpful it was to their cattle operation. One hundred percent of respondents indicated they had received information they could apply to their operation now or in the future. Seventy-seven percent of respondents indicated they would make changes in their operation based on information learned in the course. Some comments made on evaluations included, "As a new comer to the cattle business, this program was fantastic.", "Very informative class - keep at top level as provided." Additionally 100% of participants indicated the course was worth their time and expense.

- Fourteen forage and livestock producers attended the Alabama/Florida Grazing School held in Paxton, Florida. A program evaluation showed 75% of participants rated the program as excellent. Fifty percent of participants indicated they would make changes in their forage programs after attending the grazing school. One hundred percent of participants felt they could increase the quality of the forage they grow. As a result

of the grazing school 85% felt they could better match the nutritional needs of their cattle with the forages they grow as well as increase their forage production. Eighty-five percent have a better understanding of soil fertility, while 66% learned fencing principles they could use in their operation.

Number: 22
Title: Alabama/Florida Grazing School
Extension Personnel: Gerald R. Edmondson
Department: Okaloosa County
Duration of Program: Long Range
SMPs: FL102, FL103
Multi-State Partners:
Charles Simon, Alabama, Cooperative Extension

Description of Activity: The school was a series of four meetings held in October and November in Paxton, Florida. The following sessions were taught: Understanding Your Soils, Forages That Will Work on Your Place, Grazing Systems That Will Make More Profit, Forage Irrigation, and Comparative Fence Systems.

Percent Extension Time: 15%

Impacts:
- Fourteen forage and livestock producers attended the Alabama/Florida Grazing School held in Paxton, Florida. A program evaluation showed 75% of participants rated the program as excellent. Fifty percent of participants indicated they would make changes in their forage programs after attending the grazing school. One hundred percent of participants felt they could increase the quality of the forage they grow. As a result of the grazing school 85% felt they could better match the nutritional needs of their cattle with the forages they grow as well as increase their forage production. Eighty-five percent have a better understanding of soil fertility, while 66% learned fencing principles they could use in their operation.

-

Number: 23
Title: University of Missouri College Intern
Extension Personnel: Roger M. Elliott
Department: Escambia County
Duration of Program: Long Range
SMPs: FL102, FL103, FL128, FL261, FL711
Multi-State Partners:
Missouri, U. of Missouri College of Agriculture

Description of Activity: College Intern from the University of Missouri - Department of Agriculture Economics completed a two-month summer college internship with the Escambia County 4-H program. Included corresponding with faculty from the University of Missouri and planning internship program and following up with evaluation. Intern participated with 4-H summer camp activities at Camp Timpoochee and Day Camps at the Langley Bell 4-H Camp.

Percent Extension Time: 10%

Number: 24
Title: Summer Camping Programs
Extension Personnel: Roger M. Elliott

Department: Escambia County
Duration of Program: Long Range
SMPs: FL714
Multi-State Partners:
Sonya Woods Mahler, Alabama, Baldwin County Extension Maric
Marissa Lee-Sasser, Alabama, Escambia County Extension
Description of Activity: Summer camping programs including week long overnight 4-H Summer Camp at Camp Timpoochee and Environmental/Agricultural Day Camps at the Langley Bell 4-H Center in Escambia County. Included resource leaders and agents from Baldwin and Escambia Counties in Alabama. Provided educational programming in areas of environmental and marine science education

Percent Extension Time:10%

Number: 25
Title: Eating on the Run
Extension Personnel: Joan P. Elmore
Department: Jackson County
Duration of Program: --
SMPs: –
Multi-State Partners:
Florida, University of Florida Extension-Washington/Holmes Counties
Alabama, Alabama Cooperative Extension System-Houston County
Florida, University of Florida-Jackson County

Description of Activity: Taught two-hour Eating on the Run class with Judy Corbus, Washington/Holmes FCS Agent, to 50 persons in Dothan Extension office, Houston County, Alabama. The purpose was to teach participants ways to prepare nutritious meal on a tight time schedule. Delivery methods included agents' demonstrations of six main courses, utilizing the oven, range, crockpot and microwave. A brief lesson on sound nutrition principles; distribution of an 18-page booklet of recipes and time saving food preparation tips developed by agents; and participants sampling of prepared foods. A demonstration on growing and using herbs also was presented by the Montgomery County, Alabama Horticulture Extension Agent in conjunction with the class. The class was a multi-county (Jackson, Washington/Holmes) collaborative effort.

Percent Extension Time: 3%

Number: 26
Title: Master Tree Farmer 2000 (MTF 2000)
Extension Personnel: Shepard D. Eubanks
Department: Holmes County
Duration of Program: Long Range
SMPs: FL421
Multi-State Partners:
Involved 13 states

Description of Activity: Agent assisted the Jackson County CED with the planning and delivery of the 2000 Master Tree Farmer Program (MTF2000) Program, A Southwide Satellite Broadcast Shortcourse for Forest Landowners, February 1 - March 14, 2000. The program was broadcast live via satellite downlink from the host site Clemson University to sites in thirteen southern states from Maryland to Texas.

Percent Extension Time: 5%

Impacts:

1. Fifty-one landowners enrolled in the Master Tree Farmer 2000 class in Marianna, with 45 receiving certificates of completion. In evaluating the program, all completing the evaluation instrument felt the program would help them save and/or earn them more money from their timberland. All indicated they had measurable improvement in their knowledge and would recommend the program to their friends if offered again. The acreage of timberland owned ranged from 20 to 2400 acres, with the majority indicating they owned 150 acres or less.

Number: 27
Title: IPM Nursery Scout Training
Extension Personnel: Elizabeth A. Felter
Department: Orange County
Duration of Program: Short
SMPs: FL112
Multi-State Partners:
Extension, Georgia, University of Georgia

Description of Activity: IPM Scout Training in Cairo, GA in cooperation with Grady Co. Extension, total teaching hours 172 person/hours and total facilitated hours 249 person hours.

Percent Extension Time: 15%

Number: 28
Title: South East Ag Coalition
Extension Personnel: James H. Fletcher
Department: Madison County
Duration of Program: Short
SMPs: FL513
Multi-State Partners:
GA, Univ. of GA Extension

Description of Activity: Responsibility of the coalition is to Promote Agriculture in GA and FL

Percent Extension Time: 1%

Number: 30
Title: Dairy Business Analysis Program
Extension Personnel: Russell G. Giesy
Department: Sumter County
Duration of Program: Long
SMPs: FLl128
Multi-State Partners:
Dr. Lane Ely, Georgia, UGA Extension
Description of Activity: DBAP collects dairy business data, provided dairy producers bench-marking opportunities and a 67-page report indicating business and production strengths, weaknesses, opportunities and threats. In 2000, DBAP 99 data was summarized including 15 Florida dairies and 10 Georgia dairies.

Percent Extension Time: 5%

Number: 31
Title: Tri-State Aquaculture Commission
Extension Personnel: Max E. Griggs
Department: Escambia County

Duration of Program: Short
SMPs: FL132, FL269, FL312
Multi-State Partners:
Georgia, Univ. Georgia
Alabama, Auburn Univ.
Alabama, Creek Indian Enterpr.

Description of Activity:
*Provide one day training for prospective catfish farmers from Alabama and Georgia.
*Provide consultation to Creek Indian Tribe in Atmore Alabama for their aquaculture.
*Provide mud samples to University of Georgia for proliferative gill disease of channel catfish
*Provide display materials for S.E. U.S. Agriculture Exposition
*Facilitate activities of the West Florida Regional Fish Growers Coop.
*Coordinate Blue-Channel Catfish hybrid trials in Florida in cooperation with Georgia researcher(a S.E. United States project

Percent Extension Time: 3%

Impacts:
- Ponded acreage for cultured channel catfish production has grown to 757 with total production exceeding three and one-half million pounds. Net profits exceed $640,000 for the twenty-nine farm families directly involved in raising fish. In addition, the "ripple effect" has given rise to employment in a variety of areas including, but not limited to, custom hauling, custom harvesting, feed marketing, water treatment supplies marketing, pond design and pond construction.

Number: 38
Title: Money 2000
Extension Personnel: Mary N. Harrison
Department: Family Youth and Community Sciences
Duration of Program: Long Range
SMPs: FL512
Multi-State Partners:
New York, Rutgers University

Description of Activity: Money 2000 is a financial management program developed by several extension specialists in different states. The goal of the program is to provide educational experiences that will enable consumers to decrease their debts and increase savings through improved money managed practices. Presently there are 32 states participating in the program. Barbara O'Neal of Rutgers University serves as the chairperson of this group of specialists giving leadership to this program. In Florida, the program has been taught as a lunch and learn series, a web page program, and a correspondence course.

Percent Extension Time: 5%

Impacts:
During 1998 several counties set up the program and in 1999 three counties set up special web sites to teach county employees. Eighteen other counties used the material as lunch and learn lessons and 5 additional for special programs. Counties are continuing to use the program this year. All participants reported increased savings and reduced indebtedness. Three fourths of 141 participants report developing their first budget and following it for three months. In 2000, 12 counties reported using the propose as a learn by mail program reaching 212 people. A total of 95% reported reducing their debts by more than 15%.

Number: 39
Title: Jump Start

Extension Personnel: Mary N. Harrison
Department: Family Youth and Community Sciences
Duration of Program: -- Long term
SMPs: –
Multi-State Partners:
Washington D.C., Jump Start

Description of Activity: Jump Start is a national organization responsible for reviewing consumer education and resource management materials and making this information available to educators needing reliable information. The material must be reviewed and approved. The governing board consists of 15 representatives of major educational and financial organizations. The goal of the organization is to increase financial literacy among school age students. Florida's Money Wise series is included in Jump Start. To date, the information has been supplied to 42 states requesting the information.

Percent Extension Time: 5%

Number: 40
Title: High School Financial Planning Program
Extension Personnel: Mary N. Harrison
Department: Family Youth and Community Sciences
Duration of Program: Long Range
SMPs: FL512
Multi-State Partners:
Colorado, National Endowment for Financial Education

Description of Activity: The National Endowment for Financial Education, headquartered in Denver, CO is a co-partner with the Cooperative Extension system (Federal and State) in the development and delivery of the High School Financial Planning Program. NEFE provides the funds and prints the educational material. Extension provides the instructional component and delivery system. Mary Harrison gives leadership to the educational programs carried by high schools throughout Florida. This Fall, Florida was third in the nation in the number of schools participating.

Percent Extension Time: 8%

Impacts:
Pre- and post-tests document increased knowledge gain (average increase of 40 points on a scale of 100). A national survey by NEFE in 1999 found students who participated in the program saved more and has less indebtedness as adults. They were more financially secure. The number of schools participating in Florida in 2000 increased from 123 to 157.

Number: 41
Title: AARP Financial Management Program
Extension Personnel: Mary N. Harrison
Department: Family Youth and Community Sciences
Duration of Program: --
SMPs: –
Multi-State Partners:
Georgia, AARP District Rep

Description of Activity: The AARP, a national association of older citizens, cooperates with extension to provide much needed financial management programs for women and older adults nation-wide. The programs are scheduled and handled by the Extension agents, assisted by AARP district representatives. Mary gives state guidance to this program and coordinates material with the district representative in Atlanta.

Percent Extension Time: 5%

Number: 42
Title: U.S. Department of Treasury Federal Funds Educating System
Extension Personnel: Mary N. Harrison
Department: Family Youth and Community Sciences
Duration of Program: -- Long term
SMPs: –
Multi-State Partners:
Sandy Richards, South Eastern States, U.S. Department of Treasury

Description of Activity: The U.S. Department of the Treasury came to the Florida Extension for help in reaching and providing information to individuals who receive federal checks. The goal is twofold: increase direct deposit to save federal funds and to educate the unbanked in order to help them protect and better manage their funds. Working in cooperation with Sandy Richards and other state representatives, extension provided educational programs for extension agents who then taught programs to their county residents in the southeastern states.

Percent Extension Time: 5%

Number: 43
Title: Indoor Air Quality
Extension Personnel: Mary N. Harrison
Department: Family Youth and Community Sciences
Duration of Program: --
SMPs: –
Multi-State Partners:
South Carolina, Clemson University
Georgia, University of Georgia
North Carolina, North Carolina State University

Description of Activity: In January the first regional conference on Indoor Air Quality was held at Clemson University. This launched the beginning of a succession of regional meetings being planned and also video tele-conferences. Further planning will take place at the annual Housing/Agricultural Engineers meeting to be held in October 2000 in Charleston, S.C. The regional activities are scheduled to be rotated from state to state in the region. There is also a possibility of regional cooperative research projects. For example, humidity problems in the colder states in the region and in warmer Florida. There are also potential research/extension activities in relation to various types of affordable housing including manufactured housing.

Number: 33
Title: Florida House Outreach Program
Extension Personnel: Michael J. Holsinger
Department: Sarasota County
Duration of Program: -- Long Range
SMPs: –
Multi-State Partners: –
LA, GA,
Description of Activity:

The Major activity involved a trip to Baton Rouge, Louisiana in May to assist Louisiana State University in launching their "La House" Project modeled after our Florida House Learning Center. Betty Alpaugh, Florida House Program Specialist and I made presentations to more than 100 people at an organizing seminar. We also had several in-depth discussions with the Core Planning Team. Subsequently, we hosted members of the CORE Committee on two separate occasions at Florida House. They have expressed their appreciation to our Dean for Extension and credited us with being the catalyst for their program. (See Success Story #1).

Percent Extension Time: 5%

Number: 34
Title: Southern Region Watershed Resources Management
Extension Personnel: Arthur G. Hornsby
Department: Soil and Water Science
Duration of Program: Intermediate
SMPs: FL411, FL412
Multi-State Partners:
Alabama, Auburn University
Arkansas, Arkansas Cooperative Extension
Georgia, USEPA Reg. 4
Georgia, Univ. of GA
Kentucky, UK
Louisiana, LSU
Mississippi, MSU
New Mexico, NMSU
North Carolina, NCSU
Oklahoma, OSU
Clemson Univ.
South Carolina, Clemson Univ.
Tennessee, UT
Texas, TAMU

Description of Activity: Develop a database of georeferenced research and extension publications, projects and programs jointly with Water Quality Research, Education, and Extension Coordinators from Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas. Conduct Regional (multi-stare) Extension workshops for extension agents from the following states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas.

Percent Extension Time: 25%

Impacts: Project only recently funded

Number: 37
Title: Small Grains Handbook for the Southeastern United States.
Extension Personnel: Tom A. Kucharek
Department: Plant Pathology
Duration of Program: Long Range
SMPs: FL101, FL107
Multi-State Partners:
Georgia, University of Georgia
Alabama, Auburn University
South Carolina, Clemson University

Description of Activity: I co-authored the chapter on plant diseases and their control.

Percent Extension Time: 1%

Impacts:
The indiscriminate deposition of sprays on soil can be minimized. Also, the rate of the fungicide can be reduced proportionately in relation to the area of the crop sprayed or the normal rate can be applied to that portion of the crop where disease typically occurs which will maximize suppression of disease.
The indiscriminate deposition of sprays on soil can be minimized. Also, the rate of the fungicide can be reduced proportionately in relation to the area of the crop sprayed or the normal rate can be applied to that portion of the crop where disease typically occurs which will maximize suppression of disease.

Number: 38
Title: Identification of cabbage leaf curl virus
Extension Personnel: Tom A. Kucharek
Department: Plant Pathology
Duration of Program: Long Range
SMPs: FL101, FL102, FL107, FL108, FL111, FL112, FL116

Multi-State Partners:
Georgia, University of Georgia

Description of Activity: Working with Georgia on viral-like cabbage sample that they feel should be assayed for a geminivirus.

Percent Extension Time: 0.5%

Number: 29
Title: National Beef Infobase
Extension Personnel: Dr. William Kunkle
Department: Animal Science
Duration of Program:
SMP's:

Multi-state Partners:
Animal Science Specialists 35 states across US Agriculture Universities

Description of Activity:
The Beef Infobase is a multi-disciplinary, multi-state effort to develop a selected collection of extension publications (handbooks, factsheets, bulletins, etc.), research reports, conference proceedings and industry information relating to beef production. Version 1 of the Beef Infobase was released in January 2000 and includes over 1100 publication from 35 states. Beef Infobase version 1.2 containing over 1500 publications was recently released. It contains electronic copies of the documents facilitating rapid text search and printing. It is available on CD-ROM or on the WWW. The Beef Infobase was developed by a group of extension specialists and industry representatives across the U. S. A USDA grant was used to provide initial support for this project and continuing support is anticipated thru sales and industry support. I co-chair the national committee overseeing this project
Percent: 10%

Number:
Title: Multi-County Approach to Providing Weekly Newspaper Garden Columns

Extension Personnel: David Marshall
Department:
Duration of Program:
SMP's:
Multi-state Partners:
Georgia – University of Georgia Extension
Description of Activity: In 2000 I initiated a rotational plan for the horticulture agents in our extension district so that only one agent would have to write a column each week. We would then use that one column across the district, even into southwest Georgia, as we have multi-state participation in this project, through Keith Mickler, University of Georgia Grady County Agent. This allows us to be more efficient and reach a much larger audience, estimated to be at least 607,820.
Percent: 20%

Number: 38
Title: Georgia-Florida Green Industry Updates
Extension Personnel: David W. Marshall
Department: Leon County, Fl – Environmental Horticulture
Duration of Program:
SMP's:
Multi-state Partners: GA
Description of Activity:
The following excerpt from an email newsletter from Gale Buchanan, Dean for Agriculture and Environmental Sciences at the University of Georgia, tells something of the growing impact of our Georgia-Florida Green Industry Updates. They are truly an example of multi-state programming:

"GEORGIA/FLORIDA GREEN INDUSTRY UPDATES - The eighth annual Georgia/Florida Green Industry Updates were recently held in Cairo and Kingsland, Ga., and Tallahassee, Florida. The updates are a cooperative effort of the Georgia and Florida Cooperative Extension Service to serve the grower, landscape and retail segments of the Green Industry in south Georgia and north Florida. The updates were initiated in 1993 with one site and 35 attendees. The multi-state cooperative effort has grown to the current three sites and participation by 420 industry professionals. The programs are coordinated by Mel Garber, UGA, and Gary Knox, UF, in cooperation with Georgia county agents Keith Mickler (Grady), Byron Rhodes (Thomas), Jake Price (Camden) and Jeff Michel (Glynn), and Florida agents David Marshall (Leon), Pam Mattis (Duval) and Ray Zerba (Clay). The program now attracts industry professionals from Southeastern states and is a good example of multi-state programs that work for our industry clientele."

Percent: 5%

Impacts: CEU's were awarded at the following workshops:
114 applicators received their 8 hours of CEU's at the August 26 workshop. A Limited Landscape Maintenance Certification training program (8 hours) was given on August 26 this year.
27 applicators received CEU's at the Nursery Scout Training workshop in Cairo, Georgia.
280 applicators received CEU's at the Green Industry Update sessions in Tallahassee and Cairo.
120 pesticide applicator exams were given in 2000. Applicators taking these exams demonstrate a knowledge of proper pesticide handling procedures. These improved practices will protect the environment, the workers, and the public from hazardous pesticide exposure.

Number:
Title: Ornamental Plant Pest Scouting School
Extension Personnel: David Marshall
Department:
Duration of Program: Intermediate
SMP's:
Multi-state Partners:

Ga.

Description of Activity: Ornamental Plant Pest Scouting School, conducted in conjunction with University of Georgia Extension. Florida faculty member taught a section about correctly identifying pests called "Mistaken Identities". Only 25 participants in 2000 because format of class designed for in-depth work with a small group.

Percent: 2%

Number: 43
Title: Tri-state Forage In-Service Training Program
Extension Personnel: Douglas E. Mayo
Department: Jackson County
Duration of Program:
SMPs:
Multi-State Partners:
Alabama Extension, Alabama
Georgia Extension, Georgia

Description of Activity: Worked with Ann Blount to host an In-Service Training program for agents who work with forages in Florida, Georgia and Alabama. Agent served on the planning committee for the training session to be held in 2001.

Percent Extension Time: 3%

Number: 45
Title: Florida State Fair Open Dairy Show
Extension Personnel: Oliver P. Miller
Department: Okeechobee County
Duration of Program: Short
SMPs: –
Multi-State Partners:
Tennessee
N. Carolina
Pennsylvania
S. Carolina
Georgia

Description of Activity: Open dairy show for dairy cattle breeders

Percent Extension Time: 1%

Number: 46
Title: Dairy Management and Waste System Tour
Extension Personnel: Oliver P. Miller
Department: Okeechobee County
Duration of Program: --Intermediate
SMPs: –
Multi-State Partners:
N.C. State University, North Carolina, North Carolina Cooperative Extension

Description of Activity: A tour of local dairies was organized and conducted for dairy producers facing increased environmental regulation.

Percent Extension Time: 1%

Number: 47
Title: South Florida Fair Open Dairy Show
Extension Personnel: Oliver P. Miller
Department: Okeechobee County
Duration of Program: --
SMPs: –

Multi-State Partners:
Georgia, Franks Farm
Pennsylvania, Noll Farm
N. Carolina, Isely Farm

Description of Activity: Dairy show for dairy breeders

Percent Extension Time: 1%

Number: 48
Title: Salt Water Intrusion and Its Effects on the Landscape
Extension Personnel: Daniel E. Mullins
Department: Santa Rosa County
Duration of Program: Short
SMPs: FL114

Multi-State Partners:
Alabama, Cooperative Extension

Description of Activity: Traveled to Ono Island, Alabama and presented a program to the homeowners association. Described how saltwater intrusion occurs, injury symptoms on landscape plants and discussed possible remedies. This program was delivered at the request of the Marine Science Agent in Baldwyn County, Ala.

Percent Extension Time: 1%

Number: 49
Title: Santa Rosa Nurseries Participate at the Gulf Coast Horticultural Expo and Seminar
Extension Personnel: Daniel E. Mullins
Department: Santa Rosa County
Duration of Program: Short

SMPs: FL121
Multi-State Partners:
Nursery Associations; Miss., Ala., La.

Description of Activity: The Gulf Coast Horticultural Expo is held in late January of each year in Mobile, Alabama. This event includes many educational seminars, and is considered to be one of the best "small" trade shows in the country. Nurseries from all over the Southeast, as well as nationally are represented. Several years ago I began encouraging Santa Rosa County nurseries and garden centers to participate in the Expo. Our county is now well represented as many people from our area attend each year. Last year five nurseries from Santa Rosa exhibited there and the owner of one of our largest nurseries told me that someone offered to buy all of the nursery stock that he had grown.

Percent Extension Time: 1%

Number: 50
Title: 4-H Leader Training
Extension Personnel: Vickie B. Mullins
Department: Santa Rosa County
Duration of Program: Short
SMPs: FL718, FL801
Multi-State Partners:
Alabama, 4-H
Alabama, 4-H

Description of Activity: Planned and implemented a 4-H Leader Training with Kay Brown in which two 4-H Agents and three 4-H Volunteer Leaders from Alabama participated. Plans are being made to collaborate with other Alabama 4-H Agents who are interested in developing joint 4-H leader training programs.

Percent Extension Time: 1%

Impacts:
Southern Region Leadership Forum
Survey of participants revealed that each of the five Santa Rosa County participants has already used information that they learned at the Forum in working with 4-H members and/or their 4-H Clubs. The participants are also planning a "mini" Leadership Forum for Santa Rosa County in order to share what they learned with other leaders.

Number: 45
Title: Southern Region Pest Management Center
Extension Personnel: O. Norman Nesheim
Department: Food Science and Human Nutrition
Duration of Program:
SMP's:
Multi-state Partners:

Alabama	Auburn University
Arkansas	University of Arkansas
Georgia	University of Georgia
Kentucky	University of Kentucky
Louisiana	Louisiana State University
Mississippi	Mississippi State University
North Carolina	North Carolina State University

Oklahoma	Oklahoma State University
South Carolina	Clemson University
Tennessee	University of Tennessee
Texas	Texas A & M University
Virginia	Virginia Tech University

Description of Activity:
I serve as a Co-director of the new USDA-CSREES Southern Region Pest Management Center. The Center is a three year competitive grant award to UF-IFAS. The Center will link with other states in the Southern Region by establishing state pest management information programs based on an open and competitive grants process. The competitive grants process is completed and twelve states will be awarded grants for state pest management information programs in early 2001. These states include, Alabama, Arkansas, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia. The Center Directors at UF-IFAS will administer the grants program and provide leadership on issues related to the pest management information network in the region.

Percent: 66%

Number: 57
Title: Louisiana House Learning Center (LaHouse)
Extension Personnel: Mark E. Shelby
Department: Sarasota County
Duration of Program: Short
SMPs: FL114, FL122

Multi-State Partners:
Louisiana, Louisiana State Univ.

Description of Activity: Assisted in providing guidance to the LA House team of Extension Specialists from Louisiana State University. Two separate groups visited Fla. House in August and November to gain insights from us in order to develop a similar program at LSU.

Percent Extension Time: 1%

Impacts:
IMPACTS OF EDUCATIONAL PROGRAMS:

Florida House Learning Center (FHLC): Florida House had 9,350 recorded visitors to the house in 2000. Landscape visitors are often unrecorded since many visit in off hours or do not enter the house. Also, several events took place where visitors were not adequately recorded. I would estimate that over 16,000 people visited the landscape portion during 2000.

Number: 58
Title: National Millennium Arbor Day Celebration
Extension Personnel: Mark K. Shelby
Department: Sarasota County
Duration of Program: Short
SMPs: FL114, FL122

Multi-State Partners:
National, National Arbor Day Foundation

White House Millennium Council
National, International Soc. of Arboriculture
National, U.S. Forest Service
National, America The Beautiful Fund

Description of Activity:
ACTIVITY: This event was an expansion of the local Tree Fair events from previous years. Owing to the success of these events, the International Society of Arboriculture chose this event as their premier Arbor Day celebration event for the millennial year. This soon progressed to partnerships with the National Arbor Day Foundation, the U.S. Forest Service, and the White House Millennium Council. This event was held at the world-renowned John & Mable Ringling Museum of Art in Sarasota. I was Vice-Chair of the National Millennium Arbor Day Celebration Committee and was the Event Coordinator. Through delegation of responsibilities to others, I was ultimately responsible for all facets of this event on a local level. Activities and events included a vendor midway, kids activities, kid's tree climb, a professional tree climbing demonstration, professional tree service demonstrations, main stage ceremonies, dedication of the Millennium Tree Trail, educational programs, etc. Organizers of the event included the ISA, Sarasota County Government, City of Sarasota, Keep Sarasota Beautiful, Marie Selby Botanical Gardens, Ringling Museum of Art, Sarasota County Technical Institute, and the Sarasota Garden Club. Sponsors included the ISA, University of Florida Extension - Sarasota County, US Forest Service, Sarasota Herald-Tribune, National Arbor Day Foundation, Sarasota County Government, Toro Company, and Cherry Lake Tree Farm. Educational programs were presented by local professionals, including myself.

IMPACT: Over 3,137 people from all over the country (and a few international visitors, too) attended this event. There were also 50 vendors and exhibitor from across the nation, and one from Australia. An exit survey of 52 people indicated that they were extremely satisfied with the event as a whole, and had a 18% knowledge gain concerning tree-related issues (mostly an awareness of urban forestry). Participants who actually attended an educational program had a 29% knowledge gain in that particular subject. The most negative comments dealt with logistical issues, especially concerning parking and the lack of advertising for the event (specific survey results are covered below this paragraph). An informal vendor/exhibitor follow-up survey found that vendors were generally pleased with the event and would likely return if a similar event were held in the future. Both the participants and the vendors felt that the children's activities were the best feature of the entire event, although appreciation was expressed for other planned activities, such as the Millennium Tree Trail, the educational programs, and the professional arborist demonstrations.

Percent Extension Time: 8%

Number:
Title: IR-4 program
Extension Personnel: William Stall
Department: Horticulture Sciences Department
Duration of Program:
SMP's:
Multi-state Partners:
North Carolina N. C. State
Georgia U. Ga

Description of Activity: The IR-4 Project is a CSREES Program to establish residue tolerances on minor crops. I work with agents in Florida as well as specialists in other states to establish priorities that are needed for vegetable production.

Percent: 20%

Number:
Title: Weed Management in Vegetables
Extension Personnel: William Stall
Department: Horticultural Sciences Department

Duration of Program:

SMP's:
Multi-state Partners:

North Carolina	N. C. State
Georgia	U. Ga
Tennessee	U. Tennessee
Alabama	Aurburn U

Description of Activity: Specialists from the Southeast meet yearly to 1. Discuss recommendations, 2. Develop multistate demonstration needs, and 3 . develop new herbicide priorities that may be submitted to the manufacturer or to IR-4.
Percent: 10%

Number: 61
Title: Enhancing Seed Availability for the Clam Aquaculture Industry Through Application of Remote Setting Techniques
Extension Personnel: Leslie N. Sturmer
Department: Levy County
Duration of Program: Short
SMPs: FL132
Multi-State Partners:
John Supan, Louisiana , Louisiana State University
Knox Grant, South Carolina, SeaPerfect, Inc.

Description of Activity: This program was a collaborative effort among researchers at the Office of Sea Grant Development at Louisiana State University and faculty with the UF Food and Resource Economics Department and Cooperative Extension Service. A letter of memorandum written by Dr. John Supan confirms LSU's commitment to the remote setting project. A private hatchery with headquarters in South Carolina served as an industry partner this past year. Results from this research and demonstration program could result in both technical and economic benefits to the clam aquaculture industry in Florida and other states in the southeast.

Percent Extension Time: 20%

Impacts:
Objective 1: Remote Set Field Trials

1) This 2-year demonstration project will be continued in County Major Program 605 during 2001. After which, operational procedures and guidelines for remote setting clam seed will be summarized and findings disseminated to industry members.

2) About 130 aquaculturists statewide, including 13 shellfish hatchery and nursery operators, were made aware of this demonstration project and the proposed benefits of helping to ensure a consistent supply of inexpensive clam seed to this segment of the clam aquaculture industry.

3) One of the industry partners submitted a proposal to the U.S. Department of Commerce's Small Business Innovation Research Grants Program for consideration of funding in 2001-2 to scale up the demonstration project at his site to a pilot-scale operation. This federal funding program allows for R&D of commercializable concepts.

4) Some of the management techniques being demonstrated in this project, including the use of supplemental feeding with a commercial algal paste and mechanical filtration of the salt water supply, may also be of benefit in rearing 1 mm seed, the smallest size currently purchased from hatcheries and reared by nursery operators. These techniques will be evaluated at several land-based nurseries during 2001 in an effort to improve seed survival and growth.

Number: 62
Title: Development and Implementation of Cultured Clam Crop Assistance Programs
Extension Personnel: Leslie N. Sturmer
Department: Levy County
Duration of Program: Intermediate
SMPs: FL132
Multi-State Partners:
Massachusetts, Southeastern Massachusetts Aquaculture Center/Sea Grant
Virginia, Virginia Institute of Marine Sciences/Sea Grant
South Carolina, Clemson University/Sea Grant
Georgia, USDA Risk Management Agency / Southeastern Regional Services Office
Georgia, USDA Risk Management Agency / Southeastern Regional Services Office
Missouri, USDA Risk Management Agency / Research and Evaluation Division

Description of Activity: Worked closely with aquaculture extension agents and Sea Grant marine agents in those states where the pilot crop insurance program was being evaluated by the USDA Risk Management Agency (RMA). Those states included South Carolina, Virginia, and Massachusetts. Also worked closely with the RMA insurance specialists from the southeastern regional office located in Georgia and national office in Missouri .

Percent Extension Time: 12%

Impacts:
Objective 1: Pilot Crop Insurance Program Support
1) Negative effects on clam production experienced by growers in Dixie County during the spring and summer related to the La Niña weather phenomenon as well as hurricane damage experienced by some growers in Levy County in the fall, affirmed that the pilot insurance program can provide important financial protection to the clam aquaculture industry. Over 100 claims were made and approved this year. In spite of the fact that not all of these claims qualified for a payment, indemnity (loss) payments of about $1,020,000 were made to growers in these counties.

2) By facilitating an exchange of information among growers, USDA/RMA insurance specialists and insurance providers, the optional unit provision in the policy was clarified in a special bulletin released by the Federal Crop Insurance Corporation in August. Confusion over this provision had become controversial and may have led to growers' dissatisfaction with the pilot program. This clarification allows growers to insure parcels within the same high-density lease area independently of each other. Further, additional improvements in the policy during the pilot phase were identified. Changes in the field nursery coverage will be implemented in crop year 2002.

3) The pilot program was continued for the crop year 2001. To date, 124 growers, representing about 40% of the clam growers in the eligible counties, enrolled in the crop insurance program for the second program year. This represents about 55% of those who did so in the first program year.

Objective 2: Development of Record Keeping Software

1) A simplified spreadsheet software program was designed and developed to be used as a business tool for clam growers.

2) Training in using these spreadsheets to growers in counties where the pilot crop insurance program is implemented will be conducted in 2001 through workshops and consultations with growers on an individual basis.

3) A fact sheet that discusses the need for record keeping and serves as a user's manual for the spreadsheet software program will be developed and disseminated in 2001

Objective 3: Miscellaneous

1. Through these efforts, 60 growers in southwest Florida received over $848,000 in federal assistance funds giving them the economic opportunity to rebuild their businesses and livelihoods.

Project number: OTHER #1
Title: Master Tree Farmer 2000

Extension Personnel: Allen Tyree

Department:

Duration of program:

SMP's:

Multi-State Partners: Clemson University – 10 Southern states Southeastern land-grant universities

Description of Activity:

3-hour satellite broadcasts on Master Tree Farming every Tuesday night from Clemson University to February through March 2000 at 11 sites in Florida. I was the only extension agent in my area that assisted with every class presented at the Madison (North Florida Community College) site. Approximately 20 persons received a Master Tree Farmer certificate.

Percent Extension Time: 3%

Project number: OTHER #1
Title: Testing Retrofitted Flue-Cured Tobacco Bulk Barns for Gas Efficiency
Extension Personnel: Allen Tyree

Department:

Duration of program:

SMP's:

Multi-State Partners: - North Carolina - North Carolina University

Description of Activity:

Tobacco barns that had been retrofitted in the county were tested by a gas analyzer for their energy efficiency. Approximately 13 barns were tested in the county. Flue-cured tobacco bulk barns were tested throughout the flue-cured tobacco belt (Florida, Georgia, Kentucky, Maryland, North Carolina, South Carolina, Tennessee, and Virginia). The agent tested the barns and cooperated

with UF-IFAS Tobacco Specialist Ben Whitty and North Carolina State University Specialist Mike Boyette.

Percent Extension Time: 3%

Number: 65
Title: Southeastern Dairy Youth Retreat
Extension Personnel: James E. Umphrey
Department: Animal Sciences
Duration of Program: Long
SMPs: FL711
Multi-State Partners:
Georgia
South Carolina
North Carolina
Virginia
Alabama
Tennessee
Kentucky

Description of Activity: Southeastern Dairy Youth Retreat
The Agent is responsible for coordinating the State Delegation to the S.E.D.Y. Retreat. This is an excellent 4-day program for younger members to learn about National Dairy Issues. The Agent elected to strongly encourage participation in the program after the Dairy Institute was closed due to the closing of camp facilities. This is a regional effort by VA, NC, SC, GA and FL 4-H Dairy Extension staff. There were 12 students from Florida that attended the 2000 retreat in South Carolina.

Percent Extension Time: 1%

Number: 66
Title: Southern Extension Marketing Committee
Extension Personnel: John J. VanSickle
Department: Food and Resource Economics
Duration of Program: Short
SMPs: FL101, FL102, FL103, FL107, FL108, FL111, FL115, FL119, FL128, FL129, FL130
Multi-State Partners:
Alabama, Auburn University
Georgia, University of Georgia
Kentucky, University of Kentucky
Virginia, Virginia Tech
Mississippi, Mississippi State University
Georgia, University of Georgia
Tennessee, University of Tennessee
Texas, Texas A&M University
South Carolina, Clemson University

Description of Activity: The SEMC meets once annually to discuss programs that can be shared within the region. The SEMC also plans the Southern Outlook Conference in which I participated by making the outlook presentation on Fruits and Vegetables. I also made a presentation to the group on Risk Management and the use of Futures Markets. These efforts help in planning activities in our states that can benefit from the activities of other states. Evaluations of agricultural policy within the southern region is being completed as part of the Southern Extension Committee to help in developing materials for growers and policy makers in the debate for the next Farm Bill expected to pass in 2001 or early 2002.

Percent Extension Time: 25%

Impacts:
Impacts: Much has been done to help policy makers understand the unique characteristics and needs of Florida agriculture. An evaluation of spending on U.S. agriculture and the share of that spending that goes to Florida was completed and used by industry leaders to seek more understanding of the attention that Florida agriculture deserves from U.S. policy makers. That evaluation has been used extensively to highlight the importance of Florida agriculture and the attention it deserves at the federal level. Along this line, education has been taking place within the state to help the Florida agricultural industry understand the importance of agricultural policy and what it can do to help Florida agriculture. The Florida Farm Bureau hosted meetings in Orlando, Florida in November, 2000, that brought together leaders from the agricultural industry and legislative leaders from the Florida delegation. Our involvement has been pivotal in helping Florida agriculture to get more involved in the policy making process as the next round of negotiations begin for the next Farm Bill that is expected to pass within the next year.

Number: 67
Title: Investing for your Future Home Study Course
Extension Personnel: Judith A. Wakefield
Department: Indian River County
Duration of Program: Intermediate
SMPs: FL215, FL512
Multi-State Partners:
New Jersey, Rutgers Cooperative Extension Service

Description of Activity: The *Investing For Your Future* program from Rutgers University

Percent Extension Time: 3%

Impacts: These are activities that have come out of this program that are used now in many states:

- Making Your Own Cleaning Products
- Investing For Your Future
- Successful Single Parenting
- Who Gets Grandma's Yellow Pie Plate

Number: 58
Title: Dairy Records Management System
Extension Personnel: Dan W. Webb
Department: Dairy and Poultry Science
Duration of Program: Long Range Planning
SMP's: FL128
Multi-state Partners:

KY	U Ky
TN	UT
MO	U Mo
KS	Kan SU
IA	ISu
IL	UI
OK	OSU
AK	UA
Tx	TA&M
LA	LSU

Description of Activity: Annual meeting in October

Board meetings in October and March
Spring Workshop for all DHIA workers in 22-states participation
Workshops for dairy farm consultants (veterinarians and nutritionists)
Meetings of specific work groups/committees
PocketDairy
CTAP
100-day contract software
DHIA BIlling system
Telephone conferences

Percent: 15%

Number: 59
Title: Southeast Dairy Management Conference
Extension Personnel: Dan W. Webb
Department: Dairy and Poultry Sciences
Duration of Program: Long Term
SMP's: FL128
Multi-state Partners:

GA	U G
AL	Auburn U
FL	UF
FL	UF
GA	U G

Description of Activity: An annual conference for dairy producers, managers and employees is held in Macon Ga.
This conference provides latest information on management techniques for dairy farm workers as well as consulting advisors.
A proceedings is published.
Percent: 2%

Number: 60
Title: Southern DHI (Dairy Herd Improvement)
Extension Personnel: Dan W. Webb
Department: Dairy and Poultry Science
Duration of Program: Long Term
SMP's: FL128
Multi-state Partners:

TN	Tenn DHIA
FL	FL DHIA
FL	UF
GA	U G
AL	Akabama DHIA
MS	Miss State Univ
MS	Miss State Univ
FL	FL DHIA
GA	GA DHIA
GA	SE Dairy Lab

Description of Activity: This 6-state group works to improve the quality of DHI record information and on-farm service for the DHIA programs in the 6-state area (LA, MS, AL, TN, GA, FL).
One meeting is held each year in May. At least one telephone conference is held.
Each state collects data on personnel training, equipment calibration, and follow-up procedures for insuring data going to national database (USDA) is correct and sound. This information is collated and submitted to the national DHIA Quality Certification Services, Inc for review. The desired result is improvement in quality of DHI data and formal certification of that quality..

Percent: 5%

Number: 68
Title: Radio Program
Extension Personnel: Larry L. Williams
Department: Okaloosa County
Duration of Program: Short
SMPs: FL114, FL116

Multi-State Partners:
Illinois, University of Illinois Extension

Description of Activity: The agent Participated in a live radio broadcast at the National Association of County Agricultural Agents' 2000 Professional Improvement Conference/Annual Meeting in Jackson Mississippi. The program was aired by WSDR Radio Station in Sterling, Illinois, with a listening audience of 15,000. Stanley Eden, University of Illinois Extension/Unit Educator Crops/Environment, interviewed the agent concerning the Extension Program in Florida and environmental Challenges faced in the state.

Percent Extension Time: 1%

Number:
Title: Sustainable agronomic crop production
Extension Personnel: David Wright
Department: Extension Agronomy
Duration of Program: Intermediate
SMP's: FL101
Multi-state Partners:
Dr. Dewey Lee Georgia Univ. Georgia
Dr. Paul Mask Alabama Auburn Univ

Description of Activity: We have partnered with both Auburn University and University of Georgia to offer inservice training to agents. We feel that we can offer more and varied information by involving more specialists. We have an in service training planned for June 26, 2001 and conducted one on grain handling drying and storage in June of 2000 in Tifton, GA.

Percent: 10%

Impacts: If starter fertilizer increased yields only an average of 8 bushels per acres over the 1.7 million acres grown yearly, an additional 13.6 million bushels of grain was available to livestock and poultry producers with an increase in value of $40.8 million for the corn growers in the southeast.
(Impact) With Florida and the southeast producing about 2.1 million acres of cotton, a 15 fold increase in conservation tillage usage by farmers has resulted between $15.8 and $34.6 million savings to growers in the southeast region alone.
Data from research and peanut producers who have converted to strip tillage show an increase profit of about $45/acre. (Impact) If that is calculated from the 25% of the acreage over 600,000 acres in the southeast, a total cost savings of almost $7 million is realized by our growers.

Number:
Title: Best Management Practices for producing container-grown plants
Extension Personnel: Thomas Yeager
Department: Department of Environmental Horticulture
Duration of Program: Intermediate
SMP's: FL105
Multi-state Partners:

Alabama	Auburn University
Alabama	Auburn University
North Carolina	North Carolina St. Univ.
Tennessee	USDA
Virginia	Virginia Polytechnic Institute and State University

Description of Activity: Adoption of BMPs by container nursery operators so that plant production results in minimal impact on the natural environment
Percent: 5%

Number:
Title: Bi-State Regional Regional Training for Commerical Horticulture Clientele
Extension Personnel: Raymond Zerba
Department: Environmental Horticulture
Duration of Program:
SMP's:
Multi-state Partners: University of Georgia

Description of Activity: Meet with Extension Agents in Georgia to plan Northeast Florida/Southeast Georgia multi-state training for Commercial Horticulture Clientele in 1999.
Participate in first of planned training sessions by attending and giving a short presentation as part of a 85 minute lecture on the "Ten Most Common Pests on Ornamentals in the Landscape in Northeast Florida and Southeast Georgia" . I presented information on three common pests (15 minutes total) and participated in followup question and answer session.
Program was held in Kingsland, Georgia on November 10, 2000. Next years joint program is being planned for Duval County (Jacksonville)

Percent: 1%

Final 3/1/01
U.S. Department of Agriculture
Cooperative State Research, Education and Extension Service
Integrated Extension Activities

Update
March 1, 2001

Research Project number: PROJECT
Extension Project number: CMP2
Project Title: Urea and Boron Foliar Sprays on Avocados
Extension Personnel: Carlos Balerdi
Department: Miami Dade
Duration of program: Intermediate
SMP's involved: FLl11
Research faculty involved:
Y. Li FL TREC
J. Crane FL TREC

Description of Activities
Test effect on yield.

Percent Extension Time: 1%

Research Project number: PROJECT
Extension Project number: CMP2
Title: Nitrogen and Iron Nutrition of Carambolas
Extension Personnel: Carlos Balerdi
Department: Miami Dade
Duration of program: Intermediate
SMP's involved: FLl11
Research faculty involved:
Y. Li FL TREC
J. Crane FL TREC
Description of Activities
Evaluate correction of deficiencies and effect on canopy.
Percent Extension Time: 1%

Research Project number: PROJECT
Extension Project number: CMP2
Title: Nematodes on Lychee Survey
Extension Personnel: Carlos Balerdi
Department: Miami Dade
Duration of program: Intermediate
SMP's involved: FLl11
Research faculty involved:
R. McSorley FL Gainesville
J. Crane FL TREC
Description of Activities
Survey lychee groves for nematode presence.
Percent Extension Time: 1%

Impacts: Only 5% of (21) of the growers were able to identify pests/weeds affecting tropical fruits before the programs while 100% (414) said they learned to recognize pests/weeds after the presentations. They also learned the control of these pests. One hundred percent of lychee - longan growers are now aware that bird damage is increasing. They also learned that losses of 20 - 50% could result on lychees due to anthracnose damage.

One hundred percent of the clientele (211) involved with canker programs learned the symptoms of canker, why eradication was necessary and ways to minimize its spread. However, only 10% (21) agreed with the canker eradication effort, even less after the 1900 feet from infected tree rule.

Six packing houses are selling lychee, longan and mamey sapote in California. One guava grower is also selling irradiated fruit in California now after irradiating them in Florida. Mango growers/packers are now asking researchers to show that green mangos are not hosts to the Caribbean fruit fly as a result of the successful lychee, longan and mamey research programs.

Only 30% (19) of the workers in the safety program knew that there were many lightning fatalities in Florida and 12 did not protect themselves against lightning. Sixty-two percent (26) have had back problems and 100% (64) said they will follow back care methods learned in the program. Sixty-four attendants said they will follow safety procedures learned when handling garden equipment, pesticides and when operating noisy equipment. One hundred percent (22) participants in the private applicator section of pesticide license training passed the exam.

Research Project number: PROJECT
Extension Project number: CMP2
Title: Irrigation Systems Management and Scheduling
Extension Personnel: Carlos Balerdi
Department: Miami Dade
Duration of program: Intermediate
SMP's involved: FLl11
Research faculty involved:

Y. Li	FL TREC
B. Schaffer	FL TREC
R. Nunez	FL TREC
J. Crane	FL TREC
B. Boman	FL Ft Pierce

Description of Activities

Evaluate irrigation systems and soil moisture measuring devices.

Percent Extension Time: 1%

Impacts:

1. There were over 30 new grove owners that installed high volume or microspinkler systems. There were 4 programs on irrigation. A total of 90 tensiometers were installed by old / new grove owners. Each grower installed a set of 6 and a 12" tensiometers. These growers (40, covering 250 Ac.) have confidence in them and after visits / phone conversations say they are saving 1/3 to 1/2 the amount of energy and water. They have also reduced the amount of fertilizer because of leaching prevention.

2. Thirty new or potential fruit growers received a packet for new growers. They were asked to read the information and return or call to explain subjects they still had doubts. These 30 growers proceeded to plant their groves as discussed, and recommended by the agent. They were also able to get agricultural tax exemption - a 30 to 70% savings in property taxes.

3. There were 30 programs on cultural practices (fertilizers, pruning, propagation, crops, etc.) for growers. A total of 1861 clients attended the programs. Forty -four to eighty-one percent of the growers (819 to 1507) when surveyed were not familiar with the cultural practices discussed in the programs. From 54 to 100% of the growers (1005-1861) responded they will use the practices discussed in the programs, i.e. most growers are now pruning their trees from a young age using hand, mechanical / hydraulic tools and hedgers / toppers, 100% (12) carambola growers will use some kind of mulch in their groves to improve tree condition in the winter and obtain early season production. Lychee - longan growers learned that all chelated iron forms for alkaline soils can be used to correct iron deficiency. Attendants to the to the commodity workshops were able to see new cultivars or learned more about existing ones. Horticulturists from 18 different Caribbean countries were trained in general concepts of tropical fruit production and

propagation. They also were trained in growing avocados, mango, guava, `Tahiti' lime, carambola, jackfruit and passionfruit.
4. There were 134 attendants to the Post Harvest / Marketing Workshops. Of these, 5 to 15% (7 - 20) experienced moderate fruit postharvest losses (avocado, lime, mango, mamey, etc.) while 20 to 80% (27 - 107) experienced severe post harvest losses (carambola, lychee, papaya). Seventy seven percent (103) will use the information presented in their operations and 90% (121) will use the refrigeration information and post harvest treatments in their operations. Only 12% (16) did gift-shipping and more marketed through the internet. After the presentations, 86% (115) will consider marketing their own crop; only (52%, 70) were doing it before the presentation. Lack of knowledge and time and too much work were common reasons for not marketing their own crops. From 44 to 56% (59 - 75) will apply the information in the programs in evaluating alternative crops and marketing channels and in developing a strategic marketing plan and a web page in their operations.
5. There were 1321 contacts through office and field visits; 2529 phone contacts and 1174 samples were processed. These are grower to agent contacts to answer questions, develop groves, get agricultural tax exemption identify crops / cultivars / insects / diseases, etc. About 294 samples related to CMP 2 were processed; the rest was related to CMP 10. Direct contacts with clientele are probably the most effective way for the agent in solving problems. The agent has contacts at the county agricultural tax exemption section that send him clientele unaware of the Extension Service. The same holds true to the USDA, Farm Service Agency.

Research Project number: PROJECT
Extension Project number: CMP2
Title: IR-4 New Pesticide Evaluations
Extension Personnel: Carlos Balerdi
Department: Miami Dade
Duration of program: Intermediate
SMP's involved: FLl11
Research faculty involved:
J. Crane FL TREC
Description of Activities
Help find cooperators and needed pesticide registration.
Percent Extension Time: 1%

Research Project #: AGR-03726 (active)
Research Title: Evaluation of Forage Germplasm and Forage Management Practices
Extension Program Number:-
Extension Title: Forage Management practices
Extension Personnel: C.G. Chambliss
Department: Agronomy
SMP's involved: FL102
Research Faculty involved: C.G. Chambliss; L.E. Sollenberger
Description of Activity: Field plots of perennial grasses have been established and the first year of yield data has been collected using the following goals and objectives:

1. Evaluate promising forage plant germplasm for adaptation, persistence, forage yield, quality, short day yield, seed production, and resistance to pests and herbicides.
2. Quantify the effects of environmental factors, fertilizer applcation rates and dates varied heights and frequencies of defoliation, and plant drying methods on the yield, nutritional quality, and persistence of forage plants.
3. Evaluate forages in different pasture management systems.
4. Quantify the effect of herbicides, rates, and cultural practices on desirable and non-desirable plant germplasm in pastures.

Percent Extension time: 3**%**

Impact/Accomplishments: NA at this time

Number: DOV-03553
Title: Vegetable Variety Evaluation in Florida
Extension Personnel: T.E. Crocker
Department: Horticultural Sciences
Duration of Program: Short Term
SMP's Involved: FL107
Research Faculty Involved: Chandler, Legard and Sims
Description of Activity: Vegetable variety evaluation in Florida.
Percent Extension Time: 25%

FAES Project Number: PROJECT
Extension Project Number: 1
Project Title: DDIS (Distance Diagnosis and Identification System)
Extension Personnel: Shepard D. Eubanks
Department: Holmes County
Duration of Program: Long
SMPs involved: FL101, FL107, FL122
Research Faculty:
Description of Activities: The Agent utilized DDIS 8 times this year for disease and weed identification in field and vegetable crops.
Percent Extension Time: 5%
Impacts:
1) Eight different Holmes County producers were introduced to and learned the benefits of DDIS during the program year. This represents 10% of the farmers that were targeted.

2) The percentage of Holmes County farmers using hull scrape for determining peanut maturity is 50%.

3) As a result of working with the farmers 75% of the peanuts in the county are planted to varieties that provide the best opportunity for protection against Tomato Spotted Wilt, and 50% of cotton acreage is planted to Bt or stacked gene cotton varieties. 50% of farmers are utilizing conservation tillage practices thereby cutting costs and increasing profitability.

4) As a result of pesticide training activities the Agent trained 12 Holmes County farmers so that they were able to obtain their Restricted Use licenses. In total the Agent trained 73 producers in CORE and Private Applicator topics resulting in the awarding of Continuing Education Units toward renewal of licenses for these individuals.

5) The Agent presented a talk on pesticide spills and a fact sheet to 140 peanut farmers at the Panhandle Peanut Shortcourse. The talk was well received.

FAES Project Number: PROJECT
Extension Project Number:
Project Title: Mole Cricket Task Force
Extension Personnel: Lochrane A. Gary
Department: Hardee County
Duration of Program: Long
SMPs: FL101, FL102, FL103
Research Faculty: Norman Leppla, Howard Frank, Grover Smart, Martin Adjei, Findley Pate, and Bill Brown
Description of Activities: Agent has been involved since inception of taskforce in June of 1999. Activities include initiating a state project to produce and distribute the nematode S. scapterisci , test reduced quantities in various arrays, conduct practical research to improve rearing, storage, shipping and application

methods. Agent also involved in capturing live mole crickets in pit-fall and sound traps at the Ona Range Cattle station and subjecting them to varying levels of nematode infestations to ascertain morbidity and mortality.
Percent Extension Time: 5%
Impact: --

Number: 30
Title: Dairy Business Analysis Program
Extension Personnel: Russell G. Giesy
Department: Sumter County
Duration of Program: Long
SMPs: FLl128
Multi-State Partners:
Dr. Lane Ely, Georgia, UGA Extension
Description of Activity: DBAP collects dairy business data, provided dairy producers bench-marking opportunities and a 67-page report indicating business and production strengths, weaknesses, opportunities and threats. In 2000, DBAP 99 data was summarized including 15 Florida dairies and 10 Georgia dairies.

Percent Extension Time: 5%

FAES Project Number: PROJECT
Extension Project Number:
Project Title: Methyl Bromide Alternatives Technology Transfer
Extension Personnel: P. R. Gilreath
Department: Manatee County
Duration of program: Long
SMPs involved: FL107
Research faculty involved:
J. P. Gilreath, Florida, IFAS/UF/GCREC
J. W. Noling, Florida, IFAS/UF/CREC
Description of Activities: Cooperative effort between IFAS research and extension faculty to transfer technology and information about methyl bromide alternatives to growers. Effort involves cooperation on grower field demonstrations, field day, printed materials, etc.
Percent Extension Time: 15%

Number:
Title: Integrated Management of Bacterial Spot and Bacterial Wilt on Tomato
Extension Personnel: Tim Momol, Steve Olson, and Henry Grant
Department: North Florida REC, Plant Pathology, Florida Extension-Gadsden County
Duration of Program: Intermediate
SMP's Involved: FL107
Research Faculty Involved: Jeff Jones, Tim Momol, Steve Olson and Dave Mitchell
Description of Activity: This research project will use several strategies to develop integrated management of the bacterial spot and wilt of field-grown fresh-market tomatoes in the southeastern U.S. The research will be carried out by a team of plant pathologists and a horticulturist, and will include the involvement of extension personnel to insure that the results will be readily implemented in commercial tomato production. This work will produce economic, practical and effective management of these economically important diseases on tomato that are impossible to control at present or whose management strategies need to be improved. This project supports the national goal of having a high percentage of U.S. agriculture acreage under IPM by the year 2000 and beyond, and will enhance the sustainability of tomato production in the southeastern U.S.

Percent Extension Time:
Henry Grant (3%)

Number: IT-2
Title: DDIS (Distance Diagnosis and Identification System
Extension Personnel: Jiannong Xin, Howard Beck and over two dozen county agents and Extension specialists (Larry Halsey, Jim Fletcher, Richard Sprenkel and Timur Momol)
Department: IFAS Information Technologies
Duration of Program: Long Term
SMP's Involved: FL131
Research Faculty Involved: Howard Beck and Timur Momol
Description of Activity: Provide diagnostics of pests and other problems using digital cameras.
Percent Extension Time:
Beck, 5%
Xin, 30%
Others about 5-10%
Impacts:
DDIS equipment is now in over 75% of the Florida counties. This has been possible by a $20000 Fl First Grant and administration providing another $15000 of technology funds.

Number: CMP-3
Title: Native Plants Projects
Extension Personnel: Lawrence A. Halsey
Department: Jefferson County
Duration of Program: Short Term
SMP's Involved: FL114
Research Faculty Involved: Dr. Jeff Norcini
Description of Activity: Volunteers are actively contributing to researcher, especially native plants projects of Norcini at NFREC, in planting plots, gathering data, assisting with field days, etc.
Percent Extension Time: 1%
Impacts
The volunteers:
* Collect wildflower and native grasses data at NFREC-Monticello
* Assist 4-H coordinator with three school gardens and gardener/mentor K-2 ESE children with special needs
* Organized, recruited and trained three horticulture judging teams, the first the county has had since the late 70s
* Served as advisory committee and recruiters for the 2001 class, many obligating themselves as presenters and demonstration leaders in the planned new class.
* Assisted in hosting the NFREC-Monticello Field Day and the Pecan Field Day
* Provided a horticulture speakers bureau, participated in extension program support and other activities.
* Established 5 butterfly gardens in public areas such as school and day-care grounds
* Assisted in re-establishing the outdoor education nature trail at the elementary school.
* Assisted in designing and installing landscapes/gardens, including the lot at the courthouse for the Board of County Commissioners.

Number: CMP-17
Title: Brainy Babies
Extension Personnel: Susan L. Hedge
Department: Family Youth and Community Science
Duration of Program: Intermediate
SMP's Involved: FL515
Research Faculty Involved: Millie Ferrer, Ph.D.
Description of Activity: The purpose of Brainy Babies is to teach 30 at-risk families nurturing parenting skills which are based on the brain research. Parents will learn to adopt appropriate behaviors that nurture,

motivate, and guide their children. Families in this project will have improved parenting skills, will demonstrate responsible, nurturing parenting techniques, and will gain skills in accessing community services and supports to meet their needs and the needs of their children for such things as medical care, education, job training and placement, and child care.
Percent Extension Time: 30%

IMPACTS:
Annual Objective #1 was to provide a maximum of 1450 units (1 unit=90 minutes of supervised visitation) of Supervised Visitation targeting a minimum of 25 families over the contract period.
We exceeded this objective by providing 1665 units for 144 families. This was largely due to the flexibility of the FCC staff in keeping up with the mand.
Annual Objective #2 was to strengthen positive parenting behaviors by mentoring birth parents of children in out-of-home care and teaching them new skills of interaction through hands-on redirecting toward and support of appropriate parenting behaviors.
When we began using the Brainy Babies curriculum to teach parents nurturing behaviors, we realized that the evaluation of the general population was inappropriate for FCC parents because their children were not present in the home. The evaluation was based on practicing nurturing behaviors at home. However, all parents visiting with their children were observed practicing at least two of the nurturing behaviors taught while they were present during supervised visits.
Annual Objective #3 was to enhance and support reunification and permanency efforts by providing frequent and consistent visitation. Through regularly scheduled visitations, the family bond will be strengthened and parents will be motivated to comply with the tasks on their case plan.
Of the 144 families using the Family Connection Center, by the end of November 2000:
33 families had having been motivated to comply with the tasks on their case plan were reunified
27 families had progressed to a level that they could visit unsupervised
11 families had parental rights terminated and children were placed up for adoption
56 are still being supervised
11 are unknown

Number: 2
Title: FYN Pollution Modeling Research Project
Extension Personnel: Michael J. Holsinger
Department: Sarasota County, CES, Horticultural Sciences
Duration of Program: Intermediate
SMP's Involved: FL114
Research Faculty Involved: George Snyder and Tim Brochat
Description of Activity: Served as part of field team advising on the Florida Yards and Neighborhoods (FYN) Pollution Modeling Research Project at Ft. Lauderdale REC. The project is examining the leaching and runoff of nitrates from turfgrass plots and tree-shrub plots following specific regimes of fertilization and irrigation.
Percent Extension Time: 5%

FAES Project Number: SOS3460
Extension Project Number: SOS/AGH/05
Project Title: Southern Region Watershed Resources Management
Extension Personnel: Arthur G. Hornsby
Department: Soil and Water Science
Duration of Program: Intermediate
SMPs: FL411, FL412
Multi-State Partners:
James Hairston, Alabama, Auburn University
Stanley Chapman, Arkansas, Arkansas Cooperative Extension

Arthur Hornsby, Florida, UF
Lisa McKinley, Georgia, USEPA Reg. 4
William Seagars, Georgia, Univ. of GA
William Thom, Kentucky, UK
R. Hendrick, Louisiana, LSU
Jimmy Bonner, Mississippi, MSU
Craig Runyan, New Mexico, NMSU
Greg Jennings, North Carolina, NCSU
Mike Smolen, Oklahoma, OSU
Barbara Speziale, South Carolina, Clemson Univ.
Rocky English, South Carolina, Clemson Univ.
George Smith, Tennessee, UT
Mark McFarland, Texas, TAMU

Description of Activity: Develop a database of georeferenced research and extension publications, projects and programs jointly with Water Quality Research, Education, and Extension Coordinators from Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas. Conduct Regional (multi-stare) Extension workshops for extension agents from the following states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas.

Percent Extension Time: 25%

Impacts: Project only recently funded

27. Hutchinson, Chad Michael

FAES Project Number: HAS-03875

Extension Project Number: HAS-2-002

Project Title: Regional NE184 Project

Extension Personnel: Austin Tilton

Department: Putman County

Duration of program: Long

SMPs involved: FL107

Research Personnel:

Gearld Basten	Prince Edward Island, CAN	HZPC Americas Corporation
Barbara Christ	Pennsylvania	Pennsylvania State University
Walter De Jong	New York	Cornell University
Don Halseth	New York	Cornell University
Kathleen Haynes	Maryland	USDA
Mel Henninger	New Jersey	Rutgers University
Matt Kleinhenz	Ohio	The Ohio State University
Bill Lamont	Pennsylvania	Pennsylvania State University
David MacKenzie	Maryland	NERA
Steve O'Hair	Florida	University of Florida
Gregory Porter	Maine	University of Maine
Alvin Reeves	Maine	University of Maine
Eric Simonne	Florida	University of Florida
Joseph Sieczka	New York	Cornell University
Pete Weingartner	Florida	University of Florida
Marion White	Florida	University of Florida
Craig Yencho	North Carolina	North Carolina State University

Description of Activities: The Hastings REC participates in evaluating potato varieties from a number of variety development programs. A number of these programs are integrated across disciplines and states. The program with the most diverse participation is the Regional NE184 project, a Hatch funded project.

The Regional Project NE184 is titled, "Development of New Potato Clones and Varieties in the Northeast." This project is a multi-state potato variety evaluation program developed to test new potato clones against commercially accepted varieties to determine if they possess advantages for commercial producers. The cooperative potato variety trials reported were conducted to provide information on the production, adaptation, and performance stability of new potato clones under a wide range of geographic, climatic, soil, and cultural conditions.

Percent Extension Time: 5%

Impacts:

This is an important program because it allows advanced varieties to evaluated at many sites on the eastern seaboard. All locations involved in the evaluation receive seed from the same source at the same stage of production. Participation by IFAS personnel in the evaluation insures there is input into variety selections that will benefit Florida potato growers.

FAES **Project** **Number:**
Extension **Project** **Number:**

Project Title: Water Conserv II

Extension Personnel: John L. Jackson

Tim Crocker,	UF/IFAS,	Horticultural Sciences
Jeff Williamson,	UF/IFAS,	Horticultural Sciences
Andy Rose,	UF/IFAS,	Citrus County
Linda Landrum,	UF/IFAS,	Volusia County
David Holmes,	UF/IFAS,	Marion County
Carroll Chamblis,	UF/IFAS,	Agronomy
Bob Sands,	UF/IFAS,	Animal Science
Bill Price,	UF/IFAS,	Lake County
Dennis Mudge,	UF/IFAS,	Orange County
Joe Walter,	UF/IFAS,	Brevard
Ed Jennings,	UF/IFAS,	Sumter County
Charlie Williams,	UF/IFAS,	Osceola County
Sharon Gamble,	UF/IFAS,	Volusia County
Mark Shuffet,	UF/IFAS,	Marion County

Department: Lake County

Duration of program: Long

SMPs involved: FL10**8**

Description of Activities: Water Conserv II is a 30 million a day water reuse project with the City of Orlando and Orange County generating the water and agriculture using a large majority of it to produce several crops. Citrus is the primary user; there is a golf course, ornamental nurseries, and several research and demonstration plots. The project became operational in 1987 and IFAS had been an important part of the project from the late 70's when the concept was developed. The contract between the grower and the City of Orlando and Orange County requires research to be conducted in order to be sure there is no adverse effect from the application of reclaimed water to crops. Currently, there are three research and three extension plots. Research work with citrus includes nutritional studies to determine the contribution of the reclaimed water to the nutrient requirements, irrigation scheduling and rates studies, evaluation of new varieties, interaction between irrigation and fertilizer, cold protection, and pesticide evaluations. A nitrogen and potassium movement study is in place at the Orange National Golf course. This study tracks the movement of these nutrients through the soil profile of greens and fairways from establishment through maintenance. The last research plot examines the production of forest trees for biomass. This 5-year project will determine the economics of growing trees for power generation utilizing high rates of irrigation.

There are three extension demonstration plots. The first one is an 8-acre plot that contains a number of cultivars of pecans, feijoas, figs, plums, persimmons, peaches, muscadine grapes, and blackberries. In addition field days are held to demonstrate correct cultural practices. A 43-acre plot contains different forage crops to determine the economics of producing hay with unlimited amounts of irrigation water. The last plot is 33 acres of vegetables that contains those crops that can be grown with reclaimed water.

Cultivars are evaluated, as are various cultural practices. A number of Extension agents are involved with the demonstration plots.

Research faculty involved:

Adair Wheaton	UF/IFAS Citrus REC
Larry Parsons	UF/IFAS Citrus REC
Bill Castle	UF/IFAS Citrus REC
Kelly Morgan	UF/IFAS Citrus REC
Don Rockwood	UF/IFAS Forestry
George Snyder	UF/IFAS Belle Glade REC
John Cisar	UF/IFAS Ft. Lauderdale REC

Percent Extension Time: 3%

Number:
Title: FAWN
Extension Personnel: John L. Jackson
Department: Lake County
Duration of Program: Long Term
SMP's Involved: FL101, FL102, FL103, FL105, FL106, FL107, FL108, FL111, FL112, FL114, FL116, FL117, FL121, FL128, FL129, FL130, FL214, FL261, FL265, FL269, FL411, FL714
Research Faculty Involved: Howard Beck, Fedro Zazueta, Jinnanong Xin and Everette Emino
Description of Activity: FAWN is already an important aspect of many research projects. It now provides researchers with reliable real time weather data from several locations in Florida. Feed back has been very positive from the research community. It appears that research is the largest consistent user of FAWN data. However, there are many other users of the FAWN data. Within agriculture growers, agri-chemical sales, consultants, trade associations, foresters, regulatory agencies, harvesters, marketers, processors and packers all find the real time weather data helpful. The list of nonagricultural users is varied with construction, emergency management, National Weather Service, private forecasters, Water Management Districts, and many more.
Percent Extension Time: 20%
Impacts:
According to the members of the Ag Weather Task Force, FAWN has had a million dollar impact on agriculture through more informed production, harvesting and marketing decisions. The example below is just one example of the impact from FAWN. There has been no major attempt to document the overall impact, but feedback from non agricultural users indicate substantial use and value. NWS has used the data when evaluating fire risks, emergency management has used the data when making decisions regarding potential risks from weather events. No doubt there are many more that we are aware of and have no way of determining the impact. The example below provides an example of the value of FAWN.
Brunt Minimum Temperature Tool
This tool utilizes sunset air and dew point temperature to estimate minimum temperature the following morning. November 22 and 23 temperatures dropped into the upper 20's in the northern area of central Florida. Citrus growers using Brunt were able to gain enough confidence in the forecast to not turn on cold protection systems. Both nights were excellent radiation events and FAWN clearly showed the strong inversion that was present. This information showed growers that even though temperatures close to the ground were in the low 30's, the temperature at 30 feet was 10F to 15F warmer and thus it was highly unlikely any additional substantial drop would occur next to the ground. As a result irrigation systems were not turned on to protect citrus.
There were approximately 50,000 acres involved. Using this acreage at cost of $14.17 to pump an acre inch (from Economic Information Report 98-3) and irrigation rates of 2100 gallons per hour (gph) for citrus the following numbers can be generated.
50,000 acres X 2100 gallons/acre/hour X 1.5 hours = 157,500,000 gallons water saved
$14.17 per acre inch X 157,500,00 = $82,658 saved
It is clearly evident that billions of gallons of water and millions of dollars will be saved though the use of FAWN. As more sophisticated tools are developed, FAWN will have a significant role in impacting the Florida economy and environment.

Number: 12
Title: Poultry Related Fly Problems
Extension Personnel: Roger D. Jacobs
Department: Hillsborough County
Duration of Program: Intermediate
SMP's Involved: FL106, FL117
Research Faculty Involved: Jerry Hogsette, USDA Research
Description of Activity: The project was a result of applied research in several counties conducted by Jerry Hogsette and Roger Jacobs.
Percent Extension Time: 12%
TERMINATED

Number: 12
Title: Environmental Use of Poultry Manure
Extension Personnel: Roger D. Jacobs
Department: Hillsborough County
Duration of Program: Intermediate
SMP's Involved: FL106, FL117
Research Faculty Involved: Ray Buckland, Agricultural and Biological Engineering
Description of Activity: The project was a result of applied research in several counties conducted by Ray Buckland and Roger Jacobs to find best uses in environment for poultry manure.
Percent Extension Time: 12%
TERMINATED

FAES Project Number: PROJECT
Extension Project Number:
Project Title: Enhancement Award "Precision Agriculture Applications/Introduction to Precision Agriculture Technologies"
Extension Personnel: Wonsuk “Daniel” Lee
Department: Agricultural and Biological Engineering
Duration of program: Short
SMP’s involved: FL130
Research faculty involved:

Larry Halsey	FL	Jefferson County Extension
Jeff Mullahey	FL	North West Florida REC/Jay
Rao Mylavarapu	FL	Soil and Water Science, UF
William Crow	FL	Nematology, UF
David Wright	FL	North Florida REC/Quincy
Jim Fletcher	FL	Madison County, CED
Tom Schueneman	FL	Palm Beach County, EA
Johannes Scholberg	FL	Agronomy, UF
Loukas Arvanitis	FL	Forestry, FL
Joyce Treadaway	FL	Agronomy, FL

Description of Activities: The project will use GPS to map a cooperating farmer's field and to establish sites for management zone-based soil samples. Several GPS devices will be used to familiarize participants with different data collection schemes. Field demonstration of GPS/GIS-directed input application (pesticide or fertilizer sprays) will be made, providing agents with an understanding of site-specific variable rate input application equipment (VRT). Data collected in the field will be transferred to GIS in a lab setting, demonstrating data conversions, projection and datum needs, and GIS data portrayal. The VRT demonstration unit will be available to counties to set up local demonstrations after the project is completed.
Percent Extension Time: 5%

Number: 10
Title: Alternative Dessicants for Use on Potatoes.
Extension Personnel: Eugene J. McAvoy
Department: Hendry County
Duration of program: Short term
SMP's involved: FL107
Research faculty involved: Dr Charles Vavrina
Description of Activity:
On-farm trial to evaluate alternative dessicants for use of potatoes.
Percent Extension Time: 1%

Number: 10
Title: Integrated Management of Soil Borne Pests and Soil Fertility in a Sustainable Vegetable Production System
Extension Personnel: Eugene J. McAvoy
Department: Hendry County
Duration of program: Short term
SMP's involved: FL107
Research faculty involved: Dr Phil Stansly, Dr Monica Ozores-Hampton, Dr Thomas Obreza, Dr Pamela Roberts – FL UF/IFAS and Dr. Nancy Roe – Texas, Texas A& M
Description of Activity:
A series of trials comaring the use of compost, cover crops and other methyl bromide alternatives in controlling soil-borne pests and managing soil fertility in sustainable vegetable production systems.
Percent Extension Time: 1%

Number: 10
Title: Varying Rates of Telone and Chloropicrin Alone and in Combination for the Control of Fusarium in Basil.
Extension Personnel: Eugene J. McAvoy
Department: Hendry County
Duration of program: Short term
SMP's involved: FL107
Research faculty involved: Dr Pamela Roberts
Description of Activity:
On-farm trial to evaluate varying rates of chloropicrin alone and in combination for the control of fusarium crown rot in basil.
Percent Extension Time: 1%

Number: 10
Title: Use of Phomopsis for the Biological Control of Pigweed in Vegetables.
Extension Personnel: Eugene J. McAvoy
Department: Hendry County
Duration of program: Short term
SMP's involved: FL107
Research faculty involved: Dr Raghavan Charudattan
Description of Activity:
On-farm evaluation of the use of phomopsis fungus for the biological control of pigweed in vegetables
Percent Extension Time: 1%

Number: 10
Title: Cultivars of Snap Beans
Extension Personnel: Eugene J. McAvoy , Teresa Olcyzk
Department: Hendry County
Duration of program: Short term
SMP's involved: FL107

Research faculty involved: Dr Charles Vavrina
Description of Activity:
On-farm trials to evaluate the performance of 22 cultivars of snap beans for performance in South Florida
Percent Extension Time: 1%

Research Project number: PROJECT
Extension Project number:
Title: "Preemergence Control of Spotted Spurge in Italian Cypress"
Extension Personnel: Frank Melton
Department: Manatee County
Duration of program: Short
SMP's involved: FL115
Research faculty involved: Dr Jim Gilreath
Description of Activity:

This was a project with Dr. Jim Gilreath, Weed Scientist, Gulf Coast Research and Education Center, to evaluate various herbicides to control spotted spurge in 1 gallon pots of Italian Cypress.

Percent Extension Time: 1%

FAES Project Number: PROJECT
Extension Project Number:
Project Title: Stargrass Fertilization in Okeechobee
Extension Personnel: Oliver P. Miller
Department: Okeechobee County
Duration of program: Intermediate
SMP's involved: FL102
Research faculty involved:
J. Rechsigl Fl IFAS
Description of Activities: recruitment of cooperator, location citing, program coodination, audiance recruitment
Percent Extension Time: 1%

Number: 14
Title: Centipedegrass Decline Project
Extension Personnel: Daniel E. Mullins
Department: Environmental Horticulture
Duration of Program: Intermediate
SMP's Involved: FL114
Research Faculty Involved: Dr. Bryan Unruh, Turfgrass Specialist
Description of Activity: I am currently cooperating with the turf specialist at the West Florida REC. We are dealing with the centipedegrass decline problem so prevalent in Northwest Florida. Research is ongoing. My involvement includes suggesting possible causes and arranging locations for tests to be conducted. This spring the state turf specialist and I will begin a 2-year project that monitors the movement of nitrogen, phosphorus and potassium following fertilizer application on waterfront lawns.
Percent of Time: 12%

Number: 13
Title: Floricultural, Woody Ornamental Grass Research
Extension Personnel: Daniel E. Mullins
Department: Environmental Horticulture
Duration of Program: Intermediate
SMP's Involved: FL114
Research Faculty Involved: Dr. Shibu Jose, School of Forest Resources and Conservation, UF/IFAS

Description of Activity: Work with state extension specialists to provide information to growers. Five field demonstrations were provide this past year. Provide trained Master Gardener volunteers who work with the West Florida REC in floricultural, woody ornamental and ornamental grass research. Cooperate with the turf specialist at the West Florida REC on centipedegrass research. Currently working with Dr. Shibu Jose, Assistant Professor in the School of Forest Resources and Conservation at the University of Florida, in preparing a grant for an agroforestry project. If approved, the project will involve tree/horticultural crop interplanting trials.
Percent of Time: 10%

Research Project #: LAL-03571 (active)
Research Title: Dynamic Economic Analysis of the Florida Citrus Industry

Extension Program Number: FL 108
Extension Title: Budgeting/Finance/Marketing
Extension Personnel: R.P Muraro
Department: Citrus REC-Lake Alfred
SMP's involved: FL 120
Research Faculty involved: R.P Muraro
Description of Activity:
Conducted the annual custom rate and fertilizer and chemical surveys for the Interior/Ridge and Indian River/South Florida citrus production regions.

The surveys are conducted each year to provide current information to citrus caretakers and growers on custom rate charges for specific grove care practices along with fertilizer and chemical prices. The average custom rates and input prices are incorporated into published citrus budgets for the major citrus producing regions in Florida. The summary results of the surveys were distributed as a mimeo extension handout to county extension agents as well as an insert in the July 2000 issue of the Citrus Industry magazine which has a 10,000+ distribution.

Percent of Extension time: 80%

Impacts/Accomplishments:
Provided citrus growers, and related industries, with current comparative "benchmark" information to analyze their own citrus firm's cost data.

Research Project number:
Extension Project number: CMP 39
Title: Evaluating potato cultivars
Extension Personnel: Teresa Olczyk
Department: UF/IFAS
Duration of program: Intermediate
SMP's involved: FL107
Research faculty involved:
Chad Hutchinson Fl UF IFAS
Eric Simonne Fl UF IFAS

Description of Activities:

Coordinated the Homestead location for the state-wide potato cultivars evaluation. Cooperated with local potato grower on selecting the site, applying fertilizer and pesticides before planting. Participated in the planting of the trial. Cooperated with two vegetable state specialists and agent from Hendry County.

Percent Extension Time: 20%

Research Project number:
Extension Project number: CMP 45
Title: Scheduling irrigation for tomatoes grown on calcaerous rocky soils
Extension Personnel: Teresa Olczyk
Department: UF/IFAS
Duration of program: Intermediate
SMP's involved: FL107
Research faculty involved: Yuncong Li - FL UF

Description of Activities:

Field demonstration to improve irrigation water efficiency through the use of tensiometers for successful vegetable production in calcareous soils in South Florida.
Percent Extension Time: 15%

Research Project number:
Extension Project number: CMP 38
Title: Phosphorus ferter management for potato grown in a calcareous soil.
Extension Personnel: Teresa Olczyk , Mary Lamberts
Department: UF/IFAS
Duration of program: Intermediate
SMP's involved: FL107
Research faculty involved: Yoncong Li , Steven O'Hair

Description of Activities:

The objective of this trial was to evaluate the effect of reduced phosphorus fertilizer rates on potato yield and quality.
Percent Extension Time: 5%

Research Project number: BGL-03504
Extension Project number: ERECKP-1
Title: Biological control of Fusarium crown rot in tomato
Extension Personnel:

Ken Pernezny	FL	Univ of FL
Janice Collins	FL	Univ of Fl
Amanda Carroll	FL	Univ of FL

Department: Everglades Research and Education
Duration of program: Intermediate
SMP's involved: FL107

Research Personnel Involved:

Ken Pernezny	FL	U of FL
Janice Collins	FL	U of Fl
Amanda Carroll	FL	U of FL
Lawrence Datnoff	FL	Univ of FL
Brenda Rutherford	FL	Univ of FL

Description of Activities:
Work on biological control of Fusarium crown of rot of tomato. We are examining commercial biologicals (bacteria and fungi) for in-field use on commercial farms under funigated and non-fumigated conditions. About 90% of our work is IPM-related and about 50% is cooperative.

Percent Extension Time: 50%

Research Project number: BGL-03496
Extension Project number: ERECKP-1
Title: Polyphasic Analysis of Xanthomonads Associated with Horticultural Crop Plants in Florida
Extension Personnel:

Ken Pernezny FL Univ. of FL
Department: Everglades Research and Education
Duration of program: Intermediate
SMPs involved: FL107

Research Personnel involved:

Jeff Jones	Fl	Univ. of FL
Amanda Carroll	FL	U of FL
Bob Stall	FL	Univ. of FL
Jim Graham	FL	Univ. of FL
Ken Pernezny	FL	U of FL
Janice Collins	FL	U of FL

Description of Activities:
Polyphasic Analysis of Xanthomonads Associated with Horticultural Crop Plants in Florida
Percent Extension Time: 15%

Research Project number: BGL-03496
Extension Project number: ERECKP-1
Title: Management of Bacterial Spot of Pepper
Extension Personnel:

Janice Collins	FL	U of FL
Amanda Carroll	FL	U of FL
Ken Pernezny	FL	Univ. of FL
Ken Shuler	FL	Palm Beach Extension

Department: Everglades Research and Education
Duration of program: Intermediate
SMPs involved: FL107

Research Personnel Involved:

Ken Pernezny	FL	U of FL
Janice Collins	FL	U of Fl
Amanda Carroll	FL	U of FL
Brenda Rutherford	FL	U of FL
Lawrence Datnoff	FL	Univ. of Fl

Description of Activities:
We work with Palm Beach Extension and private seed companies on management of bacterial spot of pepper by host-plant resistance. About 90% of our work is IPM-related and about 50% is cooperative.
Percent Extension Time: 30% (Pernezny)

Number: LAL-03492
Title: Microirrigation of Horticultural Crops in Humid Regions
Extension Personnel: L.R. Parsons
Department: Citrus REC, Lake Alfred
Duration of Program: Intermediate
SMP's Involved: FL108
Research Faculty Involved: L.R. Parsons, T.A. Wheaton
Description of Activity: Determine effects of reclaimed water on citrus. Determine effects of high and moderate rates of reclaimed water application on citrus tree growth, tree performance, and fruit quality.

Determine response of citrus trees to different irrigation and fertilizer rates. Use this data to develop Best Management Practices (BMPs) for citrus irrigation and fertilization.
Percent Extension Time: 50%

Impact:
Our work has shown that reclaimed water can be safely and effectively used to irrigate citrus. Reclaimed water use on citrus and edible crops has increased to 15,221 acres, a 75% increase in 8 years. This increase in reclaimed water use can be attributed, in part, to our research findings at Conserv. Given Florida's water shortages and our present drought, reclaimed water use will continue to increase.

Our studies on soil water movement have given us a better understanding of ridge citrus soils. This, along with our studies on soil measuring devices (Enviroscan, tensiometers, and resistance blocks), will help improve our recommendations on irrigation management.

Number: LAL-03759
Title: Freeze Damage and Protection of Horticultural Species
Extension Personnel: Larry Parsons
Department: Citrus REC, Lake Alfred
Duration of Program: Intermediate
SMP's Involved: FL108
Research Faculty Involved: L.R. Parsons, T.A. Wheaton
Description of Activity: Observe effects of microsprinkler irrigation in citrus frost protection. Determine effects of elevated microsprinklers on extent of tree protection during a freeze.
Percent Extension Time: 10%
Impacts:
This program has led to the expansion in use of microsprinkler irrigation and demonstrated the effectiveness of microsprinklers in frost protection. In the past 15 years, microsprinkler irrigated citrus acreage has increased by more than 600% to 500,000 acres. This program contributed to that expansion by demonstrating the important factors that influence microsprinkler effectiveness. This program also demonstrated improved frost protection effectiveness by showing the benefits of elevated microsprinklers. Every time there is a moderate to severe freeze, microsprinkler irrigation saves the citrus industry over $60,000,000. That impact comes directly from information developed by this program. The frost that hit south Florida in January, 1997 and winter 2000-01proved again that growers who used microsprinklers benefitted their trees while those who did not (because of lack of water or other reasons) suffered significant cold damage. See papers and chapters on freeze protection by Parsons (2000, 2001).

FAES Project Number: PROJECT
Extension Project Number: 19
Project Title: Economic Viability of Meat Goat Production On Native Rangeland in South Florida
Extension Personnel: Dana A. Rice
Department: Collier County Extension
Duration of program: Long
SMP's involved: FL121
Research faculty involved:
Jeff Mullahey FL SWFREC
Description of Activities: Obtaining research animals
Establishment of browsing areas
Collection of data
Management of animals

Terminated?: true
Percent Extension Time: 9%
Impacts:
Objective 1: Small farmers will become familiar with and utilize their county cooperative extension service and other IFAS resources. 77 Collier County residents involved in small-scale agriculture obtained

educational information through participation in one of the three workshops, by office visits, telephone, farm visits and/or e-mail.

Objective 2: Small farmers will gain knowledge that they can apply to their operations through participating in workshops and field days. As a result of attending workshops, having farm visits and visiting with other small farmers 3 clients have started new ventures, 7 experienced producers have undertaken more economical and/or efficient production methods such as scheduled health programs, utilizing electric fence for grazing previously unproductive land and more economical supplementation programs and 2 individuals decided that production agriculture is not the proper venture for them (I consider this a success also).

Objective 3: Small farmers will gain knowledge they can apply to their operation through developing and participating in a farmer-to-farmer network. No formal network was established but during follow up visits 20 clients were asked if they had shared or obtained information from a fellow participants, 18 responded affirmatively.

FAES Project Number: 03074
Extension Project Number: FL 103
Project Title: Effect of Single Trait Selection for Marbling on Productivity of a Cow Herd
Extension Personnel:
R. S. Sand Fl Animal Science
J. R. Hartzog Fl NFREC-Marianna
Duration of program: Intermediate
SMP's involved: FL102, FL103
Research faculty involved:
R. L. West Fl Animal Sciences
D.D.Johnson Fl Animal Sciences
Description of Activities: Examining the effects of single trait sire selection on the productivity of the cow herd in terms of the performance of the females in the herd and the steers on the rail.
Percent Extension Time: 5%
Impacts:

Number: BGL-03245
Title: Implementation and Verification of BMPs for Reducing P Loading in the EAA
Extension Personnel: Forrest T. Izuno, Ron W. Rice and Tom J. Schueneman
Department: Everglades REC-Belle Glade
Duration of Program: Long Term
SMP's Involved: FL101, FL411, FL412, FL129, FL115
Research Faculty Involved: F.T. Izuno and R.W. Rice
Description of Activity: Implementation and verification of BMPs for reducing P loading in the EAA.
Percent Extension Time: 30%

Number:
Title: Dairy Business Analysis Project
Extension Personnel: Travis E. Seawright
Department: Manatee County
Duration of Program: Long Term
SMP's Involved: FL128
Research Faculty Involved: Russ Giesy, Dairy Science Department
Description of Activity: The Dairy Business Analysis Program is a cooperative program between the Florida Extension Dairy Agents and the University of Florida Diary Science Department.
Percent Extension Time: 10%

Number:
Title: Mole Cricket Project

Extension Personnel: Travis E. Seawright
Department: Manatee County, CES
Duration of Program: Intermediate
SMP's Involved: FL103
Research Faculty Involved: Dr. Marti Adjei
Description of Activity: Mole cricket project.
Percent Extension Time: 5%

Number:
Title: Pasture Fertilization and Weed Control
Extension Personnel: Travis E. Seawright
Department: Manatee County, CES
Duration of Program: Intermediate
SMP's Involved: FL103
Research Faculty Involved: Dr. Jack Rechcigl
Description of Activity: Pasture fertilization and weed control.
Percent Extension Time: 5%

Number:
Title: The Ridge Citrus Nitrate /Groundwater Monitoring project
Extension Personnel: Howard Still
Department: Highland County
Duration of program: Long term
SMP's involved: FL108
Research faculty involved: Dr. Adair Wheaton and Dr. Wendy Graham
Description of Activity: This project is a collective effort of the Florida Department of Agriculture, Florida Department of Environmental Protection, Lake Alfred Research Center , Extension Service and USDA Soil Conservation. This program is considering groundwater quality related to introduction of Nitrates through soil applied nutrients. Preliminary results demonstrate that rapid leaching of elements is possible, but by reducing the introduction of elements will improve the water quality over time.
Percent Extension Time: 5%

FAES Project Number: FRE-03571
Extension Project Number: CMP-10
Project Title: Citrus Risk Management Research and Education Program
Extension Personnel:

James A. Stricker	Florida	Univ. of Fla.
Ron Muraro	Florida	Univ. of Fla.
Tim Hewitt	Florida	Univ. of Fla.
Fritz Roka	Florida	Univ. of Fla.

Department: Polk County
Duration of program: Intermediate
SMP's involved: FL120
Research faculty involved:

Robert Iberra	Georgia	USDA Risk Management Agency
Thomas H. Spreen	Florida	Univ. of Fla.
John J. VanSickle	Florida	Univ. of Fla.
P.J. van Blokland	Florida	Univ. of Fla.
J.L. Smith	Florida	Univ. of Fla.

Description of Activities: The Citrus Risk Management Research and Education published a series of 9 publications on risk management in citrus. A Web site was developed and maintained to provide research results and educational information. A program evaluation was conducted and showed that, as a result of information received in the program, 93% of managers are more aware of risk management as part of overall business management. Eighty-six percent reported that they have thought about specific risks in

their citrus business and 72% had taken action to reduce or mitigate one or more risks. Fifty-five percent of managers reported discussing risk management with an average of 2.2 other citrus managers. Sixty-two percent of managers believe that it's possible to shift some of their risk to others as compared to only 19% in the original survey. A total of 72% of managers recognized the relationship between risk and potential return, an increase from 26% in the original survey. Seventy-two percent of respondents said that they plan to include risk management as part of their overall business management program. This program is integrated with FRE-03571 and SMP FL120.
Percent Extension Time: 25%

Impacts:
An evaluation survey was sent to citrus managers who participated in Citrus Risk Management educational activities. Results showed that, as a result of information received, 93% are more aware of risk management as part of overall business management, 86% reported that they have thought about specific risks in their citrus business and 72% had taken action to reduce or mitigate one or more risks. Fifty-five percent of managers reported discussing risk management with an average of 2.2 other citrus managers. Sixty-two percent of managers believed that it's possible to shift some of their risk to others as compared to only 19% in the original survey. A total of 72% of managers recognized the relationship between risk and potential return, an increase from 26% in the original survey. Seventy-two percent of respondents said that they plan to include risk management as part of their overall business management program. Sources of information about risk management reported by those managers responding to the follow-up survey included: meetings and seminars - 83%, Newsletters - 41%, Magazine article - 52%, Internet - 10% and other 10%. Details of the follow-up survey are available on the Citrus Risk Management Web site at "riskmgt.ifas.ufl.edu".

FAES Project Number: AGR-03731
Extension Project Number: CMP-22
Project Title: Developing a Kenaf Industry for Central Florida
Extension Personnel:
James A. Stricker Florida Univ. of Fla.
Department: Polk County
Duration of program: Long
SMP's involved: FL121
Research faculty involved:
Dr. Gordon Prine Florida Univ. of Fla.
Description of Activities: A program to develop a Kenaf industry in Polk County, which is integrated with AGR-03731 in the Agronomy Dept. Includes searching for a market for Kenaf products and developing a business plan for a processing and manufacturing business.
Percent Extension Time: 5%
Impact:
1. Kenaf Program Impact:
Annual objectives: A business plan for a commercial kenaf processing facility will be completed.

A system for mitigating phosphorus and turbidity in storm water runoff will be developed and cost estimated.

BioComposit Solutions proposed building a plant to use kenaf fibers to manufacture panels to be used in the construction industry. They developed a pro-forma financial statement for the enterprise that showed that the enterprise could be economically feasible. Plant and equipment would cost an estimated $120 million and require around 15,000 acres of kenaf to supply. A market analysis performed by the Market Research Center in the Food & Resource Economics Dept. found that demand for the type of panels to be manufactured was strong and growing at around 6% per year. Financing for the project was to be arranged through the FARM Foundation thought a series of cooperatives. Unfortunately the project failed when

BioComposite Solutions required an up front payment of $5,000,000, without assuming any risk, to proceed with the project.

A system for removing turbidity and phosphorus from storm water runoff from cultivated phosphatic clay soil was developed by an engineering consulting firm with experience working with phosphatic clay soils. A "typical" settling area was selected for the study. Total capital cost for the 432-acre settling area was $122,000. The system required an impounded area of 48 acres, leaving a usable area of 384 acres. Capital cost was $282.41 per acre for an installed system. Cost per acre would likely to be less with a larger drainage area.

FAES Project Number: FOR-03631
Extension Project Number: CMP-22
Project Title: Commercializing Biomass Crops
Extension Personnel:
James A. Stricker Florida Univ. of Fla.
Department: Polk County
Duration of program: Long
SMP's involved: FL121
Research faculty involved:
D.L. Rockwood Florida Univ. of Fla.
D.R. Carter Florida Univ. of Fla.
Description of Activities: A program working with electric utilities to co-fire woody biomass with coal in electrical generating plants and establishing a demonstration planting of *Eucalyptus* trees in Polk County. Approximately 100 acres of *Eucalyptus* trees were planted on reclaimed phosphate mined land in 2000. In addition, a new project "Commercial Tree Crops for Phosphate Mined Lands" was funded by the Florida Institute of Phosphate Research. The project includes production of cypress, cottonwood, and slash pine for pulp, mulch, biomass, fence posts, and saw timber. This program is integrated with FOR-03631.
Percent Extension Time: 15%

Impact:
2. Biomass Program Impact:
Annual objectives: A commercial scale biomass plantation will be established.

Secure additional funding for biomass programs.
The first commercial plantation of woody biomass in Florida was established. Approximately 100 acres of Eucalyptus was planted during this past summer on phosphatic clay soil near Lakeland. Additional acreage is planned. Renewable energy options in Florida are limited because of Florida's climate and topography. There is no opportunity for hydro or wind power and high cost of solar cells makes it an uneconomic choice. Biomass is the best alternative. Tampa Electric (TECO) is currently offering their customers a "green" energy option. Presently the green energy is coming from a small amount of solar and biomass co-fired with coal. Biomass is coming from tree trimmings and yard waste. The TECO program is a first in Florida. In addition, Lakeland Electric is planning to offer a green energy option for their customers. If these programs are to expand, closed loop biomass will be needed.

Two grants have been secured to advance forestry and renewable energy programs. Dr. Rockwood has secured a five-year $213,300 grant from the Florida Institute for Phosphate Research. The project will study production of cypress and cottonwood on reclaimed land. The second grant was secured by this agent from the Center for Biomass Programs for $3,250 to enhance community support for renewable energy programs.

FAES Project Number: CMP606
Extension Project Number: CMP606
Project Title: Sustainable Hard Clam Production
Extension Personnel:
Leslie Sturmer Florida UF Cooperative Extension Service
Sherman Wilhelm Florida FL Department of Agriculture and Consumer Services, Division of Aquaculture
Department: Levy County

Duration of program: Long
SMP's involved: FL132, FL312, FL316
Research faculty involved:
Shirley Baker Florida UF Department of Fisheries and Aquatic Sciences
Ed Phlips Florida UF Department of Fisheries and Aquatic Sciences
Clay Montague Florida UF Department of Environmental Engineering Sciences
Description of Activities: A collaborative research and extension effort among the FL Department of Agriculture and Consumer Services, Division of Aquaculture staff and UF faculty from the Department of Fisheries and Aquatic Sciences, Department of Environmental Engineering Sciences, and Cooperative Extension Service was initiated this year. The 4-year project, called CLAMMRS, Clam Lease Assessment, Management, and Modeling using Remote Sensing, was funded by the U.S. Department of Agriculture. The integrated project will allow for the adoption of remote sensing technologies for the Florida clam culture industry.
Percent Extension Time: 5%
Impacts:
Objective 1: Industry Information Exchange

1) All clam producers were provided with information to gain knowledge in current culture methods and information on new issues affecting the industry through dissemination of newsletters, suppliers lists and personal interactions.

2) The 1999 aquaculture survey released by the Florida Agricultural Statistics Service in June 2000 acknowledged that producers in the Big Bend area were provided with a resource for education and assistance through a multi-county extension agent.

3) Forty-two (42) wholesalers, or 85% of those identified, responded to a cultured clam market channel assessment survey. These responses were summarized by UF Food and Resource Economics Department faculty to be used in an IMPLAN model analysis in the upcoming year. Results from this study will be useful in providing a more accurate measure of the contribution that clam culture is making to Florida's economy.

Objective 2: Seed Production

1) Through the continued support of over 45 land-based nurseries in the Cedar Key area helped to ensure a reliable and consistent supply of clam seed to Levy County growers. Benefits in doing so included decreased costs in procuring seed by nursery/grower operators, increased opportunities to successfully implement business plans, and increased net returns to nursery/grower operators.

2) The increased demand for clam seed resulted in 2 additional "niche" businesses emerging in Levy County this year. One such nursery business reported a seasonal net return of $12,000.

3) The community land-based nursery in Horseshoe Beach was not operational this year. Lingering effects of the La Niña weather phenomenon on the inshore coastal waters of Dixie County, resulting in higher than normal salinities, were of concern to potential users of the facility. The year-to-year risks associated with rearing and handling smaller clam seed were recognized by growers in this area.

Objective 3: Product Quality and Marketing

1) Through the continuance of focus meetings, now conducted over 4 years, have provided a forum in which industry members, primarily wholesalers, may interact with appropriate university faculty and state agency representatives on marketing and product quality issues affecting their businesses.

2) Five (5) processing plants interested in tempering this summer did so by participating in an industry validation. Results of this study are to be used by industry to verify that tempered product entering commerce is as safe as non-tempered product and does not pose a public health risk. A complete report is in the process of being compiled and will be made available to industry members (see County Major

Program 606 for 2001).

3) On August 9, the DACS Division of Aquaculture, which now oversees all shellfish regulatory activities in the state, identified dry tempering as an alternative process for clams and included it in the Comprehensive Shellfish Control Code, Chapter 5L-1.1013, F.A.C. This culminates almost 5 years of evaluating acclimation and handling alternatives to improve shelf life of clams harvested during summer months and pursuing regulatory approval.

4) Nine (9) shellfish wholesalers in the Big Bend area have been approved, through an application process, by the DACS Division of Aquaculture to incorporate dry tempering into their processing regime. By integrating this step-down acclimation process prior to placement of live clams into customary refrigerated storage, clams harvested from subtropical waters are able to adjust, increasing survival by several days during the summer months.

5) Residents of Levy County, as well as the Big Bend area, became more aware of a new seafood product being grown in their own coastal waters, thereby increasing the probability that they select clams when buying seafood for home preparation or when eating out.

Objective 4: Water Quality

1) Water quality data provided by continuous monitoring systems were used in documenting 12 crop insurance claims. By beginning to compare crop losses with water quality events, substantive evidence can be provided to both growers and insurance companies. Further, this preliminary data has provided important details of temporal variability previously unresolved. Identification of trends in environmental conditions critical to clam health and production is anticipated. This information will let the industry begin to refine and improve management practices, such as allowing growers to make informed decisions about when to plant and transfer seed. Ultimately, this can lead to improved production and profitability.

2) A 4-year project, called CLAMMRS, Clam Lease Assessment, Management, and Modeling using Remote Sensing, was submitted to the USDA for funding consideration. An $863,000 grant was recently awarded and will result in a collaborative effort among the DACS Division of Aquaculture staff and faculty from the UF Department of Fisheries and Aquatic Sciences, UF Department of Environmental Engineering Sciences and Cooperative Extension Service. The project, which will begin in 2001 (see County Major Program 606), will allow for the installation and operation of remote water quality monitoring systems and weather stations at lease areas in 6 counties.

3) A 1-year project, funded by the SRWMD, was completed by faculty from the UF Family Youth and Community Sciences Department. The resulting information can be used in investigating the sources of bacteriological pollution in the Shired Reef watershed basin, as well as assisting Dixie County in identifying management strategies for improving water quality in their coastal waters.

Objective 5: Species Diversification

1) Mollusc samples provided for inspection by seafood wholesale buyers at an international seafood show resulted in a compilation of information on size preferences, product form preferences, appearances, market locations and wholesale prices. This marketing information is needed as the shellfish aquaculture industry begins to explore the potential of a variety of molluscan species for culture.

2) A summary report of the New Molluscs for Aquaculture Workshop should facilitate a process with which to identify the research and business priorities to address production and marketing barriers and needs of a slate of promising molluscan shellfish candidates.

Overall Objective:

Refinement of practices in growout production as well as development of practices in other aspects of clam aquaculture, such as nursing of seed, handling and storage of product, alternative marketing strategies, and

water quality monitoring can lead to an integrated management approach for this new industry, allowing for profitable and sustainable production of clams in the Big Bend area.

FAES Project Number: CMP608
Extension Project Number: CMP608
Project Title: Development and Implementation of Cultured Clam Crop Assistance Programs
Extension Personnel:
Leslie Sturmer Florida UF Cooperative Extension Service
Gary Jenson Washington, D.C. USDA Cooperative Research, Education and Extension Services
Department: Levy County
Duration of program: Intermediate
SMP's involved: FL132
Research faculty involved:
Chuck Adams Florida UF Department of Food and Resource Economics
Description of Activities: The development of an inventory software program is a collaborative effort between UF faculty in the Food and Resource Economics Department and Cooperative Extension Service with funding procured from the USDA Risk Management Agency and administered through the USDA Cooperative Research, Education and Extension Services. This program will result in simplified computerized spreadsheets using existing software packages that are specific to the management practices employed by the Florida clam aquaculture industry. The marine economic specialist (Chuck Adams) is a co-principal investigator in this $15,000 grant.
Percent Extension Time: 12%

Impacts:
Objective 1: Pilot Crop Insurance Program Support

1) Negative effects on clam production experienced by growers in Dixie County during the spring and summer related to the La Niña weather phenomenon as well as hurricane damage experienced by some growers in Levy County in the fall, affirmed that the pilot insurance program can provide important financial protection to the clam aquaculture industry. Over 100 claims were made and approved this year. In spite of the fact that not all of these claims qualified for a payment, indemnity (loss) payments of about $1,020,000 were made to growers in these counties.

2) By facilitating an exchange of information among growers, USDA/RMA insurance specialists and insurance providers, the optional unit provision in the policy was clarified in a special bulletin released by the Federal Crop Insurance Corporation in August. Confusion over this provision had become controversial and may have led to growers' dissatisfaction with the pilot program. This clarification allows growers to insure parcels within the same high-density lease area independently of each other. Further, additional improvements in the policy during the pilot phase were identified. Changes in the field nursery coverage will be implemented in crop year 2002.

3) The pilot program was continued for the crop year 2001. To date, 124 growers, representing about 40% of the clam growers in the eligible counties, enrolled in the crop insurance program for the second program year. This represents about 55% of those who did so in the first program year.

Objective 2: Development of Record Keeping Software

1) A simplified spreadsheet software program was designed and developed to be used as a business tool for clam growers.

2) Training in using these spreadsheets to growers in counties where the pilot crop insurance program is implemented will be conducted in 2001 (see County Major Program 608) through workshops and consultations with growers on an individual basis.

3) A fact sheet that discusses the need for record keeping and serves as a user's manual for the spreadsheet software program will be developed and disseminated in 2001 (see County Major Program 608).

Objective 3: Miscellaneous

1) Through these efforts, 60 growers in southwest Florida received over $848,000 in federal assistance funds giving them the economic opportunity to rebuild their businesses and livelihoods.

FAES Project Number: PROJECT
Extension Project Number: 4
Project Title: Tobacco Varietal Resistance Towards Cucumber Mosaic Virus and Tomato Spotted Wilt Virus
Extension Personnel:
Ben Whitty FL UF-IFAS
Allen Tyree FL UF-IFAS
Greg Hicks FL UF-IFAS
Department: Hamilton County
Duration of program: Short
SMP's involved: FL101
Research faculty involved:
Ben Whitty FL UF-IFAS
Description of Activities: Tobacco variety plots on county farm were planted and observed to determine resistance towards viruses.
Percent Extension Time: 1% (Tyree)

FAES Project Number: PROJECT
Extension Project Number: 4
Project Title: Fungicide/Biological Agent Tobacco Trial Towards Cucumber Mosaic and Tomato Spotted Wilt Viruses
Extension Personnel:
Ben Whitty FL UF-IFAS
Allen Tyree FL UF-IFAS
Greg Hicks FL UF-IFAS
Department: Hamilton County
Duration of program: Short
SMP's involved: FL101
Research faculty involved:
Ben Whitty FL UF-IFAS
Description of Activities: Fungicides/biological agents were sprayed on tobacco plants on county farm and observed to determine efficacy of products.
Percent Extension Time: 1% (Tyree)

Research Project number: PROJECT
Extension Project number: 4
Title: Fungicide/Biological Agent Efficacy Trial on Cucumber Mosaic Virus and Tomato Spotted Wilt Virus in Tobacco
Extension Personnel:
Tom Kucharek FL UF-IFAS
Allen Tyree FL UF-IFAS
Greg Hicks FL UF-IFAS
Department: Hamilton County
Duration of program: Short
SMP's involved: FL101
Research faculty involved:
Tom Kucharek FL UF-IFAS
Description of Activities:

Fungicides/biological agents were sprayed on tobacco plants on county farm and observed to determine efficacy of products.
Percent Extension Time: 1% (Tyree)

FAES Project Number: PROJECT
Extension Project Number: 4
Project Title: Herbicide In Tobacco Efficacy Trial
Extension Personnel:
Joyce Tredaway FL UF-IFAS
Allen Tyree FL UF-IFAS
Department: Hamilton County
Duration of program: Short
SMP's involved: FL101
Research faculty involved:
Joyce Tredaway FL UF-IFAS
Description of Activities: Various herbicides were sprayed on tobacco plants on county farm and observed to determine efficacy of products.
Percent Extension Time: 1% (Tyree)

FAES Project Number: PROJECT
Extension Project Number: 4
Project Title: Herbicide Efficacy Trial In Sugar Beets
Extension Personnel:
Bill Stall FL UF-IFAS
Allen Tyree FL UF-IFAS
Department: Hamilton County
Duration of program: Short
SMP's involved: FL101
Research faculty involved:
Bill Stall FL UF-IFAS
Description of Activities: Various herbicides were sprayed on sugar beets on county farm and observed to determine efficacy of products.
Percent Extension Time: 1% (Tyree)

Research Project number: PROJECT
Extension Project number: 4

Title: Pine Tree Experimental/Observational Plots at the Suwannee Valley Research Center
Extension Personnel:
Alan Long FL UF-IFAS
Chris Demers FL UF-IFAS
Allen Tyree FL UF-IFAS
Department: Hamilton County
Duration of program: Short
SMP's involved: FL101
Research faculty involved:
Alan Long FL UF-IFAS
Chris Demers FL UF-IFAS
Allen Tyree FL UF-IFAS

Description of Activities:

Sixteen (16) acres of loblolly, longleaf, and slash pines were planted at the Suwannee Valley Research Center. Different species, fertilities, herbicide treatments, row spacings, scalping vs. not scalping are some of the plots being observed.

Percent Extension Time: 3% (Tyree)

Research Project number: PROJECT
Extension Project number: 5
Title: Assessing Potential for African-Americans in Hamilton County to Attain Nature/Heritage Tourism Benefits

Extension Personnel:
Taylor Stein FL UF-IFAS
Jennifer Hale FL UF-IFAS
Allen Tyree FL UF-IFAS
Department: Hamilton County
Duration of program: Short
SMP's involved: FL101
Research faculty involved:
Taylor Stein FL UF-IFAS
Jennifer Hale FL UF-IFAS

Description of Activities:

A major study on what Hamilton County African-Americans would like to see, in terms of eco-heritage tourism development was conducted. This study has been finalized and will be made available to the public in early 2001. This is one of the first studies of its kind in Florida and the US.

Percent Extension Time: 2% (Tyree)

FAES Project Number: FRE
Extension Project Number: FL120
Project Title: Economics and Policy Within the Florida Tomato Industry
Extension Personnel:
John J. VanSickle Florida University of Florida
Department: Food and Resource Economics
Duration of program: Short
SMP's involved: FL101, FL102, FL103, FL107, FL108, FL111, FL115, FL119, FL128, FL129, FL130
Research faculty involved:
John J. VanSickle Florida University of Florida
Description of Activities: Evaluations of industry organization and public policy are conducted and presented to the industry. The information generated by this project helps the industry organizations develop an agenda for public policy development. It also helps producers understand the impacts of policy and market structure on the industry.
Percent Extension Time: 15%
Impacts: Much has been done to help policy makers understand the unique characteristics and needs of Florida agriculture. An evaluation of spending on U.S. agriculture and the share of that spending that goes to Florida was completed and used by industry leaders to seek more understanding of the attention that Florida agriculture deserves from U.S. policy makers. That evaluation has been used extensively to highlight the importance of Florida agriculture and the attention it deserves at the federal level. Along this line, education has been taking place within the state to help the Florida agricultural industry understand the importance of agricultural policy and what it can do to help Florida agriculture. The Florida Farm Bureau hosted meetings in Orlando, Florida in November, 2000, that brought together leaders from the agricultural industry and legislative leaders from the Florida delegation. Our involvement has been pivotal in helping Florida agriculture to get more involved in the policy making process as the next round of negotiations begin for the next Farm Bill that is expected to pass within the next year

Research Project number:
Extension Project number: CMP2

Title: Dairy Affluent Spray Project
Extension Personnel: Marvin F. Weaver
Department: Gilchrist County
Duration of program: Long
SMP's involved: FL106
Research faculty involved: Van Horn
Description of Activities
The affluent spray field is also a research project, which is supported by the Water Management District, University of Florida, and private industry.
Percent Extension Time: 5%

FAES Project Number: Hatch 3544
Extension Project Number: FL105
Project Title: BMP Development
Extension Personnel: Thomas Henry Yeager
Duration of program: Long
SMP's involved: FLl05
Research faculty involved: Thomas Yeager
Description of Activities:
Extension program is dependent on information developed by researchers both in and out of state. Personnel with research appointments serve on the design team and participate in inservice training.
Percent Extension Time: 70%

Impacts: In ten counties, the four-year programmatic effort will result in an 8% increase in acreage of micro-irrigated container nurseries, thereby reducing water consumption when compared to the use of overhead irrigation. Improved irrigation scheduling, irrigation runoff recovery systems to recycle water, and use of nonpotable water (reclaimed water), will improve efficiency of water use and provide an additional water savings. The impact of programmatic effort will result in a 20% reduction in water use and an 8% reduction in fertilizer use with a 4% increase in nutrient monitoring. Related SMPs FL 411 - Water Conservation in Florida. Coordinate educational activities with Dr. Dorota Z. Haman team leader.

U.S. Department of Agriculture
Cooperative State Research, Education and Extension Service
Integrated Research Activities

March 1, 2001

Research Project #: ABE-03596 (active)
Research Title: Animal Manure And Waste Utilization, Treatment and Nuisance Avoidance For A Sustainable Agriculture
Research Faculty involved: R.A. Nordstedt; L.O. Bagnall; E.P. Lincoln
Extension Program Number: ABE-WM1
Extension Title: Improving Management of Agriculture and other Organic Wastes
Extension Personnel: R. A. Nordstedt
Department: Agriculture and Biological Engineering
SMP's involved: FL 106

Description of Activity:
1. Construction was completed on a constructed wetlands with overland flow system on a 250 cow commercial dairy farm in West Central Florida. The project was funded by FDEP with EPA 319 funds. The system was placed in full operation in April, 1999, and biweekly water quality monitoring was initiated. In the first six months of operation there was a 25% removal of phosphorus and a 61% removal of nitrogen in the system. Most of the phosphorus removal was in the overland flow system, and most of the nitrogen removal was in the constructed wetlands system. However, the system had probably not stabilized, and better removal efficiencies are anticipated. In addition, the system was undersized because of a road that was built through the farm property. The final report was submitted in November, 1999, and a supplement to the final report was also submitted to FDEP. Although the project officially ended in November, 1999, monitoring of the system continued through the year 2000. Unfortunately, a severe drought in winter and spring resulted in the loss of most of the wetland plants, and the system did not recover sufficiently in the late summer and fall to achieve nitrogen and phosphorus reductions that had been achieved in the previous year.

2. Construction was completed on a demonstration waste management system at a 1600 cow commercial dairy farm in West Central Florida. The project was funded by FDEP with EPA 319 funds. The system includes a gravity sand trap, a holding tank, a mechanical screen, a tangential flow separator, a plate clarifier, and a large drum composter. Screened solids are being processed into a marketable product as a peat replacement in the plant nursery industry. Solids recovered from the plate clarifier will also be processed in the future. The drum digester was returned to the manufacturer in August and September for replacement of bushings in the trunnions with roller bearings and for machining of the tires on the drum. Modifications are being made in the system to improve performance, and preliminary testing of chemicals was begun to increase nutrient removal in the plate clarifier. Controlled tests of the potting media product will be carried out in greenhouse studies in 2001, and a demonstration test will be conducted at a commercial plant nursery in the Tampa area.

Impacts/Accomplishments:
1. Constructed wetlands can be utilized for nutrient removal and management of stormwater runoff on dairy farms and other livestock operations, thus reducing their environmental impact.

2. Development of marketable products from livestock wastes will help offset the costs of improved waste management systems on livestock operations and result in the export of nutrients from the farms.

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: AGE-03508 (terminated)
Research Title: Interior Environment and Energy Use in Poultry and Livestock Facilities
Research Faculty involved: R.A. Bucklin; P.H. Jones
Extension Program Number:
Extension Title:
Extension Personnel: **R.A. Bucklin**
Department: Agricultural and Biological Engineering
SMP's involved: **Agricultural and Biological Engineering**

Description of Activity:
This project dealt with development of improved ventilation and cooling methods for livestock housing. Studies included projects dealing with dairy, poultry and swine housing. Dairy studies involved cooling systems for freestall housing. Poultry studies dealt with ventilation and cooling systems for layer and broiler housing. Swine studies involved the effects of heat stress on nutrition and a development of a model of swine growth. During the last year, calf growth rate and rectal temperatures were measured for dairy calves housed in wooden and metal roofed calf hutches and under an open sided barn. Analysis indicated that calf performance was best under the open sided barn. No significant differences were observed among calves housed in wooden and metal roofed hutch types.

Impacts/Accomplishments:
Losses caused by heat stress are a major problem for livestock producers in states such as Florida with warm or hot, humid climates. Several studies conducted during this project resulted in improved ventilation and cooling methods for livesock production.

Total Hatch Expenditures: $4,804
National Goal: 1

Research Project #: AGR-03180 (Terminated)
Research Title: Evaluation of Forage Germplasm Under Varied Management
Research Faculty involved: C.G Chambliss; L.E. Sollenberger
Extension Program Number:
Extension Title:
Extension Personnel: C.G. Chambliss
Department:
SMP's involved:

Description of Activity:
During 3 yr of grazing (160 d/yr), weight gains of yearling beef heifers grazing Tifton 85 and Florakirk bermudagrasses were similar and averaged 0.62 kg/d. Tifton 85 pastures out yielded Florakirk and supported more days of grazing and greater gains per hectare (706 vs. 413 kg). Crude protein averaged between 11 and 12% for both forages, but in vitro digestion was greater for Tifton 85 (56 vs. 53%). Also during 3 yr of grazing (150 d/yr), weight gain of 6-month-old Holstein heifers averaged 0.58 and 0.63 kg/d on Arbrook and Florigraze rhizoma peanut. Gain per hectare averaged 533 kg for Florigraze and 488 kg for Arbrook. Crude protein concentration was higher for Florigraze than Arbrook (17.4 vs. 15.9%) as was in vitro digestion (72.1 vs. 67.7%).

Impacts/Accomplishments:
No impact statement at this time
Total Hatch Expenditures: $103
National Goal: 1

Research Project #: AGR-03594 (active)
Research Title: Formation, Sprouting and Longevity of Hydrilla Tubers
Research Faculty involved: W.T. Haller; A.M. Fox; K.A. Langeland; R.K. Stocker
Extension Program Number: FL416
Extension Title: Aquatic Weeds
Extension Personnel: W.T. Haller
Department: Agronomy
SMP's involved: FL416

Description of Activity:

Hydrilla, the most invasive submersed aquatic weed in Florida was introduced in approximately 1960 and now costs about $15M annually for control. This plant reproduces solely by vegetative means. It produces vegetative buds in response to short day length (<13 hours) at the end of underground rhizomes. These buds are commonly termed tubers. Hydrilla, under ideal conditions of warm winter temps and shallow water, may produce over 1,000 tubers/m2 annually. These propagules become the basis of survival and long-term re-infestation of a water body. Hydrilla out competes native species through its ability to photosynthesize under lower light levels compared to native species and forms dense monocultures in shallow as well as deep water where native species are unable to grow (light limited). Improved hydrilla management can only occur by managing hydrilla tubers in some manner. Questions posed during the conduct of this research included: If hydrilla is capable of producing 1,000 tubers/m2 annually, why do we only find 200-600 tubers/m2 in ponds in which hydrilla has grown unmanaged for 5, 10 or 20 years, not 10,000-20,000 tubers/m2 ? Why do tubers when collected from in situ conditions sprout at 90%+ rates, but apparently never achieve this sprouting rate under natural conditions? If tubers form in the soil at some depth regulated by redox potential as commonly believed, why do we find more tubers at shallower depths in sandy hydrosoils whereas in organic soils, with lower redox potentials, tubers are found with a more random and generally deeper distribution? Finally, at what rates do tubers typically sprout? Do herbicide treatments or other management practices stimulate sprouting, and what role does endogenous abcissic acid and gibberellins play in tuber dormancy/sprouting?

Research on this project shows that upon initial infestation, hydrilla may produce several hundred tubers/m2/year, however after establishment, hydrilla shades itself out with much less attachment to the hydrosoils and fewer tubers are produced due to fewer stems (loci) growing from the hydrosoil. After removal of tubers from the reducing conditions found in the hydrosoil for as short as 30-60 minutes exposure to oxidative conditions, tubers sprout at nearly 100% rates. It is hypothesized that ABA is xidized to lower endogenous levels by exposure to oxidative conditions and the ABA/gibberillin balance changes to promote sprouting.

Redox potential does not regulate depth of tuber formation. Under reducing conditions, tubers form at the end of positively geotrophic rhizomes when an obstruction (pebble, hardpan, piece of wood) is encountered. Thus, under sand hydrosoil conditions, most tubers are found on top of a clay hardpan (4-10 cm) whereas in peat soils, rhizomes penetrate deeper (10-20 cm) and form tubers at the limits of rhizome growth (up to 26 cm observed in the studies), or upon encountering an obstruction.

In pond studies, tubers typically sprout at 1-3% of their population/month with peak sprouting noted (for 3 years) at 3-6%/month during the October-November period. When winter temperatures are cold (<15C) sprouting probably does not occur and further, management practices such as contact herbicide treatments do not stimulate,additional sprouting as was commonly believed. Studies conducted with exogenous ABA, gibberellins and other growth regulators suggest that endogenous ABA/gibberellin balance regulates tuber sprouting. Oxidative conditions reduced ABA levels, so it appears that redox, ABA and gibberellins interact in some manner to regulate sprouting.

Impacts/Accomplishments:
A better understanding of tuber formation and sprouting will lead to more effective control measures.

Total Hatch Expenditures: $19,772

National Goal: 4

Research Project #: AGR-03726 (active)
Research Title: Evaluation of Forage Germplasm and Forage Management Practices
Research Faculty involved: C.G. Chambliss; L.E. Sollenberger
Extension Program Number:
Extension Title: Forage Management practices
Extension Personnel: C.G. Chambliss
Department: Agronomy

SMP's involved: FL 102

Description of Activity:
Field plots of perennial grasses have been established and the first year of yield data has been collected using the following goals and objectives:

1. Evaluate promising forage plant germplasm for adaptation, persistence, forage yield, quality, short day yield, seed production, and resistance to pests and herbicides.

2. Quantify the effects of environmental factors, fertilizer applcation rates and dates varied heights and frequencies of defoliation, and plant drying methods on the yield, nutritional quality, and persistence of forage plants.

3. Evaluate forages in different pasture management systems.

4. Quantify the effect of herbicides, rates, and cultural practices on desirable and non-desirable plant germplasm in pastures.

Impact/Accomplishments: NA at this time

Total Hatch Expenditures: $0

National Goal: 1

Research Project #: ANS-03572 (Active)
Research Title: Byproduct Feedstuffs: Rumen Degradability of Carbohydrate and Fat Fractions And Effects On Feed Efficiency
Research Faculty involved: M.B. Hall; H.H. Van Horn
Extension Program Number: Dairy Nutr 1
Extension Title: Improving Nutritional Management of Dairy Cattle in Florida
Extension Personnel: M.B. Hall
Department: Animal Science
SMP's involved: FL 128

Description of Activity:

Studies in which the profile of dietary non-neutral detergent fiber (NDF) carbohydrates (NFC) fed to lactating dairy cattle from corn meal or byproduct feed sources were shifted from primarily starch to sugars and neutral detergent-soluble fiber, showed alteration in milk composition, including milk protein. To begin to determine the basis for the differences in performance among the feedstuffs, in vitro fermentations of the predominant NFC were performed, and yield of trichloroacetic acid-precipitatable crude protein (TCACP) was determined. TCACP offers an estimate of microbial crude protein yield. Isolated bermudagrass NDF (bNDF), and 60:40 blends of bNDF and sucrose (Suc), citrus pectin (Pec), or corn starch (Star) were fermented in vitro with mixed ruminal microbes for 24 hours, with destructive sampling at 4 hour intervals. Substrates were adjusted so that all fermentations contained similar amounts of organic matter. Among the NFC, maximal yield of TCACP of both Pec and Suc fermentations were less than that of Star. The forms of the regression curves of TCACP and time of fermentation for Suc and bNDF were cubic, whereas those for Pec and Star were quartic. Yield of TCACP varied by hour with Suc, Pec, and Star achieving peak yields at 12, 12 or 16, and 16 hours of fermentation, respectively. In ration

formulation, ruminal fermentation of the variety of NFC have been considered to yield similar amounts of microbial protein. Recognition of differences in microbial protein yield among NFC will allow nutritionists to more accurately supplement dairy cattle diets to meet nutrient requirements, and minimize nutrient excretion.

Impacts/Accomplishments:

Dairy cattle rely on microbial protein from rumen fermentation to meet a large part of their daily protein requirements. Recognition that microbial crude protein yields differ across sucrose, pectin, and starch will allow nutritionists to formulate dairy cattle diets to more accurately meet animal protein requirements for production while minimizing nutrient excretion.

Total Hatch Expenditures: $47,363
National Goal: 1

Research Project #: ANS-03596 (Active)
Research Title: Animal Manure and Waste Utilization, Treatment and Nuisance Avoidance for a Sustainable Agriculture
Research Faculty involved: H.H. Van Horn; M.B. Hall
Extension Program Number: Dairy Nutri 1
Extension Title: Improving Nutritional Management of Dairy Cattle in Florida
Extension Personnel: M.B. Hall
Department: Animal Science
SMP's involved:

Description of Activity:
Additions of alum (Al2(SO4)3), ferric chloride, and polyacrylamide solutions were tested in the laboratory for their effectiveness to increase nutrient removals, especially phosphorus (P), by sedimentation from flushwaters with 1% dairy manure solids. Alum and ferric chloride significantly affected TS recovered, pH, and amounts of P, TKN, K, Ca, Zn, Cu, Mn, and Na remaining in the effluent as compared with control sedimentations without additives. Effects on P removals were greatest with removal curves best fitting a quadratic polynomial (r2 = .96 for P). However, the linear regression coefficients for P with a linear only model (r2 = .93) were considered to be good estimates of average removal rates (4.0 mg P removed/mmol Al+3 for alum, 5.36 mg P removed/mmol Fe+3 for ferric chloride). Polyacrylamide treatments were not different from control sedimentations at the concentrations tested. Field studies tested 0, 0.9, and 1.8 ml/L additions of alum solution (4.4% Al by weight) to dairy manure flushwaters (.33% TS and 41 mg P/L) that previously had been subjected to sedimentation and screening. Management scenarios tested, utilizing 4100 L tanks, were single-fill (batch), 3-fill continuous flow, and 6-fill continuous flow. Removals of 11 to 17 mg P/mmol Al+3 added (0.9 ml alum/L) were higher than in the laboratory experiment. All removal efficiencies in laboratory and field experiments with either alum or ferric chloride were well below theoretical efficiency of one millimole of P (31 mg) precipitated as phosphate with one millimole of Al+3 or Fe+3 but lower efficiencies are expected when organic compounds are present that can bind these ions. These studies demonstrated that reduction of P in dairy manure wastewaters to low levels is possible with additions of alum or ferric chloride solutions. However, the economics of these procedures did not appear favorable.

Impacts/Accomplishments:
Farms that can utilize most manure nutrients on-farm but must export a specific amount manure P to balance a mandated farm P budget may be able to sequester the required amount of P with a prescribed amount of flocculant for later export. The economics of using flocculants to solve marginal nutrient management problems may make this technology more affordable on some farms.

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: ANS-03659 (active)
Research Title: Metabolic Relationships in Supply of Nutrients for Lactating Cows
Research Faculty involved: M.B. Hall
Extension Program Number: Dairy Nutri 1
Extension Title: Improving Nutritional Management of Dairy Cattle in Florida
Extension Personnel: M. B. Hall
Department: Animal Science
SMP's involved:

Description of Activity:
Studies in which the profile of dietary non-neutral detergent fiber (NDF) carbohydrates (NFC) fed to lactating dairy cattle were shifted from primarily starch to sugars and neutral detergent-soluble fiber, showed alteration in milk composition, including milk protein. To begin to determine the basis for the differences in performance among the feedstuffs, in vitro fermentations of the predominant NFC were performed, and yield of trichloroacetic acid-precipitatable crude protein (TCACP) was determined. TCACP offers an estimate of microbial crude protein yield. Isolated bermudagrass NDF (bNDF), and 60:40 blends of bNDF and sucrose (Suc), citrus pectin (Pec), or corn starch (Star) were fermented in vitro with mixed ruminal microbes for 24 hours, with destructive sampling at 4 hour intervals. Substrates were adjusted so that all fermentations contained similar amounts of organic matter. Among the NFC, maximal yield of TCACP of both Pec and Suc fermentations were less than that of Star. The forms of the regression curves of TCACP and time of fermentation for Suc and bNDF were cubic, whereas those for Pec and Star were quartic. Yield of TCACP varied by hour with Suc, Pec, and Star achieving peak yields at 12, 12 or 16, and 16 hours of fermentation, respectively. In ration formulation, ruminal fermentation of the variety of NFC have been considered to yield similar amounts of microbial protein. Factors that affect metabolizable nutrient supply become a major issue as we attempt to define how diets meet animal requirements. Differences among NFC in microbial protein will alter the metabolizable nutrient supply to the animal. Recognition of differences in microbial protein yield among NFC will allow nutritionists to more accurately supplement dairy cattle diets to meet nutrient requirements, and minimize nutrient excretion.

Impacts/Accomplishments

Dairy cattle rely on microbial protein from rumen fermentation to meet a large part of their daily protein requirements. Recognition that microbial crude protein yields differ across sucrose, pectin, and starch will allow nutritionists to formulate dairy cattle diets to more accurately meet animal protein requirements for production while minimizing nutrient excretion.

Total Hatch Expenditures: $0
National Goal: 1

Research Project #: ANS-03818 (Active)
Research Title: Improvement of Beef Cattle in Multibreed Populations: Phase lii
Research Faculty involved: M.A. Elzo; D.D. Johnson; W.E. Kunkle
Extension Program Number:
Extension Title:
Extension Personnel: W.E. Kunkle
Department: Animal Science
SMP's involved:

Description of Activity:
During the period reported here work was done in the following areas: 1) multibreed data acquisition, 2) genetic analysis of unibreed and multibreed data, 3) development of new international multibreed genetic

research plans, and 4) development of new software. Reproduction, growth, and carcass data were collected from the Angus-Brahman multibreed herd of the University of Florida. In addition, multibreed data sets were obtained from Colombia (Blanco Orejinegro Criollo breed; growth traits), and from Thailand (one experimental, and one field data set composed of Bos taurus and Bos indicus straightbred and crossbred records; primarily dairy traits). Editing and preliminary analyses of these multibreed data sets were conducted in collaboration with Colombian and Thai researchers (research in progress). The unibreed data analysis (Brahman, Florida) resulted in one publication (J. Anim. Sci.). A revised protocol for multibreed genetic animal research was developed for the University of Florida. This protocol served as the basis for another one to be used in Colombia if a national multibreed research project submitted to the Ministry of Agriculture is funded. An agreement was worked out with Kasetsart University in Thailand to train a Ph. D. Student in Animal Breeding using multibreed Thai data sets. Participation in this collaborative multibreed research made necessary the development of new editing and analytical software (research in progress). In addition, software for the computation of standard errors of variance and covariance MREMLEM estimates is currently being written and tested (research in progress). A collaboration agreement with researchers of the University of Chile to work on genetic evaluation of the Chilean Holstein-European Friesian multibreed population was established (research in progress).

Impacts/Accomplishments:
The purpose of multibreed genetic evaluation procedures is to be able to identify animals that produce superior progeny in matings within a breed, and in crossbred matings. Results obtained in Phase III of the multibreed genetic research project will facilitate the identification of animals with superior genetic ability in pure breeding and crossbreeding situations. Both experimental and field data sets, and a variety of traits will be used to test and revalidate these procedures. This multibreed methodology will be useful to both purebred breeders and commercial producers.

Total Hatch Expenditures: $0

National Goal: 1

Research Project #: APO-03321 (terminated)
Research Title: Management of Weeds in Ornamental Crops
Research Faculty involved: R.H. Stamps
Extension Program Number:
Extension Title:
Extension Personnel: R.H. Stamps
Department:
SMP's involved:

Description of Activity:
Many preemergence herbicides were evaluated under this project for efficacy in controlling specific weeds (e.g., Phyllanthus tenellus, P. urinaria, Oxalis stricta, Fatoua villosa, Emilia fosbergii, E. sonchifolia) and reducing overall weed competition (as determined by percent weed coverage and weed weights). Effects of the herbicides and weed competition were also determined for numerous containerized ornamental crops. Acute and chronic herbicide phytotoxicity, and plant top (growth index and dry weights) and root growth were determined. Weeding times were also measured so that the economics of weed control using preemergence herbicides could be determined. In the last year of this project, four granular preemergence herbicide formulations (prodiamine 0.5 G, dithiopyr 0.27 G, thiazopyr 2.5 G, oxyfluorfen + pendimethalin 3 G) and prodiamine 65 WDG were applied at various rates repeatedly to eighteen genera (Acer, Agapanthus, Asparagus, Camellia, Cupressocyparis, Cycas, Galphimia, Gelsemium, Illicium, Lantana, Loropetalum, Myrtus, Ophiopogon, Plumbago, Quercus, Rhododendron, Viburnum, Zamia) of ornamental plants. Oxyfluorfen + pendimathalin and prodiamine WDG at 2.2 and 4.5 kg a.i./ha were acutely phytotoxic to about one-third of the plants. At 1.7 kg a.i./ha, dithiopyr, thiazopyr, and prodiamine G and WDG caused some phytotoxicity to only 2 to 3 genera each. For many plants, weed competition reduced crop growth compared the hand-weeded control. Plant top growth indexes and/or dry weights were reduced

by at least one herbicide treatment for all crops except Cupressocyparis and Zamia. All treatments reduced weed production, with the 4.5 kg a.i./ha prodiamine WDG and granular formulations suppressing weed growth the most. Earlier work has been reported and published previously. The last years research will be published later.

Impacts/Accomplishments:
Weed competition is one of the costliest problems encountered during the nursery production of ornamental plants. These studies have identified numerous phytotoxic and numerous safe herbicide/crop combinations. The use of preemergence herbicides has been shown to reduce production costs under certain circumstances. Effective herbicide materials, formulations and rates for controling/suppressing certain weeds have been identified and, in some cases, product labels have been modified accordingly.

Total Hatch Expenditures: $5,997
National Goal: 1

Research Project #: APO- 03490 (active) Being revised to APO-03934 ????
Research Title: Biological Control of Selected Anthropod Pests and Weeds
Research Faculty involved: L.S. Osborne
Extension Program Number:
Extension Title:

Extension Personnel: L.S. Osborne

Department: IPM Biological Control of Insects and Mites: Central Florida REC-Apopka
SMP's involved:

Description of Activity:
Aphelinus gossypii was evaluated to control Aphis gossypii in the greenhouse. Results showed that a 3d access to nymphs by one parasitoid female resulted in a mean of 12.7% mortality to nymphs with a slight increase to 17.9% after a 6 days exposure. Mummies were apparent 4-5 days after parasitoid introduction with a mean of 66.7% vs. 70% parasitism after 3d and 6d access periods, respectively. The combination of host feeding and parasitism by individual female parasitoids resulted in 79.4% and 88.4% reduction in live aphids after 3d and 6d exposure, respectively. Results of treating Hibiscus plants with labeled rates of Marathon 60WP indicate the following: 1) Treated plants were protected from whiteflies, aphids, mealybugs and thrips, 2) Two-Spotted spider mites survived on treated and non-treated plants, and 3) There was no significant difference between survival and reproduction of Neoseiulus californicus on treated and non-treated plants. This demonstrates that biological and chemical controls can be integrated to manage the most important pests of this crop. During a similar study conducted on Impatiens, thrips and other insects pests did not establish on Marathon 60WP treated plants; however, broadmites, Polyphagotarsonemus latus, significantly damaged every plant in the study irrespective of treatment. This indicates that host plant and mite species may play a role in the applicability of these results. A strain of Neoseiulus californicus, resistant to the insecticide Talstar GH, was evaluated in the greenhouse for it's ability to establish viable populations on plants treated one week prior to release of this predatory mite. Three adults females of this strain and three adult females from a commercially available strain were released on to isolated leaves with 7d old residues of Talstar GH. The commercial strain failed to establish in all cases whereas the resistant strain established and reproduced on every treated leaf on which they were placed. In the controls (un-treated leaves), the resistant strain appeared to produce more progeny than the commercial strain.

Impacts/Accomplishments:
The ability to integrate chemical and biological controls on ornamental plants is critical. Hudson et al. (1996), stated that any program designed to change pesticide use patterns in the ornamental plant industry should focus on mite control as one of its major target areas. Based on a national survey of the ornamental industry, these authors also state: "Of the top four products, two (dienochlor and propargite) are miticides. Together these represented 34% of the total estimated insecticide/miticide use, demonstrating the importance of mites as pests in the industry." Reduction

of pesticide usage, proper rotation and scheduling of applications, incorporation of biorational materials and a knowledge of which materials can be safely integrated with predatory mites is important for a number of reasons. First, this information will allow for efficient and effective mite management. Secondly, it will allow the industry to properly steward the valued pesticide resources we desperately depend on. A final benefit from this research will be seen in the programs developed for managing thrips.

Hudson, W.G., M.P. Garber, R.D. Oetting, R.F. Mizell, A.R. Chase, and K. Bondari. 1996. Pest management in the United States greenhouse and nursery industry: V. Insect and mite control. HortTech 6(3): 216-221.

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: APO- 03523 (Active)
Research Title: Management of Diseases of Tropical Foliage Plants
Research Faculty involved: D.J. Norman
Extension Program Number: APO-03523
Extension Title: Outreach and Public relations with the Ornamental Plant Industry
Extension Personnel: D.J. Norman
Department: Plant Pathology- Central Florida REC-Apopka
SMP's involved: FL 112

Description of Activity:

2. **Determine epidemiological importance of classification groupings of the major phytopathogenic bacteria and fungi.**
3. **Examine the etiology and ecology of newly described bacterial and fungal pathogens.**
4. **Determine the efficacy of chemical and biological control agents for foliage crops.**
5. **4) Examination of plant species, varieties and cultivars for disease resistance.**

Impacts/Accomplishments:

The Florida ornamental industry has a wholesale value of over 1.4 billion dollars. Nearly 400 million dollars of this production is in tropical foliage plants. The research that I conduct has a direct benefit to this industry. Each year I conduct research on agro-chemicals, cultivar resistance, and do cooperative research with plant breeding programs in IFAS. Information gained from my research is disseminated to growers, extension and DPI agents via trade journals and by an extensive statewide lecture series. Basic research into genetic relationship of both fungal and bacterial pathogens are also conducted, this information is published in refereed journals. Although, the impact of my research is hard to translate into specific dollar amounts, the applied research does provide growers with valuable information regarding disease controls that will provide cost savings to the industry.

Total Hatch Expenditures: $20,109
National Goal: 1

Research Project #: APO-03825 (Active)
Research Title: Technical and Economical Efficiencies of Production, Marketing, and Managing Environmental Plants
Research Faculty involved: J.J. Haydu
Extension Program Number: MREC-JJH-1 (2) (3)
Extension Title: Analysis os Industry Structure and Performance and Evaluation of Agricultural Technologies
Extension Personnel: J.J. Haydu
Department: Food and Resource Economics- Central Florida REC-Apopka

SMP's involved: Fl 116; FL 119; FL 120

Description of Activity:

1. Regional Research Project S-290 – "Technical and Economical Efficiencies of Producing, Marketing and Managing Environmental Plants". The first project with Florida participation is "Trade flows and Marketing Channels for Florida Nursery Products." The marketing study is the fourth in 10 years which examines changes in marketing practices by nurseries as part of a 26 state effort. Questionnaires for Florida were sent out in February of 1999, data was analyzed and a technical report published. The second project is a "Landscape Values Survey" in which roughly a dozen states are participating. The purpose is to quantitatively estimate the perception and valuation of different residential landscapes by consumers and landscape and real estate professionals. Over 75 consumers were interviewed in Florida and the results were sent to Michigan State University where the data will be analyzed by Dr. Bridgette Behe, project head. Project status will be confirmed in February (2001) meeting

2. Production and Economics of Up-canning. The primary objective of this three-year project was to evaluate the effectiveness of up-canning as a production technology and to compare it to other technologies. Criteria were developed at two levels: (1) a physical component where growth rates of live oak trees were measured from several container sizes during production towards a 15 gallon marketable-sized plant, and (2) an economic component examining financial aspects of this technology. From templates developed, biological and economic information were collected on a regular basis for 3 years. Data for the economic portion of the study was collected and analyzed. As of September, the biological portion was completed and the economic portion is now being prepared.

Economic Impact Study of Florida's Nursery Industry – Year 2000. The first FNGA study was

ducted in 1998, using 1997 information, and published in 1999. FNGA and AgFirst, the regional farm credit bank in Columbia, South Carolina, are funding a second study that examines impacts for year 2000. This is to begin in February-March, 2001.

4. **Market Expansion Strategies for Turfgrass Producers in the United States: Phase 1 (eastern U.S.) was completed and published in 2000 as an Departmental Economic Information Report, and in the Acta Horticulture Journal at the ISHS (International Symposium on Horticultural Economics) meetings in Guernsey. Turfgrass Producers International (TPI) funded ($18,845) a second marketing study for the central United States. Data has been collected and currently being analyzed. Results of Phase 2 will be presented at the annual convention in Albequerque in February, 2001.**
5. **Improving Irrigation Management in Container-grown Landscape Ornamentals. This three-year project (1997-1999) with Richard Beeson was funded by Southwest Water Management Districts and Tampa Bay Wholesale Growers Association. The objectives were to 1) evaluate techniques hypothesized to improve irrigation water use efficiency of existing overhead irrigation systems in container-grown landscape ornamentals, and; 2) provide the industry with economically feasible, water conserving methods for container nursery irrigation. The data has been collected and analyzed. A draft report was submitted to the Water Management District in September. Revisions are being made and a final report will be submitted in January, 2001.**
6. **Pre-harvest and Post-harvest Benefits of Field Applications of Captan and Iprodione for the Control of Fruit Rot Pathogens of Strawberry (Legard, PI, Dover Research Center). The Florida strawberry industry is the principal fresh berry supplier for the eastern half of the U.S. and Canada from December to April. Disease control strategies are aimed at reducing pre-harvest fruit rots caused by anthracnose, gray mold and Phomopsis leaf blight that can reduce yields up to 40%. Due to this potential for severe losses, strawberries receive more fungicide applications than any other food crop in the United States. This 3-year project addressed the pre- and post-harvest benefits of captan and iprodione usage and evaluated alternative chemical and post-harvest strategies for reducing their use. The final project report, including the economic section, has been submitted to the funding agency.**

7. **Market Analysis on the Capillary Mat Technology in the Southeastern United States. This is a joint project between a Canadian firm (Soleno Textiles, Techniques), Leval University in Quebec, and University of Florida. I was requested to examine the current situation regarding water**

availability for irrigation of nurseries in the southeast U.S. and their degree of receptivity towards improved irrigation technologies, including the capillary mat. Focus group sessions were conducted with nurserymen in Central and Southwest Florida in August. A survey instrument was designed in September and the survey implemented in which 491 wholesale nurseries and 163 retail garden centers were interviewed. In October data was analyzed, a final report written and submitted in December 2000. Results will be submitted to the Journal of Environmental Horticulture in 2001.

8. **Competition in the Container Market in the Southeastern United States. Increasingly, manufactured plastic nursery containers are used for horticultural production because of their advantages of convenience and productivity versus traditional field growing systems. Purchase of nursery containers is a significant production expense and is often the single largest direct cost item. In recent years, the market for nursery containers has become more concentrated, and is dominated by a very small number of major firms, with the result that competition may be hampered. The primary objective of this project is to determine the current degree of competitiveness in the market for horticultural (nursery) containers in the southeast United States. Focus group sessions were held in two different locales in Florida in August and a telephone survey was conducted with producers in nine southeastern states. Data has been compiled and analyzed and a report is being written.**

Impacts/Accomplishments:

1. Technical and Economical Efficiencies of Producing, Marketing and Managing Environmental Plants

(S-290). The first project, "Trade Flows and Marketing Practices" is an ongoing effort that has been utilized extensively by researchers, extension specialists, and industry clientele. This research is highly desired because it addresses marketing issues which are normally under-funded in favor of production and disease research. On average, I receive between 20-25 requests per year for these publications. The second project is still being carried out, so no impacts are yet available.

2. **Production and Economics of Up-canning. The potential impacts of this project will be significant as results indicate production efficiencies can be greatly enhanced utilizing this approach. Production efficiencies also have clear economic benefits.**

3. **Economic Impact of Florida's Nursery Industry. The Florida Nurserymen & Growers Association have used this study repeatedly to demonstrate, for the first time ever, the value ($1.46 billion in farm gate sales) and economic importance ($5.4 billion in value added) of their industry. Nearly 3,000 copies were requested and distributed to FNGA members and non-members. The industry has used information from this study both in Tallahassee and Washington D.C. for various initiatives. FNGA is funding a second impact study for a year 2000 update, to be conducted in Feb. 2001.**

4. **Market Expansion Strategies for Turf grass Producers in the U.S. This research is the first of its kind for turf grass in the United States. Information from phase 1 was obtained from 26 states so recommendations have broad application. Results were disseminated in different ways – published in a refereed international journal, in a UF departmental publication, in an international trade journal, and as a 1 hour and 30 minute seminar at the Association's annual convention. The fact that a phase 2 was funded by the association, and that I have been asked back as a keynote speaker to talk on marketing, suggests a message is being received. Phase 2 is still under way, so impact cannot be assessed.**

5. Improving Irrigation Management in Container-Grown Landscape Ornamentals. Water resources in

Florida are a concern for agricultural producers and water managers. With population and urban development increasing daily, producers must utilize effective and efficient irrigation systems. The final report has just been submitted so impact is still premature to measure.

6. Pre-harvest and Post-harvest Benefits of Field Applications of Captan and Iprodione for the Control of Fruit Rot Pathogens of Strawberry. This report has just recently been submitted to the funding agency so assessing impact is premature.

7. Market Analysis on the Capillary Mat Technology in the Southeastern United States. Ongoing project –early to assess impact.

8. Competition in the Container Market in the Southeastern United States. Ongoing project – early to assess impact.

Total Hatch Expenditures: $0
National Goal: 1

Research Project #: BGL-03260 (terminated)
Research Title: Calibrated Soil Test Methodology for Management of Agronomic and Vegetable Crop Nutrients
Research Faculty involved: R. W. Rice
Extension Program Number:
Extension Title:
Extension Personnel: R.W. Rice
Department:
SMP's involved:

Description of Activity:
Two research trials were conducted for the grant entitled "Phosphorus Fertilizer Investigations for Leafy Crops Grown in the EAA", funded by the Florida Fruit and Vegetable Association. Results were presented at the Florida Society for Horticultural Sciences annual meeting (November 1999) and a paper has been submitted (currently under review) for the proceedings entitled "Phosphorus Rate Demonstration Trials on Lettuce in the Everglades Agricultural Area". An extension update seminar was also presented to EAA leafy vegetable growers (April 1999). Crisphead and romaine production response to P differed across the two study sites. Under optimal rainfall and soil moisture conditions at planting, (Farm A), gross yield responses across P inputs did not appreciably differ. Under dry planting conditions that persisted throughout the first month of growth (Farm B), gross yields increased dramatically with increasing P inputs. This effect was largely due to increased seedling survival with increasing P rate. P inputs might improve seedling survival under dry conditions by encouraging deeper and more prolific root systems, but root growth was not measured. The strong response to P inputs at Farm B is also associated with soil characterized by low soil-test P (6 lb/acre) levels, high pH (7.0) and extremely high soil-test Ca levels (5734 lb/acre). Subsurface irrigation practices contribute Ca (from the calcium carbonate bedrock)to the soil profile and serves to elevate soil pH, which can compromise the short-term availability of P and some micronutrients. By contrast, Farm A had higher soil-test P levels (13 lb/acre), lower soil pH (6.0), and lower soil-test Ca (1360 lb/acre) levels. These favorable soil characteristics may contribute to the attenuated production response to P inputs recorded for crisphead and romaine. For 1999, EAA leafy vegetable growers have made an in-kind contribution of roughly $2000 in the form of different special-order liquid P fertilizer blends to be used for additional trials on crisphead, romaine, escarole, and endive leaf crops.

Impacts/Accomplishments:
Given that agriculture in the EAA is currently conducted under a climate of increasing environmental regulation (particuarly P), it is timely to revisit current P recommendation schemes through a series of on-farm demonstration trials on grower properties. Verifying current P recommendations and establishing confidence with the water extraction procedure will contribute to scientifically defensible and environmentally sound fertilizer BMP strategies for EAA leaf growers.

Total Hatch Expenditures: $8,557
National Goal: 4

Research Project #: BRA-03321 (terminated)
Research Title: Management of Weeds in Ornamental Crops
Research Faculty involved: J.P. Gilreath
Extension Program Number:
Extension Title:
Extension Personnel: J.P. Gilreath
Department:

Description of Activity:
Caladium tuber production is confronted with a host of soilborne pests; principal among them are weeds. Research on alternatives to methyl bromide in caladium production began in 1998 with a single experiment. In 1999 that work was expanded to 4 experiments, all conducted in commercial fields in cooperation with growers. One experiment was a repeat of the first experiment on the same site. Herbicides were combined with the fumigant treatments to provide the necessary level of weed control. In the multi-year study, weed control was better with metam + chloropicrin and 1,3-D + chloropicrin than with methyl bromide in the first year, but there was no difference observed in the second year. Tuber production was better with 1,3-D than with methyl bromide in the first year, but in 1999 there was no difference in tuber production with any of the treatments, including the nontreated control. In the other 3 experiments, weed control was better with treatments containing metam, if the soil was tarped after application. Without a tarp, control was poor. All fumigant treatments produced more tubers than where no fumigant was applied, with no differences among fumigant treatments. Chemical weed control trials have been conducted on caladiums for many years. This research was intensified in response to increased needs due to the loss of methyl bromide and culminated in 1999 with three herbicide experiments on caladiums. The first experiment was a study investigating the efficacy and crop response of three rates each of metolachlor, oryzalin, and prodiamine when applied twice during the season. Metolachlor (the industry standard as a result of previous research) produced no injury when applied at planting but over the top applications in July resulted in some foliar scorch and some stunting of plants. Weed control was best with oryzalin. A second study was designed to explore the effect of preplant incorporated vs preplant surface applications of metolachlor followed by a midseason application of metolachlor, oryzalin, prodiamine, and isoxaben on caladiums. Based on weed control data, soil incorporation of metolachlor does not appear to be a good option for caladium producers on muck. Surface application provided much better control than soil incorporation, but preemergence application of oryzalin was even better than metolachlor applied ppi or preemergence. Tank mixing herbicides also was explored. In one experiment metolachlor, oryzalin, isoxaben and prodiamine , alone and in various combinations, all with paraquat, were applied twice during the growing season. All treatments performed well with no phytotoxicity observed with any treatment.

Impacts/Accomplishments:
Methyl bromide has been an important component in soilborne pest control in caladiums for many years. One of its main uses is for weed control and more money is spent on weed control in caladiums than for any other aspect of crop production. Identification of soil fumigants which can replace methyl bromide is vital to the survival of the industry. Safe, effective herbicide based weed control programs are necessary for the continuation of a viable caladium industry. This work provides those needs of the growers.

Total Hatch Expenditures: $6,190
National Goal: 1

Research Project #: BRA-03372 (terminated)

Research Title: Microirrigation for Optimum Crop Productivity and Minimum Groundwater Contamination
Research Faculty involved: C.D. Stanley
Extension Program Number:
Extension Title:
Extension Personnel: C.D. Stanley
Department:
SMP's involved:

Description of Activity:
1) A study was initiated to investigate the effectiveness of using grass filter strips in both microsprinkler-irrigated citrus groves and annual vegetable production fields to temporarily retain stormwater and irrigation runoff to facilitate removal of NO3-N and sediments in the water. Two commercial grower sites have been identified and groundwater monitoring stations installed. Soil core samples have been collected to determine denitrification potential within the filter strips. Only preliminary data has been collected at this time. 2) A study is being conducted to determine the impact of that plastic mulch for irrigated vegetable production and water table level have on field runoff amounts and rates for an EauGallie fine sand (97% sand). The treatments include two initial water table levels (30-35 cm and 45-50cm) and three plastic mulch amounts (100%, 50%, and 0% of production beds covered). Overhead irrigation applied at a rate of 1cm/hr was used to simulate rainfall occurrence. Water table level changes were monitored continuously throughout the data collection period. Preliminary data indicate that the initial water table level had more of an impact on when runoff first occurs and when an equilibrium state of irrigation input versus runoff output occurred. This supports the view that runoff occurs because of rising water table levels nearing the surface and that the infiltration through the unmulched soil areas causing the water table to rise occurs readily enough to overcome the presence of plastic mulch.

Impacts/Accomplishments:
The use of filter strips to temporarily retain storm and irrigation runoff is a lower cost option (compared to major water retention structures) that Florida horticultural producers are given by regulatory agencies. If these accomplish the same goals, cost savings are realized by the producers while still complying with environmental regulations.

Total Hatch Expenditures: $2,062
National Goal: 1

Research Project #: BRA-03402 (Active)
Research Title: Integrated Pest Management as an Alternative for Control of Soilborne Pests of Vegetable Crops
Research Faculty involved: R.J. McGovern
Extension Program Number: Extension Program
Extension Title: Diagnosis and Integrated Management of diseases of Ornamentals and Vegtables
Extension Personnel: R.J. McGovern
Department: Plant Pathology-Gulf Coast REC-Bradenton
SMP's involved: FL 107; FL 112; FL 114; FL 801

Description of Activity:
1. Management of Phytophthora blight of vegetables caused by Phytophthora capsici:
- **Survival of the pathogen in two retention ponds was investigated**
- **Screened new fungicides or fungicide formulations including biocontrol for efficacy against P. capsici in tropical pumpkin**

2. Evaluation of fungicides for control of foliar diseases of tomato:

- Biofungicides, other low-impact compounds, and new conventional fungicides were screened for effectiveness against foliar diseases (early blight, target spot, gray leaf spot, and leaf mold) in tomato

3. Optimization of soil solarization for management of soilborne diseases of vegetables in raised beds:

- Experiments were conducted to develop optimal solarization procedures solarization including bed design and use of a bicarbonate-based amendment

Impacts/Accomplishments:

1. Populations of P. capsici rapidly dropped to low levels in retention ponds

2. A new fungicide was effective in reducing Phytophthora blight in tropical pumpkin

3. A number of biofungcides including such strobilurin compounds as Quadris, and the low impact potassium-based Armicarb 100 proved effective in reducing multiple foliar diseases in tomato, thereby providing Florida growers with new tools in their disease management arsenal

4. Progress was made in developing methods for soil solarization using raised beds

Total Hatch Expenditures: $670.00

National Goal: 4

Research Project #: BRA-03415 (active)

Research Title: Development of Pest Management Systems For the Control of Getable Diseases

Research Faculty involved: J.P. Gilreath; R.J. McGovern

Extension Program Number:

Extension Title:

Extension Personnel: J.P. Gilreath; R.J. McGovern

Department:

SMP's involved:

Description of Activity:

A long term (multi-year) study was initiated in tomato with the best chemical alternative program to methyl bromide (1,3-D + chloropicrin with pebulate) and the best nonchemical alternative (soil solarization for 8 weeks) in 1998. Treatments were applied each year during late summer followed by fall tomatoes. During the course of this study, there was a large increase in nutsedge, rootknot nematodes and Fusarium wilt incidence on tomato in the nontreated control. Pebulate with 1,3-D + chloropicrin was as effective as methyl bromide (67/33) for control of these three pests. Soil solarization was intermediate between methyl bromide and the nontreated control for all three pests. Tomato fruit production followed a trend similar to pest control in that those treatments with the best control had the highest yields. Double cropped cucumber also was a part of this experiment, following the fall tomatoes. Weeds in the bed were a problem with all treatments, but more so with solarization and the nontreated. Rootknot nematode resurgence was experienced both years in the spring cucumbers, but it was worse in the second year of the study. Even methyl bromide treated plots experienced some resurgence of rootknot, but galling was most severe on plants grown in soil which was solarized or not treated at all. Cucumber yields were lower in solarized and nontreated plots. Efficacy and yield were similar between methyl bromide and 1,3-D + chloropicrin with pebulate. Results of this study have been extended to growers by conducting replicated, large plot field validation experiments on commercial farms in west central and southwest Florida. These experiments have relied upon 1,3-D + chloropicrin with either pebulate (tomato) or napropamide (pepper) or

combinations and have provided data which substantiated the results from small plot studies on the experiment station.

Impacts/Accomplishments:
Results of these studies have provided other scientists and growers with information on the current best chemical alternative to methyl bromide. The project has extended information to growers through field demonstration trials which have focused on the best chemical alternative to methyl bromide (1,3-D + chloropicrin with pebulate or napropamide). As a result of these efforts with key growers, many of the area growers are aware of how to use this alternative and some of the details of herbicide and fumigant application which are peculiar to this integrated management program. Additionally, through studies with growers, the efficacy of 1,3-D + chloropicrin applied in bed vs. broadcast was established and various pieces of application equipment have been evaluated to identify the one which provides the best broadcast application.

Total Hatch Expenditures: $10,574
National Goal: 1

Research Project #: BRA-03416 (Active)
Research Title: Weed Management In Vegetable Crops Grown in Flatwoods Soils
Research Faculty involved: J.P. Gilreath; S.J. Locascio; E.N. Rosskoph,; D.O. Chellemi; J.P. Jones

Extension Program Number: BRA3416

Extension Title: Weed Control in Vegtable Crops Grown on Sand Land
Extension Personnel: J.P. Gilreath; J.W. Noling; P.R. Gilreath; S.M. Olson
Department: Horticultural Science- Gulf Coast REC-Bradenton
SMP's involved: FL 107

Description of Activity:

Methyl bromide alternatives technology transfer in vegetable crops is an extension component of Project 3416.

Situation: methyl bromide sales and useage were cut to 25% of 1994 levels during 2000 and as of January 1, 2001 there will be a further reduction to 50%. This phase out of methyl bromide is resulting in price increases and declines in availability of the soil fumigant which has become the backbone of plastic mulch cultured vegetable crops. The importance of methyl bromide to the vegetable industry cannot be overstated. Growers are increasingly anxious to receive solutions or alternatives to methyly bromide and need help learning how to use these alternatives in order to remain productive and competitive.

Objectives: demonstrate to growers 1) the most effective chemical alternative programs (consisting of soil fumigant and herbicide) to methyl bromide for soilborne pest control, 2) the proper selection of herbicides based on expected weed pests and the application procedures for herbicides in these programs, 3) the most effective application procedure for Telone products in order to not only retain efficacy but also to minimize impacts of PPE requirements, and 4)

inform growers about herbicide and fumigant options, and other matters relative to alternatives for methyl bromide.

Procedures: These objectives were met by conducting research on the experiment station and field demonstration studies on commercial farms with growers who are considered industry leaders. Experiment station research focused on new discoveries or methodologies whereas on farm studies involved applications with commercial equipment to demonstrate the applications of these practices under real world conditions. Studies on the experiment station and on farms consisted of not only herbicide and Telone product trials, but also virtually impermeable film mulch which greatly reduces emissions and ehances methyl bromide activity by increasing the effective concentration (retention time x dose). At least ten demonstrations trials were conducted on tomato, pepper and strawberry during 2000. Growers learned first hand what options worked and how to apply them properly. Presentations also were given to grower and industry audiences at one local. regional, and statewide meetings, one private consultant sponsored Crop Consultant Certification Training, and international conferences including the International Methyl Bromide Alternatives Conference and the International Weed Science Society Congress.

Procedures: These objectives were met by conducting research and field demonstration studies on commercial farms with growers who are considered industry leaders. These studies involved applications with commercial equipment to determine the limitations of selected herbicides and fumigant alternatives and to demonstrate the applications of these practices under real world conditions. Studies consisted of 3 herbicide trials and 4 herbicide /soil fumigant trials which were started in 1999 and completed in 2000 and one herbicide / soil fumigant study which was initiated in 2000 and will be completed early in 2001. Growers learned about these options by viewing the field trials on their farms or another grower's farm. Presentations also were given to grower and industry audiences at one local meeting, one statewide meeting involving administrators from the USDA, ARS, one private consultant sponsored Crop Consultant Certification Training, and international conferences including the International Methyl Bromide Alternatives Conference and the International Weed Science Society Congress.

Impacts/Accomplishments:

As a result of these trials with this select group of growers, almost every major tomato, pepper, and strawberry grower in west central and southwest Florida has plans to conduct his own on-farm trials during spring of 2001. These trials will consist of Telone products with herbicides or other fumigant alternatives and the use of virtually impermeable film mulch in combination with one-half rates of methyl bromide. Thus, growers will gain valuable experience with selected alternatives and will begin to better understand herbicides and how to apply them properly. Additionally, the use of virtually impermeable films will allow them to continue using methyl bromide in those fields where it is most needed. This knowledge will be essential to maintaining profitable farming operations.

Total Hatch Expenditures: $9,532
National Goal: 1

Research Project #: BRA-03492 (active)
Research Title: Microirrigation of Horticultural Crops in Humid Regions
Research Faculty involved: C.D. Stanley; A. A. Csizinszky
Extension Program Number:
Extension Title:
Extension Personnel: C.D. Stanley
Department: Soil and Water Science--Gulf Coast REC-Bradenton
SMP's involved: FL 411

Description of Activity:

a) The yield response of 'Camarosa' strawberry to three biostimulant products was evaulated during the fall-winter-spring (Oct. 1999-Mar. 2000) seasons. Production system was the full-bed polyethylene mulch with micro- (trickle-) irrigation. Treatments were arranged in a randomized complete block, replicated four times. Biostimulant products were: 'Atonik' (mononitrophenolate) (Asahi Chemical Co., Japan) and Amino-Quelant-K (AQ-K) (L-alpha-amino acids) (Bioiberica S.A., Spain). The 'Atonik' was applied as a pre-transplant dip, then as a foliar spray applied weekly or bi-weekly intervals throughout the 160 day long season. The 'TSR' was applied via the irrigation tube in the root zone at transplanting, then five more times at 14-day intervals. The 'AQ-K' product was applied via the irrigation tube at 15 and 5 days before the first harvest, followed by foliar application at 5 days, 15 days and 25 days after the first harvest. In the control plots the plants were sprayed with water. Fruits were harvested weekly, from 22 Nov. 1999 to 29 Mar. 2000. Fruit yields were similar with water and biostimulant treatments. b) A study was conducted to determine the effectiveness of using containerized transplants (as opposed to conventionally-used bare-rooted transplants) for annual hill strawberry production in Central Florida. The use of bare-rooted transplants normally requires

substantial irrigation water to establish the transplants in the field (30-50% of the total seasonal needs for irrigation). This study investigated the effect of transplant size (four sizes classes) and type (bare-rooted and containerized), and establishment overhead irrigation amounts (0, 37 cm, and 118 cm (conventional)) on transplant survivability and early and total seasonal fruit yields. The results showed that containerized transplants survived regardless of irrigation or transplant size treatments, while bare-rooted transplant had high survivability only where overhead irrigation was used. Yield results showed that containerized transplants had a two-fold higher early season yield over bare-rooted transplants. c)Caladium tuber production primarily occurs on subirrigated organic soils in central Florida. Limited work has been conducted as to the optimum water table level to maintain in production fields. Earlier field work showed that although producers attempted to control water table levels in production areas, very little control was accomplished for a number of reasons. Besides this, the level at which to maintain the water table was unknown. In order to determine this level, a study was conducted to investigate the effect of water table level on caladium tuber production. Treatments used were 30, 45, and 60 cm water table depths. A field-located drainage lysimeter system was used to maintain treatment levels. Results showed the highest depth (30 cm) had significantly higher production levels as long as flooding was not allowed to occur. These results indicate the importance of maintaining proper water table levels in the fields for maximum tuber production.

Impacts/Accomplishments:
a) Biostimulant applications did not increase strawberry yields. Therefore, under optimum nutritional conditions and irrigation regimes, the application of biostimulant products is not recommended. b) The impact of using containerized transplants could be huge financially if earlier fruit production occurs, but environmentally, the water savings could be a much as 6 billion gallons less water being applied to establish transplants compared to current practices. c) The impact of knowing where to maintain water table levels will resulting more efficient use of water and improved tuber production. Improvement of the means by which water tables are controlled would further improve the consistency of high levels of production, thus improving the financial state of producers.

Total Hatch Expenditures: $0

National Goal: 4

Research Project #: BRA-03544 (active)
Research Title: Improved Nutrition and Irrigation of Ornamental Plants
Research Faculty involved: B.K. Harbaugh
Extension Program Number: 782-bkh
Extension Title: Integrated Crop Management for the Floricultural Crops
Extension Personnel: B.K. Harbaugh
Department: Environmental Horticulture-Gulf Coast REC- Bradenton

SMP's involved: FL 105; FL 112

Description of Activity:

1. Water management for caladium tuber production on muck soils: B. K. Harbaugh and C. D. Stanley.
   A. Lysimeter tests. Completed the 2 year study by digging tubers from the 1999 test. I have analyzed the data and am in the process of preparing a paper for the caladium industry and HortTechnology.

B. Monitoring wells. Currently analyzing data from 2 year study and preparing a report on the efficiency of mole drains for the caladium industry.

2. Relationship between tissue nitrogen and phosphorus concentrations of impatiens and thrips infestation and damage on impatiens. B. K. Harbaugh, K. Williams, and M. Bell.

A. Foliar nutrient concentrations. We were able to refine fertilization practices by analyzing results from the 1999 test at GCREC and comparing the results with a greenhouse study done by cooperators at KSU.

B. Thrips preference. We conducted a 3N x 4P factorial experiment at GCREC to correlate the relationship between foliar nutrient content of nitrogen and phosphorus in impatiens with thrips populations and incidence/severity of feeding damage.

3. Rapid propagation of caladium tubers. B. K. Harbaugh, R. J. McGovern, and J. E. Polston.

A. Media. Tissue cultured explants were successfully grown in vermiculite and growth was comparable to peat mixes, thus allowing propagation in sterile media rather than highly contaminated peat mixes.

B. Fertilization. Five studies were completed comparing foliar growth and tuber production of explants grown in vermiculite with various rates and ratios of N-P-K.

Impacts/Accomplishments:

We estimate that adoption of best management practices for caladiums can increase caladium tuber production by 20% compared to current practices.

Total Hatch Expenditures: $11,256
National Goal: 4

Research Project #: BRA-03554 (Active)
Research Title: Flower Initiation and Development of Floriculture Crops
Research Faculty involved: B.K. Harbaugh
Extension Program Number: 702-bkh
Extension Title: Integrated Crop Management for Floricutural Crops
Extension Personnel: B.K. Harbaugh
Department: Environmental Horticulture- Gulf Coast REC- Bradenton
SMP's involved: FL 105, FL112

Description of Activity:

1. A Novel Approach Using H-Mutant Bacteriophages For The Biological Control of Erwinia Soft Rot of Poinsettia. B. K. Harbaugh and J. B. Jones

A. A highly virulent phage strain was isolated that was specific for Erwinia. Techniques were developed to concentrate the phage solution to 10-9th for use in future experiments.

B. Concentrations of Erwinia were evaluated to develop an inoculation technique to produce uniform disease symptoms under mist conditions. A 10-5th solution was found to be ideal. In a second test, a phage solution was evaluated for control of Erwinia soft rot as either a: 1) pre-stick drench of oasis cubes; 2) pre-stick stem dip; or 3) post-stick drench/spray. Control treatments failed to develop diseases symptoms due to cold greenhouse temperatures so the test will be repeated in the summer.

2. Characterization of, and Development of Management Practices for Control of Fusarium on floricultural Crops. R. J. McGovern and B. K. Harbaugh

A. Temperature. Two temperature-regression studies were accomplished to define optimal temperatures for disease development of F. oxysporum.

B. Hosts. We were able to isolate F. oxysporum from caladium, cyclamen, lisianthus, calla lilies, and vinca, and to characterize symptoms on these susceptible plants.

Impacts/Accomplishments:
No impact at this time

Total Hatch Expenditures: $9,393
National Goal: 1

Research Project #: BRA-03832 (active)
Research Title: Microirrigational Technologies for Protection of Natural Resources and Optimum Production
Research Faculty involved: C.D. Stanley; A.A. Csizinszky
Extension Program Number: 702-cds 1
Extension Title: Improvement of Water Management for Production of Vegetable and Flowering Ornamental Crops
Extension Personnel: C.D. Stanley
Department: Soil and Water Science - Gulf Coast REC-Bradenton
SMP's involved: FL 411

Description of Activity:

This 3-year study is being conducted to determine the impact of irrigation system and water table level on irrigation water requirements and fruit production for subirrigated fresh market tomatoes. The use of the fully-enclosed subirrigation (FES) system (which utilizes microirrigation tubing to convey water for ater table level maintenance) is compared to conventional seep (ditch-conveyed irrigation) at two water table levels (45 and 60 cm). The first season results showed that water use was reduced by 50% using FES at 45 cm water table level and further reduced 50% when the water table was lowered to 60 cm. No fruit yield or quality differences were detected among treatments. The first season results showed that water use was reduced by 50% using FES at 45 cm water table level and further reduced 50% when the water table was lowered to 60 cm. No fruit yield or quality differences were detected among treatments.

Impacts/Accomplishments:

Success in this project should show that the use of the fully enclosed subirrigation system to control water table levels at 60 cm affords dramatic water savings, allows for lessening the potential for applied fertilizer loss due to elevated water table levels, and does not result in reductions of production potential.

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: DOV-03586 (active)
Research Title: The Epidemiology And Control of Strawberry Diseases
Research Faculty involved: D.E. Legard; C.K. Chandler
Extension Program Number: Program one
Extension Title: Development and presentation of interdisciplinary programs on the integrated management of annual strawberry production with special emphasis on disease control.
Extension Personnel: D.E. Legard; C.K. Chandler
Department: Plant Pathology - Gulf Coast REC-Dover
SMP's involved: FL 107

Description of Activity:

Twenty-six different fungicide treatments/schedules were evaluated for control of Botrytis fruit rot on strawberry. It was found that treatments with weekly applications of captan or thiram were the most effective in controlling the disease. Supplemental late season applications of Elevate provided the best control of Botrytis fruit rot. The timing of bloom applications for control of Botrytis fruit rot was evaluated by treating individual flowers. It was found that flowers need to be treated with fungicides within 7 days of opening for effective control. For the second season in a row, powdery mildew, caused by Sphaerotheca

macularis, was controlled equally well with weekly applications of sulfur, benomyl, and myclobutanil. The population structure of Collectotrichum gloeosporioides and C. acutatum from strawberry was evaluated and it was found that C. gloesporioides is highly polymorphic and the variation is due to sexual recombination. The C. acutatum were highly clonal and appear to reproduce asexually. The population structure and pathogenicity of Collectotrichum gloeosporioides from weeds and isolates was further evaluated. Weed isolates were as genetically diverse as strawberry isolates but formed a separate clad apart from strawberry isolates in a dendrogram. This suggests that weed isolates of C. gloeosporioides in Florida do not play a role in the epidemiology of Collectotricum crown rot.

Impacts/Accomplishments:
No impact at this time

Total Hatch Expenditures: $25,344
National Goal: 1

Research Project #: DOV-03764 (active)
Research Title: Strawberry Cultivar Development
Research Faculty involved: C.K Chandler; D.E. Legard
Extension Program Number: Program one
Extension Title: Strawberry Cultivars for Florida
Extension Personnel: C.K Chandler; D.E. Legard
Department: Horticultural Sciences- Gulf Coast REC- Dover
SMP's involved: FL 107

Description of Activity:

Approximately 12,000 new genotypes were evaluated in a fruiting field trial during the 1999-2000 season. Two hundred and nine (209) of these genotypes were selected for inclusion in future clonal trials. FL 95-237 x FL 96-116, FL 96-24 x FL 96-11, FL 96-24 x FL 94-128, 'Sweet Charlie' x FL 95-303, FL 95-237 x FL 96-11, and FL 96-114 x FL 96-11 were the crosses that produced the highest percentage of seedlings with acceptable fruit quality. Two hundred and thirty eight (238) selections were evaluated in an observational (stage 2) trial containing one or two 10-plant plots per selection. FL 93N-21, FL 96-70, FL 97-39, FL 97-51, FL 97-56, FL 97-57, FL 97-129, FL 97-141, FL 97-143, FL 97-145, FL 97-197, and FL 98-95 received high marks for fruit attractiveness, and will be evaluated in a replicated trial during the 2000-01 season. FL 95-256 performed well in a grower trial, and will be considered for release in 2001. 'Earlibrite' (FL 93-100) and 'Strawberry Festival' (FL 95-41) were named and released in January 2000.

Advanced the UF/IFAS strawberry breeding program another cycle. (This included intercrossing about 20 clones to combine desirable traits; selecting cultivar candidates from among a population of approximately 10,000 seedlings; determining which of 300 selections in the observational plots should be advanced to the next level of testing; comparing 8 advanced selections to 2 standard cultivars in a replicated trial; and evaluating 5 promising selections in commercial field trials involving 8 Florida growers.)

Impacts/Accomplishments:

This work led to the development of new strawberry cultivars 'Earlibrite' and 'Strawberry Festival'. These cultivars should help Florida maintain its dominance in the U.S. winter strawberry market

Total Hatch Expenditures: $0
National Goal: 1

Research Project #: ENH-03543 (Active)
Research Title**:** Establishing Trees in Urban Landscapes

Research Faculty involved: E.F. Gilman
Extension Program Number: Program
Extension Title: Selecting and planting appropriate trees for the urban landscape
Extension Personnel: E.F. Gilman
Department: Environmental Horticulture
SMP's involved:

Description of Activity:
Strength of branch attachment in Acer rubrum L. was related to the diameter of the branch relative to the diameter of the stem to which the branch was attached measured directly above the branch. Linear correlation coefficients ranged from 0.7 to 0.96 between branch:stem diameter ratio and load required to separate branches from stems. Slopes of the lines describing this relationship increased with branch diameter.

Impacts/Accomplishments:
Presence of included bark in the union significantly reduced the load required to separate the branch from the stem. Codominant stems were far easier to split apart than branches that were small relative to stem size. This information has implications for arborists climbing trees and will help guide development of pruning objectives.

Total Hatch Expenditures: $5,227
National Goal: 5

Research Project #: ENH-03544 (Active)
Research Title: Improved Nutrition And Irrigation of Ornamental Plants
Research Faculty involved: T.H. Yeager
Extension Program Number: FL105
Extension Title: Management of Water and Nutrition in Florida's Nursery Industry
Extension Personnel: T.H. Yeager
Department: Environmental Horticulture
SMP's involved: FL105

Description of Activity:
Achieved state and national recognition for nursery BMPs. Initiated revision of "Best Management Practices, Guide for Producing Container-grown Plants." This handbook culminated years of research conducted throughout the southeast. The handbook was published by the Southern Nurserymen's Association and is sold by the nursery industry. Currently coordinating research for development of greenhouse BMPs. Co-coordinator of Container Nursery Water Management Group, composed of Environmental Horticulturists and Agricultural Engineers, whose focus is improving container nursery irrigation application efficiency. We received the first major funding from the nursery industry for a project of this type and have submitted one patent application.

Impacts/Accomplishments:
Approximately 50% of Florida nurseries are located within one mile of urban centers. Thus, the production of plants utilizing environmentally compatible production practices is crucial. The accomplishment of these objectives will provide nursery operators with basic information needed to meet environmental guidelines of the future.

Total Hatch Expenditures: $1,782
National Goal: 1

Research Project #: ENY-03490 (active)
Research Title: Biological Control of Selected Anthropod Pests and Weeds
Research Faculty involved: J.P. Cuda; J.H. Frank; J.L. Capinera; M. A. Hoy; D.W. Hall
Extension Program Number: 305
Extension Title: Delivery of Biological Control Information and Technology in Florida
Extension Personnel: J.P. Cuda; M.A. Hoy
Department: Entomology and Nematology
SMP's involved: FL101, FL102, FL107, FL108, FL111, FL112, FL113, FL114, FL116, FL117, FL120, FL121, FL122, FL123, FL129, FL130, FL131, FL211, FL212, FL214, FL261, FL265, FL269, FL412, FL416, FL420, FL711, FL712, FL714

Description of Activity:

Brazilian peppertree, Schinus terebinthifolius: We continued conducting biological studies and host range tests in US quarantine and South America with the defoliating sawfly Heteroperreyia hubrichi, the stem tip thrips Pseudophilothrips ichini and the leafrolling moth Episimus utilis. The sawfly H. hubrichi exhibits annual population peaks mainly during fall (May) and spring (November) months in Brazil. Two annual population peaks were observed in South America, which suggests the insect is likely to exhibit a similar temporal pattern in Florida. The sawfly population dynamics data were compared with climatic data from the survey area obtained from the Meteorological System of Paraná State (Simepar-PR). The high population levels observed in Brazil during May suggest that sawfly emergence is influenced by an increase in soil moisture resulting from precipitation during the months of February and March. We identified potential sites in Florida for release of H. hubrichi using climate-matching software (CLIMEX) and the web-based Florida Automated Weather Network (FAWN). The model predicted the sawfly H. hubrichi is likely to establish and persist in areas within the northern limit of Brazilian peppertree's distribution in peninsular Florida. Fatal livestock poisonings by ingestion of sawfly larvae have occurred in at least four countries in three different continents. To address this concern, larvae of the sawfly H. hubrichi are being assayed for the presence of the vertebrate toxins pergidin, lophyrotomin, and any new toxins. This collaborative research with scientists in the College of Veterinary Medicine was conducted to satisfy the requirements for the Environmental Assessment mandated by NEPA. A permit to release this insect in Florida will likely be issued by APHIS-PPQ in 2001 if the results of the toxicity studies are favorable.

We conducted host specificity studies (non-choice and multiple choice feeding and oviposition tests) with the thrips P. ichini using 30 plant species in 11 families. Although California peppertree, S. molle, and mango, Mangifera indica, were utilized as developmental hosts in NON-choice laboratory tests, field surveys in Brazil confirmed these economically important non-target plants are not attacked by P. ichini under natural conditions. Ovipostion tests confirmed the unsuitability of mango as a host for the thrips P. ichini. Biological studies (life table construction, nutritional requirements) on the leafroller E. utilis were conducted in the US quarantine laboratory. We also initiated studies on the biology and host range of the leaf galling psyllid Calophya terebinthifolii, another promising natural enemy of

Brazilian peppertree. Brazilian peppertree (BP) forms dense thickets of tangled woody stems that are difficult to penetrate at ground level. A pilot project was conducted to determine whether low-level aerial surveillance techniques can be used to monitor establishment, dispersal and impact of introduced natural enemies. BP was treated with a herbicide to stress the plant and simulate "herbivory". Small format digital imagery was acquired using a small fixed-winged aircraft with a simple window mount. Aerial images of normal versus herbicide-damaged BP were compared by computer discrimination of the textural information. The herbicide damaged BP was clearly discriminated from normal BP in a series of images using texture indices in a multiple logistic regression model. These preliminary results demonstrated the feasibility of using aerial surveillance techniques for monitoring weed biologicial agents of invasive woody weeds in remote areas.

Impacts/Accomplishments:

Invasive plants such as Brazilian peppertree, tropical soda apple and hydrilla are major problems for natural resource managers in Florida because they reduce the biodiversity of the native plant and animal communities. Tropical soda apple also interferes with range and beef cattle production. Classical biological control of these invasive weeds with host specific insect natural enemies provides an environmentally acceptable alternative to expensive and ecologically disruptive large-scale mechanical removal and herbicide applications.

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: ENY-03694 (active)
Research Title: Managing Plant-Parasitic Nematodes in Sustainable Agriculture with Emphasis on Crop Resistance
Research Faculty involved: D.W. Dickson
Extension Program Number: FL101
Extension Title: Practices for sustainable agronomic crop production in Florida
Extension Personnel: D.W. Dickson
Department: Entomology and Nematology
SMP's involved: FL 101

Description of Activity:

Fifty peanut genotypes plus Coan, a new cultivar release with Meloidogyne arenaria race 1 resistance were tested in a root-knot nematode infested farm site. Only one genotype had a rating of less then 5 (rating of 3.2), based on a 0 to 10 scale with 0 = no galls, ...10 = 100% of roots, pods, and pegs galled. The rating for Coan was 4.7. All other genotypes had gall ratings over 5.

Impacts/Accomplishments:

The release of a peanut cultivar with good to excellent resistance to the peanut root-knot nematode would be a major advancement for peanut farmers who have little opportunity for long-term rotation because of lack of land or have a need to stay near an irrigation well. Coan shows a great deal of promise as the first cultivar that has root-knot nematode resistance incorporated within the germplasm, however much work needs to be done to ensure that the resistance will hold against Florida populations of the peanut root-knot nematode.

Total Hatch Expenditures: $0
National Goal: 1

Research Project #: ENY-03798 (active)
Research Title: Biologically Based IPM Systems for Management of Plant-parasitic Nematodes
Research Faculty involved: D.W. Dickson
Extension Program Number: FL101
Extension Title: Practices for sustainable agronomic crop production in Florida
Extension Personnel: D.W. Dickson
Department: Entomology and Nematology
SMP's involved: FL 101

Description of Activity:

An experiment is being conducted to determine the length of time P. penetrans remains viable in the absence of its root-knot nematode host and to determine whether a root-knot nematode suppressive soil will remain suppressive without growing root-knot nematode susceptible crops. The field site selected was located near Williston, Florida. The field had a history of severe root-knot disease on peanut beginning in the 1960's and the disease continued to cause economic losses to peanut yield through the mid-1980's. Thereafter, root-knot disease diminished. Suppressive soil tests identified P. penetrans endospores in very high numbers in the soil and large numbers of the root-knot nematodes females were infected by this nematode parasite. Beginning in summer of 1970, peanut was grown and winter cover crops of rye, hairy vetch (through 1989), wheat (1990), or weed fallow were grown. In 1992, the wheat plots were planted with Tifton 9 Pensacola bahiagrass, the hairy vetch plots were planted with rhizomal peanut, and the weed fallow plots remained as weed fallow plots. Each fall the entire area was mowed and the fallowed plots were disked and planted with rye. Each plot is 30 ft wide by 125 feet long and replicated 10 times. Each plot was sampled in the winter of 1999 and the suppressiveness of the soil to the peanut root-knot nematode was bioassayed in the laboratory. The entire area was disked and deep plowed January 1999, and all plots planted with peanut in April 1999. The population densities of M. arenaria, and P. penetrans are being monitored. Low levels of root-knot nematodes survived over the 9-year period. Greater numbers of root-knot nematodes survived in the weed fallowed plot then in either the Bahiagrass or rhizomal peanut plots. Very low levels of P. penetrans persisted, but he numbers appear to be increasing with the increase in root-knot nematodes.

Impacts/Accomplishments:
Information being attained will give us important information on the survival ability of Pasteuria penetrans and its long-range impact on root-knot nematodes infestations. We are not sure what happens to soils that reach a high level of nematode suppressiveness due to P. penetrans. We hope to show that the soil remains suppressive even when rotated to nematode nonhost crops and then returned to a susceptible crop, such as peanut.
Total Hatch Expenditures: $0
National Goal: 1

Research Project #: FOS-03741 (active)
Research Title: Food Technology Research Support to Florida Agriculture Industries in Value Adding Enterprises
Research Faculty involved: R.P. Bates
Extension Program Number: FL110

Extension Title: Food Processing & Handling: Quality, Value-Added Concepts & Safety
Extension Personnel: R.P. Bates
Department: Food Science and Human Nutrition
SMP's involved: FL 110

Description of Activity:

In view of increasing evidence that blueberries possess important phytochemicals, studies were initiated based on Florida-grown cultivars. Twelve cultivars and breeding lines were obtained at various stages of maturity. Berries were partitioned into skin, seed, and flesh fractions. Oxygen radical absorbance capacity (ORAC, trolox equivalent, te/g), total anthocyanin (TA, mg/kg), and total phenolic (TP, mg/kg) analyses were performed on the fractions and whole berries. In ripe blueberries ORAC value in the skins were 3 to 10 times higher (~ 48 te/kg) than in the flesh (~6 te/kg). Seed values were more variable, ranging from 6 te/kg to about the same as in the skin ~ 36 te/g). TP followed the same trends, ranging from 3 to 13 times higher in the skins. In contrast, TA's were exclusively in the skins, 4500 to 8000 mg/kg. ORAC values were generally higher in whole ripe berries than in green or immature fruit, but cultivar dependant (30 to 40 te/g). TAs were absent in green and low in immature berries compared to ripes, 1200 to 2300 mg/kg.

TPs were comparatively unchanged among maturities, 10,000 to 4,000 mg/kg, but cultivar dependant. Over all cultivars the ripe fruit correlation between TA and TP was 0.78, whereas there was no correlation between ORAC and TA and ORAC and TP. Blueberry juice and wine were prepared from a selected cultivar employing standard extraction procedures (hot press for juice and hot press and various time on hull treatments for wine). The cited analyses and sensory data are being performed on all processing stages from whole blueberries through finished and stored juice and wines. Attempts to establish the bioavailability of blueberry phytochemicals by an in vivo assay using mice comparison with in vitro analyses is the focus of work in progress.

Impacts/Accomplishments:

These data are being shared with an IFAS blueberry breeder, Dr. Paul Lyrene, who supplied fruit in 2000 and will provide comparable samples during the 2001 season. The results will result in blueberry breeding lines with an improved phytochemical profile. Subsequently, breeding selections for release to commercial growers will have a more positive health image and competitive market potential compared to existing blueberry cultivars and other fruits.

Total Hatch Expenditures: $1,200
National Goal: 1

Research Project #: FRE-03255 (terminated)
Research Title: Estimating Florida Per Capita Fish and Shellfish Consumption
Research Faculty involved: R.L. Degner; C.M. Adams
Extension Program Number:
Extension Title:
Extension Personnel: R.L. Degner; C.M. Adams
Department:
SMP's involved:

Description of Activity:
Project terminated in FY 1998. Nothing more to report.

Impacts/Accomplishments:

No impacts at this time
Total Hatch Expenditures: $1,658
National Goal: 1

Research Project #: FRE-03488 (active)
Research Title: Changes in Fishing Regulations and Commercial Fishing Families
Research Faculty involved: C.M. Adams
Extension Program Number: Mar2
Extension Title: Fisheries Management and Seafood Markets
Extension Personnel: C.M. Adams
Department: Food and Resource Economics
SMP's involved: FL 315; FL 316; FL 317

Description of Activity:

Made progress toward developing a protocol and methodology for identifying a fishing community in Florida. This methodology will be extremely useful in satisfying the requirements put forth by National Standard 8 of the Sustainable Fisheries Act.

Impacts/Accomplishments:
No Impacts at this time

Total Hatch Expenditures: $0
National Goal: 5

Research Project #: FRE-03583 (active)
Research Title: Impact Analysis and Decision Strategies for Agricultural Research
Research Faculty involved: C.B. Moss; M.R. Langham
Extension Program Number:
Extension Title:
Extension Personnel: M.R. Langham
Department:
SMP's involved:

Description of Activity:

Research in 2000 under this project has focused on three products. The first product, in cooperation with Eldon Ball at the USDA/ERS has focused on the estimation of rates of return to research at the state level including spillover effects from other states, agricultural specialization, and infrastructure. This product is in the final stages of completion and should be submitted sometime in early 2001. The second product focuses more on the value of research to the state of Florida. In addition to the analysis of state spending levels on total factor productivity, in the first study, this study examines whether gains to total factor productivity are transferred to either farm income or land values. The results indicate that total factor productivity has no effect on either farm income or land values. The final

project investigates the potential spillover effects using partial correlation analysis. In addition, this study also considers the possibility of cointegration using a common trend specification. This project is in very early stages.

Impacts/Accomplishments:
Very early stages of development. No impacts at this time

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: FTL-03212 (terminated)
Research Title: Nutritional and Environmental Considerations of Turfgrass Fertility
Research Faculty involved: J.L Cisar
Extension Program Number:
Extension Title:
Extension Personnel: J.L. Cisar
Department:
SMP's involved:

Description of Activity:
Nitrogen (N) fertilization is required to maintain high-quality turfgrass on golf courses. The nitrate form of nitrogen is very mobile in soils and is a contaminant in groundwater. Drinking water standards generally specify that nitrate-N should be below 10 mg N L-1. Monitoring studies were conducted on vadose-zone water in newly-constructed sand-based golf greens at two courses (9 total greens) in Florida, and in six fairways on sand soil at one course. Lysimeters were used for monitoring in the greens, which were generally constructed according to United States Golf Association specifications. Ceramic cup water samplers placed at 0.5 m depth were used in the fairways. One of the golf courses was irrigated with reclaimed water that contained approximately 8 mg N L-1 in the nitrate form and monitored for groundwater N. Appreciable N leaching was observed in the golf greens. Nitrogen leaching occurred mostly in the nitrate form, except for a short period (30 to 45 days) following greens construction. During the period of time when the newly-planted grass was filling in (the grow-in period), N concentrations ranged from 20 to nearly 200 mg L-1. After the greens were established, and when N fertilizations involved lower rates, less frequent applications, and greater use of controlled-release N sources, nitrogen concentrations generally were below 10 mg L-1. Nitrogen in water samples taken from the fairways occurred mostly in the nitrate form, and generally was below 10 mg N L-1. An on-going groundwater monitoring study at one of the golf courses revealed no increase in nitrates during the 7 months following course construction. Clearly, nitrate leaching can be substantial in sand-based golf greens, but it can be reduced considerably by modifying N fertilization rates, application frequency, and by utilizing controlled-release N sources. The fact that less N leaching was observed in fairways, and fairways constitute a considerably greater portion of the golf course area than greens, may partially explain why no increase of nitrate was observed in groundwater during the 7-months of one study.

Impacts/Accomplishments:
No impact at this time
Total Hatch Expenditures: $864
National Goal: 4

Research Project #: FTL-03504 (active)
Research Title: Biological Control and Management of Soilborne Plant Pathogens for Sustainable Crop Production
Research Faculty involved: M.L. Elliott

Extension Program Number: New area of study for researcher. This will be developed when research is completed.
Extension Title: NA see extension program #
Extension Personnel: M.L. Elliott

Department: Plant Pathology--Ft. Lauderdale-REC

SMP's involved:

Description of Activity:

Cotton and snap bean were selected for a multi-year, multi-state regional (southeastern United States) research project to evaluate the efficacy of both commercial and experimental bacterial and fungal biological control agents for management of damping-off diseases. The goal for this portion of the project was to determine viability and stability of biological agents after application to seed. The biological seed treatments used included: 1) Bacillaceae bacteria, 2) non-Bacillaceae bacteria, 3) the fungus Trichoderma, and 4) the fungus Beauveria bassiana. Seed assays were conducted to evaluate the following application factors: short-term (< 3 months) stability after seed treatment; quality (i.e., isolate purity); compatibility with chemical pesticides and other biocontrol agents; and application uniformity between years and plant species. For the bacterial treatments, the Bacillaceae genera (Bacillus and Paenibacillus) had the greatest population of bacteria per seed, the best viability over time and the best application uniformity across years and seed type. The non-Bacillaceae genera Burkholderia and Pseudomonas had the least viability and uniformity. Although Beauveria bassiana was only evaluated one year, the seed fungal populations were high and uniform. The seed fungal populations and uniformity for the Trichoderma isolates were more variable, except for the commercial product T-22. However, this product was contaminated with a Streptomyces isolate in both years it was evaluated. The study demonstrated that Bacillaceae can be mixed with Trichoderma isolates or with numerous pesticides to provide a complete pest control/growth enhancement package.

Impacts/Accomplishments:

This information provides researchers with data on biological seed treatment stability in general (fungal vs. bacterial; gram-negative bacteria vs. gram-positive bacteria), and on individual seed treatments.

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: FTL-03620 (active)
Research Title: Weed Biology and Control for Turfgrass and the Landscape
Research Faculty involved: P. Busey
Extension Program Number: Turfgrass
Extension Title: Support of county extension faculty and trade associations
Extension Personnel: P. Busey

Department: Environmental Horticulture

SMP's involved:

Description of Activity:

1. Occurrence and nature of weed populations in Florida turfgrass Basketgrass, Oplismenus hirtellus, was reported as a turf weed problem in central Florida. Samples are being cultivated for possible herbicide evaluation. Old World diamondflower, Hedyotis corymbosa, continues to be misdentifeid as the monocot doveweed, Murdannia nudiflora, so a trade magazine article was written to hopefully straighten out the confusion. Another trade magazine article was written to compare tropical signalgrass with crabgrasses, which are frequently confused, and alert the industry to the seriousness of the latter two weeds in both bermudagrass turf on golf course as well as in St. Augustinegrass sod.

2. Competitive strategies of weeds in the managed landscape Dollarweed (Hydrocotyle umbellata) is the most serious weed pest of St. Augustinegrass, and St. Augustinegrass (Stenotaphrum secundatum) is the most widely used turf species in Florida, especially in lawns. A belief widely stated without documentation

is that reducing irrigation also reduces dollarweed infestation in turf. To evaluate the relationship of irrigation management and dollarweed infestation, an 0.2-ha site was planted with sprigs of dollarweed and plugs of St. Augustinegrass. The weed and the turfgrass have now been brought into a uniform population, and the 24 irrigation zones will be programmed in replicates to provide treatments ranging from excessive irrigation to droughty conditions. The plan has been modified to have eight replicates of only three treatments, and split-block fertilization treatments have also been initated, making this a factorial nonherbicidal management study. The null hypothesis is that variations in irrigation strategy (amount and frequency) have no effect on dollarweed infestation, measured as a percent canopy area from digital imagery. It is not known whether a single drought is more effective than moderate irrigation year-round. This is a two- or three-year experiment.

3. Discovery and use of herbicides and other agents for weed and vegetation management a. Timing of preemergence herbicides prior to perennial ryegrass overseeding of fairway turf. Two experiments were completed, at Oak Tree Golf Course and Fort Lauderdale REC, to evaluate the safety of applying preemergence herbicides shortly before perennial ryegrass overseeding of bermudagrass fairway turf. Experiments were established involving 11 weekly applications of dithiopyr, pendimethalin, and rodiamine at label rates, followed by overseeding with perennial ryegrass at 41.5 g per square meter (8.5 pounds per thousand square feet). Stand establishment was evaluated visually and based on seedling counts, to determine the safety period for overseeding, following the last preemergence application. Dithiopyr and pendimethalin were safely applied at label rates within 5 to 7 weeks prior to overseeding, but prodiamine was not safely applied anytime between 0 and 10 weeks prior to overseeding. Practical decay curves based on nonlinear regression showed that the breakdown of prodiamine is about one-half as fast as dithiopyr and pendimethalin. b. Timing of preemergence and postemergence herbicides after overseeding Successive plantings of perennial ryegrass (20- to 67-days old) were treated with dithiopyr, pendimethalin, oryzalin, rodiamine, surflan, metribuzin, and ethofumsate. Herbicides were applied at three rates, 0.5x x, 1 x, and 2 x, where x=labelled rate. Perennial ryegrass injury varied by herbicides and rates, but age of planting was more important than rate of application in explaining the level of injury. c. Control of torpedograss with quinclorac Torpedograss (Panicum repens) is a persistent weed of turf and ornamentals and is spread by rhizomes. Seed production probably does not occur in Florida. Quinclorac was registered in Florida in 1999 for control of torpedograss at rates of application one-half the efficacious rate based on research of McCarty. Two experiments were continued at separate golf courses, Eagle Trace, and Palm Aire, involving rate of application, split applications, and adjuvants. There was no advantage in weed control from one adjuvant compared with another, even in comparison to using no adjuvant. (Previous work had shown that tank mixtures with diclofop-methyl, MSMA, and other herbicides provided no advantage.) Quinclorac more effectively ($P < 0.05$) controlled torpedograss in bermudagrass (Cynodon spp.) turf on golf courses when applied in three or four split applications than in one or two applications. (Each set of applications totaled 2.2 Kg a.i./ha.). Despite the initially excellent (80%) reduction of torpedograss canopy using quinclorac, within 12 months the torpedograss stands had regained at least 50% of canopy lost. It appears that multiple years of application must be used to control torpedograss with quinclorac. d. Management of tropical signalgrass on golf course fairways A series of experiments for control of tropical signalgrass on golf courses was concluded. MSMA alone, with or without adjuvant, was the only product that was effective for selective postemergence control of tropical signalgrass in bermudagrass turf. e. Management of tropical signalgrass on the sod farm Six experiments were conducted at Woerner Turf in Palm Beach County, involving both preemergence and postemergence herbicides for control of tropical signalgrass. The only approach that is effective at preventing the spread of the weed in new sod fields involves both preemergence and postemergence herbicides. Either oxadiazon (Ronstar WSP) or pendimethalin (Pendulum) can be applied 8 days after plug planting, and there is significant early postemergence weed control, about 80%. Metalochlor (Pennant), which is currently used as a preemergence herbicide for tropical signalgrass control, was mediocre, with less than 40% control. Asulam (Asulox) must follow within about two weeks after preemergence application, to catch seedlings that escape. A second asulam treatment is necessary. Ethofumesate does not improve efficacy in tank mixture with asulam. Low rates of asulam (1/3 the label rate) are nearly as effective as higher rate applications, therefore it appears that the most reasonable strategy is repeated low rate applications. f. Management of mixed weed populations Sedge chemicals imazaquin (Image) and halosulfuron (Manage) and metribuzin+MSMA are the only chemicals that are effective in removing green kyllinga from bermudagrass turf. However, removal of late season (February) green kyllinga exposed the soil to invasion from tropical signalgrass, therefore one

should manage the weeds that will become a problem several months later. g. Phenoxy herbicide combinations with carfentrazone for broad-leaf weed control Six experiments were conducted with mixtures of 2,4-D, carfentrazone, dicamba, MCPP, and other chemicals for control of difficult broad-leaf weeds such as alligatorweed, Alternanthera philoxeroides, and Old World diamondflower, Hedyotis corymbosa, as well as less difficult weeds such as dollarweed, Hydrocotyle umbellata. In general, mixtures with little or no MCPP were safe for use on St. Augustinegrass, and were highly effective against broad-leaf weeds, except for southern sida, Sida acuta, and Richardia grandiflora.

Impacts/Accomplishments:

Herbicides and adjuvants are sometimes applied needlessly because there is no research basis for a particular treatment, and turf managers find that existing herbicide techniques are not effective, so they will try new combinations in the hope of finding something that works. Although such attempts sometimes result in good hypotheses, they often lack adequate controls and are not systematic. Adaptive herbicide research will take some of the uncertainty out of chemical application and should consequently reduce the total amount of chemicals used in the environment.

Total Hatch Expenditures: $17,585
National Goal: 1

Research Project #: FTL –03711 (active)
Research Title: Turfgrass Fertility Management and Environmental Impact
Research Faculty involved: J.L. Cisar
Extension Program Number: FLRECTURF-JLC-1
Extension Title: Turfgrass Coordinator, Turfgrass Water Conservation and Quality and Management
Extension Personnel: J.L. Cisar
Department: Environmental Horticulture
SMP's involved: FL105, FL114, FL116

Description of Activity:

We are monitoring vadose-zone soil water on a golf course (Orange County National in Central Florida) for reducing N leaching on golf courses using reclaimed (effluent) water. We have identified appreciable N leaching with grow-in of a golf course. However, over time, N leaching was reduced considerably and the use of high N reclaimed water did not increase the loss of N in percolate to groundwater. The monitoring study is a long-term project to identify impacts to the Hawthorne Aquifer. In 2000, we conducted s survey of golf course using effluent water. A manuscript has been submitted for peer review and an extension document is being created based upon survey results.

Impacts/Accomplishments:

There are over 1400 irrigated golf courses in Florida and many are candidates for reclaimed irrigation water. The use of reclaimed water for golf course irrigation is being promoted as an alternative to potable water sources. This research demonstrates the utility of turf to effectively reduce N concentrations in reclaimed water to below the limit for the current safe potable water standard. Reclaimed water can be used in conjunction with routine N fertilization on bermudagrass grown on sand soils without appreciable N leaching. Therefore, reclaimed waters can be used as an alternative water source, reducing pressures on sometimes limited potable water resources. The identification of appreciable N leaching during the brief grow-in phase of golf course construction constitutes an environmental concern and warrants further research to elucidate management strategies to reduce N leaching during establishment.

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: FTP-03700 (active)
Research Title: Plant Growth Regulators to Enhance Profitability of Fresh and Processed Florida Citrus
Research Faculty involved: E.W. Stover; M. Tignor
Extension Program Number: IRREC-ews extension3
Extension Title: Effective utilization of plant growth regulators for more profitable citrus production
Extension Personnel: E.W. Stover
Department: Citrus Horticulture--Indian River REC-Ft. Pierce
SMP's involved: FL 108

Description of Activity:

In collaboration with Gene Albrigo, a series of experiments, funded by FCPRAC, were conducted in 97-99 and 98-2000 to evaluate methods available for controlling cropload in citrus. I conducted trials on a block of Navel and of Ambersweet that flower profusely but usually carry only modest croploads. The following treatments were applied: 1) GA application during late December-early Jan. to reduce floral initiation, 2) urea application during late December-early Jan. to enhance strength of flower buds that develop, 3) application of GA during flowering to enhance fruit set, and 4) application of micronutrients during flowering to enhance fruit set. The experiment was designed as a factorial combining all winter treatments (plus a non-treated control) and all postbloom treatments (plus a non-treated control). Hypotheses tested were: 1) reduction of flower number through reducing floral initiation will increase actual numbers of fruit set because fewer resources will be wasted on unwanted flowering (this has been reported for Navel in Spain), 2) application of urea will significantly enhance fruit set by increasing the flower size and enhancing early fruit sink-strength, and 3) bloom treatments with GA and nutrients will enhance cropping.

In In 97-98, Ambersweet flowering was reduced by 40%, increasing fruit/tree by 65% and increasing boxes/tree by 47% with a single winter application of GA. It appears that reducing flowering does conserve resources and enhances cropping. In the IR navel block, a single winter GA application reduced flowering by 49%, increased fruit size and fruit /tree (both only at p=.10), and increased boxes / tree by 22% . Winter application of urea did not affect flowering, but did increase fruit / tree and boxes / tree, presumably by increasing the bud strength. In 98-99, winter GA applied to Ambersweet significantly increased cropping while bloom GA significantly decreased fruit/ tree, however, cropping was very poor even with the best treatment. Because, of warm conditions in December we were concerned that flower induction might be delayed, and we also sprayed some Ambersweet at the end of January. These trees produced 275 fruit / tree vs. only 25 fruit / tree in non-treated controls. Time of GA treatment affected time of bloom as well as final crop. Navel in 1998-99 had many fewer flowers, produced a very large crop (6 boxes per tree in controls), and winter GA actually reduced cropping. More heavily flowering Navel trees in a neighboring block displayed increased cropping following winter GA. It appears that treatments to influence flower induction and differentiation show promise for enhancing yield in heavily flowering, light cropping blocks, but effectiveness will depend on environmental conditions and their effects on flower induction. A new model for predicting effect of temperature on floral induction, under development by Albrigo, should assist us in timing our treatments for best effect.

Gene Albrigo and I received funding from FCPRAC for 2000-2001 to further explore the potential for using GA to enhance cropping in citrus varieties. GA3 (20 grams / acre plus 0.05% Silwet) has been applied at three timings (mid Dec, early Jan, late Jan) to Late Navel, Valencia, Minneola, and Ambersweet. At the middle timing, we applied two additional rates of GA (10 and 15 grams / acre). Data on defoliation, flushing, flowering, and cropping were taken on all blocks. Flowering was signficantly reduced by all GA treatments in Minneola and Ambersweet (reduced by 50-80%) with little effect in Valencia and Late Navel except for the January 12 treatment. Time of flowering was greatly altered by GA sprays except in Late Navel, with early treatments delaying flowering and late treatments accelerating bloom. Harvest data were collected on Ambersweet but

not yet analyzed, while other varieties will be harvested in 2001. ***Note:This is one of 8 tests going on under FTP-03700. The others can be seen on the web page. URL provided on the content page of this federal report.***

Impacts/Accomplishments:

Manufacturers of GA are working to include use this use on their labels for citrus. Valent Biosciences has obtained Section 18 for January application of GA to Ambersweet this year. Many growers treated limited acreage to reduce flowering and enhance cropping, as permitted by current GA. In many blocks, cropping has been increased by 20-50% by reducing excessive flowering.

Total Hatch Expenditures: $9,774

National Goal: 1

Research Project #: FYC-03782 (active)
Research Title: Early Childhood Interventions for Violence Prevention in Florida
Research Faculty involved: G.D. Evans
Extension Program Number: Fl-515-01
Extension Title: Parenting Education/Child Development
Extension Personnel: G.D. Evans
Department: Family Youth and Community Service
SMP's involved: FL 515

Description of Activity:

Work has been completed on the CDC- funded Violence Prevention Project titled The Jacksonville Child Care Families Initiative. Data collection was completed during the past year, data has been analyzed and a final report has been submitted for review. New projects have been initiated that are designed to examine the effectiveness of a school- based/ school-linked model of mental health service delivery for at-risk children in a rural school district. Specifically, these projects are examining mental health utilization patterns in these rural communities as they relate to the provision of school-linked mental health services to children in grades K-12. A related project examines the effectiveness of school-linked mental health interventions in terms of reducing aggressive, violent, and delinquent behavior. A third project in the series examines the perception of high school students regarding the provision of mental health services in a school-based model of care. Specifically, students have been surveyed regarding the perception of stigma for such services, there fears regarding the hypothetical provision of such services and their perceptions for such services.

Institutional Review Board approval has been sought and accepted for each of the before mentioned projects, data collection is well under way in each project. In terms of the study examining students' perceptions of school-based mental health care, data collection has been completed and data entry and analysis is projected for the coming year.

Impacts/Accomplishments:

Results of the Violence Prevention Project titled The Jacksonville Child Care Families Initiative revealed that the project was quite successful in improving childcare workers' knowledge of developmental expectancies as compared to the control groups. Additionally, the study revealed that program activities significantly increased parents' participation in childcare center events thus increasing their senses of bonding with the activities of the children in these centers. However, the data suggest that the project produced more mixed results regarding the reduction of aggressive, anti-social behavior in pre-schoolers. While trends in the data suggested that children aggressive behavior increases over the length of the project (regardless of whether they were in the control group or treatment groups) there is moderate evidence to support the argument active treatment served to limit this expansion of aggressive and ant-social behavior as compared to the increases seen in the control group. Additionally, the home visiting treatment component also garnered limited support to use as a protective strategy against reductions in children's self-esteem and reciprocal

increases in mood/emotional problems at this age. All in all, subject attrition and challenges in the consistent delivery of the treatment strategies have limited the impacts of the project. However, the results of this study provide preliminary evidence to support earlier childhood interventions for reducing aggressive and anti-social behavior and increasing parent involvement in children's self - esteem related to academic pursuits.

Work on this project has also lead to several professional publications. This faculty member has authored chapters on violence among children and African-American parenting strategies in the book Parenthood in America. Additionally, he has written a review article on the prevention of violence in and adolescents for the web- based journal title Lifescape. He has published one peer- reviewed article on academic/ community collaboration for preventing juvenile violence in the American Journal of Preventive Medicine. He has another peer- reviewed article in press that relates to school -based approaches to preventing violence in the journal Professional Pyschology: Research and Practice. His work on this project has also lead to the publication of papers presented at two national meetings related to treatment dropout characteristics of the study sample and parental locus of control in at-risk families. His work has also served as background for a paper Family Impact of the Groundfish Crisis presented at Elise B. Newell Seminar Series at the University of Florida. These proceedings are currently in press. Finally this faculty member work on violence has lead to and extension publication titled Violence Among Children: Recent Trends. Which summarizes up-to-date information on prevention strategies for violence and delinquencies and practical knowledge for parents and caregivers to consider when preventing aggressive and violent behavior in their children. This faculty member's work in violence has also lead to four presentations at national meetings on issues varying from violence prevention strategies to help-seeking characteristics of families referred to school-based mental health service programs. Finally, this faculty member's work on the prevention of mental disorders and violence in rural areas through school-based prevention programs was used as a basis for a chapter titled, "Rural Social Service Systems as Behavioral Health Delivery Systems" in Behavioral Healthcare in Rural and Frontier Areas: An Interdisciplinary Handbook.

Total Hatch Expenditures: $0
National Goal: 5

Research Project #: HAS-03623 (active)
Research Title: Biology and Management of Diseases Affecting Vegetable Crops in North Florida
Research Faculty involved: D.P. Weingartner
Extension Program Number:
Extension Title:
Extension Personnel: D.P. Weingartner
Department: Plant Pathology–Hastings-REC
SMP's involved:

Description of Activity:
Three hundred fifty seven samples of P. infestans were analyzed from isozyme phenotype and 125 of these were further analyzed for determination of metalaxyl sensitivity and mating type. Seven samples were from south florida and 350 were from the tricounty potato producing region of north Florida. All samples except two were from potato. One sample each from north and south Florida were from tomato. All samples except one tomato sample from Hendry county were identified as US-8. The tomato sample from Hendry County was US-17. Eighty four % of all isolates(i.e. 105 of 125)tested for metalaxyl sensitivity were intermediate in sensitivity to the fungicide.

Impacts/Accomplishments:
Information on the distribution and incidence of different genotypes of P. infestans can have important impact on the selection of fungicides and on management strategies for controlling late blight in commercial potato and tomato crops because strains differ

in aggressiveness on the two crops and in sensitivity to certain fungicides. Costly, ineffective fungicide applications can be avoided by knowing the make up of P. infestans populations in the state. The data are also useful in determining whether or not the pathogen has become established in Florida.

Total Hatch Expenditures: $16,743
National Goal: 4

Research Project #: HAS-03875 (active)
Research Title: Development of New Potato Clones for Environmental and Economical Sustainability in the North East
Research Faculty involved: C.M. Hutchinson; D.P. Weingartner
Extension Program Number: HAS-2-001
Extension Title: Potato Varietal Improvement
Extension Personnel: C.M. Hutchinson; D.P. Weingartner
Department: Horticultural Sciences--Hastings-REC
SMP's involved: FL 107

Description of Activity:
Twenty-five potato varieties including fresh market whites, reds, and russets were evaluated for production qualities under the guidelines of the NE-184 program. Total yield was highest in Atlantic, Kenebec, Snowden, and NY-115 with NY-115 producing 452 cwt/acre. Total yields were lowest in Superior, AF1437-1, AF1758-7, and A8495-1 with A8495-1 yielding 167 cwt/acre.

Impacts/Accomplishments:
This project potato evaluates for use under Florida growing conditions. Development of new potato varieties unique to Florida that require fewer inputs would benefit both growers and the Florida environment.

Total Hatch Expenditures: $0
National Goal: 1

Research Project #: HOM-03490 (active)

Research Title: Biological Control of Selected Arthropod Pests and Weeds
Research Faculty involved: R.M. Baranowski; C.M. Mannion
Extension Program Number: State Major Program
Extension Title: Integrated Crop Management of Commercial Ornamental Plants
Extension Personnel: C.M. Mannion
Department: Entomology and Nematology-Tropical REC-Homestead
SMP's involved: FL 112

Description of Activity:
The intensive nature of production and high aesthetic value of greenhouse and nursery crops make pest control an important economic issue. The ornamental industry has become heavily dependent on pesticides in pursuit of pest-free plants. In more recent years, biological products and improved environmental management techniques have altered pest control methods in the ornamental industry, however, there is a tremendous need for management of known pests as well as monitoring for new potential pests.
1. Learning about and determining the key insect pests in ornamental production in south Florida.
2. Meeting with growers to determine how their pest management needs can be met.
3. Conducted several pesticide screening tests for snails and slugs, citrus root weevil larvae, and whiteflies

providing information for interested parties.
4. Attended and presented information at several state, regional and national meetings.

Impacts/Accomplishments:

This program is in the early stages of development, however, the accomplishments thus far will contribute to the development of a research program on pest management of ornamentals. The program will ultimately have an impact on the ornamental industry in south Florida by providing the growers with the most up-to-date options for pest management, as well as provide tools to monitor for new pest situations.

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: HOM-03540 (active)
Research Title: Genetic Improvement of Bean (phaseolus Vulgaris): Yield, Disease Resistance, and Food Value
Research Faculty involved: R.T. McMillan
Extension Program Number:
Extension Title:
Extension Personnel: R.T. McMillan
Department:
SMP's involved:

Description of Activity:
Bean Golden Mosaic Gemini Virus (BGMV) continues to cause severe losses in spite of the use of insecticides that have shown to be effective for the control of the insect vector Silverleaf whitefly (Bemisia argentifolii). Three genes for resistance to BGMV have been backcrossed to a commercially acceptable snap bean (Phaseolus vulgaris) cultivar. The F1 generation snap bean will be checked for the marker gene and screened for resistance to BGMV in the greenhouse and field. Potential chemistry for the control of Sclerotinia sclerotiorum was evaluated. Flubioxonil, Tebuconazole, and Serenade were evaluated in vitro and found to have activity by restricting fungal growth. Two chemicals were evaluated for the control of Bean rust. The fungicides Tebuconazole and Propiconazole were field screened and found to be significantly effective for the control of bean rust (Uromyces appendiculatus).

Impacts/Accomplishments:
Snap bean production in South Florida is an important crop economically with over 20,000 acres and a dollar value over $40,000,000. Bean Golden Mosaic Gemini Virus and its Silverleaf whitefly vector is the number one production problem for snap bean. A BGMV resistance snap bush bean cultivar would result in more acreage planted and an increase in revenue. After BGMV especially in the dry spring, bean rust becomes a serious problem for snap bean production. More effective rust fungicides for the control of bean rust are under field trials and showing significant control. With an Environmental Protection Agency approval of Tebuconazole for bean rust control in the near future it will add a much-needed fungicide for bean producers. Several fungicides have shown promise for another fungus, Sclerotinia sclerotiorum, that can be a serious problem for snap bean production but more research is needed to make them available for the bean producers.

Total Hatch Expenditures:
National Goal: 1

Research Project #: HOS-03278 (terminated)

Research Title: Reducing Production Costs in Young Citrus Tree Management
Research Faculty involved: F.S. Davies; J.J. Ferguson
Extension Program Number:
Extension Title:
Extension Personnel: J.J. Ferguson
Department:
SMP's involved:

Description of Activity:
This project began in 1982 and has been involved in determining optimum cultural practices for young citrus trees. The project has been summarized in an article for HortReviews,"Growth, Development, and Cultural Practices for Young Citrus Trees", 1999, Vol. 7, pp.319-372.

Impacts/Accomplishments:
This project developed the most widely used method of cold protection for young citrus trees and has allowed citrus growers to reduce fertilizer application rates and costs by fifty percent.

Total Hatch Expenditures: $24,440
National Goal: 1

Research Project #: HOS-03402 (active)
Research Title: Integrated Pest Management as an Alternative for Control of Soilborne Pests of Vegetable Crops
Research Faculty involved: W.M. Stall; S.J. Locascio
Extension Program Number:
Extension Title:
Extension Personnel: W.M. Stall
Department:
SMP's involved:

Description of Activity:
Tomato was grown during the Spring of 1999 and 2000 to evaluate the effect of method of application of 1,3- dichloropropene(1,3-D) + 17% and 35% chloropicrin (pic) on fruit production and pest control. Application of 1,3-D + pic and metam-Na broadcast and then pressed into a bed provided pest control that was comparable to in-row 1,3-D or with MBr(methyl bromide)-pic. Nematode root gall ratings were somewhat poorer with metam-Na than with 1,3-D but were significantly better than with the untreated tomato. In past work, application of metam-Na at 295 L/ha in-row was not effective. However, in the present study with 295 L/ha metam-Na applied broadcast and pressed into a bed, pest control was more comparable to that with MBr-Pic. With the treatment of 1.8 m area and bedded into 0.9 m beds, the fumigant was concentrated and activity was enhanced. These studies indicate that broadcast application of 1,3-D + pic was as effective as in-row applications. Broadcast applications of metam-Na broadcast were apparently more effective than in-row applications in past studies, probably due to a concentration of the fumigant in the bed under the mulch. Application of pebulate in-row as in spring 2000 was more effective than broadcast application as in spring 1999 in control of nutsedge.

Impacts/Accomplishments:
This work indicates that 1,3-D can be applied broadcast effectively to control pests. Broadcast application with bedding 7-10 days later minimizes the worker protection issues since hand labor is not involved in contrast to in-row applications. This work also shows that broadcast application of pebulate before bed prepration is less than in-row applications in nutsedge conrol.

Total Hatch Expenditures: $14,331
National Goal: 4

Research Project #: HOS-03559 (active)
Research Title: Senescence Physiology and Deterioration in Harvested Tomato and Other Fruits
Research Faculty involved: D.J. Huber; S.A. Sargent; J. A. Bartz; M. T. Momol ; S.M. Olson; P. R. Gilreath.
Extension Program Number: FL 107–vegetables
Extension Title: Innovative Techniques for Maintaining Postharvest Quality of Vegetables
Extension Personnel: S.A. Sargent
Department: Horticultural Sciences
SMP's involved: FL107

Description of Activity:

A poplastic levels of pectins and free galactose in ripening and chill-injured tomato fruit Pectin solubility in ripening tomato fruit is typically studied in vitro, employing isolated cell walls; however, it is unknown whether in vitro studies address the actual changes in the status of pectins in the fruit in situ. In vivo pectin solubilization was examined in a pressure-extracted apoplastic fluid obtained from ripening and chill-injured tomato fruit with down-regulated polygalacturonase (PG) activity and untransformed wild-type. Pectin levels in apoplastic fluid increased 3-fold during ripening and were not affected by PG levels. In contrast, PG strongly affected pectin levels in bulk, enzymically active pericarp fluid. There was a 14-fold increase in bulk pectin levels during ripening of PG-antisense fruit and a 36-fold increase in wild-type fruit. Pectin levels in the apoplastic fluid of fruit stored at 5 oC for 14 days were 40% lower than that of freshly harvested mature-green fruit, but increased significantly upon transfer of fruit to 15 oC. Monomeric galactose in the apoplastic fluid increased from 41 g mL-1 at the mature-green stage to 67 g mL-1 in ripe fruit. Bulk levels of galactose were 3 to 4 fold higher than apoplastic levels. After low-temperature storage galactose levels were 50% and 20% lower than in freshly harvested fruit for the bulk and apoplastic fluids, respectively. These results indicate that in vivo pectin solubilization is restricted and largely independent of PG. Low-temperature storage reduces in vivo pectin solubilization, an effect that is reversed upon transfer of fruit to higher temperature following cold storage. Cell wall autolysis and polygalacturonase activity in solutions with the pH and mineral composition of the tomato fruit apoplast Polygalacturonase (PG) activity and the autolysis of cell wall isolated from PG-antisense fruit were studied under conventional conditions (CC, 30 mM sodium acetate, 150 mM NaCl, pH 4.5), and in solutions that mimic the pH and mineral composition of the apoplast fluid of tomato fruit at the mature-green and ripe stages. PG-mediated pectin solubilization and release of reducing groups was very restricted in simulated apoplastic conditions. Autolytic release of pectins was very limited under simulated apoplastic compared with CC, but there were minimal differences in release of reducing groups among the incubation solutions. Pectins that remained ionically bound to the wall residue after incubation were extracted in CDTA and analyzed by size exclusion chromatography. The elution profiles of ionically bound pectins from cell walls incubated under CC were similar for all ripening stages. In solutions mimicking the pH and mineral composition of the apoplast of mature-green and ripe fruit, pectins extracted from pink and ripe fruit cell walls showed a decrease in average molecular mass compared with polymers from mature-green cell walls. The mineral composition and pH of the incubation solution exert strong influence on PG-activity and PG-independent cell wall autolysis Purification and properties of endo-polygalacturonase from avocado fruit. Activity of endo-polygalacturonase was recovered from the cell walls of vocado (Persea americana Mill) mesocarp tissue by treatmentwith 1.8 M NaCl. It was purified by sequential ion-exchange andgel-filtration chromatography and separated into two isozymes. The molecular masses of the purified PG isozymes were about 50 and 49 kDa as determined by SDS-PAGE. Both isozymes had maximum activity at pH 6.0 against polygalacturonic acid (PGA) and they hydrolyzed PGA of about 180kDa to polymers of about 2-3 kDa, although the catalytic activity of the 49 kDa isozyme was lower than that of the 50 kDa protein. Treatment of cell walls from pre-ripe avocado fruit with

both isozymes substantially promoted the release of polyuronides. The molecular masses of the polyuronides released by PG treatment were comparable to those of water-soluble polyuronides isolated from cell walls of ripening avocado fruit. These results suggest that the two PG isozymes are involved in the drastic degradation and depolymerization of polyuronides in cell walls of ripening avocado fruit. The effects of 1-methylcyclopropene (1-MCP) and waxing for regulating the ripening and extending the storage life of avocados 1-methylcyclopropene (1-MCP), an inhibitor of ethylene action, has been shown to extend the storage period of avocado fruit. Waxing is also known to extend the storage life of avocado by reducing water loss and modifying the fruit internal atmosphere. In this study, 1-MCP and waxing were used to investigate their effects on ripening characteristics in avocado fruit. Preclimacteric Tower II and Booth 7 avocados were treated with 1-MCP (Ethylbloc®) for 12 h at 20 C. Half of the fruit were waxed (Sta-Fresh 819F®, FMC co.) after 1-MCP treatment. The fruit were subsequently stored at 13 C or 20 C at 85% relative humidity. As evaluated by fruit firmness, ethylene evolution, and respiration rate, 1-MCP and waxing delayed the ripening of Tower II avocado stored at 20 C. Fruit treated with both 1-MCP and wax had better retention of green peel color and fruit firmness, and the delayed climacteric pattern of ethylene evolution and respiration rates. Waxing reduced weight loss and retarded softening, but did not delay the climacteric ethylene evolution and respiration rates. Whereas firmness of control fruit decreased from >100 N to 20 N in as few as 7 days at 20 C, fruit treated with both 1-MCP and wax reached 20 N over 11days at 20 C. The firmness of Booth 7 avocados treated with both 1-MCP and wax decreased from >170 N to 20 N over a 5-week period at 13 C. Current studies are addressing the nature of decrease in firmness of 1-MCP treated fruit.

Impacts/Accomplishments:

Analysis of apoplastic conditions in tomato and other fruit will provide information on the regulation of enzymes located in the cell wall and assist in understanding the role of these enzymes in ripening. Additionally, characterization of the composition of apoplastic fluid will provide information on the in vivo reactions contributing to the solubilization of specific carbohydrates during fruit ripening and softening. The use of 1-methylcyclopropene and waxes significantly extends the postharvest quality and shelf life of Florida avocado fruit. These results will allow greater marketing flexibility and potential for this highly perishable fruit. The information developed from this program will assist Florida packer/shippers in reducing postharvest losses due to decay. A 1% decrease in losses would translate to over $5 million savings per year for the industry. Sanitary packing operations also reduces the risk of contamination by food-borne human pathogens.

Total Hatch Expenditures: $16,936
National Goal: 2

Research Project #: HOS-03846 (active)
Research Title: Postharvest Quality and Safety in Fresh-cut Vegtables and Fruits
Research Faculty involved: J.K. Brecht; D.J. Huber; S.A. Sargent
Extension Program Number: FL107--Vegtables
Extension Title: Innovative Techniques for Maintaining Postharavest Quality of Vegetables
Extension Personnel: J.K. Brecht; S.A. Sargent
Department: Horticultural Science
SMP's involved: FL107

Description of Activity:
Both climacteric and nonclimacteric fruits produce ethylene. Exogenous ethylene treatment stimulated ACC oxidase activity in both climacteric (tomato) and nonclimacteric (strawberry) fruits at all ripeness stages. Ethylene production was inhibited by ethylene treatment at all stages of strawberry ripeness, but was inhibited in immature tomato pericarp and stimulated in mature-green and pink tomato tissue. The transition from negative to positive ethylene feedback with the onset of ripening distinguishes climacteric from nonclimacteric fruit. Negative ethylene feedback in tomato locule gel applied only to ethylene production as red color development, tissue liquefaction, seed maturation, and onset of autocatalytic

ethylene production were hastened. Perforation-mediated modified atmosphere packaging (MAP) uses macro perforations or tubes to control oxygen and carbon dioxide (CO2) exchange and create the desired atmosphere inside an otherwise gas-tight package. Shredded leaves of Galega kale were used as a case study of the application of perforation-mediated MAP, which allows higher CO2 levels to be attained than conventional semipermeable film MAP. A methodology and models were developed for design of perforation-mediated MAP for fresh (respiring) produce.

Impacts/Accomplishments:
Fresh-cut produce can help increase the consumption of fresh produce due to its convenience and attractive appearance and flavor. Development of novel approaches for assuring the quality and safety of fresh-cut produce depends on a better understanding of fresh-cut vegetable and fruit physiology, including nutrients and other functional components as affected by storage and handling.
Total Hatch Expenditures: $0
National Goal: 1

Research Project #: IMM-03571 (active)
Research Title: Dynamic Economic Analysis of the Florida Citrus Industry
Research Faculty involved: F.M. Roka
Extension Program Number: Economic Impacts
Extension Title: Economic importance of agriculture to the regional economy
Extension Personnel: F.M. Roka
Department: Southwest Florida REC-Immokalee
SMP's involved: FL 270

Description of Activity:

Collaborated with Ron Muraro (CREC) and Robert Rouse (SWFREC) to update and expand yield database through the 1999/2000 harvest season. Study involves 12 commercial growers, who are cooperating by providing production data from 103 citrus blocks. The study accounts for more than 7,000 acres of commercial citrus.

Most data are from Hamlin and Valencia blocks on either Swingle or Carrizo rootstocks. The yield-age profile has been extended to 13 years.

Two papers were prepared from the study. An overview paper was written and presented at the annual Fla. State Hort. Soc. Meeting in Orlando, Florida, July 2000. A second paper discussing the economic value of high density plantings was prepared and will be presented at the annual Southern Agricultural Economics Association meeting in Ft. Forth, Texas, January 2001.

A $15,000 grant was awarded to Ron Muraro and myself from the citrus research box-tax committee (FCPRAC). The grant will fund development of a spreadsheet model that will help growers analyze alternative tree replacement strategies.

A $15,000 pre-proposal to the FCPRAC by Ron Muraro and myself was to extend the current yield study in southwest Florida to the Indian River and Central Ridge production areas. If successful, this grant will fund the multi-county citrus agents in helping to collect yield data from new cooperating production managers.

Impacts/Accomplishments:
Study results are providing citrus growers with benchmarks of citrus yields for southwest Florida growing conditions. Some growers have commented that the study results have already helped them develop more realistic production forecasts and helped target attention to production performance of individual blocks. Study results are also being used by agricultural economists in FRED and FDOC to help adjust the state's citrus production forecasting models.

Total Hatch Expenditures: $0
National Goal: 1

Research Project #: IMM-03622 (active)
Research Title: Water Management in Flatwoods Citrus Groves
Research Faculty involved: T.A. Obreza
Extension Program Number: Soil/Water 1
Extension Title: Improving nutrient, soil, and water management for efficient crop production
Extension Personnel: T.A. Obreza
Department: Southwest Florida REC-Immokalee
SMP's involved: FL107, FL108, FL129

Description of Activity:

Grant funds were obtained from the Florida Dept. of Agriculture and Consumer Services and the South West Florida Water Management District for a project entitled "Improving nitrogen-use efficiency by alleviating micro-irrigation emitter plugging." This project was initiated in August 2000.

Impacts/Accomplishments:
To new for impacts

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: JAY-03204 (terminated)
Research Title: Population Dynamics and Extinction of Naturally Isolated Wildlife Population in Managed Landscape
Research Faculty involved: D.L. Miller; M. Thetford
Extension Program Number:
Extension Title:
Extension Personnel: D.L.Miller
Department:
SMP's involved:

Description of Activity:

Rapid reestablishment of the fragmented dune system is essential for many wildlife and plant species and protection of coastal structures against storm surge.Planting storm-uprooted sea oats appears to be an important unexplored restoration technique. Experiments were conducted to assess percent tiller emergence from replanted sea oats rhizomes after exposure to salt water, air exposure of 1, 3, 5, 7, and 11 days and reburial in pots (watered) or on the beach (with or without supplemental water). Sea oats rhizomes uprooted by Hurricane Georges (1998) were experimentally planted. In addition, the utility of biodegradable materials and the optimum fence orientation for rapid sand accumulation was assessed in a secondary dune position. Effect of season of planting on growth and survival of nursery grown plants of sea oats and bitter panicum transplanted in association with sand fences was also evaluated. Wood and Geojute material sand fences in three orientations were installed at six sites. Sand accumulation associated with these fence

material/orientation combinations and non-fenced controls was quantified twice a year (1996-99). Geojute performed well for approximately 8 months with no significant differences in accumulation between materials for most positions. However, the material degraded rapidly and accumulated sand was lost. Eighteen months after installation, Geojute no longer had significantly more accumulated sand than the controls. For wood fences, sand accumulation did not differ significantly among fence configurations at most distances from the fence. Through time the straight-conventional wood and perpendicular-wood fence treatments had consistently higher sand accumulation values compared to unfenced controls. While survival of transplanted sea oats and bitter panicum was not effected by season of planting, growth for spring plantings was greater than growth of fall plantings. For uprooted and salt water exposed sea oats rhizomes, tiller emergence generally declined with increasing length of exposure and decreasing size of rhizome. Across the three years of the study, tiller emergence from treated rhizomes varied considerably (0-80%). Mean tiller emergence for rhizomes exposed for 7 days varied from 0 - 40%. After 11 days of exposure with no supplemental water but 12 cm of rainfall, beach planted rhizomes had 20% emergence. Percent emergence of rhizomes replanted 5 days after uprooting by Hurricane Georges ranged from 32-48%. Thus, reburial within 3 -7 days after a storm without supplemental water and up to 11 days with supplemental water or adequate rainfall is a viable restoration technique. Softwood cuttings of Ceratiola ericoides Michx. were successfully propagated using a perlite:vermiculite substrate. An improvement of root quality (increased root number and root length) was achieved with the application of a synthetic auxin containing 1,000 to 5,000 ppm NAA. Pinebark-based production substrates were suitable for the production of Ceratiola ericoides.

Impacts/Accomplishments:
This information will assist public agencies and private landowners in barrier island dune restoration following hurricanes.

Total Hatch Expenditures: $3,380
National Goal: 4

Research Project #: JAY-03609 (active)
Research Title: Introduction and Evaluation of Ornamental Plants
Research Faculty involved: M. Thetford; R.K Schoellhorn
Extension Program Number: JAY 03609MG
Extension Title: The Milton Gardens Program 1996-2000
Extension Personnel: R.K Schoellhorn
Department: West Florida REC-Jay
SMP's involved: FL 112

Description of Activity:

Greenhouse experiments were initiated to evaluate the tolerance of woody landscape plants to root knot nematodes. Field trials have been established to evaluate the landscape performance of native and ornamental grasses without fertilizer or water inputs. Experiments to develop production protocols for native plants utilized in beach dune restoration were initiated. A collection of Chamaecyparis thyoides germplasm obtained in 1999 was produced in 3-gallon containers for long-term field experiments planned for installation in 2001. Collections of germplasm of Camellia species

and Cryptomeria japonica cultivars were obtained in 2000 for future long-term evaluations to be initiated in 2002.

Impacts/Accomplishments:

Establishment of irrigated and non-irrigated landscape plantings to evaluate the adaptability and performance of landscape species will provide information useful for selecting landscape species adaptable to Northwest Florida and performance information will be useful to regional municipalities for selecting landscape species for landscape plantings, to FDOT for selecting species for establishing roadside plantings, to the Florida Nursery Industry for selecting new or improved genotypes for expanding markets, and to the Florida homeowner in selecting plants for home landscapes. Performance trials evaluating timing and rates of fertilizer application and evaluation of plant growth regulators for managing growth of landscape species will provide local information on which to base recommendations for homeowners, landscape managers, and extension personnel of Northwest Florida.

Total Hatch Expenditures: $9,454
National Goal: 1

Research Project #: JAY-03620 (active)
Research Title: Weed Biology and Control for Turfgrass and the Landscape
Research Faculty involved: B.J. Brecke
Extension Program Number: JAY-BJB02
Extension Title: Weed Management in Turfgrass
Extension Personnel: B.J. Brecke
Department: West Florida REC-Jay
SMP's involved: FL 116

Description of Activity:

Objective 1**.** Evaluate herbicides and natural products for annual grass control in turfgrass.
Accomplishments**:** Oryzalin (Surflan) and prodiamine (Barricade) provided near perfect control of annual bluegrass (Poa annua) in non-overseeded turf. Pendimethalin (Pendulum) and a package mix of benefin 1 lb/A + trifluralin 1 lb/A (Team Pro) also provided good annual bluegrass control. XL 2G, simazine (Princep) and oxadiazon (Ronstar) provided less than acceptable control. Dithiopyr (Dimension) when applied as a sequential treatment also provided greater than 95% annual bluegrass control.

Sequential application of prodiamine (Barricade) preemergence at 0.75 lb/A followed by a second application 60 days later or a single preemergence application of a package mix of benefin 1 lb/A + trifluralin 1 lb/A (Team Pro) provided 95 to 100% crabgrass control. Dithiopyr (Dimension) applied as a sequential treatment at 0.5 lb/A preemergence followed 60 days later by a second 0.5 lb/A application or oxadiazon (Ronstar) applied at 3 lb/A preemergence controlled crabgrass (90 to 95%) better than pendimethalin (Pendulum) 1 lb/A twice, oryzalin (Surflan) 1.5 lb/A twice or metolachlor (Dual) 4 lb/A once (70 to 80%).

Corn gluten, a natural product, applied the third year to the same plots as in 1997 and 1998, provided 85% control of crabgrass when applied at 435 lbs/A or 870 lbs/A twice during the season. Higher rates did not improve control and control actually declined at an application rate of 1740 lb/A. Prodiamine at 0.5 lb/A applied twice provided 85 to 90 % crabgrass control. Corn gluten controlled annual grasses better the second season than the first and appears to offer an alternative for turfgrass managers interested in reducing herbicide inputs.

Objective 2. Develop purple nutsedge management systems for turfgrass.
Accomplishments: Selected herbicides were evaluated for yellow nutsedge control in bermudagrass.

Imazaquin (Image) + MSMA applied twice (90%) halosulfuron (Manage) applied twice (90%) and imazapic (Plateau) applied twice (98%) provided good to excellent control of purple nutsedge and better control than achieved with the standard of MSMA applied twice (85%). An experimental herbicide from Syngenta was also evaluated for yellow nutsedge control. CGA 362622 at rates of 0.022 to 0.044 lb a.i./A provided excellent (90 to 99%) control with a single application.

These same treatments were also evaluated for control annual kyllinga and control was similar to that observed with yellow nutsedge

Objective 3. Develop integrated torpedograss management systems for turfgrass.
Accomplishments: Quinclorac (Drive) applied three times at 0.5 lb/A at 21 day intervals or quinclorac 0.75 lb/A + diclofop (Illoxan) 0.75 lb/A applied twice 21 days apart provided 85 to 90% season-long torpedograss control.

The effect of N fertility on torpedograss control with quinclorac was determined. Slow-release N improved early-season quinclorac activity by only 5% over no N fertilizer and had no impact on late-season control torpedograss control.

The impact of mowing interval prior to quinclorac application on torpedograss control was also evaluated. Allowing a 7-day interval between mowing and quinclorac application (providing more foliage to intercept herbicide) did not improve control over mowing the day of application. In fact, mowing the day of application resulted in 10 to 15% better torpedograss control than the 1-week interval.

CGA 362622 was also evaluated for control of torpedograss. A sequential application spaced 6 wk apart of CGA 362622 at 0.044 lb a.i./A provided 85 to 90% torpedograss control with no damage to bermudagrass.

CGA 362622 has the advantage of controlling both nutsedge and torpedograss, two of the most troublesome perennial weeds in Florida turfgrass.

Objective 4. Evaluate herbicides for postemergence broadleaf control in bermudagrass.
Accomplishments: Triclopyr (Lontrel), a herbicide recently registered in Florida, provided excellent control of spotted spurge, and wandering cudweed and good control of dollarweed and caused no injury to either bermudagrass or St. Augustinegrass when applied postemergence. Triclopyr did not control Brazil pusley or rustweed. Fluroxypry + clopyralid, a package mix being developed for use in turfgrass, controlled spotted spurge but only provided 60 to 70% control of dollarweed.

Objective 5. Evaluate methyl bromide alternatives for establishment of bermudagrass turfgrass.
Accomplishments: Several products were evaluated as MeBr alternatives for weed management during turfgrass establishment. Metham sodium + chloropicrin provided 95 to 100% common bermudagrass control, comparable to that observed with MeBr. Methyl iodide also controlled common bermudagrass.

Objective 6. Evaluate herbicides for tolerance in warm-season turfgrass species.
Accomplishments: Several studies were conducted in 2000 to determine the level of herbicide tolerance several warm-season turf species and cultivars. The fluroxypyr + clopyralid mix was evaluated for tolerance in bermudagrass and St. Augustinegrass. At high rates both turf species were severely damaged. At lower rates bermudagrass exhibited some tolerance but St. Augustinegrass was again severely damaged.

Quinclorac was evaluated for tolerance in St. Augustinegrass. At rates required to provide adequate weed control, St. Augustine was severely damaged and thus will not be registered for use in this turf species.

CGA 362622 was evaluated for tolerance in five St. Augustinegrass cultivars and in Tifeagle bermudagrass, an ultradwarf cultivar. Singleapplication of CGA 362 were tolerated by most of the St. Augustinegrass cultivars evaluated but sequential treatments caused excessive injury in all but Raleigh. Tifeagle bermudagrass tolerated both single and sequential treatments with only minor discoloration that quickly disappeared.

Seashore paspalum was also evaluated for tolerance to standard herbicide treatments 6 wk after sprigging when the surface was covered but prior to full establishment of the turfgrass. Seashore paspalum appeared to tolerate postemergence application of Basagran, Manage, Image, Lontrel, Trimec Southern and Vanquish but did not tolerate CGA 362622. Several of the standard preemergence herbicide cased some injury at this stage but most of these products are not labeled for use until the turf is established.

Impacts/Accomplishments:

Weed management in Florida turf costs $90 million each year. This research will provide Florida turfgrass managers a basis for choosing the most effective herbicides for managing the spectrum of weeds they encounter while minimizing potential environmental harm. Data collected from this research will be used to support registration on new, more effecting and more environmentally friendly herbicides that will then be available to Florida turf managers. This information is disseminated through various publications including fact sheets, bulletins, trade journal articles, and public speaking engagements.

Total Hatch Expenditures: $11,065
National Goal: 1

Research Project #: JAY-03748 (active)
Research Title: Herbicide Persistence in Southern Soils: Bioavailable Concentration and Effect on Sensitive Rotation
Research Faculty involved: B. J. Brecke
Extension Program Number: JAY-BJB02
Extension Title: Weed Mangament in Turfgrass
Extension Personnel: B. J. Brecke
Department: West Florida REC-Jay
SMP's involved: FL 116

Description of Activity:

An imazapic (Cadre) and flumetsulam (Strongarm) field dissipation study was conducted to determine the potential for these herbicides to cause damage to cotton planted the year following application. Flumetsulam was applied preplant incorporated at 0.024, 0.048 and 0.072 lb/A and imazapic was applied postemergence at 0.63, 0.125 and 0.25 lb/A (1,2 and 3 times the labeled rate, respectively) to peanut during 1999. The highest rate of Cadre (3X rate) caused a reduction in cotton height and mid-season plant dry weight. Cadre at the 1X and 2X rates and Strongarm at all three rates did not adversely affect cotton growth. As in previous research, Cadre carryover appears to be of a threat to cotton planted the year after application than does strongarm.

Impacts/Accomplishments:

Peanut followed by cotton is a common rotation in the southeastern U.S. These results indicate that if imazapic is applied to peanut, cotton should not be planted the following season while there is little risk of damage from strongarm residue.

Total Hatch Expenditures: $0
National Goal: 1

Research Project #: LAL-03492 (active)
Research Title: Microirrigation of Horticultural Crops in Humid Regions

Research Faculty involved: L. R. Parsons
Extension Program Number: FL 108
Extension Title: Citrus Water Management and Frost Protection
Extension Personnel: L. R. Parsons
Department: Citrus REC-Lake Alfred
SMP's involved: FL 108

Description of Activity:

Through its cooperative work with citrus growers and the City of Orlando and Orange County at the Water Conserv II project, this project has shown that citrus can be irrigated safely and effectively on a large scale commercial basis with treated reclaimed wastewater. Conserv II is the largest agricultural irrigation reclaimed water project of its type in the world and is the premier example in the state. Because Florida's growing population has increased demands on water and created the need for greater water conservation, numerous other reclaimed water projects have started in Florida in the past 5 years (delivering a combined total of more that 100 million gallons per day). Many of those projects look to Conserv for information on how their water will affect the crops irrigated.

1. Irrigation Studies

Fruit yield and canopy growth have been significantly improved by the higher (50 and 100 inches/year) reclaimed water application rates. Leaf mineral element levels are being monitored in experimental blocks and growers' fields. Results have shown that 100 inches/year of reclaimed water cannot provide adequate N and must be supplemented with N fertilizer. Irrigation and fertilizer treatments have been recently changed to maximize yield and manage vegetative growth. There has been interest in Ambersweet orange, a new variety that was widely planted until recently. Yields and pounds solids production have not met grower expectations, and there is particular interest in how to improve Ambersweet solids production. Our 20-acre test plot at Conserv II provides the most complete information data set anywhere on effects of irrigation and fertilization on Ambersweet growth and fruit production. Our tests have shown that Ambersweet is more sensitive than most varieties to nutritional or water stress and requires more careful management to insure adequate yields and good fruit quality.

The Conserv II project continues to provide research data and good public relations for CREC. An article highlighting the benefits of Conserv II was on the front page of the Gainesville Sun newspaper (Jan. 15, 2000). Conserv II was also the subject of a cover story by the Florida Grower in September, 2000. Forty people from all over the world visited Conserv as part of an ISC Congress tour. Research results continue to be presented to the growers, and city and county officials at the Mid Florida Citrus Foundation annual meeting. Conserv II reclaimed water reduces groundwater withdrawals and helps recharge the aquifer in this area. This is an example of a major water conservation project that benefits a metropolitan area and is dependent on agriculture.

2. Nitrogen Uptake Studies

Results at Conserv II have shown that even high volume applications of this dilute reclaimed water cannot meet tree nitrogen requirements. This had led us into experiments on this interaction of irrigation management with nitrogen uptake. Little information is available on citrus uptake of nitrogen from dilute solutions (such as reclaimed water) and effects of soil moisture on nitrogen uptake. These areas have been investigated by Dr. Johan Scholberg, a postdoctoral research associate in our lab.

We have successfully developed a new method to monitor nitrogen uptake of young citrus trees. Most other methods studying N uptake use N15, which can be expensive, or plants in solution culture, which may develop roots that are somewhat different than roots grown in soil. Dr. Scholberg has built a specially designed irrigation and vacuum system that allows precise control of nitrogen leaching and extraction and good evaluation of plant nitrogen uptake. This soil column and vacuum system provides us flexibility in manipulating the system so we can get complete leaching and N removal in a short time (see Scholberg et al., 2001).

One experiment evaluated N uptake over N concentrations ranging from 7 to 210 ppm N. A second experiment studied the effects of residence time and N concentration on N uptake and plant growth. Initial results showed N uptake rates on the order of 1-3 mg N per plant for smaller plants under N-limiting conditions. For larger plants, higher application rates have resulted in uptake rates as high as 20-25 mg N per plant per day.

A third experiment used split root systems to examine the effects of water stress on nitrogen uptake. Irrigation was initiated at soil water tensions of 4.5, 9, or 18 cbar. Nitrogen was applied to dry, intermediate, or wet soil. Initial results showed that plant growth was greatest at the intermediate soil moisture level. Part of the study was presented by a student working in our lab, Ajia Paolillo, at the 1999 Florida State Horticultural Society meetings. She won the Best Student Paper Award ($250) for this paper.

B. Irrigation Management

Field studies have been set up to accurately measure water storage and water movement through the soil. With the poor water holding capability of Florida's sandy soils, a reduction in soil water content of as little as 1% by volume represents a depletion of available water of approximately 15%. Hence, it is necessary to properly calibrate soil water sensors to get accurate readings.

We are comparing lower cost soil water measuring devices (e.g. tensiometers and Watermark resistance blocks) with the Enviroscan. By comparing these units and their accuracy, we can provide better information to growers on how to accurately measure soil water status in their groves (see paper by Morgan et al., 2001). More widespread use of these soil moisture measuring devices will improve grower irrigation management.

Impacts/Accomplishments:

Our work has shown that reclaimed water can be safely and effectively used to irrigate citrus. Reclaimed water use on citrus and edible crops has increased to 15,221 acres, a 75% increase in 8 years. This increase in reclaimed water use can be attributed, in part, to our research findings at Conserv. Given Florida's water shortages and our present drought, reclaimed water use will continue to increase.

Our studies on soil water movement have given us a better understanding of ridge citrus soils. This, along with our studies on soil measuring devices (Enviroscan, tensiometers, and resistance blocks), will help improve our recommendations on irrigation management.

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: LAL-03571 (active)
Research Title: Dynamic Economic Analysis of the Florida Citrus Industry
Research Faculty involved: R.P Mauaro
Extension Program Number: FL 108
Extension Title: Budgeting/Finance/Marketing
Extension Personnel: R.P Mauaro
Department: Citrus REC-Lake Alfred
SMP's involved: FL 120

Description of Activity:

Conducted the annual custom rate and fertilizer and chemical surveys for the Interior/Ridge and Indian River/South Florida citrus production regions.

The surveys are conducted each year to provide current information to citrus caretakers and growers on custom rate charges for specific grove care practices along with fertilizer and chemical prices. The average custom rates and input prices are incorporated into published citrus budgets for the major citrus producing regions in Florida. The summary results of the surveys were distributed as a mimeo extension handout to county extension agents as well as an insert in the July 2000 issue of the Citrus Industry magazine which has a 10,000+ distribution.

Impacts/Accomplishments:

Provided citrus growers, and related industries, with current comparative "benchmark" information to analyze their own citrus firm's cost data.

Total Hatch Expenditures: $4,004
National Goal: 1

Research Project #: LAL-03759 (active)
Research Title: Freeze Damage and Protection of Horticultural Species
Research Faculty involved: L.R. Parsons
Extension Program Number: FL 108
Extension Title: Citrus Water Management and Frost Protection
Extension Personnel: L.R. Parsons
Department: Citrus REC-Lake Alfred
SMP's involved: FL 108

Description of Activity:

Elevated microsprinklers proved to be particularly effective in protecting trees in 1989. Tests have been set up to determine how high jets can be positioned and still be effective. Information on this technique is of particular interest to growers, for it offers an effective method to speed up recovery significantly after a major freeze.

Impacts/Accomplishments:

This program has led to the expansion in use of microsprinkler irrigation and demonstrated the effectiveness of microsprinklers in frost protection. In the past 15 years, microsprinkler irrigated citrus acreage has increased by more than 600% to 500,000 acres. This program contributed to that expansion by demonstrating the important factors that influence microsprinkler effectiveness. This program also demonstrated improved frost protection effectiveness by showing the benefits of elevated microsprinklers. Every time there is a moderate to severe freeze, microsprinkler irrigation saves the citrus industry over $60,000,000. That impact comes directly from information developed by this program. The frost that hit south Florida in January, 1997 and winter 2000-01proved again that growers who used microsprinklers benefitted their trees while those who did not (because of lack of water or other reasons) suffered significant cold damage.

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: LAL-03788 (active)
Research Title: Development of Ecological Methods for Nematode Management
Research Faculty involved: J.W. Noling
Extension Program Number: FL107FL108
Extension Title: Vegetable IPM, Production, Harvesting, & Handling Efficiencies--Citrus Management
Extension Personnel: J.W. Noling
Department: Citrus REC-Lake Alfred
SMP's involved: FL 107, FL 108

Description of Activity:

Study 1 and 2. As part of a continuing effort, two studies were again conducted during spring and fall 2000 to evaluate the use of a municipal solid composted waste in combination with a resistant tomato variety (cv. Sanibel) on the ability of tomato plants to tolerate root-infection by the southern root-knot nematode, Meloidogyne incognita. Unlike the previous spring 1999 results, the spring 2000 study showed a very significant (P=0.0001) linear increase in tomato yields with amendment rates (0 to 120 ton/a) in both the nematode free and infested microplots. As in previous 1997,1998, and 1999 studies, the impact of the root-knot nematode on tomato yield of the now resistant variety was again however, effectively constant after reapplication of the various amendment rates during fall 1999. Near identical results were obtained during Fall 2000 studies. Based on summary of 4 years of research, it would appear that application of at

least some forms of soil amendments do not enhance the ability of tomato plants to tolerate root-infection by M. incognita. The results of this research seem to indicate that the major effects of soil amendments to crop yields appears to be less related to nematode or soil pathogen control than to enhanced plant nutrition and nutrient and water availability. Studies are continuing (Spring 2001) in field microplots to evaluate tomato and nematode population growth processes to re-application of the amendments, now in combination with a resistant tomato cultivar and soil fumigation treatment with Telone II (1,3-dichloropropene). A second objective is to determine the extent to which improvements in tomato plant growth may accelerate selection pressure towards resistant breaking nematode biotypes. A third, and new objective, is to determine the possible incompatibility of combined IPM tactics such as soil fumigation in conjunction with soil amendments (i.e., reduced diffusivity, enhanced adsorption, and application higher application rate requirements).

Study 3 and 4. The objective of these experiments were to continue into the fourth year of evaluation of the newly released resistant fresh market tomato variety, Sanibel, to the southern root-knot nematode, Meloidogyne incognita, and to compare the resistance and yield performance of this variety with one of the current industry standard varieties, FL 47. Separate, and final experiments were again conducted during spring 2000 and fall 2000.

During spring 2000, tomato fruit yields of both cultivars were significantly (P=0.0001) reduced by M. incognita. For spring 2000, a significant yield interaction was not detected and yield losses of 48% to 59% was observed for Sanibel and FL 47, repectively. A higher degree of plant tolerance was not observed when Sanibel was planted into M. incognita infested microplots formerly cropped exclusively with a susceptible cultivar, i.e., either susceptible Agriset 761 or FL 47. In the presence of M. incognita, root galling was severe (P=0.0001) but less (P=0.0025) so for Sanibel compared to FL47. Although variable in response, final harvest soil population density of M. incognita was higher on FL47 compared to Sanibel.

During Fall 2000, tomato fruit yields of both FL 47 and Sanibel were significantly (P=0.0001) reduced by M. incognita. A significant cultivar effect (P=0.009) was also detected in that yield losses of 56% was observed for FL 47 and only 45 % for Sanibel. A significant yield interaction (0.8590) was not detected. Once again a higher degree of plant tolerance was observed for Sanibel, even after the 4th repeated planting cycle. In the presence of M. incognita, root galling was severe for (P=0.0001) for both FL 47 and Sanibel (P=0.0001) with no significant cultivar (P=0.286) or interaction term.(P=0.367). The results of these varietal response studies are contributing valuable information regarding resistance management and the loss of durability of nematode resistance when a resistant cultivar is repeatedly planted under conditions of high nematode pressure.

Study 5. During spring 2000, a greenhouse experiment was conducted to assess crop and nematode population response at soil temperatures of 72 and 90 F to provide positive confirmation of changes which have already occurred in the original nematode parent population since the inital tomato planting of Fall 1996 or whether these changes are simply related to the thermal instability of the Mi gene bearing resistant cv. Sanibel. During spring 2000, a temperature controlled growth room study was conducted to confirm: 1) the heat sensitivity of the Mi gene in the root-knot nematode resistant tomato variety Sanibel; 2) the loss of nematode resistance to this gene at soil temperatures above 90 F; and 3) the development of a resistance breaking biotype of the root-knot nematode after five repeated plantings of resistant Sanibel. The results of the temperature controlled growth room study (24 C, 32 C) confirmed the loss of Sanibel resistance at high temperature (32 C) and the development of a resistance breaking biotype of M. incognita.

Study 6. Cover Crops: During June 2000 a single field experiment was initiated at the Citrus Research and Education Center, Lake Alfred, FL to evaluate the use of various summer cover cropping practices on root-knot nematode population dynamics. The experiment concluded September 2000, in which all of the cover crops were harvested for biomass (organic matter) contribution to soil and resultant impacts on nematode population levels.

The experimental objectives were to evaluate: 1) the effect of selected nematode resistant cover crops on final harvest soil population densities of M. incognita; 2) Plant biomass yield; 3) the ease to which these crops can be field established; and 4) the degree to which these cover crops effect weed species recolonization and density.

The treatments included: 1) sun hemp (Crotalaria juncea); 2) iron clay pea; 3) southern pea, cv. _Mississippi Silver'; 4) Sesame; 5) Velvetbean (Mucuna deeringiana); 6. Hairy indigo; and 8) fallow. The

results of this study showed that in addition to suppressing weeds and nematodes, providing excellent ground cover, both sunnhemp and sesame produced the highest plant biomass of any cover crop evaluated. Seed germination and plant establishment was excellent, and from all appearances is well adapted for production in west central Florida.

Unlike iron clay pea, cowpea or velvetbean, the incidence of foliar disease or insect defoliation was also minimal. As a legume, sunnhemp has the advantage of contributing more nitrogen to subsequently grown crops (i.e., strawberry) than sesame. Given the high levels of plant biomass produced, woody nature of stalks produced, additional time and possible disking operations will be required to get the field debrie to decay before strawberry plastic laying / bedding operations can be initiated in the fall. This study was conducted as part of a statewide effort to identify and evaluate alternatives to methyl bromide for soil pest control in Florida vegetable production systems.

Study 7 and 8. STRAWBERRY IR-4: As part of a national, interregional research project (IR-4), two strawberry field experiments were initiated during fall 1999-Spring 2000 in Plant City, FL. The objectives of these experiments were to evaluate 10 treatments including various fumigant alternatives to methyl bromide for soilborne pest and disease control and strawberry yield. The ten treatments, including enzone, metham sodium, chloropicrin, Telone C35, and methyl iodide were evaluated alone or in combination and compared with and untreated control and standard grower application of methyl bromide and chloropicrin. Preliminary results from these experiments are demonstrating highest plant mortality, reduced plant size, and higher soil populations of the sting nematode, Belonolaimus longicaudatus with all treatments involving either enzone (carbon disulfide) or metham sodium. No differences in plant growth performance and nematode population density have be observed in plots treated with either Telone C35 or methyl iodide compared to methyl bromide / chloropicrin.

Study 9 and 10. USE OF ALTERNATIVE FUMIGANTS: During spring 2000, a single replicated field experiment was conducted to evaluate preplant applications of Propargyl bromide for control of yellow nutsedge, Cyperus esculentus, the southern root-knot nematode, Meloidogyne incognita, and resultant impacts on tomato plant growth and yield (cv FL 47). Treatments included broadcast equivalent propargyl bromide application rates of 40, 80,120, 160, and 200 lb/a compared with metham sodium (75 gal/a), Basamid (400 lb/a), methyl bromide 98/2 , Telone II (18 gal/a), Telone C17 (35 gal/a), Telone C35 (26 gal/a), and an untreated control. All fumigant treatments produced significantly (P=0.05) greater total fruit weights of large (6x6) and extra large (5x6) size fruit than the nematode infested, untreated control. With the exception of Metham sodium, Basamid, and Telone II, total fruit yield was increased over two fold by fumigant treatment. No significant (P=0.05) dose response relationship between Propargyl bromide application rate and fruit yield was observed for total fruit yield.

All fumigant treatments significantly (P=0.05) reduced final harvest root gall severity below that of the untreated control. Use of Basamid (400 lb/a) reduced root gall severity to an intermediate level compared to the untreated control and other fumigant treatments. No fumigant treatment completely eliminated final harvest root galling.

Tomato yields were directly correlated with root gall severity. A significant (P=0.05) dose response relationship was observed between propargyl bromide application rate and level of root gall severity. The relationship between log10 propargyl bromide dose and root gall severity was linear and highly significant (P=0.0001).

However, in separate analysis, no differences (P=0.594) in the level of root gall severity was observed between Propargyl bromide application rates at or above 80 lb/a.

During fall 2000, a single replicated field experiment was conducted to evaluate preplant applications of Propargyl bromide for control of yellow nutsedge, Cyperus esculentus, the southern root-knot nematode, Meloidogyne incognita, and resultant impacts on tomato plant growth and yield (cv FL 47). Treatments included broadcast equivalent propargyl bromide application rates of 40, 55, 70. 85, and 100 lb/a compared with metham sodium (75 gal/a), Basamid (400 lb/a), methyl bromide 98/2 , Telone II (18 gal/a), Telone C17 (35 gal/a), Telone C35 (26 gal/a), Propylene Oxide (100 gal/a),and an untreated control. Two near systemic acquired resistance (SAR) compounds, Messenger and Rezist, were also included for comparitive purposes.

During fall 2000, once again, all fumigant treatments significantly (P=0.001) reduced final harvest soil population density of Meloidogyne incognita and tomato root gall severity compared to the untreated control. No differences (P=0.05) or dose response relationship between application rates of propargyl

bromide, Telone C17, or methyl bromide were observed in these parameters. Tomato yields were significantly (P=0.001) increased by all fumigant treatments compared to the untreated control. Tomato yields or root gall severity were not affected by either SAR compound compared to the untreated control.

Study 11 and 12. Use of Alternative Fumigants, Soil Solarization, and Cultural Practices. During Spring 2000 and Fall 2000 a long term cover cropping, double cropping validation trial was continued as part of a collaborative project with Dr. Jim Gilreath, Gulf Coast Research and Education Center, Bradenton, FL. These studies are part of a statewide effort to identify and evaluate alternatives to methyl bromide for soil pest control in Florida vegetable crop production systems. Principal cooperators within these studies include the following University of Florida faculty: J.P. Gilreath and J.W. Noling. The objective was to determine the degree to which crop productivity of a second spring crop of cucumbers following the previous fumigated primary crop of tomato is altered by use of soil solarization, methyl bromide, or Telone C35. Final harvest root galling varied among the fumigant and soil solarization treatments. Late season resurgence of nematode populations was most evident in all fumigant treatments except methyl bromide. Soil solarization did not effectively control root-knot nematode. This experiment was immediately followed by a spring 2001cover crop, double cropped cucurbits and weed fallow treatments. Nematodes, disease and weed populations are being monitored to determine the short and long term impacts to cropping system productivity. Of all of the alternatives; only Telone C35 combined with Tillam allowed double cropping without serious yield reductions. The results from trials completed during Spring 2000 once again demonstrated that the use of Telone C-35 in combination with Devrinol (herbicide) can be inconsistent in response, resulting in smaller plants and lower yields at some sites while appearing to provide near equivalent response in strawberry plant growth (initially slower) and yields comparable to that of methyl bromide at others.

Impacts/Accomplishments:

Study 1 and 2. N/A

Study 3 and 4. The results of these experiments have demonstrated that even with a resistant cultivar, some consideration of initial soil population level of M. incognita must be observed to minimize tomato yield losses.

Use of a resistant tomato variety should also not be considered in itself a stand alone, direct replacement strategy for the benefits of methyl bromide soil fumigation. Given Sanibel tomato yield reductions of 40-60%, combined efforts to manage soil populations to low levels prior to planting must still be considered, particularly if tomatoes are planted as a fall crop. These studies have also demonstrated the need for some long-term resistance management strategy to preserve the durability of the resistance Mi gene in tomato. With the loss of resistance after as few as 5 repeated planting cycles, some alternation of planting resistant and susceptible cultivars must be employed by farmers to preserve the practical utility of the resistant cultivar.

Study 5. Many nematode infested vegetable growing fields in Florida likely contain populations of Melodogyne which similarly possess the ability to overcome resistance conferred by the Mi gene in tomato, particularly at soil temperatures above 90 F. Given the almost daily occurrence of high soil temperature in the fall, and the temperature sensitivity of the resistance gene in tomato, use of the resistant cultivar Sanibel under high nematode pressure is probably better suited for spring plantings when cooler temperatures initially prevail. Some consideration should also be given to alternating use of susceptible and resistant varieties to further minimize selection pressures towards resistance breaking biotypes. Growers should recognize that once resistance breaking capability develops in a nematode population it is not currently possible to revert the nematode population back to a previous state where the resistance gene functions properly. Finally, even with resistant Sanibel, some management consideration of initial soil population density of the nematode to avoid significant tomato yield loss.

Study 6. N/A

Study 7 and 8. N/A

Study 9 and 10. Based on overall summary of repeated field microplot trials during 1999 and 2000, propargyl bromide proved to be a compound which was easy to handle and apply, demonstrated excellent nematicidal, herbicidal and fungicidal activity, and produced tomato yields equal to that of methyl bromide. Field research is continuing, now as part of a concerted, funded effort with USDA, to evaluate propargyl bromide as a potential alternative to methyl bromide soil fumigation.

Study 11 and 12. As in previous studies, Tillam or Devrinol combined with Telone C-17 or Telone C35 provided good control of the various weeds found in the test areas and was in most cases equal to that of methyl bromide. There were however some exceptions, but these were usually related to miscalibrations of herbicide application equipment or difficult to control weeds. Soilborne disease incidence was low at most test sites and no differences in the incidence of Fusarium wilt between the two treatments occurred at most farms. Plant pathogenic nematodes were not a factor at any site. For the tomato studies, crop plant size and fruit production can be significantly affected. Most recent computed averages for these demonstration trials suggests that losses of 1 to 10% should be anticipated following use of Telone C17 or C35.

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: MAR-03603 (active)
Research Title: Enhancing the Sustainability of Commercial Peanut Production through Improved Disease Management
Research Faculty involved: D.W. Gorbet; T.D. Hewitt
Extension Program Number: MAR 103
Extension Title: Sustainable Agriculture Practices
Extension Personnel: T.D. Hewitt
Department: North Florida REC--Marianna
SMP's involved: FL101, FL102, FL120

Description of Activity:
Studies have been done for three seasons in two different locations (Quincy and Marianna) to study methods that will be effective for peanut disease management. However, some of the chemical schemes used are not economically efficient. Also certain varieties work better than others for some of the treatments. In terms of tillage, conventional methods seem to be better overall both in terms of yield and economic return.

Studies have also been done to assess how strip tillage works for peanut production. Yield, disease management, and cost benefits are evaluated to determine if conventional plantings can be improved in terms of cultural practices and overall returns.

Impacts/Accomplishments:
Peanut producers are able to make more informed decisions on choosing the varieties and fungicides that work best for their location and their goals. Conventional tillage though costly in terms of equipment use is still the preferred method for Florida producers. However, this research is looking at different tillage systems along with chemical applications that might save Florida peanut producers money. Some research has shown that a $30 savings per acre is possible and this will result in over a $4 million dollar increase in revenue for Florida farmers**.**

Total Hatch Expenditures: $0
National Goal: 1

Research Project #: MON-03321 (terminated)
Research Title: Management of Weeds in Ornamental Crops
Research Faculty involved: J.G. Norcini
Extension Program Number:
Extension Title:

Extension Personnel: J. G. Norcini
Department:
SMP's involved:

Description of Activity:
Prodiamine (4.5 kg ai/ha) applied PRE and POST (60 days apart) provided 14 weeks of good to excellent control of container-grown Stachys floridana (Florida betony) produced from tubers. Two PRE applications of prodiamine at 4.5 kg ai/ha (about 10 weeks apart) provided the longest and most consistent control of Phyllanthus urinaria (chamberbitter; leafflower) and Phyllanthus tenellus (long-stalked phyllanthus). Imazapic (0.14 kg ai/ha), oryzalin (4.5 kg ai/ha), oxadiazon (4.5 kg ai/ha), and isoxaben + trifluralin (1 + 4 kg ai/ha, resp.) applied prior to germination of Aristida beyrichiana (wiregrass) all caused unacceptable injury, as did imazapic (0.14 kg ai/ha) applied over-the-top of young wiregrass seedlings (about 2.5 to 3.8 cm tall). However, prodiamine (0.8 or 1.7 kg ai/ha) plus or minus atrazine (2.2 kg ai/ha), atrazine (2.2 kg ai/ha), and oxadiazon (2.2 kg ai/ha) applied over-the-top of 4-month old wiregrass seedlings (about 12.5 cm tall) caused only slight (but acceptable) injury. Dithiopyr at 0.56 or 1.12 kg ai/ha applied over-the-top to field-grown Coreopsis lanceolata (lanceleaf coreopsis) and Gaillardia pulchella (Indian blanket) that were in flower caused little to no injury. Imazapic at 0.1 or 0.2 kg ai/ha (+ Latron AG-98, a no-foam nonionic spreader, at 0.25% (v/v)) delayed subsequent flowering of lanceleaf coreopsis but caused no visible foliar injury. Imazapic caused severe rate-dependent injury to Indian blanket, with the high rate causing near total destruction of treated plants. Latron AG-98 when applied alone caused no injury to either species.

Impacts/Accomplishments:
Information about chemical weed control methods to use around wiregrass is important to those growing or using wiregrass for reclamation and restoration because young wiregrass plants are not very competitive.

Total Hatch Expenditures: $5,918
National Goal: 1

Research Project #: MON-03490 (active)
Research Title: Biological Control of Selected Arthropod Pests and Weeds
Research Faculty involved: R.F. Mizell
Extension Program Number:
Extension Title:
Extension Personnel: R.F. Mizell
Department:

Description of Activity:
Harmonia axyridis, (Coccinellidae) an exotic ladybird has colonized most of the U.S. and parts of Canada. This ladybird is a voracious predator of many arthropod pests such as aphids, whiteflies, mites, etc. The impact of this new predator has been dramatic in certain crops such as pecan in the southeast where pecan aphids are now regulated to low numbers by H. axyridis and native predators. However, H. axyridis has at least one and perhaps two negative side effects. 1. It may be outcompeting the native beneficials, suppressing their numbers or actually displacing them. 2. It becomes a pest in winter because it overwinters in dwellings by the thousands causing much consternation to the occupants. Once the ladybirds are inside the structures they must be removed. Handling the ladybirds causes them to release defensive secretions that are smelly and stain furnishings. ARS personnel developed a light trap that attracts and removes most of the ladybirds once they are in the buildings. However, the ladybirds may emerge inside houses from fall until spring forcing use of the light trap for many months. As an alternative we have sought ways to prevent the ladybirds from entering houses using traps and other behavioral modification methods. A prototype trap has been developed and is being tested along with other techniques to improve trap efficiency. The trap is to date relatively inefficient, but several modifications show promise. Data on the impact of H. axyridis on native predators including other ladybirds, lacewings and mirids is being collected. H. axyridis became established for the first time in Florida in April 1993. Data is available for 3-5 years previous to that date on

the populations of predator species on several commodities. Data is now being collected on the population density of predators after introduction of H. axyridis for comparison.

Impacts/Accomplishments:
Once the trap is perfected we hope to be able to protect dwelling from H. axyridis. Addressing the problem already has generated much goodwill and interest from the public, and provided an opportunity to educate the public about biological control.

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: MON-03609 (active)
Research Title: Introduction and Evaluation of Ornamental Plants
Research Faculty involved: J.G. Norcini; G.W. Knox
Extension Program Number: MON-JGN1
Extension Title: Introduction and Evaluation of native Wildflowers and Grasses
Extension Personnel: J.G. Norcini; G.W. Knox
Department: North Florida REC--Monticello
SMP's involved: FL112, FL114, FL121, FL420

Description of Activity:

1. After 3 years of evaluation of 14 native grass species under full sun, low input conditions, the best performers were bigtop lovegrass (Eragrostis hirsuta), chalky bluestem (Andropogon capillipes), Gulf muhly (Muhlenbergia capillaris) and Indian oats (Chasmanthium latifolium). Preliminary results from two newly established evaluation gardens (Leon County CES and WFREC-Jay) concur with the previous findings.

Moreover, purpletop (Tridens flavus) exhibited excellent ornamental potential based on results at the two new sites.

2. Preliminary results of disease study showed that north Florida ecotype of black-eyed susan (Rudbeckia hirta) was more resistant to Fusarium oxysporum than a Texas selection.

3. Plateau (imazapic; Cyanamid) applied at reduced rates (1 to 3 oz product/acre) to well-established seedlings/young plants of black-eyed susan and dye flower (Coreopsis basalis) will reduce weed coverage and cause only minimal injury.

Impacts/Accomplishments:
Plateau (imazapic; Cyanamid) should be used at reduced rates when it is applied over-the-top of young native wildflower species.

Total Hatch Expenditures: $8,359
National Goal: 1

Research Project #: ONA-03726 (active)
Research Title: Evaluation of Forage Germplasm and Forage Management Practices
Research Faculty involved: P. Mislevy; R.S. Kalmbacher; M.B. Adjei
Extension Program Number: RCREC-MBA-03
Extension Title: Complementary Forages for Sustainable Livestock Production
Extension Personnel: M.B. Adjei
Department: Range Cattle REC--Ona
SMP's involved: FL102, FL103

Description of Activity:

1. Non-dormant Alfalfa Trials

Established 17 entries of non-dormant alfalfa cultivars in November of 1999 under rain-fed conditions for evaluation. There were 3 reps of each entry. Plots were harvested once in March, 2000 but stands were lost to drought and repeated deer grazing.

2. Established lablab bean and velvet beans on half-acre plots and evaluated for summer legumes that may be incorporated in corn for silage or cut for hay.

Impacts/Accomplishments:

Non-dormant alfalfa cultivars did not persist under prolonged severe drought, and continuous grazing by deer at Ona despite the application of lime and fertilizer. Presently we cannot recommend alfalfa as an alternative winter annual.

Lablab and velvet bean stands were lost because of drought and grazing by deer.

Total Hatch Expenditures: $0

National Goal: 1

Research Project #: PLP-03496 (active)

Research Title: Polyphasic Analysis of Zanthomonads Associated with Horticultural Crop Plants in Florida

Research Faculty involved: R.E. Stall

Extension Program Number:

Extension Title:

Extension Personnel: R.E. Stall

Department:

SMP's involved:

Description of Activity:

Strain 16 of Xanthomonas campestris pv. vesicatoria isolated as a nonpathogenic mutant after mutagenizing strain Xv75-3 with the transposon Tn5. Strain 16 was of interest because it grew in planta without causing disease. This is in contrast to hrp mutants that do not grow in planta. A DNA clone of strain 16 was isolated that contained the Tn5 transposon. Marker exchange of the clone into another strain resulted in nonpathogenicity of the exchanged strain. A DNA clone that complemented strain 16 back to pathogenicity was obtained. The clone was subcloned and eventually sequenced. In comparison of the sequence with those in a DNA gene bank, it was found that the sequence was homologous to hrp M which was originally isolated from Pseudomonas syringae pv. phaseolicola.

Impacts/Accomplishments:

No impacts at this time

Total Hatch Expenditures: $20,276

National Goal: 1

Research Project #: PLP-03603 (active)

Research Title: Enhancing the Sustainability of Commercial Peanut Production through Improved Disease Management

Research Faculty involved: T.A. Kucharek

Extension Program Number: Program 4

Extension Title: Determination of economical return potential with different spray programs for leaf spot, rust, and white mold in peanut

Extension Personnel: T.A. Kucharek
Department: Plant Pathology
SMP's involved: FL 101

Description of Activity:

A. Eight peanut cultivars and 10 advanced breeding lines were evaluated for suppression of cylindrocladium black rot (CBR; Cylindrocladium parasiticum) in a commercial field in Santa Rosa County. Modest levels of resistance exist in some cultivars, including Southern Runner, Georgia Green, and FL MDR 98. High levels of resistance exist in a few of the breeding lines, particularly those where one of the parents is NC 3033, a breeding line that has no commercial value. However, the breeding lines with resistance to CBR do have good agronomic characteristics and are in advanced nursery trials conducted by Dr. Dan Gorbet, the peanut breeder who I am working with.

B. In the fungicide tests in 2000 that were located at the Green Acres Farm, a continued effort was made to design spray programs for control of peanut leaf spot and rust that maximized yield. In this this test, the highest yield was achieved with a treatment where chlorothalonil, azoxystrobin and tebuconazole were alternated among six sprays. This treatment resulted in a yield of 5667 lb/A and the unsprayed check was 3730 lb/A. Several other treatments provided similar levels of control of leaf spot and rust, but yields were somewhat lower. A summary of the economical returns are presented in the Extension Section. A new experimental compound, BAS 500 was tested for the first time and it provided excellent disease control and substantial yield increases. Several of the treatments were sprayed on two cultivars, Florunner and Georgia Green. This was done for several reasons including the possibility that Georgia Green has some unclaimed resistance to leaf spot based upon previous observations by me. Indeed, Georgia Green has a small level of resistance as indicated by a 33% reduction of leaf spot in the unsprayed Georgia Green compared to the unsprayed Florunner. Similar comparisons were made in a second test for the control of white mold (Sclerotium rolfsii). Of great interest is the minimal financial returns that occurred in this test when compared to the test for control of peanut leaf spot. See Extension Section for details.

C. Robert Kemerait completed his dissertation work on the ecology of soilborne, fungal pathogens of peanut. His research will be "the reference source" for some time on soilborne, fungal communities and stages for peanut because his data is based upon data collected over multiple years, multiple farms, multiple times, and across multiple crop production variables.

Impacts/Accomplishments:

A. Growers use the data from my tests to determine what cultivar would be best for them depending upon the presence of CBR in their fields. Prior to my work, nobody, including the plant breeders, realized that some of the commercially available varieties for Florida, except for NC12C, had modest, useable resistance against CBR.

Also, Dr. Gorbet is using my information about the various breeding lines to better position them when they become released as breeding lines or cultivars.

B. From my fungicide trials, we have learned how to use several different fungicide types effectively for resistance management and at the same time understand financial returns for the various combinations. This has gained a lot of positive comments from growers because two of the

major problems they have with chemical are the onset of resistant strains of the pathogens and cost of the chemical being developed today. I am also discovering that financial returns for controlling leaf spot and rust are greater than for white mold.

C. With research from Dr. Robert Kemerait, we have learned that the 48 fungal Genera that colonize roots, pegs, and pods of peanut can be grouped in ecological communities or substages of communities. These communities and substages are influenced by crop growth stages, environmental factors (e.g. soil pH, canopy moisture and temperature levels, etc.), cultivars, etc.

Total Hatch Expenditures: $1,382
National Goal: 1

Research Project #: QUN-03364 (active)
Research Title: Biology and Management of Arthropod Pests of Vegetables
Research Faculty involved: J.E. Funderburk; P.C. Andersen
Extension Program Number: QUN03364
Extension Title: Biology and Management of Arthropod Pests of Vegetables
Extension Personnel: J.E. Funderburk; P.C. Andersen
Department: North Florida REC--Quincy
SMP's involved: FL107

Description of Activity:
Funds were successfully solicited from government agencies and industry. Experiments were conducted on tomato, pepper, and cabbage. Presentations were made at a grower field day, an in-service training, commodity meetings, and professional society meetings. Data was included in nonrefereed extension articles and in refereed journal articles.

Impacts/Accomplishments:
Traditional, broad-spectrum, highly toxic insecticides have heavy environmental and worker safety risks. The efficacies and environmental benefits of new, biological insecticides are being determined in this research.

Total Hatch Expenditures: $12,777
National Goal: 4

Research Project #: QUN-03402 (active)
Research Title: Integrated Pest Management as an Alternative for Control of Soilborne Pests of Vegetable Crops
Research Faculty Involved: D.O. Chellemi; J.R. Rich; S.M. Olson
Extension Program Number: NFREC-002
Extension Title: Improved Cultural Practices
Extension Personnel: S.M. Olson
Department: North Florida REC--Quincy
SMP's involved:

Description of Activity:

Strawberry fumigation trials were stated in fall 1999. Six treatments were applied on 30 Sept 1999. Treatments consisted of untreated control, methyl bromide/chloropicrin (67/33) at 350 lbs/a, chloropicrin at 300 lbs/a, Telone C35 at 35 gal/a, Vapam at 150 gal/a and combination of Vapam at 150 gal/a plus Telone II at 12 gal/a. All rates are broadcast rates. In addition all treatments except untreated check and methyl bromide recieved Devrinol 50 DG at 8 lbs/a. Cultivar used was 'Chandler'. Plots were split using both bare-root and plug plants. All treatments produced higher yields than the untreated check (1216 flats/a). Highest yield occurred with methyl bromide treatment at 1400 flats/a. Average berry size was also increased by all fumigant treatments. Bare-root plants produced higher yields than plug plants, 1395 flats/a vs. 1283 flats/a. Same trial was also conducted at Gainesville with S.J. Locascio and at Bradenton with J.P. Gilreath.

Impacts/Accomplishments:

No impact at this time

Total Hatch Expenditures: $7,700
National Goal: 4

Research Project #: QUN-03693 (active)
Research Title: Dynamic Soybean Insect Management for Emerging Agricultural Technologies and Variable Environments
Research Faculty involved: J.E. Funderburk; D.C. Herzog
Extension Program Number: QUN03364
Extension Title: Biology and Management of Arthropod Pests of Vegetables
Extension Personnel: J.E. Funderburk
Department: North Florida REC--Quincy
SMP's involved: FL 107

Description of Activity:

1.Develop suitable technology for analyzing the genetic composition of N. rileyi during epizootic phase 2. sample lepidopterous pests from peanut, soybean, and corn to quantify the genetic diversity of N. rileyi associated with these crops, thus providing insight into endemic behavior of pathogen 3. develop multiseasonal database to determine if epizootics are due to a series either operating in tandem or acting as a pathotype cluster to provide a cascade of genotypes adapted to environmental conditions and/or to a dynamic host complex.

Accomplishments:

A refereed journal article of research conducted in previous years was published.
A competitive grant for the National Research Initiative was submitted, but was not funded.
A presentation was made at the annual meeting of Regional Project S281**.**

Impacts/Accomplishments:

The understanding gained in this research is necessary to predict epizootics in different field crops and to successfully develop these fungal entomopathogens.

Total Hatch Expenditures: $0
National Goal: 1

Research Project #: SOS-03212 (terminated)
Research Title: Nutritional and Environmental Considerations of Turfgrass Fertility
Research Faculty involved: J.B. Sartain
Extension Program Number:
Extension Title:
Extension Personnel: J. B. Sartain
Department:
SMP's involved:

Description of Activity:
Field studies were conducted using two sources of potassium (KCl and K2SO4) applied at eight rates (0, 3.75, 7.5, 10, 15, 22.5, 30 and 37.5 g K/m2/90d) to evaluate the influence of K application levels on the top and root growth of 'Tifway' bermudagrass (Cynodon dactylon x Cynodon transvaalinsis BURTT DAVY). Nitrogen nutrition was maintained at 15 gN/m2/90d using ammonium nitrate on the K2SO4 plots and ammonium sulfate on the KCl plots. Over the four year period KCl produced more total growth than K2SO4, but this was possibly more related the a N source response than a K source response. Maximum K concentration in the tissue was obtained in response to the application of 7.5 g K/m2/90d. Tissue K levels were not increased by adding more K. Maximum total dry matter and K uptake were also attained in response to the application of 7.5 g K/m2/90d. Visual turfgrass quality and root growth were not influenced by K application rate. In other studies, glasshouse lysimeter culture was used to evaluate the influence of grow-in fertilization regimes on the leaching loss of N in an effort to establish best management practices for grow-in on golf course greens. USGA specification sand mixtures were used with peat and clay amendments. The mixture containing 85% sand, 12.5% peat and 2.5% clay produced the most rapid growth and cover (28d). Nitrogen leaching losses were reduced by increasing amendment rates. Modification of the N fertilization rate based on degree of cover reduced the total N leached by 60%. Inclusion of a synthetic slow-release N source with the modified fertilization program reduced the N leached over the grow-in period to 6% of that applied. In another field study, N modified Fe-Humates were evaluated for their effects on bermudagrass growth and quality. The three Fe-Humates differed in N (3-0-0-12, 6-0-0-12 and 7-0-0-8). Rate of N application was balanced across all plots by the addition of ammonium nitrate. Regardless of the rate of Fe application the 7-0-0-8 always produced the most rapidly growing turfgrass with the highest N and Fe uptake. In previous studies,Fe-Humates have been shown not to degrade rapidly enough to influence turfgrass growth, but the addition of N to the Fe-Humate enhanced decomposition and resulted in a positive turfgrass response. Fe-Humates containing less than 7% N failed to induce the desired response. These plots were overseeded with a cool-season ryegrass and the Fe-Humate application enhanced turfgrass quality during the transition period.

Impacts/Accomplishments:
No impact statement at this time
Total Hatch Expenditures: $2,022
National Goal: 1

Research Project #: SOS-03274 (terminated)
Research Title: Environmental Pedology and Land use
Research Faculty involved: M. E. Collins; R.B. Brown
Extension Program Number:
Extension Title:
Extension Personnel: R.B. Brown
Department:
SMP's involved:

Description of Activity:
Projects included 'Minimum Flow and Levels Criteria for Florida Lakes'; 'Soil Investigations at the UF-Natural Area Teaching Laboratory'; 'Genesis of Carbon Sequestration in Subtropical Spodosols'; 'Soil Contamination in Stormwater Retention Basins'; 'Ecological Inventory of the Apalachicola National Forest'; 'Soil Characterization Data for St. Johns River Water Management District on the Internet'; 'Pedological Investigations at Pine Acres - Phase 1'; 'CEC Activity Classes as Related to Soil Taxonomy'; and 'Explorations using Ground-Penetrating Radar'. Hydric soil indicators and hydrologic data will be applied to Lowery Lake to determine the minimum surface flow. The research project in the Osceola National Forest continues to study the genesis of carbon sequestration in Spodosols with double spodic horizons. Access wells in E, Bh, Bw/E and B'h horizons and water wells to 2 m were installed in 8 rows from the uplands to a wetland. Water samples and depths to the water table are taken and measured as necessary. A stormwater retention basin was selected on the UF campus to study soil contamination (hydrocarbons and heavy metals) associated with run-off from paved parking lots. Soils data for St. Johns River Water Management District are being prepared so that it can be accessed on the Internet. Soil characterization data were used to reclassify soil series as to CEC Activity Classes at the Family-level of Soil Taxonomy. It was determined that many soil series belong to more than one activity class. Investigations with GPR were conducted in cooperation with NASA and the Pound Human Identification Laboratory, as well as various geo-engineering and archaeological applications.

Impacts/Accomplishments:
This project emphasized the importance of soil and water as related to environmental quality and land use issues. Many of the research project completed or those continued have a great influence on the wise use of Florida's soil and water resources.

Total Hatch Expenditures: $20,465
National Goal: 4

Research Project #: SWS-03460 (active)
Research Title: Pesticides and other Toxic Organics in Soil and Their Potential for Ground and Surgface Water Contamination
Research Faculty involved: A.V. Ogram; L.T. Ou; A.C. Hornsby
Extension Program Number: SOS/AGH/01
Extension Title: Keep Your Well Water Clean
Extension Personnel: A.C. Hornsby
Department: Soil and Water Science
SMP's involved: FL 412

Description of Activity:
Soil from an experimental site in Florida that had been treated with the fumigant 1,3-dichloropropene (1,3-D) annually or biannually for at least six times exhibited enhanced degradation toward 1,3-D. After three additional annual applications of 1,3-D to this site, enhanced degradation in the soil was progressively increased.

Trans-1,3-D was degraded faster than its counter part, cis-1,3-D. A strain of Rhodococcus sp. (strain AS2C) capable of degrading 1,3-D was isolated from the enhanced soil. Similar to the enhanced soil, strain AS2C degraded trans-1,3-D faster than cis-1,3-D.

Impacts/Accomplishments:
The 1,3-D degrader, Rhodococcus sp. strain AS2C, may have potential to reduce 1,3-D residues in soil after fumigation is completed. Therefore, evaporation of 1,3-D into the atmosphere and leaching into the groundwater can be reduced.

Total Hatch Expenditures: $0
National Goal: 4

Research Project #: SWS-03711 (active)
Research Title: Turfgrass Fertility Management and Environmental Impact
Research Faculty involved: J.B. Sartain
Extension Program Number: SOS-JBS1
Extension Title: Maintaining proper turfgrass fertility promotes quality turfgrass production with minimal threat to the environment
Extension Personnel: J.B. Sartain
Department: Soil and Water Science
SMP's involved: FL 116

Description of Activity:

Both field and glasshouse experiments that were supported in part by various granting agencies were conducted according to the objectives outlined in Hatch Project SOS 03711 "Turfgrass Fertility Management and Environmental Impact. These projects combine to 0.6 research FTE for this faculty member and two full time (1.0 FTE) and one 0.6 FTE USPS employees working under my supervision. These projects can be broadly grouped under the following general areas of study.

1. Studies involving the growth and quality response of cool and warm-season turfgrasses to various slow-release N, P, and K materials were conducted. These studies involved 177 field plots.

2. A field study was conducted to evaluate an experimental N maintenance program using proprietary materials relative to a standard practice treatment on three different cultivars of bermudagrass; Floridwarf, Tifgreen, and Tifway. This study involved a total of 30 plots.

3. A study was conducted on FloraDwarf bermudagrass to evaluate the effectiveness of a number of different biological N sources in supplying N and promoting turfgrass growth and quality. A total of 60 plots were employed.

4. A field study was continued on the Envirogreen using two turfgrasses (Floridwarf and Tifdwarf) to establish correlations between soil and nutrient test N, P and K and the growth and quality response of the turfgrasses. A total of 90 plots were employed. A mirrowed lysimeter study was conducted in a glasshouse to evaluate the potential leaching characteristics of the management practices employed in the field study.

Impacts/Accomplishments:

High-quality turfgrass, whether on home lawns, golf courses or in open green spaces, continues to be the envy of most people. As land becomes more scarce due to the construction of houses and roads, well-maintained turfgrass should become even more desirable. Research in the areas of environmentally-sound maintenance and nutrition of existing and new turfgrass cultivars is absolutely necessary to satisfy the needs of a rapidly expanding turfgrass industry. In general, intensively managed turfgrasses involve an aggressive fertilization program. The proposed research will investigate the means and methods of managing turfgrass fertilization programs such that fertilization efficiency is maximized and groundwater pollution is minimized. Accomplishment of this task could result in a savings of at least 10% of the annual turfgrass maintenance costs that would represent in excess of $30 million for golf courses and residential lawns**.**

Total Hatch Expenditures: $8,261

National Goal: 4

February 28, 2001

This is to certify that I have seen and approved the Florida FY2000 Annual Report of Accomplishment. This REPORT contains the following:

- **UF/IFAS (1862) Research and Extension Report including extension multistate and extension and research integrated requirements**
- **FAMU/IFAS (1890) Extension Report**

Signatures:

Dr. Christine T. Waddill Christine T. Waddill
Dean and Director of Extension

Dr. Richard L. Jones Richard L. Jones
Dean and Director of Research

Dr. Bobby R. Phills Bobby R. Phills
Dean for College of Engineering Sciences, Technologies and Agriculture

Appendix D

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Request for Waiver from Target Percentage
for Multistate Extension Activities and Integrated Activities

Institution University of Florida
State Florida

Waiver for (circle one):
Multistate Extension Activities
Integrated Activities (Hatch Act Funds)
(Integrated Activities (Smith-Lever Act Funds))

Fiscal Year (circle one):
(FY 2000)
FY 2001
FY 2002
FY 2003
FY 2004

Type of Waiver:
Pre-waiver (Must be submitted prior to October 1)
(Post-waiver (Must be submitted with Annual Report of Accomplishments and Results))

Justification:

The University of Florida/IFAS is requesting a one-year waiver. Florida has not historically collected information on integrated and multi-state information until it became a requirement of the AREERA. During the past year, Florida IFAS has also begun a five-year plan that is requiring changes in extension state major programs to make them more accountable and measurable. We are also attempting to tie research projects and extension state major programs more closely together. Along with these changes IFAS fiscal directors are in the process of determining some changes in the accounting process that will make our integrated and multistate programs much more auditable. For this reason, we request a waiver for one year from targeted percentages that were approved this past year while we make these needed internal changes. We are still submitting a percentage and we expect to meet and/or exceed our targeted percentage with the next report in 2002.

Christine T. Waddill — Director

2/22/2001 — Date

Christine T. Waddill

Note: All reports must be submitted regardless of request for waiver.

Form CSREES-WAIVER (2/00)

Total Formula Funds Expended by Goal

	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Total
1862 Extension	$1,336,742	$113,285	$95,402	$241,474	$630,355	$2,411,800
1862 Research	$1,759,575	$161,862	$0	$1,319,595	$53,220	$3,294,252
1890 Extension	$335,235	$55,873	$55,873	$0	$670,470	$1,117,451
***1890 Research**						

*1890 Research will report separately

Multi-state Funds Expended by Goal

	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Total
1862 Extension	$183,442	$903	$3,887	$75,465	$34,045	$297,741
1862 Research	N/A	N/A	N/A	N/A	N/A	N/A

1862 Integrated Extension/Research Formula Funding

	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Total
1862 Integrated Extension	$ 92,828	0	$0	$ 66,580	$0	$159,408
1862 Integrated Research	$ 227,635	20940	$0	$ 170,715	$6,885	$426,175
1890 Extension						
***1890 Research**						

*1890 Extension and Research will report separately

1862 Extension Matching Funds/Smith-Lever

	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Total
Federal Smith-Lever	$2,446,029	$207,294	$174,571	$441,860	$1,153,451	$4,423,205
State	$13,977,583	$1,184,560	$997,569	$2,424,965	$6,591,279	$25,175,956
County	$13,558,671	$1,149,059	$967,671	$2,449,291	$6,393,736	$24,518,428

1862 Research State Matching Funds

	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Total
State	$12,374,690	$1,138,340	$0	$9,280,406	$374,282	$23,167,719

1890 State Matching Funds

	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Total
State	$100,500	$16,750	$16,750	$9,280,406	$201,000	$335,000

FTEs and SYs

	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Total
1862 Extension (FTEs)	35	1	3	6	11	56
1862 Research (SYs)	29	4		32	4	69

Appendix A
FLORIDA EXTENSION STATE MAJOR PROGRAMS

FL101 Practices for Sustainable Agronomic Crop Production in Florida
FL102 Florida Forage Production for Livestock and Dairy
FL103 Improving the Production, Efficiency and marketability of Beef Cattle in Florida
FL104 Strategies for Successful Dairying in Florida (FL 104 was discontinued as of 1/1/2000)
FL105 Management of Water and Nutrients in Florida's Nursery Industry
FL106 Managing Animal Manures and Wastes to Facilitate a Sustainable Florida
FL107 Vegetable Production, Harvesting and Handling Efficiencies in Florida
FL108 Citrus Management in Florida
FL109 Food Safety and Quality in Florida
FL110 Food Processing and Handling in Florida: Quality, Value-Added Concepts and Safety
FL111 Tropical Fruit Crops Management in Florida
FL112 Ornamental Plant Production and Integrated Pest Management in Florida
FL113 Sustainable Community Development and Enhancement of Natural Systems in Florida
FL114 Environmental Landscape Management in Florida
FL115 Florida's Regulatory Environment
FL116 Florida Turfgrass Management
FL117 Profitable and Sustainable Poultry Production in Florida
FL119 Business Management for Horticultural Enterprises in Florida
FL120 Managing Competitiveness in Agriculture Through Management, Finance, Marketing, and Policy
FL121 Small Farm Sustainable Agriculture Alternative Opportunities and Crops in Florida
FL122 Pesticide Applicator Training in Florida
FL123 Pesticide Impact Assessment for Florida
FL124 Florida's Farm and Home Safety and Disaster Preparedness and Recovery
FL127 Florida Urban Gardening Program (FL 127 was discontinued as of 1/1/2000)
FL128 Sustaining the Economic Viability of the Florida Dairy Industry
FL129 Profitable and Sustainable Sugarcane Production in Florida
FL130 Information Management in Precision Agriculture and Natural Resources
FL131 Quality and Management of Florida State Diagnostic Services
FL132 Florida Aquaculture: A new state major program for 2000-2003

Florida A&M University (1890 Programs)

FL261 Small Animal and Small-Scale Farm Profitability and Sustainability in Florida - 1890
FL262 Nutrition, Diet and Health in Florida - 1890
FL265 Improving Profitability of Small-Scale Crop Production in Florida
FL267 Financial Management and Decision-Making in Florida - 1890
FL269 Water Quality and Environmental Programs in North Florida
FL270 Community Resource Development
FL271 Adult and Child Health and Wellness Programs
FL272 Herd Health and Food Safety
FL273 Small Farms

Sea Grant Programs

FL312 Seafood and Aquaculture Product Quality and Safety in Florida
FL315 Coastal and Marine Recreation and Waterway Management
FL316 Florida's Coastal Environment and Water Quality
FL317 Florida's Sustainable Marine Fisheries

Natural Resources

FL411 Florida Water Conservation
FL412 Florida's Comprehensive Water Quality Program
FL413 Florida Aquaculture and Pond Management (FL413 was incorporated into FL420 as of 1/1/2000)
FL415 Florida's Forest Resources (FL415 was incorporated into FL420 as of 1/1/2000)
FL416 Management and Ecology of Aquatic, Wetland, and Invasive Exotic Plants in Florida
FL417 Ecosystem Conservation in Florida: Protecting and Sustaining Wildlife Species in Natural and Altered Systems -- (FL417 was incorporated into FL420 as of 1/1/2000)
FL418 Animal Damage Control and Management of Nuisance Wildlife Situations in Florida -- (FL418 was incorporated into FL420 as of 1/1/2000)
FL419 Management and Ecology of Mosquitoes and Other Biting Arthropods in Florida – (FL419 was incorporated into FL420 as of 1/1/2000)
FL420 Conserving Natural Resources in Florida (This SMP incorporates FL413, FL415, FL417, FL418, and FL419 as of 1/1/2000)

Family, Youth and Community Sciences

FL510 Housing and Built Environment in Florida
FL511 Food, Nutrition, and Health in Florida -- (This SMP incorporates FL514, FL516, and FL518 as of 1/1/2000)
FL512 Family Economic Stability in Florida
FL513 Building Community Leadership for Economic Development and Public Issues Education
FL514 EFNEP in Florida (FL514 was incorporated into FL511 as of 1/1/2000)
FL515 Successful Parenting/Family Development in Florida
FL516 Decisions for Health in Florida (FL516 was incorporated into FL511 as of 1/1/2000)
FL517 Florida Association for Family and Community Education Maintenance -- (FL517 was incorporated into FL801 as of 1/1/2000)
FL518 Family Nutrition Program -- (FL518 was incorporated into FL511 as of 1/1/2000)
FL801 Extension Volunteer Development – (This SMP incorporates FL517, FL719, and FL219 as of 1/1/2000)

4-H and Other Youth Programs

FL201 Preparing Florida's Youth for the World of Work
FL211 Animal Sciences Education
FL212 Plant Sciences
FL213 Science and Technology
FL214 Environmental Education
FL215 Individual and Family Resources
FL216 Citizenship/Leadership
FL217 Communication Arts and Sciences
FL218 Organizational Development
FL219 Volunteer Development -- (FL219 was incorporated into FL801 as of 1/1/2000)
FL701 Preparing Florida's Youth for the World of Work
FL703 4-H EFNEP in Florida
FL704 SOAR School Gardens (FL704 was incorporated into FL712 as of 1/1/2000)
FL711 Animal Sciences Education
FL712 Plant Sciences (This SMP incorporates FL704 as of 1/1/2000)
FL713 Science and Technology
FL714 Environmental Education
FL715 Individual Family Resources Including Health and Safety
FL716 Citizenship/Leadership
FL717 Communication, Arts and Sciences
FL718 Organizational Development

FL719 Volunteer Development (FL719 was incorporated into FL801 as of 1/1/2000)

4-H Continuing Core Programs

As of January 1, 2000, all 4-H Continuing Core Programs will be identified as regular state major programs.

Project Number	Status	Type	Title
ABE-03456	Active	H	Improvement Of Thermal Processes For Foods
ABE-03593	Active	H	Development And Application Of Comprehensive Agricultural Ecosystems Models
ABE-03596	Active	H	Animal Manure And Waste Utilization, Treatment And Nuisance Avoidance For A Sustainable Agriculture
ABE-03874	Active	H	Improvement of Thermal and Alternative Processes for Foods
AGR-03594	Active	H	Formation, Sprouting And Longevity Of Hydrilla Tubers
AGR-03596	Active	H	Animal Manure And Waste Utilization, Treatment And Nuisance Avoidance For Sustainable Agriculture
AGR-03667	Active	H	Molecular Improvement Of Peanut And Sugarcane
AGR-03706	Active	H	Reproductive Biology And Gametophytic Selection In Higher Plants
AGR-03713	Active	H	Plant Genetic Resources Conservation and Utilization
AGR-03726	Active	H	Evaluation of Forage Germplasm and Forage Management Practices
ANS-03552	Active	H	Dna Microsatellites To Predict Bovine Calpastatin Gene Activity
ANS-03572	Active	H	Byproduct Feedstuffs: Rumen Degradability Of Carbohydrate And Fat Fractions And Effects On Feed Effi
ANS-03596	Active	H	Animal Manure And Waste Utilization, Treatment And Nuisance Avoidance For A Sustainable Agriculture
ANS-03651	Active	H	Breeding To Optimize Maternal Performance And Reproduction Of Beef Cows In Southern Region
ANS-03659	Active	H	Metabolic Relationships In Supply Of Nutrients For Lactatingcows
ANS-03768	Active	H	Nutritional Systems for Swine to Increase Reproductive Efficiency
ANS-03818	Active	H	Improvement of Beef Cattle in Multibreed Populations: Phase Iii
ANS-03821	Active	H	Synchronization of estrus in cattle of Bos indicus breeding
ANS-03833	Active	H	The Poultry Food System: A Farm to Table Model
ANS-03912	Active	H	Enhancing Production and Reproductive Performance of Heat-stressed Dairy Cattle
APO-03364	Active	H	Biology And Management Of Arthropod Pests Of Vegetables
APO-03413	Active	H	Development Of Improved Carrot Varieties For Florida

APO-03490	Active	H	Biological Control Of Selected Arthropod Pest And Weeds
APO-03523	Active	H	Management Of Diseases Of Tropical Foliage Plants
APO-03609	Active	H	Introduction And Evaluation Of Ornamental Plants
APO-03825	Active	H	Technical and Economical Efficiencies of Producing, Marketing, and Managing Environmental Plants
APO-03875	Active	H	Development Of New Potato Clones For Environmental And Economical Sustainability In The Northeast
BGL-03460	Active	H	Pesticides And Other Toxic Organics In Soil And Their Potential For Groundwater Contamination
BGL-03504	Active	H	Biological Control And Management Of Soilborne Plant Pathogens For Sustainable Crop Production
BGL-03711	Active	H	Turfgrass Fertility Management and Environmental Impact
BGL-03826	Active	H	Genetic Manipulation of Sweet Corn Quality and Stress Resistance
BGL-03827	Active	H	Best Management Practices for Turf Systems in the East
BRA-03402	Active	H	Integrated Pest Management As An Alternative For Control Of Soilborne Pests Of Vegetable Crops
BRA-03415	Active	H	Development Of Pest Management Systems For The Control Of Getable Diseases
BRA-03416	Active	H	Weed Management In Vegetable Crops Grown In Flatwoods Soils
BRA-03492	Active	H	Microirrigation Of Horticultural Crops In Humid Regions
BRA-03524	Active	H	Identification, Management And Control Of Viruses Infecting Ornamental And Related Crops
BRA-03544	Active	H	Improved Nutrition And Irrigation Of Ornamental Plants
BRA-03554	Active	H	Flower Initiation And Development Of Floriculture Crops
BRA-03609	Active	H	Introduction And Evaluation Of Ornamental Plants
BRA-03764	Active	H	Strawberry Cultivar Development
BRA-03832	Active	H	Microirrigation Technologies for Protection of Natural Resources and Optimum Production
BRO-03651	Active	H	Breeding To Optimize Maternal Performance And Reproduction Of Beef Cows In The Southern Region

DOV-03586	Active	H	The Epidemiology And Control Of Strawberry Diseases
DOV-03764	Active	H	Strawberry Cultivar Development
ENH-03543	Active	H	Establishing Trees In Urban Landscapes
ENH-03544	Active	H	Improved Nutrition And Irrigation Of Ornamental Plants
ENH-03564	Active	H	Micropropagation Protocol Development For Production Of Native Wetland, Aquarium And Water Garden Pl
ENH-03595	Active	H	Asexual Propagation Of Environmental Plants
ENH-03600	Active	H	Morphological And Physiological Responses Of Chimeral Plants To Environmental Factors
ENH-03602	Active	H	Taxonomy And Boisystematics Of Cultivated Plants
ENH-03609	Active	H	Introduction And Evaluation Of Ornamental Plants
ENH-03669	Active	H	Effects Of Horticulture, Gardening Experiences, And Green Spaces On Human Populations
ENY-03386	Active	H	Dynamics And Management Of Plant-parasitic Nematodes Of Turfgrasses
ENY-03442	Active	H	North American Katydids And Crickets (orthoptera:terrigoniidae And Gryllidae
ENY-03490	Active	H	Biological Control Of Selected Arthropod Pests And Weeds
ENY-03493	Active	H	Development And Integration Of Entomopathogens Into Pest Management Systems
ENY-03592	Active	H	Integrated Management Of Arthropod Pests Of Livestock And Poultry
ENY-03694	Active	H	Managing Plant-parasitic Nematodes in Sustainable Agriculture with Emphasis on Crop Resistance
ENY-03723	Active	H	Conservation and Laboratory Rearing of Butterflies
ENY-03788	Active	H	Development of Ecological Methods for Nematode Management
ENY-03796	Active	H	Biological Control of Scapteriscus Mole Crickets
ENY-03798	Active	H	Biologically Based Ipm Systems for Management of Plant-parasitic Nematodes
ENY-03860	Active	H	Interactions Among Bark Beetles, Pathogens, And Conifers In North American Forests
FOS-03322	Active	H	Fatty Acids In Foods
FOS-03456	Active	H	Improvement Of Thermal Processes For Foods
FOS-03513	Active	H	Controlled Dietary Folate Effect On Folate Status In Elderlywomen
FOS-03515	Active	H	Folate Requirements Of Pregnant Human Subjects
FOS-03548	Active	H	Solid-phase Extraction Techniques For Pesticides In Water Samples
FOS-03741	Active	H	Food Technology Research Support to Florida Agriculture Industries in Value Adding Enterprises

FOS-03764	Active	H	Strawberry Cultivar Development
FOS-03846	Active	H	Postharvest quality and safety in fresh-cut vegetables and fruits
FRE-03488	Active	H	Changes In Fishing Regulations And Commercial Fishing Families
FRE-03497	Active	H	Agricultural Change In The Gulf Of Mexico: The Case Of Citrus And Sugarcane In Florida And Veracruz
FRE-03571	Active	H	Dynamic Economic Analysis Of The Florida Citrus Industry
FRE-03583	Active	H	Impact Analysis And Decision Strategies For Agricultural Research
FRE-03597	Active	H	Factors Affecting The Cost Of Capital In Rural Communities: Changing Competition And Regulations
FRE-03599	Active	H	The Effect Of Farmland Boom/bust Cycles On The Rural Economy
FRE-03660	Active	H	Food Demand, Nutrition And Consumer Behavior
FRE-03701	Active	H	Agricultural and Food Product Logistics: Implications for Florida and the U.s. in a World Market
FRE-03752	Active	H	Impacts of Trade Agreements and Economic Policies on Southern Agriculture
FRE-03769	Active	H	Financing Agriculture and Rural America: Issues fo Policy Structure and Technical Change
FRE-03825	Active	H	Technical and Economical Efficiencies of Producing, Marketing and Managing Environmental Plants
FTL-03504	Active	H	Biological Control And Management Of Soilborne Plant Pathogens For Sustainable Crop Production
FTL-03539	Active	H	The Influence Of Edaphic Factors On Growth Of Torpedograss, Maidencane, And Hygrophila And Their Res
FTL-03544	Active	H	Improved Nutrition And Irrigation Of Ornamental Plants
FTL-03554	Active	H	Flower Initiation And Development Of Floriculture Crops
FTL-03602	Active	H	Taxonomy And Biosystematics Of Cultivated Plants
FTL-03607	Active	H	Bionomics And Management Of Hemipterous Pests Of Woody Ornamental Plants And Turfgrasses In Florida
FTL-03609	Active	H	Introduction And Evaluation Of Ornamental Plants
FTL-03620	Active	H	Weed Biology And Control For Turfgrass And The Landscape
FTL-03711	Active	H	Turfgrass Fertility Management and Environmental Impact
FTL-03754	Active	H	Coconut Lethal Yellowing and Related Diseases
FTL-03807	Active	H	Integrated Management of Ornamental Plant Pests

FTL-03925	Active	H	Biological Control of Soilborne Plant Pathogens for Sustainable Agriculture
FTP-03492	Active	H	Microirrigation Of Horticultural Crops In Humid Regions
FTP-03700	Active	H	Plant Growth Regulators To Enhance Profitability Of Fresh And Processed Florida Citrus
FTP-03882	Active	H	Eradication, Containment and/or Management of Plum Pox (sharka Disease)
FYC-03488	Active	H	Changes In Fishing Regulations And Commercial Fishing Families
FYC-03782	Active	H	Early Childhood Interventions for Violence Prevention in Florida
HAS-03623	Active	H	Biology And Management Of Diseases Affecting Vegetable Crops In North Florida
HAS-03875	Active	H	Development Of New Potato Clones For Environmental And Economical Sustainability In The Northeast
HOM-03490	Active	H	Biological Control Of Selected Arthropod Pests And Weeds
HOM-03540	Active	H	Genetic Improvement Of Bean (phaseolus Vulgaris): Yield, Disease Resistance, And Food Value
HOS-03402	Active	H	Integrated Pest Management As An Alternative For Control Of Soilborne Pests Of Vegetable Crops
HOS-03408	Active	H	Genetic Engineering Of Osmoprotectant Levels To Enhance Stress Tolerance In Citrus And Other Crops
HOS-03413	Active	H	Development Of Improved Carrot Varieties For Florida
HOS-03492	Active	H	Microirrigation Of Horticultural Crops In Humid Regions
HOS-03559	Active	H	Senescence Physiology And Deterioration In Harvested Tomato And Other Fruits
HOS-03601	Active	H	Identification Of Genetic And Physiological Mechanisms Of Thermotolerance In Lettuce Seed
HOS-03675	Active	H	Regulation of Photosynthetic Processes
HOS-03700	Active	H	Plant Growth Regulators To Enhance Profitability Of Fresh And Processed Florida Citrus
HOS-03729	Active	H	Genetic and Molecular Characterization of Plant Genes involved in Disease Resistance
HOS-03760	Active	H	Seed Biology, Technology and Ecology
HOS-03822	Active	H	Development of Snap Bean Varieties and Genetic Investigations in Common Bean

HOS-03846	Active	H	Postharvest Quality and Safety in Fresh-cut Vegetables and Fruits
IMM-03571	Active	H	Dynamic Economic Analysis Of The Florida Citrus Industry
IMM-03593	Active	H	Development And Application Of Comprehensive Agricultural Ecosystems Models
IMM-03622	Active	H	Water Management In Flatwoods Citrus Groves
JAY-03609	Active	H	Introduction And Evaluation Of Ornamental Plants
JAY-03620	Active	H	Weed Biology And Control For Turfgrass And The Landscape
JAY-03713	Active	H	Plant Genetic Resources Conservation and Utilization
JAY-03726	Active	H	Evaluation of Forage Germplasm and Forage Management Practices
JAY-03748	Active	H	Herbicide Persistence In Southern Soils: Bioavailable Concentration And Effect On Sensitive Rotation
LAL-03356	Active	H	Nitrogen Bmp For Citrus To Minimize Potential Nitrate Contamination Of Groundwater
LAL-03458	Active	H	Diversity And Interactions Of Beneficial Bacteria And Fungi In The Rhizosphere
LAL-03490	Active	H	Biological Control If Selected Arthropod Pests And Weeds
LAL-03492	Active	H	Microirrigation Of Horticultural Crops In Humid Regions
LAL-03493	Active	H	Development And Integration Of Entomopathogens Into Pest Management Systems
LAL-03496	Active	H	Polyphasic Analysis Of Xanthomonads Associated With Horticultural Crop Plants In Florida
LAL-03571	Active	H	Dynamic Economic Analysis Of The Florida Citrus Industry
LAL-03759	Active	H	Freeze Damage and Protection of Horticultural Species
LAL-03788	Active	H	Development of Ecological Methods for Nematode Management
LAL-03896	Active	H	Natural Products Chemistry As A Resource For Biorational Methods Of Insect Control
MAR-03603	Active	H	Enhancing The Sustainability Of Commercial Peanut Productionthrough Improved Disease Management
MON-03490	Active	H	Biological Control Of Selected Arthropod Pests And Weeds
MON-03609	Active	H	Introduction And Evaluation Of Ornamental Plants

ONA-03726	Active	H	Evaluation of Forage Germplasm and Forage Management Practices.
PLP-03280	Active	H	Characterization, Etiology, Epidemiology And Control Of Virus And Graft-transmissible Diseases:citru
PLP-03402	Active	H	Integrated Pest Management As An Alternative For Control Of Soilborne Pests Of Vegetable Crops
PLP-03415	Active	H	Development of Pest Management Systems for the Control of Vegetable Diseases
PLP-03490	Active	H	Biological Control Of Selected Arthropod Pests And Weeds
PLP-03496	Active	H	Polyphasic Analysis Of Zanthomonads Associated With Horticultural Crop Plants In Florida
PLP-03498	Active	H	Evaluation And Development Of Plant Pathogens For Biologicalcontrol Of Weeds
PLP-03524	Active	H	Identification, Management, And Control Of Viruses Infectingng Ornamental And Related Crops
PLP-03586	Active	H	The Epidemiology And Control Of Strawberry Diseases
PLP-03588	Active	H	Sanitation In Post Harvest Handling Practices For Fresh Fruits And Vegetables
PLP-03603	Active	H	Enhancing The Sustainability Of Commercial Peanut Productionthrough Improved Disease Management
PLP-03846	Active	H	Postharvest Quality and Safety in Fresh-cut Vegetables and Fruits
QUN-03364	Active	H	Biology And Management Of Arthropod Pests Of Vegetables
QUN-03402	Active	H	Integrated Pest Management As An Alternative For Control Of Soilborne Pests Of Vegetable Crops
QUN-03525	Active	H	Utilizing Potassium Buffering Capacity To Predict Cotton Yield Response To Potassium Fertilizer
QUN-03693	Active	H	Dynamic Soybean Insect Management For Emerging Agricultural Technologies And Variable Environments
QUN-03706	Active	H	Reproductive Biology And Gametophytic Selection In Higher Plants
REA-03783	Active	H	Regional Research Coordination, Southern Region
SWS-03458	Active	H	Diversity And Interactions Of Beneficial Bacteria And Fungi In The Rhizosphere
SWS-03459	Active	H	Environmental Transformation, Exposure, And Effects Of Pesticide Residues
SWS-03460	Active	H	Pesticides A Other Toxic Organics In Soil A Their Potential For Ground A Surface Water Contamination
SWS-03596	Active	H	Animal Manure And Waste Utilization, Treatment, And Nuisance Avoidance For A Sustainable Agriculture
SWS-03688	Active	H	Mineralogical Controls On Colloid Dispersion And Solid-phase Speciation Of Soil Contaminants
SWS-03711	Active	H	Turfgrass Fertility Management and Environmental Impact

SWS-03834	Active	H	Chemistry and Bioavailability of Waste Constituents in Soils
SWS-03897	Active	H	Soil Microbial Taxonomic and Functional Diversity as Affected by Land Use and Management
SWS-03919	Active	H	Mechanisms and Mitigation of Agrochemical Impacts on Human and Environmental Health
VME-03753	Active	H	A National Agricultural Program To Approve Animal Drugs For Minor Species And Uses
WEC-03618	Active	H	Savanna Ecology And Management: Role Of Fire, Grazing, And Exotic Species
ABE-03285	Extended	H	Anaerobic Decomposition Of Energy Crops, Wastes, And Metals
ABE-03491	Extended	H	Parameter Sensing And Control Systems For Drying Agricultural Commodities
ABE-03492	Extended	H	Microirrigation Of Horticultural Crops In Humid Regions
AGR-03374	Extended	H	Genetic Improvement Of Forage Grass Species
AGR-03427	Extended	H	Recyclable Organic Solids In Conservation Tillage Multiple Cropping Systems
ANS-03410	Extended	H	Hatchability Of Avian Eggs: Factors Affecting Embryo Viability
BGL-03364	Extended	H	Biology And Management Of Arthropod Pests Of Vegetables
BGL-03457	Extended	H	Phenology, Population Dynamics, And Interference: A Basis For Understanding Weed Biology And Ecology
BGL-03496	Extended	H	Polyphasic Analysis Of Xanthomonads Associated With Horticultural Crop Plants In Florida
BRA-03364	Extended	H	Biology And Management Of Arthropod Pests Of Vegetables
ENY-03402	Extended	H	Integrated Pest Management As An Alternative For Control Of Soilborne Pests Of Vegetable Crops
ENY-03419	Extended	H	Toxicology Of Agriculturally Important Insect Pests Of Florida
FME-03299	Extended	H	The Invasion Of North America By Aedes Albopictus: Ecological Impact And Gonotrophic Patterns
FME-03477	Extended	H	Develop Methods For Predicting Human Epidemics Of Mosquito-borne Encephalitis Virus In Florida
FRE-03405	Extended	H	Agriculture, Trade, And The Environment In The Caribbean Basin: Sustainable Development Imperatives
FRE-03406	Extended	H	Historical Perspective And Potential Economic Impact Of Trade Liberalization With Latin America And
FRE-03411	Extended	H	Integrated Methods For Assessing Economic Properties Of Ecological Systems
FRE-03418	Extended	H	Florida Agricultural Labor Markets
FRE-03584	Extended	H	Private Strategies, Public Policies, And Food System Performance

FTL-03280	Extended	H	Characterization, Etiology, Epidemiology And Control Of Virus And Graft-transmissible Dieases Of Cit
FTL-03386	Extended	H	Dynamics And Management Of Plant-parasitic Nematodes Of Turfgrass
FTL-03423	Extended	H	Foraging Behavior And Control Of Subterranean Termites
FTP-03305	Extended	H	Comparison Of Two Management Programs On The Growth & Incidence Of Decline (blight) Of Citrus Trees
HOM-03364	Extended	H	Biology And Management Of Arthropod Pests Of Vegetables
HOM-03402	Extended	H	Integrated Pest Management As An Alternative For Control Of Soilborne Pests Of Vegetable Crops
HOS-03457	Extended	H	Phenology, Population Dynamics And Interference: A Basis Forunderstanding Weed Biology And Ecology
IMM-03364	Extended	H	Biology And Management Of Arthropod Pests Of Vegetables
JAY-03457	Extended	H	Phenology, Population Dynamics, And Interference: A Basis For Understanding Weed Biology And Ecology
LAL-03280	Extended	H	Characterization, Etiology, Epidemiology And Control Of Virus And Graft-transmissible Diseases:citru
LAL-03283	Extended	H	Integrated Management Of Nematode Pests Of Citrus
LAL-03286	Extended	H	Biochemistry And Physiology Affecting Quality Of Citrus Fruits During Storage
PLP-03305	Extended	H	Comparison Of Two Management Programs On The Growth And Incidence Of Decline (blight) Of Citrus
PLP-03336	Extended	H	Phylogenetic Relationships Of Pezizales (cup-fungi) And Tuberales (truffles)
AGE-03222	Terminated	H	Engineering Principles For Conservation Cropping Systems
AGE-03258	Terminated	H	Energy Analysis And Measurement Of Agricultural Systems
AGE-03508	Terminated	H	Interior Environment And Energy Use In Poultry And Livestockfacilities
AGR-03180	Terminated	H	Evaluation Of Forage Germplasm Under Varied Management.
AGR-03184	Terminated	H	Pollen Biology And Genetic Improvement In Higher Plants
AGR-03269	Terminated	H	Environmentally Friendly Growth Regulants For More Efficient Crop Production
AGR-03291	Terminated	H	Plant Genetic Resource Conservation And Utilization

AGR-03310	Terminated	H	Genetic Improvement Of Forage Legume Species
ANS-03178	Terminated	H	Bioavailability Of Mineral Elements For Ruminants And Nonruminants
ANS-03247	Terminated	H	Improvement Of Beef Cattle In Small And Large Multibreed Populations
ANS-03279	Terminated	H	Management Stress Influence On Behavioral, Reproductive And Productive Traits In Equine
ANS-03292	Terminated	H	Nutritional Systems For Swine To Increase Reproductive Efficiency
APO-03297	Terminated	H	Technical And Economical Efficiencies Of Producing, Marketing, And Managing Landscape Plants
APO-03321	Terminated	H	Management Of Weeds In Ornamental Crops
BGL-03260	Terminated	H	Calibrated Soil Test Methodology For Management Of Agronomic And Vegetable Crop Nutrients
BGL-03376	Terminated	H	Genetic Manipulation Of Sweet Corn Quality And Stress Resistance
BRA-03251	Terminated	H	Control Of Growth And Development In Floricultural Crops
BRA-03321	Terminated	H	Management Of Weeds In Ornamental Crops
BRA-03372	Terminated	H	Microirrigation For Optimum Crop Productivity And Minimum Groundwater Contamination
BRA-03496	Terminated	H	Polyphasic Analysis Of Xanthomonads Associated With Horticultural Crop Plants In Florida
ENH-03251	Terminated	H	Control Of Growth And Development In Floriculture Crops
ENH-03267	Terminated	H	Freeze Damage And Protection Of Fruit And Nut Crops
ENY-03259	Terminated	H	Biological Control Of Scapteriscus Mole Crickets And Its Economics
ENY-03304	Terminated	H	Ecology And Management Of Plant-parasitic Nematodes
ENY-03353	Terminated	H	Entomopathogenic Nematodes As Biological Control Agents Of The Caribbean Fruit Fly

ENY-03369	Terminated	H	Identification, Behavioral Ecology, Genetics And Management Of African Honey Bees
FME-03249	Terminated	H	Physiological And Biochemical Studies Of Trypsin Modulating Oostatic Factor (tmof) In Insects
FME-03250	Terminated	H	Ultrastructural Morphology Of Mosquito Eggs
FOS-03186	Terminated	H	Preterm Piglet Model To Evaluate Nutritional Support Regimens For Preterm Neonates.
FRE-03255	Terminated	H	Estimating Florida Per Capita Fish And Shellfish Consumption
FRE-03259	Terminated	H	Biological Control Of Scapteriscus Mole Crickets And Its Economics
FRE-03293	Terminated	H	Economic Issues Affecting The U.s. Fruit And Vegetable System
FRE-03296	Terminated	H	An Evaluation Of International Markets For Southern Commoditios
FTL-03212	Terminated	H	Nutritional And Environmental Considerations Of Turfgrass Fertility
FTP-03180	Terminated	H	Evaluation Of Forage Germplasm Under Varied Management
FTP-03280	Terminated	H	Characterization, Etiology, Epidemiology And Control Of Virus And Graft-transmissible Diseases:citru
HOS-03195	Terminated	H	Regulation Of Photosynthetic Processes
HOS-03257	Terminated	H	Development Of Cultivars And Specialized Genetic Stocks For Basic Research In Common Bean
HOS-03278	Terminated	H	Reducing Production Costs In Young Citrus Tree Management
HOS-03376	Terminated	H	Genetic Manipulation Of Sweet Corn Quality And Stress Resistance
IMM-03199	Terminated	H	Influence Of Range And Pasture Management On Plant Production, Phenological Development And The Env.
JAY-03180	Terminated	H	Evaluation Of Forage Germplasm Under Varied Management
JAY-03204	Terminated	H	Population Dynamics & Extinction Of Naturally Isolated Wildlife Populationn In Managed Landscape

JAY-03291	Terminated	H	Plant Genetic Resources Conservation And Utilization
LAL-03370	Terminated	H	Natural Products Chemistry As A Resource For Biorational Methods Of Insect Control
MON-03303	Terminated	H	Improved Systems Of Management For Pecan Insect And Mite Pests
MON-03321	Terminated	H	Management Of Weeds In Ornamental Crops
PSE-03159	Terminated	H	Factors Affecting Mineral Utilization, Immune Response And Performance Of Poultry
QUN-03180	Terminated	H	Evaluation Of Forage Germplasm Under Varied Management
QUN-03184	Terminated	H	Pollen Biology And Genetic Improvement In Higher Plants
QUN-03260	Terminated	H	Calibrated Soil Test Methodlogy For Management Of Agronomic And Vegetable Crop Nutrients
QUN-03603	Terminated	H	Enhancing The Sustainability Of Commercial Peanut Productionthrough Improved Disease Management
SOS-03212	Terminated	H	Nutritional And Environmental Considerations Of Turfgrass Fertility
SOS-03274	Terminated	H	Environmental Pedology And Landuse
SOS-03338	Terminated	H	Chemistry And Bioavailability Of Waste Constituents In Soils
VME-03159	Terminated	H	Factors Affecting Mineral Utilization, Immune Response And Performance Of Poultry.
VME-03337	Terminated	H	Research In Support Of A National Eradication Program For Pseudorabies
WRS-03204	Terminated	H	Population Dynamics And Local Extinction Of Naturally Isolated Wildlife Populations In Managed Lands

ppendix C

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Multistate Extension Activites and Integrated Activities
(Attach Brief Summaries)

titutition
te

ck one: X Multistate Extension Activites
__ Integrated Activities (Hatch Act Funds)
__ Integrated Activities (Smith-Lever Funds)

tle of Planned Program/Activity	Actual Expenditures				
	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
e Attached	$ 297,741	$ 304,717	$ 311,992	$ 319,581	$ 327,457

Director Date

Appendix C

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Multistate Extension Activites and Integrated Activities
(Attach Brief Summaries)

Institutition
State

Chck one: __ Multistate Extension Activites
X Integrated Activities (Hatch Act Funds)
__ Integrated Activities (Smith-Lever Funds)

Title of Planned Program/Activity	Actual Expenditures FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
See Attached	$ 426,175	$ 436,160	$ 446,574	$ 457,437	$ 468,710

Director Date

Appendix C

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Multistate Extension Activites and Integrated Activities
(Attach Brief Summaries)

Institutition
State

Chck one: ___ Multistate Extension Activites
___ Integrated Activities (Hatch Act Funds)
X Integrated Activities (Smith-Lever Funds)

Title of Planned Program/Activity	Actual Expenditures				
	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
See Attached	$ 159,408	$ 163,143	$ 167,038	$ 171,101	$ 175,318

Director Date