Certification Of New Jersey Annual Report of Accomplishments and Results (FY 2002)

Approval:

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New Jersey Annual Report of Accomplishments and Results (FY 2002)

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Introduction:

New Jersey has been actively involved in the implementation of the integrated research/extension 5-Year Plan of Work for fiscal years 2000-2004. The implementation of this plan has engaged New Jersey Agricultural Experiment Station researchers and Rutgers Cooperative Extension specialists, agents and staff in the generation and transfer of knowledge and technologies related to agriculture, food systems, the environment and human and community development. The diversity of our state presents research and extension with complex challenges, which are being effectively addressed through basic, applied, and policy-oriented research, education and outreach.

The strategic plan for Cook College and the New Jersey Agricultural Experiment Station has provided a framework for the future direction and focus of the College and the Station. We have focused programmatic efforts and targeted resources to address the most critical needs. We are aggressively working toward achieving our goal of being recognized nationally as the ”Solutions State” where quality of life is heightened by thriving agricultural, environmental, rural and urban communities. Stakeholders have played a pivotal role in the process and will continue to be viewed as partners in the planning and program development process for issues identification including those of the underserved and underrepresented.

Integrated research and extension programs as well as multistate, multi-institutional and multi-disciplinary research and extension activities have addressed identified critical issues resulting in significant economic, environmental and social impacts which have proved beneficial to the state while at the same time achieving the goal of improved program efficiencies and effectiveness.

A. Planned Programs

Goal 1

Overview: Operating within the most densely populated and urban state in the nation, New Jersey's agricultural producers face challenges unparalleled to their competitors in other regions of the U. S. These challenges include high land prices, property taxes, and labor costs, stringent environmental regulations, severe wildlife damage, and urban neighbors who desire rural, rustic settings but do not appreciate the complexity of agricultural practices. However, proximity to the large consumer markets, sophisticated food manufacturing and delivery systems and the center of the pharmaceutical industry also provides unique opportunities for our producers. In light of these challenges and opportunities, we have focused our resources to increase the profitability of New Jersey's agricultural producers by:

- Adding value to existing crops or products through enhancements or identification of new market opportunities
- Developing new products and commercial opportunities
- Increasing production efficiency and reducing costs

New Jersey Agricultural Experiment Station's (NJAES) Food Innovations Research and Extension Center (FIRE) provides solutions to farmers who are challenged to remain viable in the future. Through educational seminars and its Food Business Incubator, this center is providing farmers with an opportunity to create new businesses based on value added agricultural products, developing new products and commercial opportunities. These companies generated revenue of $86 million in sales in 2001, when trickled through the economy, the total impact of these firms was $146 million.

The maintenance of home grounds and home horticulture continues to be a major part of the outreach which Rutgers Cooperative Extension provides to New Jersey's residents. This could not be achieved without a strong volunteer component. The New Jersey Master Gardener program has expanded to 15 counties with over 1,200 serving as environmental and horticulture educators. Over 600,000 hours of volunteer efforts translates to $9 million dollars returned since the inception of the program.

Allocated Resources:

Research

Hatch Funds:	$1,373K
All Funds:	$15,405K
SY's:	39

Extension

Smith-Lever Funds:	$529K
All Funds:	$5,556K
FTE's:	84

Goal 1

Key Themes: Agricultural Competitiveness
Agricultural Profitability

Activity: Considering the high cost of doing business, New Jersey farmers cannot grow the same commodities as farmers in the Mid-West and still remain competitive. In recognition of the economic, fiscal, quality of life, ecological, environmental and social benefits of agriculture, New Jersey has committed billions of dollars to the preservation of farmland and open space. The viability of agriculture in New Jersey can be enhanced if farmers produced value-added products or if more food manufacturing companies nearby bought local farm products. The Food Innovations Research and Extension Center (FIRE) is located in an area of New Jersey (Cumberland County) that has vast farm acreage but ranks last in the state in per capita income, has the highest unemployment rate and a whopping 16% of residents living in poverty. FIRE provides research, education, outreach and business development services to New Jersey's agricultural and food industries. The Center is driven by the underlying need to improve the outlet for agricultural products and move New Jersey agriculture into a new age of "value added".

Impact: New Jersey has realized $4 million in additional tax revenues in 2001 as a result of employment and sales by companies nurtured at the FIRE Center. Companies receiving assistance from the FIRE Center had a total of 483 full time employees in 2001. Expenditures by these companies and their employees generated an additional 525 jobs, resulting in a total full-time employee impact of 1,008 jobs. These companies generated a total of $86 million in sales in 2001, when trickled through the economy, the total impact of these firms was $146 million. In addition, these companies have generated income for state government.

Sources of Funding: State Funds, NJ Commission on Science and Technology, City of Bridgeton, Cumberland County

Scope of Impact: State Specific

Goal 1

Key Theme: Agricultural Profitability

Activity: Research was conducted to empirically evaluate consumer response to fresh produce grown with integrated pest management (IPM) techniques and determine the market potential for IPM labeled produced in the northeastern United States. Farmers' markets play a vital role in supporting agriculture in New Jersey and other northeastern states. These markets provide an excellent marketing channel for small producers to sell directly to consumers and realize more favorable prices for their products compared to traditional wholesale markets. Further, these markets allow small volume producers to directly serve specialized and niche market segments (e.g., customers for organic products) for which the volume is not large enough to support a wholesale market. Consumers also find these markets as convenient places to purchase produce fresh from the growers. Farmers' satisfaction is an important factor for the growth and future success of the farmers' market. This study identifies the farmer characteristics and farm activities associated with higher profitability and farmer satisfaction from farmers' market operations. The results of this study suggest that farmers' profitability is enhanced through catering to niche markets such as that for organic products.

Impact: Over 61% of farmers who sell agricultural products through farmers' markets are satisfied with the returns they generate. Producers who are 50 years of age or older and those who retail at least 70% of the dollar value of the products are more likely to be highly satisfied with their profit margin from farmers' markets. A strong positive relationship is documented between profit margin satisfaction and growers who offer organic produce for sale. Furthermore, the results suggest that producers with farmers' market businesses in the growing stage are more likely to be highly satisfied with profit margins. The documentation of these characteristics will help identify farmers who are likely to participate in community farmers' markets. Participation in the community farmers' markets leads to diversification of income base for farmers.

Sources of Funding: USAID, State Funds

Scope of Impact: State Specific

Goal 1

Key Theme: Adding Value to New and Old Agricultural Products

Activity: The world faces many critical environmental problems as immediate demands for more food, fuel, fiber, and shelter increase. The long-term projection is that the planet is headed for a critical shortage of good, level farmland, which will lead to a deficit in agricultural products. Tree crops may be able to fill some gaps in projected agricultural shortages. Many should be superior to any commercial cultivar adapted to New Jersey. Nut trees also can prevent soil erosion and reduce excess carbon dioxide in the atmosphere. Many produce high-quality lumber. And nuts are good for people; most nut corps are exceptionally nutritious, many produce very high quality oil, and some have nutraceutical value.

Impacts: The New Jersey Agricultural Experiment Station has bred apricots, hazelnuts, pecans, Persian (English) walnuts, black walnuts, heartnuts, and chestnuts that will be producing nuts this year. These crops could eventually have a major impact on areas of the world that cannot presently grow nuts – and that includes many of the major population centers of the world.

Source of Funding: Hatch

Scope of Impact: State Specific

Goal 1

Key Themes: Agricultural Competitiveness
Agricultural Profitability

Activity: Research was initiated at the request of growers at the Annual Potato Research Advisory Board to determine the benefits of using an imidacloprid seed treatment at planting for potato seed pieces for the control of early spring insect pests, particularly Colorado potato beetle, potato aphid and potato leafhopper. The potato beetle is a devastating defoliator of potato leaves, and the aphid and leafhopper cause severe wilting and also transmit potato viruses.

Initial research (2000-2001) demonstrated that a seed treatment of imidacloprid could effectively and economically be used in an integrated pest management program for potato growers. Continued research (2001) showed that a rate of 10-12 oz per 100 lb of seed would effectively control the three insect pests through mid-summer, saving growers one in-furrow application of an insecticide ($20 per acre) and 3-4 foliar applications during early summer ($14-16 per application per acre). A final research project (competed fall, 2002) answered the remaining concerns of growers about timing of treating the seed piece, and data demonstrates that growers could treat the seed up to 3 weeks before planting. This data will save growers time and money in allowing significant flexibility to their planting schedules.

Impact: The methods employed by this research are extremely important for the following reasons:

- Significantly less pesticide is used, and fewer applications are required, to obtain maximum potato beetle and leafhopper management in white potatoes. This reduces the amount of pesticide used in the environment, as well as the costs to growers for pesticide material and application.

- The potential for insecticide resistance (to imidacloprid) in the Colorado potato beetle is significantly reduced because of the single, low-rate application to the seed piece of imidacloprid, a relatively environmentally-benign pesticide fast-tracked by the federal EPA. Thus this treatment method is both an important pest management tool as well as an important pesticide-resistance management tool.

- As shown by the 2002 research results, growers can utilize their time more efficiently by preparing seed in one step from 1 to 3 weeks before planting. Previously, growers needed several steps to load hopper boxes, treat the seed furrows with specialized equipment during planting, and later make several field trips with foliar spray equipment to apply mid-summer applications.

- Lastly, growers can more efficiently manage their insect pests on potatoes with this application method instead of spraying by calendar, or spraying by convenience because of short-lived favorable weather.

Growers can now effectively, and efficiently, use a one-time seed piece treatment, then monitor the fields during the summer for pest buildup, and take appropriate steps only when necessary. After 3 years of testing, the data has been of significant benefit to growers in terms of dollars saved and time saved, as well as benefit to the environment. These data have resulted in 100% of the potato growers converting to seed-piece application for management of their early season insect pests. The results of these trials have also been of interest, and benefit, to the mid-

Atlantic potato growing regions, as evidenced by requests of surrounding states to have presentations concerning seed treatments of potatoes delivered to potato growers at Atlantic City (NJ), Hershey and New Holland (PA), Newark (DE), and Riverhead, LI (NY).

Funding Sources: Smith-Lever 3(b) & (c)

Scope of Impact: Multistate (PA, DE, NY)

Goal 1

Key Theme: Agricultural Profitability

Activity: An extension agricultural agent initiated on-farm field trials and small plot research to determine new specialty crops in terms of phrenology, maturity and yield per acre. A multi-cultural approach was suggested to reach out to underserved, underrepresented audiences and focused on special ethnic vegetables – Asian, Hispanic, African/Caribbean. This multi-cultural approach was suggested and strengthened by new population census data for the Northeastern United States. Efforts to switch growers from traditional commodity, lower priced crops to alternative, higher priced, value added crops were part of an educational and marketing plan. To this end, specialty market outlet connections were made between grower and major produce retailers – the Asian Feed Center, the Hong Kong Supermarket, Wegmann's and Delicious Orchards. These four connections have better defined the market for increased specialty productions.

Impact: The Central Jersey Vegetable Growers meeting increased attendance from 65 to 125. In addition, "Ethnic and Specialty Crops Sessions" attracted over 1500 farmers. The increased attendance of farmers in these sessions document the shift and desire to manage risk and stabilize farm income by expanding into new markets. Dependence will help on a wider range of crops to ensure the viability agricultural profitability. Focused efforts in this area also target outreach and service to formally underserved and underrepresented markets.

In addition, yield information for specialty crops was used to calculate crop damage on over fifty vegetable farms and helped to estimate approximately 100 more. This grower group was part of the statewide drought disaster program that received $20,000 statewide and $10,000,000 federally.

Two years of specialty crop research have lead to new crop rotational options that are applicable to New Jersey changing market conditions. Examples include converting annual strawberry plasticulture to a diversity of crops in the second and third years. Eight growers have adopted this practice locally and these results were reported through a national publication serving 17,000 growers. Growers spread out plasticulture costs over time, save disposal costs, improve productivity of both the small fruit and the vegetable crop and increase product diversity. Annual strawberry plasticulture has increased in New Jersey from 40 to about 100 acres in the past 3 years.

Source of Funding: Smith Lever 3(b) & (c)

Scope of Impact: State Specific

Goal 1

Key Theme: Agricultural Profitability

Activity: A focus on organic blueberry production was the topic of a multi-disciplinary meeting that attracted growers and resulted in the creation of a new horticultural working group involving stakeholders in the program development process.

Impact: This organic crop production programming in Central New Jersey lead to an increase from 0 acres of organic highbush blueberry production to over 170 acres among 5 farm sites. Growers who adopted this practice doubled gross revenue as their average price per flat of $11 increased to $23 per flat for New Jersey organic blueberries.

Source of Funding: Smith Lever 3(b) & (c)

Scope of Impact: State Specific

Goal 1

Key Theme: Aquaculture

Activity: The Extension marine agent works with commercial fisheries and people who supply fresh high quality seafood to consumers. The focus has been on the waterways from the Raritan Bay to the Delaware Bay with a well established hard clam aquaculture industry that is mostly based in Atlantic County with 6 hatcheries and 40 growers who supply about 25% of the state's harvest. Focus has been on the preservation, restoration and expansion of New Jersey's bay fisheries which has resulted in native habitat improvement and management, aquaculture marketing, production development and processing.

Impact: Response to a survey of people who contacted Cooperative Extension for information about aquaculture revealed that 80% were considering a business venture rather than a hobby. Of those who originally wanted to go into business, one third proceeded. Four out of seven said it had been successful. 45 jobs were reported created as part of those businesses. Finally, when asked how much money they made on their commercial operation as a result of the information received from Rutgers Cooperative Extension, a collective income of $2,295,000 was reported.

Source of Funding: Smith Lever 3(b) & (c), South Jersey Economic Development District

Scope of Impact: State Specific

Goal 1

Key Theme: Home Lawn and Gardening

Activity: Environmental stewardship, community beautification and food security are concerns for suburban and city dwellings. Homeowners spend a great deal of their income and time establishing and maintaining landscapes. In urban areas gardening provides an avenue for community development and enhancing food security.

Home lawn, gardening information and related environmental stewardship issues have been addressed by a volunteer force of Rutgers Master Gardeners in 15 counties throughout the state. Volunteers address public health and safety concerns through tick identification and educational programs on controlling mosquitoes. Adults and youths have become better stewards of the land learning the value of water conservation and quality, beneficial insects, solid waste management, composting, and natural resource management.

Impact: Since the inception of the Master Gardener's program in New Jersey, nearly 3,000 have completed the training program. Of this number, 1,200 are actually serving as environmental and horticulture educators. They staff "Garden Helplines," conduct garden clinics, horticulture therapy projects, schoolyard habitat projects and glean fields for food banks. Many collaborate with local park departments, county and state facilities to enhance environmental awareness and stewardship while at the same time building a strong sense of community with diverse people working towards a common goal. Over 600,000 hours of volunteer efforts have expanded the outreach mission of Rutgers Cooperative Extension. This volunteer investment of time and effort translate into over $9 million dollars return since the inception of the program.

Source of Funding: Smith Lever 3(b) & (c)

Scope of Impact: State Specific

Goal 1

Key Theme: Agricultural Competitiveness

Activity: The cost of maintaining registrations for field crop herbicides and the introduction of herbicide tolerant field crop varieties continue to cause manufactures to cancel registrations on old herbicides due to loss of market share in the product's major markets. Despite the loss of Antor, Amiben, and Sprout-Nip, very important herbicides in New Jersey, progress has occurred in finding alternatives. An exciting new herbicide, halosulfuron that controlled many annual broadleaf weeds and yellow nutsedge was identified as safe for use in cucurbit crops at Rutgers Agricultural Research and Extension Center (RAREC).

Sandea (halosulfuron) received a 24C Special Local Needs label for use in cucumbers in New Jersey in 2001, and in winter squash and cantaloupes in 2002. The herbicide is an important addition to the herbicides that are labeled for use in cucurbit crops. Preemergence applications are safe only in cucumbers and cantaloupes. Applied preemergence, a wide spectrum of broadleaf weeds can be controlled. These weeds include tough weeds like common cocklebur, common lambsquarter, smooth pigweed and galinsoga that could not previously be controlled in the crop. Postemergence applications are safe in cucumbers, cantaloupes, winter squash, and pumpkins. Applied postemergence, the spectrum of broadleaf weeds controlled decreases, but control of common cocklebur, smooth pigweed and galinsoga are maintained and yellow nutsedge is effectively controlled.

Impact: Research at Rutgers Agricultural Research and Extension Center conducted in vegetable weed control in the early 1990's resulted in the first reports of safety in cucurbit crops treated with halosulfuron. Continued work to date has contributed significantly to the labels obtained in 2001 and 2002. The control of these tough weeds, especially yellow nutsedge, is perhaps the most significant contribution to vegetable production in the past decade. Continued research is under way to extend the label to watermelons and between the rows of summer squash grown on plastic mulch.

Source of Funding: Smith Lever 3(b) & (c)

Scope of Impact: National

Goal 2

Overview: New Jersey has one of the most culturally diverse populations in the United States. At the same time, a significant proportion of our residents live at or below the poverty line and do not attain even the most basic daily nutritional requirements. New Jersey farmers also have attempted to capture increased value by moving into small scale processing. Added to these are a large number of small food processors attempting to meet the needs of local consumer markets. In addition, 70 percent of the nation's major food manufacturing firms have headquarters or research facilities within a hundred mile radius of the Rutgers campus. There is a great need to design and deliver innovative programs that address the diverse food security, safety, and quality needs of consumers. At the same time, the food safety and handling and technological needs of the agricultural and food system within the State are also given priority attention.

Safety and security of the food supply are critical concerns for consumers who rely on producers to ensure and secure the food supply. Fruit and vegetable buyers have concerns about microbial contamination which could threaten the market. Extension specialists and agents have developed educational programs and strategic collaborations to address this threat to the fresh produce chain.

Although government regulations help to make our food supply safe the consumer has the final responsibility to handle food safely. Nutritious food choices and safe food handling add to healthier lifestyles and help in reducing the billions of dollars of cost in lost productivity, hospitalization and in many cases death resulting from food borne illness. Extension educators have developed and taught educational programs targeted to limited resource families with young children. This underserved audience is at high risk for food borne illness and has benefited from educational intervention.

Allocated Resources:

Research

Hatch Funds:	$269K
All Funds:	$1,573K
SY's:	6

Extension

Smith-Lever Funds:	$3K
All Funds:	$353K
FTE's:	2

Goal 2

Key Themes: Food Safety
Food Handling

Activity: Research has shown that poor personal hygiene is a contributing factor in many food borne disease outbreaks. In addition, food must be handled and prepared properly in order to prevent food borne illnesses. Consumers have the final responsibility to ensure the consumption of safe food. Extension educators conducted a series of educational programs that taught food handling, sanitation and food safety issues. The "Me and My Dad in the Kitchen" project incorporated lessons on food safety, basic nutrition and food preparation as well as kitchen safety and sanitation.

Extension educators developed a behaviorally focused "Handle With Care" food safety curriculum and supporting instructional materials to educate caregivers of infants and young children on food handling practices targeted to limited resource caregivers. Newborn infants/young children are particularly susceptible to food borne illness because their immune systems are not yet fully developed to fight infection. Yet, most food safety instructional materials do not target parents/caregivers of this group, specifically. This program was implemented in cooperation with local WIC clinics to reach this special audience.

Impact: Outbreaks of food borne illness caused an annual average of more than 15,000 cases of illness in the United States, as reported to the Centers for Disease Control and Prevention. The actual illness rate may be higher because a count is taken only when the microorganism that caused the illness is identified by a laboratory and reported by a physician.

When unreported cases are taken into account, an estimated 76 million illnesses, 325,000 hospitalizations and 5,000 deaths each year may be associated with microorganisms in food. Hospitalizations due to food borne illnesses are estimated to cost over $3 billion each year. The cost of lost productivity is estimated at between $20 billion and $40 billion each year. In addition to acute illness, some microorganisms can cause delayed or chronic illness.

When surveyed about the value of food safety education with parents of infants and young children, 95% of NJ WIC clinics rated safe handling of food, formula and expressed milk a nutrition education priority. As a result of Extension's educational intervention post-testing, indicated a positive trend toward improvements in the following areas:

- Checking infant formula "use by" dates most of the time.
- Cleaning counter-tops and tables before preparing bottles or food most of the time.
- Storing a child's leftover food for less time.
- Using a thermometer most of the time to determine whether meat was fully cooked.
- Using a separate cutting board for raw chicken.
- In addition, participants demonstrated a more positive attitude toward thawing expressed breast milk in the refrigerator.

Source of Funding: Smith Lever 3(b) & (c)

Scope of Impact: State Specific

Goal 2

Key Theme: Food Borne Illness

Activity: Food born illness is a critical issue nation-wide costing billions of dollars in lost productivity, hospitalization and in many cases resulting in death. Extension agricultural agents and specialists addressed fruit and vegetable grower concerns about microbial contamination threats to the wholesale market channels.

As reported last year, the Food and Drug Administration (FDA) reported 76 million cases of food borne illnesses in 1998 with 5,000 deaths. Approximately 5% of total illnesses were traced to fruits and vegetables. The FDA developed guidelines to minimize microbial food safety hazards from production through sales. At the same time, the supermarkets were concerned that microbial food borne illnesses would enter the food chain from fresh produce. They are requiring independent third party verification of the use of Good Agricultural Practices by all produce suppliers. These concerns directly impact New Jersey growers since they could lose $50-60 million in sales. The Extension team developed training materials and gave 17 training sessions focused on food safety on the farm.

Since the aftermath of the terrorist attack, food safety has taken on added importance. Supermarket chains are even more concerned that microbial food borne pathogens may enter the food chain at the farm level. Third party verification audits are now becoming the norm for larger produce growers across the United States. There will be pressure for smaller producers to conform to the same standards.

Extension agricultural agents have worked closely with the New Jersey Department of Agriculture and the United States Department of Agriculture certification team in developing their third party food safety audit. They also have collaborated with the National Good Agricultural Practices Program at Cornell University to train all New York Department of Agriculture and Markets Farm Inspectors (35 participants). The session was also used to update their third party audit form. This is part of the on going train the trainer series that will include cooperative extension agents from across the Northeast and Mid-Atlantic States.

Impact: As reported last year, a third party audit system for food safety was developed in coordination with the New Jersey Department of Agriculture Division of Dairy and Commodity Regulations. This is the first and only Department of Agriculture in the United States to be recognized as a third party auditor by the supermarket chains. States such as Alaska, Hawaii, Maine and Wisconsin have requested information on how to develop a similar system. Private audit firms charge a minimum of $1,000 per farm per visit to perform audits. This would cost vegetable, herb and fruit growers in Cumberland County conservatively $300,000 dollars to continue to sell produce. The Department of Agriculture can now do the same inspections for $45,000, a savings of 85%.

The New York farm commodity inspectors are now trained to carry out third party audits on farms as a result of this year's programming. This translates to savings for all produce growers in New York State. With the finalized national audit system, growers will be assured that the system is uniform and cost effective across the United States resulting in millions of dollars in savings.

Source of Funding: Smith Lever 3(b) & (c)

Scope of Impact: National

Goal 3

Overview: New Jersey's culturally and economically diverse population includes those residents that can barely afford the most basic nutritional requirements and those who are willing and able to pay for high value health-promoting foods and dietary supplements. Across this entire spectrum, consumers are confused and concerned about nutrition-related information available through the media. New Jersey's agricultural and food system must serve these diverse needs. In response, NJAES has mounted a major multi-disciplinary *Food, Nutrition and Health Initiative.* Research and Extension faculty from our Food Science, Nutritional Sciences, Plant Sciences, Family and Consumer Sciences, Agricultural, Food and Resource Economics Departments, in cooperation with other units within Rutgers and other institutions within the region, are working on this initiative.

Mosquito borne diseases such as Eastern Equine Encephalitis virus (EEE) and West Nile Virus (WNV) pose a serious health threat to humans, horses and wildlife. By monitoring the presence of these viruses in local bird population, it is possible to determine when other animal or human organisms are at high risk. In cooperation with the New Jersey Department of Health laboratories, researchers have been studying EEE at five study sites for more than a decade to study progression of virus activity in the bird feeding mosquito, Culiseta melanura. When EEE activity is documented in bird feeding mosquitoes, county mosquito control agencies target them to minimize transfer of the avian pathogen to mammalian hosts. Information from the surveillance effort is immediately made available to the agencies responsible for managing vector population.

Scientists continue their work on health promoting properties of food. Educational programs developed and implemented by Extension educators address consumer health concerns about issues such as obesity, osteoporosis and the safety and effectiveness of herbs and health. The "From Our Farms" program introduces nutrition concepts to children in a fun way as building an appreciation of the value of agriculture to the local community. These programs have resulted in increased awareness and behavior changes which have impacted the health status of New Jerseyans.

Allocated Resources:

Research

Hatch Funds:	$241K
All Funds:	$3,222K
SY's:	7

Extension

Smith-Lever Funds:	$185K
All Funds:	$628K
FTE's:	13

Goal 3

Key Theme: Human Health

Activity: Many people consume moderate levels of alcohol. The effect that alcohol has upon the body varies depending on certain factors. For moderate drinkers and, more critically, alcoholics, it is important to understand how the types of foods consumed with alcohol affect very specific impacts on the health of the drinker. A nutrition and neuroscience researcher at Cook College theorized that the interaction between alcohol and specific foods affect how alcohol is metabolized by the body. The researcher studied the influence of diets high in either fat or carbohydrate on alcohol metabolism, as reflected in blood alcohol levels and the accumulation of fat in the liver, a well-known symptom of alcoholism. The levels of fat in the liver were startlingly different between the high-carbohydrate and the high-fat diets.

Impact: The researcher concluded that the consumption of carbohydrates with alcohol can actually protect the liver from the harmful effects of alcohol. This research has major implications for the treatment of alcoholism and alcoholics. Although researchers are still searching for ways to treat the chemical imbalances in the brain that are at the root of alcohol addiction, this new understanding about the effects of nutrition on the metabolism of alcohol can help prevent the worse effects of alcohol on the body.

Source of Funding: Hatch Funds

Scope of Impact: National

Goal 3

Key Theme: Human Health

Activity: Mosquito borne diseases such as Eastern Equine Encephalitis virus (EEE) and West Nile Virus (WNV) pose a serious health threat to humans, horses and wildlife. By monitoring the presence of these viruses in local bird populations, it is possible to determine when others are at high risk. Furthermore, certain breeds of mosquitoes feed only on birds, and identifying these make human and animal risk estimates more accurate. West Nile virus first appeared in the New York metropolitan area in 1999. By 2002, virus activity was confirmed in most of the country with notable human and horse outbreaks in some areas. In cooperation with the New Jersey Department of Health laboratories, researchers have been studying EEE at five study sites for more than a decade to study progression of virus activity in the bird feeding mosquito, Culiseta melanura. When EEE activity is documented in bird feeding mosquitoes, county mosquito control agencies target them to minimize transfer of the avian pathogen to mammalian hosts. Information from the surveillance effort is immediately made available to the agencies responsible for managing vector populations.

Impact: Monitoring programs enable municipalities to avoid unnecessary use of pesticides. If no adult mosquitoes are found to be infected with EEE or WNV, municipalities need only control the mosquito larvae populations. Decisions to spray pesticides are made only on the basis of sound scientific research of the monitoring project, thus preventing potential health risks associated with spraying. Human cases of WNV have been minimal in New Jersey compared to other states that do not have a viable surveillance program in place. Similarly, no human cases of EEE have been reported since the system was put into place. Equine cases of EEE and WNV take place nearly every year in New Jersey; the reduction of cases has a significant positive impact on the state's $650 million annual equine industry revenue.

Source of Funds: Hatch, State, Center for Disease Control, and N.J. Department of Environmental Protection

Scope of Impact: State Specific

Goal 3

Key Theme: Human Health

Activity: Osteoporosis affects up to 33% of the female population over 65 years, and the estimated in-patient hospital cost of fractures caused by osteoporosis is over 2.8 billion dollars per year. Unfortunately, the risk of osteoporosis increases in women of low body weight or in those who have a history of successful weight loss. Moreover, recent studies have shown that bone mineral density is reduced with weight loss and the incidence of fracture is increased. Due to the large number of American women (up to 40 percent) who are following a weight loss regimen, the potential impact on bone during dieting is of concern. Clinical trials examining whether weight loss has a detrimental effect on bone in obese premenopausal and postmenopausal women have been completed. In addition, researchers used supplemental calcium to determine whether this intervention can reduce bone loss.

Impact: This research has significant public health implications for the large number of women in the USA who typically adhere to a weight loss regimen. The recommendation to include adequate calcium during weight reduction diets was added to the First Federal Obesity Clinical Guidelines released by the NIH-NHLBI and NIH-NIDDK in 1998.

In these studies of the supplemental use of calcium, it was found that obese postmenopausal women who were following a low-calorie diet showed an increased loss of bone over the 6-month study period. A 1 gram calcium supplement prevented bone loss in these women.

Source of Funding: Hatch Funds, Special Research Grants, NIH

Scope of Impact: State Specific

Goal 3

Key Themes: Human Health

Activity: Urban anglers on the Newark Bay Complex continue to eat contaminated fish and crab despite state advisories and previous programs to warn them of the associated health risks. This situation is more critical since the group at highest risk from this contamination – women of childbearing age and their children, low-income Latinas in particular – has the least access to information on consequent hazards to health. By continuing to work with stakeholders in the dissemination of these materials and by training extension and women's health and nutrition education staff, researchers at Cook College and NJAES have completed research projects that aided in the development of effective outreach methods and culturally sensitive materials.

Impact: Research results indicate that our materials are comprehended by the intended audience, and that a significant percentage state their intentions to change their behavior as a result of what they have learned. This information can prevent potentially life threatening illnesses to a group of people who are at immediate risk from contaminated seafood consumption.

Source of Funding: NJAES, NJ Department of Environmental Protection

Scope of Impact: State Specific

Goal 3

Key Theme: Human Nutrition

Activity: Helping people understand where their food comes from is one way to help them explore food options and incorporate more fresh foods into their diets. When people "eat locally," they support local farmers, expand retail markets and stimulate the regional economy while also protecting natural resources. They also reap nutritional benefits, because local products are typically fresher than products transported long distances. "*From Our Farms"* provides consumers with the necessary tools to introduce children to food, the farm and nutrition as a fun way of improving nutrition and agriculture knowledge and adopting healthful eating behaviors. This community-based educational program promotes improved nutrition and consumption of locally grown food which will, in turn, sustain the economic viability of local farms through a series of family-based activities offered through local libraries. This initiative is a collaboration between Rutgers Cooperative Extension, nine public libraries, farmers/growers, the local Board of Agriculture, Master Gardeners, county government, a community college, local dietetic association, and local industry. The program included two key components:

- ***Learning Boxes*** – Registration counts for the three themed boxes (fruit, vegetables, dairy cows) indicated that 595 children participated since 2000 (284 in 2002). Parents used the boxes with children at home, where they read stories and played games that taught about food, nutrition, and agriculture. Then, they completed a series of lessons and hands-on activities outlined in fun pages and activity sheets.

- ***Activity Days*** – Registration counts for activity days conducted from 2000 to 2002 indicated that 1,313 children and adults participated (320 in 2002). Activity days incorporated hands-on activities to teach children and parents which foods are produced locally; how vegetables, fruit, and animal products are grown; and how to select, use, and prepare agricultural products.

Impact: A follow-up survey administered to 250 participants' parents 6 to 9 months after checking out a fruit or vegetable learning box was completed by 77 parents (31%). The survey revealed that participation in the program resulted in the following behavior changes:

- 81% reported that their child tried a new fruit or vegetable.
- 25% prepared/cooked locally grown food with their children.
- 38% reported that they or their child learned how fruits/vegetables grow.
- 77% reported that they or their child learned which fruits/vegetables grow in NJ.
- 80% planted a garden or fruit/vegetable plant with their child.
- 90% visited a farm stand or farm market.
- 97% purchased "Jersey Fresh" produce.

Source of Funding: Smith Lever 3(b) & (c), local Board of Agriculture

Scope of Impact: State Specific

Goal 3

Key Theme: Human Health

Activity: Osteoporosis is the third cause of death in the elderly population. However, osteoporosis, a bone thinning disease, is often referred to as "a pediatric disease with a geriatric outcome," since achieving peak bone mass early in life significantly reduces the risk during old age. Research shows that men are becoming increasingly at risk, and that diet may play a large role in the formation of the disease. The annual cost to the health care system is $13 billion annually.

By combining research and outreach, many tools aimed at understanding and alleviating the cause of disease are made available to the public. Research focused on understanding lifestyle habits that influence osteoporosis formation shows that weight loss influences calcium balance and bone mass in overweight women, and that this may be due to change in hormone levels during dieting. In addition to ongoing research, extension educational programs were conducted through the "Strong Bones for a Lifetime" program to educate residents about osteoporosis prevention. In this program, women met for 26 weeks engaging in lifestyle changes while learning the importance of nutrition, diet and exercise and its relationship to health. The "Jump Start Your Bones" educational program is aimed at children educating them about the importance of nutrition and their bones was developed to provide early intervention and has been implemented through school programs.

Impact: As a result of these educational programs participants responding to a survey related the following as information learned and behaviors changed.
As a result of the program participants learned:

- 93% what osteoporosis means.
- 85% the basics of how our bones are remodeled.
- 100% the risk factors for osteoporosis that I can change.
- 95% prevention strategies for osteoporosis.
- 98% the recommended amount of dietary calcium necessary for strong bones.
- 98% the role of weight bearing and resistance exercises in building strong bones.
- 89% who should have a bone mineral density test.
- 92% various treatment options.
- 95% how to make my environment safe from falls.

As a result of the program, participants have:

- 100% determined what prevention strategies I can do today.
- 98% identified my risk factors for osteoporosis.
- 89% discussed my risk for osteoporosis with my physician.
- 93% consumed the recommended amount of dietary calcium and Vitamin D daily.
- 92% incorporated weight bearing or resistance activities into my daily routine.
- 90% examined my environment for safety and falls prevention.
- 100% become more aware of my posture and the importance of safe movement.
- 97% become more confident about my balance and strength.

Source of Funding: Smith Lever 3(b) & (c)

Scope of Impact: State Specific

Goal 4

Overview: As the most densely populated state in the U. S., New Jersey is experiencing environmental problems sooner and more severely than other states. We are challenged with land, water and air issues and to attaining an efficient balance between production activities, the environment, and human health. New Jersey is a microcosm of both the challenges faced at the agricultural/environmental interface and the mutually beneficial solutions that are possible. As such, it has the potential to serve as a model of how to achieve greater harmony between agriculture and the environment. The NJAES and Rutgers recognized this potential very early in their history and thus created an environmental sciences department nearly 80 years ago. The College of Agriculture was also renamed the College of Agriculture and Environmental Sciences in 1965. As a result, we have very broad and extensive research and Extension programming in this general area.

A major focus in New Jersey has been in biological and integrated pest management. The recent development of a hypervirulant strain of the pathogen that is the causal agent of Chestnut Blight disease may serve as a biological control agent for this factor that is responsible for the destruction of chestnut trees in eastern hardwood forests. Another program has developed insecticidal nematodes that serve as biological control agents. These nematodes have been patented and licensed to biotechnology firms. Rutgers staff have also facilitated cooperation between New Jersey and Pennsylvania to control blackfly populations in the Delaware River. We have GIS and GPS technologies to identify site-specific targets for the use of biological pesticides guided by IPM practices. Extensive IPM programs in traditional crops such as fruits, vegetables and field crops, have resulted in a major decrease in pesticide use. This leads to a decrease in farm worker exposure to pesticides, and diminishes the risk of pesticide residues on fruit, while also reducing the risk of nonpint source pollution. IPM has had a significant impact on the New Jersey environment which will benefit all for years to come.

Management of the white tail deer continues to be a major issue within the state. This year, to benefit stakeholders and citizens of the state, a comprehensive deer management website was created and launched, as well as an informative brochure. Another website was created by extension specialists and agents, with the help of nursery and landscape professionals listing plants and trees and their susceptibility to deer damage. Extension specialists and agents have provided extensive educational programs on damage control technologies. A deer fencing program and installation has resulted in a reduction of damage.

New Jersey 4-H youth development faculty have capitalized on Rutgers environmental science capacity and have planned and implemented extensive environmental programs for youth. These programs have received local and national recognition. 4-H youth who participated in the “4-H Adventures in Environmental Science Program” are becoming young stewards of the land.

Resources Allocated:

Research

Hatch Funds:	$867K
All Funds:	$1,515K
SY’s:	14

Extension

Smith-Lever Funds:	$124K
All Funds:	$1,200K
FTE’s:	29

Goal 4

Key Themes: Biological Control
Forest Resource Management
Plant Health

Activity: The American Chestnuts once occupied 25 percent of our eastern hardwood forests. However, the pathogen *Cryphonectria parasitica*, the causal agent of Chestnut Blight disease, resulted in the destruction of chestnut trees in the forests of Northeast America. Rutgers scientists, along with others in the Northeast, have been investigating viruses that may reduce virulence of the fungus and cause it to be less of a problem in forest settings, and to investigate the response of the fungal pathogen to these viruses. The goal of this research is to use viruses for biological control of chestnut blight and try to understand the natural biology of the fungus and its viruses, then where appropriate, try to manipulate those viruses to our benefit in a forest setting. Study of viruses of C. parasitica will help determine their long-term usefulness as biological control agents for the fungus that has virtually eliminated the American chestnut from North American hardwood forests.

Impact: Two transposable elements have been identified which will assist in tracking the early geographic movements of the fungus, and provide markers to assess the effect of the biocontrol viruses on the fungal population in the forests of North America. Furthermore, these elements may be of great value for developing gene-tagging vectors for plant pathogenic fungi. Being able to monitor the dynamics of virulence of this pathogen will assist in planning strategies for biologically based control practices. This probe is allowing for more critical examination of the C. parasitica populations in this study.

Source of Funding: Hatch, McIntire-Stennis, NRI, State Funds

Scope of Impact: Multistate Research (CT, MA, MD, NJ, NY, WV)

Goal 4

Key Themes: Sustainable Agriculture
Nutrient Management

Activity: The greenhouse industry is faced with unique challenges in both plant production and in maintaining a safe balance with the surrounding environment. Producers in New Jersey are particularly vulnerable to intense market competition and environmental regulations. The Bioresource Engineering group within the Department of Plant Biology and Pathology works on plant management issues related to horticultural and greenhouse engineering. One research project is using the "speaking plant' approach, which generates information on plant growth and development status based on observations of the plants in the greenhouse. This information is coupled to a computer control algorithm that adjusts the "weather" conditions inside the greenhouse for optimal plant growth.

Impact: This work directly addresses ways to improve profitability for the controlled environment agriculture sector. The speaking plant approach to controlling the greenhouse environment will optimize energy use and energy saving, and preserve natural resources. Advances in water management systems will enable greenhouse growers to more easily comply with strict regulations regarding water and nutrient run-off. The research, funded in part by NASA, has also advanced the development of life support systems for the space program.

Source of Funding: Hatch Funds, NASA

Scope of Impact: National

Goal 4

Key Themes: Integrated Pest Management

Activity: Extension agents have continued to implement integrated pest management practices (IPM) through direct scouting to manage tree fruit, blueberry and small fruit production. Grower participation has continued to increase over the past five years. Direct scouting is used to manage 50% of the tree fruit acreage and between 50 to 60% of blueberry acreage and about 13,000 acres of small fruit production. IPM/ICM grower participation continued to increase in the blueberry IPM program. The program addresses pesticides, fertilizer use and production issues associated with growing fruit in the ecologically sensitive Pinelands area with porous soils and high water tables.

Impact: Peach grower use of mating disruption for insect control has increased in each of the last 5 years. In 1994, 2 growers used the technique. By 1999 and 2000, 17 growers were using this practice. When combined with other IPM practices, insecticide use was reduced by 70%, with 100% reductions seen for some insects. Growers continued to use this practice in 2002 and combined it with turf type ground cover management, helping to minimize pesticides needed for catfacing insects, and addressing the requirements of Food Quality Protection Act (FQPA).

Overall pesticide use in tree fruit has decreased. This leads to a decrease in farm worker exposure to pesticides, and diminishes the risk of pesticide residues on fruit, while also reducing the risk of nonpoint source pollution. IPM has had a significant impact on the New Jersey environment which will benefit all for years to come.

Source of Funding: Smith-Lever 3(b) & (c) & 3D

Scope of Impact: State Specific

Goal 4

Key Themes: Natural Resource Management
Wetlands Restoration and Protection

Activity: Protection of the environment and natural resources are keys to a sustainable future. 4-H youth, grades 7-12, participate in an intensive residential week-long "4-H Adventures in Environmental Science Program". This program has been held for 13 successful years, and has trained over 200 youth from throughout New Jersey how to investigate important environmental topics.

The week includes tours of waste management facilities, hands-on activities that investigate issues of waste and water quality, and a day-long canoe trip to investigate the use of water for recreation, manufacturing and energy production. In addition, the group learns about an osprey reintroduction program, visits to a wildlife rehabilitation center and a golf course which recycles water.

The highlights of the week include a rock climbing adventure and a hike on the Appalachian Trail. At the end of the week, each sub-group of 5-6 students must present an environmental topic to a mock legislative body, who decides what to do with a mock parcel of land.

Two important projects have been added to the program in recent years: a stream restoration project and a soil survey of farms using a variety of soil amendments, including waste water sludge, commercial fertilizer and manure.

Impact: Results of 5 year and 10 year post program surveys of participants indicate significant changes in attitudes and behaviors. Results of these surveys conclude that a majority of the students are now more aware of how to handle their waste. Many of them have become environmental ambassadors, sharing the information they have learned during the program with others. Several former students reported starting recycling programs or educational events at their high schools or in college. While there are only a few students that reported actually working in an environmental field, many reported taking environmental courses in high school or college as a result of interest peaked from the 4-H program. Others report volunteering for environmentally related organizations.

In the stream restoration project, a fish survey was conducted in 2002 with the help of a professional from the Division of Fish, Game and Wildlife. This survey confirmed the importance of our stream restoration project to maintaining the stream as a natural trout-producing habitat.

Source of Funding: Smith-Lever 3(b) & (c)

Scope of Impact: State Specific

Goal 4

Key Theme: Natural Resource Management

Activity: 4-H agents worked to develop Volume 2 of a popular curriculum that explores science. The "Science Discovery Series" was created to help youth develop life skills while discovering the science of the world around them. This volume of the series covers topics such as meteorology, leaf and tree identification, spiders, oceanography, space exploration and waste management alternatives and environmental conservation. The curriculum is supplemented by a companion Science Discovery Series website. This past year alone, it has received 112,798 hits during 13,398 total visits.

Impact: The "NJ 4-H Science Discovery Series Evaluation" was used to acquire evaluative information from group leaders during pilot testing. The information has been used to help determine the value of the lessons and activities contained in each unit, and for reporting purposes. Some findings of pilot testing of Volume 2 were:

- 18 hours on instruction were provided using all units of Volume 2 to 114 youth in 9 groups, grades 3-9. Youth were in school enrichment and after school programs, including a community juvenile justice program; taught by both teachers and volunteers.
- 100% said the unit taught was Very Effective or Effective in meeting its objectives and Very Easy or Easy to teach. 100% of users said the unit taught was Very Effective or Effective in helping youth develop science/math literacy and life skills, and all would recommend the unit to others for teaching science to youth.
- Typical comments included: "Grade appropriate," "Interesting and exciting actives," "Lessons plans were user friendly for teacher," "The unit was self-explanatory and very easy to understand and teach," "Great!".

Since pilot testing, the curriculum has been used with hundreds of other youth in New Jersey and elsewhere, with similar results found. The Science Discovery Series has sparked an interest in science and discovery and provide an experiential learning opportunity to open the world of science to youth whom otherwise may not explored the wonders of science and future career options.

Source of Funding: Smith-Lever 3(b) & (c)

Scope of Impact: State Specific and beyond as a result of website potential.

Goal 4

Key Theme: Wildlife Management

Activity: As reported in 2000, the results of the survey conducted by the Rutgers Center for Wildlife Damage Control, indicated that deer were responsible for 70% of the crop damage associated with wildlife on land that is farmed. Extension specialists and agents continue to focus educational programs on wildlife damage management, trapping, urban wildlife management, human dimensions of deer management, and deer fencing.

Impact: The Extension wildlife Specialist surveyed farmers who received high-tensile woven wire fencing during the 1998 New Jersey Supplemental Deer Fence program to gauge the effectiveness of deer fencing. Ninety –nine percent of respondents indicated deer damage prior to fence installation (66% estimated $5,000 annual crop loss). After installing deer fence, 96% of respondents indicated a reduction in crop damage, with only 4% of respondents estimating crop losses of $5,000 annually. Moreover, 48% of respondents experienced no damage after fence installation. This data supports the effectiveness of Extension educational programs and the New Jersey Supplemental Deer Fence program.

Comprehensive print and web-based deer management educational resources provided residents with rapid access to information. A website created with the help of nursery and landscape professionals listing plants and trees and their susceptibility to deer damage resulted in consumer savings. Those who visited this site and made landscape choices based on this information have had significant savings in the management of their home grounds.

Source of Funding: Smith Lever 3(b) & (c)

Scope of Impact: State Specific

Goal 5

Overview: As noted previously, New Jersey has a culturally and economically diverse population. Demographic and socioeconomic factors such as poverty, indebtedness, changing employment conditions, and family structure create uncertain futures for individuals, families, communities, agricultural and food producers, and small business owners. Human and community development issues are the focus of many of our family and consumer sciences and youth development programs which address problems associated with urbanization and economic development. To improve the quality of life and enhance economic opportunity educational programs have been planned and implemented throughout the state. Participants have developed leadership skills, workforce preparation, care giving and parenting skills.

The RCE "Aboriculture Training and Internship Program" was expanded to a state-wide youth training program as a workforce preparation component of the New Jersey Youth Crops serving at-risk youth in New Jersey. This program has been extremely successful in introducing at-risk youth to careers in the green industry. 20 trainees have expressed some to moderate interest in employment and 4 accepted full time positions.

Care giving and parenting are human development skills that have been a major part of the Family and Consumer Sciences Educators "Life Keys" human development program. 87% of the parents and youth who participated in the Family Camp weekend program strengthened their families through improved communication skills.

Grandparents raising their grandchildren adopted new communication parenting skills and increased their knowledge of support services available to them as the result of educational programs and a newsletter series "Kinship Connections".

Fathers were the focus of parenting skills programming in Cape May County where "Focus on Fathers" was developed and implemented to increase parenting competence and confidence of fathers, with a goal that these fathers will stay actively involved in their children's lives at a time in our society where nearly 75% are living in a single parent household headed by a mother.

4-H youth continue to be engaged in positive experiences to develop character, make healthy lifestyle choices, and contribute to their communities through service learning and workforce development.

Youth have also been engaged in community development projects through community gardening and 4-H farmers markets bringing a sense of pride and hope to depressed communities.

Allocated Resources:

Research

Hatch Funds:	$146K
All Funds:	$1,515K
SY's:	5

Extension

Smith-Lever Funds:	$309K
All Funds:	$2,291K
FTE's:	40

Goal 5

Key Theme: Workforce Preparation – Youth

Activity: The New Jersey Bureau of Forestry's assessment of the state's tree health and maintenance problems pointed out the need for qualified managers and an infusion of labor to preserve, maintain and enhance our natural tree resources. In their December 2000 study, a marked decline of street tree health was reported, from 69% in good health in 1994 to 34% in 1999. In the same period, the need for major pruning maintenance rose from 14% to 24%, and abiotic injury to the nearly 2.1 million street trees in the urban forest rose from 6% to 25%. As more labor-intensive maintenance is required for a maturing urban forest, individual and volunteer efforts are being replaced by hired contractors and trained public works and shade tree commission employees. To provide meaningful career opportunities for underserved youth and expand the locally available labor, RCE identified partners to create an education-based solution.

RCE expanded the 2001 "Arboriculture Training and Internship Program" to a state-wide youth training program as a workforce preparation component of the New Jersey Youth Corps serving at-risk youth in New Jersey. The New Jersey Youth Corps obtained grant money from the Cumberland County Empowerment Zone, and training opportunities were made available to all New Jersey Youth Corps offices (Asbury Park, Camden, East Orange, Jersey City, Newark, Paterson, Phillipsburg, New Brunswick, Trenton, and Vineland, NJ). Thirty-five youth were identified for three days of intensive hands-on training. Evaluations completed the previous year showed the low value of classroom and lecture presentations to this clientele group, so the 2001 curriculum was re-focused on outdoor, hands-on training. The training program was conducted to coincide with high seasonal labor demand and employment opportunities.

Impact: Pre and post-training evaluations were completed to assess knowledge gained, use of proper techniques, and the development of employability skills of the trainees. Prior to the 2001 training, 83% of the group understood the need for hard hats, voice commands, and other general safety procedures (29 of 35). This can be attributed to their general training in other workforce preparation classes within the New Jersey Youth Corps program. Following the 2001 arboriculture training, the youth participants displayed the following knowledge gains:

- 30% of the trainees displayed the proper safety techniques in ascending a tree utilizing either the rope and saddle or aerial lift methods, a 70% increase from the pre-test results.
- 36% of the trainees exhibited a working knowledge of tie-in safety measures and other fall-prevention measures when working in and around trees and landscape material, a 300% increase from the pre-test results.
- 40% of the trainees properly identified potential electrical hazards and detailed the necessary safety measures and precautions when working near electrical lines, a 95% increase from the pre-test results.

20 trainees expressed some to moderate interest in employment following the training and 4 have accepted full time positions with tree care companies and garden centers/nurseries.

Source of Funding: Smith-Lever 3(b) & (c)

Scope of Impact: NJ, AR, FL, RI

Goal 5

Key Theme: Parenting
Children, Youth, and Families at Risk

Activity: At-risk families face many challenges on a daily basis that impede positive communication among family members. Family camp was specifically designed to strengthen at-risk families. Participants were from New Jersey's identified Children, Youth and Families At-Risk (CYFAR) community sites, all of which are urban.

The weekend Family Camp was developed as a way to combine educational adventure activities with structured recreational opportunities to promote positive family communication. Family Camp weekend addressed 22 of the Search Institute's 40 Developmental Assets kids need to thrive, and 3 of the 15 National Drop Out Prevention Center's key prevention elements. Because the families learned positive communication skills as a family unit, the changes are longstanding despite only being an annual program. The family as a whole participated in various experiential, hands-on educational activities that challenged individuals to learn about each other, respect each other, and spend quality time learning together in the backdrop of a camp setting for a weekend. The vision was to build on family strengths by reinforcing the importance of the family unit and increasing positive communication among family members. Using adventure-based activities in a specific metaphorical framework, facilitators addressed difficult issues light-heartedly during teachable moments when the family is not in crisis. The program allowed for cognitive restructuring and opportunities to practice newly learned skills through less-structured recreational camping activities.

Impact: 87.5% of the participants reported that the weekend activities strengthened their families. Program evaluations suggest that youth are more aware of family members' feelings, family patterns of communicating and of obstacles that "get in the way" of communication. Parents become more understanding, nurturing and enthusiastic with their children as well as better role models.

Source of Funding: Smith-Lever 3(b) & (c), Phillipsburg Housing Authority

Scope of Impact: State Specific

Goal 5

Key Theme: Parenting
Child Care/Dependent Care
Children, Youth and Families at Risk

Activity: Since 1980 there has been dramatic increase in this country in the number of children living with and being cared for by their grandparents or other relatives. The national average of children under 18 living with a grandparent rose from 3% in 1970 to 6% in 1995. Based on 1990 census data, New Jersey (7.24%) is above the national average and in Cape May County 7.35% of children under 18 are living in a grandparents' home. The Family and Consumer Sciences educator developed a newsletter series "Kinship Connection," which is distributed to more than 200 grandparents and agencies. Four educational programs and workshops for grandparents and their grandchildren were developed and taught. Educational program topics included, "Accessing Resources for Grandparents and Other Relatives as Parents," "Drug & Alcohol Prevention," "Combating TV and Media Violence," "Improving Communication Skills" and "Teen Development".

Impact: Grandparents who participated in the educational programs reported the following:

- 100% Planned to use information from the program.
- 82% Have a better understanding of drug and alcohol issues.
- 76% Planned to talk to their grandchildren about media violence.
- 88% Planned to pay more attention to what their grandchildren watch on television.
- 94% Have a better understanding of resources and services available to them.
- 100% Felt the support of other grandparents raising grandchildren.

Of those attending the classes and receiving the newsletters:

- 100% Indicated that they adopted at least one new communication parenting skill and have increased their knowledge of support services available to them.

Source of Funding: Smith-Lever 3(b) & (c)

Scope of Impact: State Specific

Goal 5

Key Theme: Parenting
Child Care/Dependent Care

Activity: Fathers play a vital and specific role in a child's life. Yet for the first time in US history the average child can expect to spend a significant amount of his or her life without a father. The National Commission on Children, Washington, DC, reports that nearly 75% of American children living in a single parent home will experience poverty by the age of 11 years old. In 88% of the single parent cases, children are living with their mothers. The "Focus on Fathers" parenting program with "Me and My Dad" activities developed in Cape May County is an effort to increase the parenting competence and confidence of fathers, with a goal that these fathers will stay actively involved in their children's lives. These comprehensive fatherhood programs cover topics such as nutrition and food safety in the "Me and My Dad in the Kitchen". Communication, school involvement, drug and alcohol prevention and self esteem were also covered as well as "The Special Role of Dads in a Daughter's Life".

Impact: As a result of participating in the fatherhood program, fathers self reported the following in 2002:

- 90% Increased their involvement in their child's education.
- 80% Read to their child.
- 82% Listened more attentively to their children.
- 75% Spent more time with their children.
- 82% Read articles related to child development and parenting.
- 72% Shared the information with at least one other person.
- 100%Plan to use one new positive discipline skill.
- 96% Professionals trained reported an increased awareness of fatherhood issues related to family development.

Source of Funding: Smith-Lever 3(b) & (c)

Scope of Impact: State Specific

Goal 5

Key Theme: Leadership Training and Development

Activity: Rutgers Cooperative Extension, in collaboration with Atlantic County Administration, addressed the need to increase the competencies of middle management staff in human development related skills. Innovative in both design and delivery, the "Best Practices for Management" initiative included the research and development of a 10-hour management course, and resulted in skill building and positive behavior change for over one hundred managers in five county units. Elements which created success were: 1) flexibility in course topic focus depending on unit concerns, and 2) a personalized and highly interactive approach of training/learning. To date, five units have been served: Intergenerational Services (Meadowview Nursing Home nursing unit), Atlantic County Library System, Department of Public Works, Division of Family and Community Development, and Department of Facilities Management.

The BPM course was designed with the following objectives:

As a result of attending the course, middle managers would:

- Increase self-awareness o behavioral tendencies.
- Set goals to address thoughts and behaviors that do not support excellence in management strategies.
- Increase base competencies of effective communication, workplace leadership, conflict management, goal setting and motivation.
- Increase effectiveness in using emotions in management of self and others.
- Create awareness and foster development of best practices in valuing workforce diversity.

Impact: Post course and follow-up evaluative data indicate the success of course content and educational delivery design. 111 managers enrolled and attended at least part of the course. 104 managers completed the course.

The table on the next page documents behavioral changes made by those who participated in the training.

Skills Development and Behavior Change
Return rate of post course surveys was 97%. Return rate for follow-up surveys was 78%. Results below focus specifically on responses to core questions.

Post Course Data	
Survey Item	**% Positive Response**
Overall Question: Learned new skills or strategies for applying management techniques.	97%
Section I: Increased awareness of how I usually manage others.	94%
Section II: Increased awareness of how my emotions affect my management style and abilities.	85%
Section III: Learned new skills or updated my skills to be an effective communicator.	91%
Section IV: Increased my knowledge of best practices in workplace leadership.	71%
Section V: Feel more comfortable managing others who are different than I am – examples: gender, race or ethnic background, religion, social class.	86%
Section VI: I learned ways to manage workplace conflict.	88%

Follow-Up Data	
Survey Item	**% Positive Response**
I have improved my ability to manage others by using at least one best practice we discussed in class.	95%
I feel more form comfortable dealing with difficult situations at work.	81%
I have changed at least one way I manage myself at work.	85%

Source of Funding: Smith-Lever 3(b) & (c), County

Scope of Impact: State Specific

Goal 5

Key Theme: Youth Development

Activity: The youth of New Jersey are our most valuable resource. They are challenged in today's environment with making choices and withstanding peer pressure to deviate from the mass. Our future depends on providing opportunities for youth to develop knowledge attitudes and skills which they need to become competent, caring and contributing members of society.

The 4-H Youth Development Program uses experimental learning methods to engage youth grades K-13 in educational programs focused on science literacy and environmental stewardship, character development, community youth development and healthy lifestyles. 4-H educators and caring adult volunteers and teen volunteers share their skills to make a difference in the lives of the 51,988 youth who participate in the program.

Impact: In 2002, New Jersey 4-H youth and adults joined the nation in celebrating the 100th Anniversary of the 4-H Youth Development Program. They pledged 10,877 hours of service to people and communities as a part of the National 4-H Power of the Youth Pledge Campaign.

Volunteers are the backbone of the 4-H program. 3,023 adult leaders and 1,053 teens successfully delivered the program to 51,988 youth. The average adult volunteer donates 220 hours per year resulting in a volunteer investment of time and effort which translates into over 11 million dollars return in support of youth development programming. 4-H educators work collaboratively with other youth serving agencies and organizations to extend the outreach of 4-H to a population of more diverse and underserved youth, while at the same time increasing resources available to 4-H.

The youth of New Jersey are engaged in meaningful experiences and are gaining invaluable skills which will benefit society in the future.

Source of Funding: Smith-Lever 3(b) & (c)

Scope of Impact: State Specific

Goal 5

Key Theme: Workforce Preparation – Youth
Management Goal: Multicultural and Diversity Issues

Activity: An increasingly large number of youth in Bergen County (and other NJ counties) are classified as "at-risk" and/or "mentally ill". Often traditional approaches have failed them and many end up in correctional facilities with no attainment of new skills to make them employable. The cost of incarceration is about $50,000 per year per individual. The recidivism rate is about 50-60%. There is a great need for effective programming to train and rehabilitate at-risk and mentally ill youth. Both professional and personal skills must be developed in order for these youth to become employed and lead productive lives.

Horticulture has been recognized as an effective tool in training and rehabilitating individuals with special needs. Horticulture is an activity in which anyone can be successful, and basic plant-related skills empower individuals, helping them to become employable in many areas of the huge ornamentals industry. RCE developed and delivered a specialized horticulture program for the Bergen Department of Mental Health. Now in its 5th year, the twice-expanded program called "First Jobs in the Green Industry" has garnered over $100,000 in support funding. In 2001 alone, over $50,000 was given to RCE along with requests for expanded programming in 2002. "First Jobs" started as a summer program and now runs year-round. Linkages with Bergen Vo-tech, and local industry (garden centers, florists, greenhouse growers, etc) has enriched the program and given participants a positive outlook regarding careers and hobbies in horticulture.

Impact: More than 40 mentally ill youth have participated in the training. As a direct result, 8 have expressed interest in pursuing horticulture training and related job paths. In addition, one student has applied and been accepted to Rutgers – Livingston College. Formalized surveys administered to the participants indicate that nearly all found the Rutgers training to be helpful and useful in preparing for a career. All expressed a sense of pride and greater confidence as a result of their successes with plants. Additionally, the counseling staff at Friendship House and the administrators in the Bergen Department of Mental Health have reported that the Rutgers "First Jobs in the Green Industry" is the single most popular discipline in which the youth participate.

Source of Funding: Smith Lever 3(b) & (c), County Funding, External Grants and Gifts

Scope of Impact: State Specific

B. Stakeholder Input Process

As reported in previous years Cook College New Jersey Agricultural Experiment Station (NJAES) engaged stakeholders in a strategic planning process. As we move forward with the implementation of the strategic plan stakeholders continued to be actively engaged. The Cook College NJAES leadership team changed during this reporting cycle and as a result, the new administrative team engaged stakeholders in sessions throughout the state sharing the vision for the future.

Annual county budget sessions were conducted in conjunction with stakeholder input meetings in counties throughout the state engaging a diverse cross section of residents, organizations, and collaborative partners encouraging their input into the budget, program planning, and development process for Cooperative Extension. In addition, Rutgers Cooperative Extension actively engages stakeholders throughout the year through service on Extension advisory boards. Extension faculty and staff also work collaboratively with community leaders and agency and organization representatives to ensure that the diverse needs of county residents are addressed through appropriate Extension educational programs.

The state mandated NJAES Board of Managers is an advisory group appointed by the Rutgers University Board of Governors based on nomination by each county Board of Agriculture. The membership also includes representatives from six other major constituencies related to the Cook/NJAES mission: environment, biotechnology, marine science, food science community resources and public policy. The Board of Managers has research, extension and teaching committees that provide valuable input directly to respective deans, faculty and staff relative to defining initiatives, identifying resources, establishing linkages and proactively addressing critical issues.

Faculty members at Cook College and the NJAES are eligible to apply for competitive funding for the McIntire-Stennis program. It is expected that these proposals will meet the goals of the McIntire-Stennis Cooperative Research Act of 1962, as well as abide by the mission of the NJAES. Proposals for McIntire-Stennis funding are evaluated by two separate reviewer groups to ensure selection of only those proposals which will provide the most impact to the field of forestry and that will result in the most benefit to the relevant stakeholder groups. These two groups are the Environmental and Natural Resources Council and the Forestry Advisory Council. To this end, proposals are evaluated by the Forestry Advisory Council, whose members consist of industry, government and faculty leaders in forestry, reviews and evaluates the proposals. Also, they are reviewed by the Environmental and Natural Resources council, a group of faculty and staff dedicated to identifying and promoting the best scientific and outreach programs in NJAES and Cook College.

NJAES/Cook College has various constituents and industry advisory boards to academic departments and centers. These advisory groups meet between one and four times a year and provide significant input and links.

C. Program Review Process

There have been no significant changes in the merit review or scientific peer review processes since the 5-year Plan of Work.

D. Evaluation of the Success of Multi and Joint Activities

At Rutgers our process for the generation and transfer of knowledge and technologies is best viewed as a continuum in an integrated system. This dynamic research, education and outreach system anticipates and responds to issues and challenges in agriculture, food systems, environment and natural resources, and human and community health and development in order to empower people to improve their lives, the lives of others, and the environment on which they depend. Needs assessments occur at the grassroots level, through industry organizations, advisory boards, professional associations and the student body to identify critical issues of strategic importance. Multistate, multi-institutional, and multidisciplinary activities and joint research and extension activities have been implemented to address these identified issues that are representative of the concerns of the diverse population of our state including agricultural, environmental, industry, youth, underserved, underrepresented, at-risk, urban and geographically isolated residents. Planned programs also address identified critical issues within the region where formal memoranda of understanding and collaboration agreements have been developed between states. The resulting agreements have resulted in both improved program effectiveness and efficiencies as documented in the reports of the Extension multistate and integrated research and extension activities, states involved in these joint efforts have benefited greatly from the shared faculty, researchers and extension specialists who have addressed critical programmatic needs that expand beyond the state. We continue to work with states within the region and beyond to identify partners and pull together teams to maximize expertise and resources to address critical issues.

E. MULTISTATE EXTENSION ACTIVITIES

- **Penn Jersey Livestock/Crops Program**

Agents from Pennsylvania and New Jersey on the northern borders of the Delaware River planned and conducted the Northeast Regional Small Farm and Rural Living Expo and Trade Show. The expo was geared to small farm operations which provide a significant impact on the economics, aesthetics and rural character of communities in the Northeast. During this two day event, over eighty workshops and demonstrations were presented to assist new farmers, farm managers and rural residents to make strategic linkages with support agencies, supplies and sound research based information. This event provided participants the opportunity to develop skills to assist in the management and marketing of their agricultural endeavors. Over 2,600 participants attended the event from nine states.

The Penn Jersey Extension Partnership delivered for the third year a Regional Crop Master Program for area crop producers. The two day intensive training session featured "weed management" as a focus for over thirty producers. The series improved grower concepts for weed identification, treatment, and control using cultural and chemical practices. The three year "Crop Master" Series was recognized at the 2001 National Association of County Agricultural Agents meeting as the award winning entry in the Search for Excellence in Crop Production. The entry won the Northeast division and then was one of four national finalists and was selected as the national winning entry.

Coinciding with the Crop Masters Series, the Penn Jersey Extension Partnership designed and developed a user friendly crop web page entitled www.cropmaster-icm.org. The website to date has had over 50,000 hits and has received wide acceptance from growers and other colleagues. Penn State University has linked the website for their forage informational website. Additionally, the fact sheets developed for the web page, were awarded the northeast team fact sheet award for the 2001 NACAA entries. Weekly Crop Alerts/Reports are also hosted on the web page and feature current topics and happenings as reported by agents, specialists, farmers, and crop agencies.

- **Mid-Atlantic Consortium (MAC), Pathways to a Better Trained Workforce**

This regional project in NJ, NY, MD and DE continues its focus on systemic change in the educational systems of the region building extensive public and private partnerships, documenting multiple pathways which enable youth to enter productive careers in the food industry. Two of the five demonstration programs were developed in Burlington County, NJ. These are the Supermarket Experience, which is a fifth grade curriculum delivered by Junior Achievement of South Jersey and the Factory Floor Classroom which is a course on food processing offered on site at Ocean Spray Incorporated.

- **MAC – Food Policy Institute**

The Food Policy Institute (FPI) is a unique partnership created to focus on policy issues and challenges facing the food industry and food consumers in the mid-Atlantic region. The Institute's mission is to develop timely and relevant research programs that address pressing food policy issues and to engage in outreach and education to industry, consumers, and policy makers. The objective is to maximize the quality of decision-making for industry executives and

government regarding food production, distribution, quality, consumption and the nutritional and health implications.

Higher education partners participating in this regional program include: Rutgers University, Cornell University, University of Delaware, Delaware State University, Sussex County College, Mercer County College, University of Maryland – College Park, and University of Maryland – Eastern Shore. In addition, there are numerous industry and trade associations, government agencies, and other public entities participating in FPI.

The FPI's supports research and outreach projects relating to the following food policy issues: 1) Consumer perceptions of food biotechnology, 2) Usage of alternative food delivery systems, 3) Nutraceutical industry development, 4) Blueberry industry development, 5) Food waste diversion
and 6) receiving numerous grants including a "Consumer Acceptance of Food Biotechnology in the US" funded by USDA's IFAFS program.

- **MAC – Food Systems Web**

The Mid-Atlantic Food Systems Web Site Project launched its initial product in March 2001 as "agri-culturehealth.com". It is a comprehensive, interactive source providing information to farmers on how-to direct market product to consumers, to consumers looking for nutrition information relating to the health benefits of local fresh produce, general information on food safety and the interaction of agriculture and the environment, specifically in the area of watershed management. Consumers and farmers are aided in finding each other by a local produce directory system that allows farmers to list their farms and products, and consumers to search for farms by area and product.

- **Mid-Atlantic Fruit, Vegetable, Crop Manuals and Conferences**

In FY 2002 New Jersey Extension specialists and agents again worked with colleagues in one or more of the neighboring states (PA, DE, MD, WV, VA) to produce "Commercial Vegetable Production Recommendations for New Jersey", "Tree Fruit Production Guide for New Jersey" and "Pest Management Recommendations for Field Crops". These are the leading handbooks for commercial agricultural producers and even small part time farmers in these states. More than 3500 copies are sold each year. Recommended practices address economics, environment (IPM) and practical tools for everyday agricultural activities. The use of the recommendations enables growers to maintain their competitive efficiency and helps them to minimize pesticide use and adhere to pesticide use regulations.

In FY 02 the 32nd Annual Mid-Atlantic Vegetable Workers Conference was held. At this conference results from numerous field experiments were presented to share performance of the latest pest control measures, varieties, cultural practices and marketing strategies. In FY 2002 the multistate team also gave leadership to the Mid-Atlantic Crop Management School and Mid-Atlantic Pumpkin School.

Research at Rutgers Agricultural Research and Extension Center conducted in vegetable weed control in the early 1990's resulted in the first reports of safety in cucurbit crops treated with halosulfuron. Continued work to date has contributed significantly to the labels obtained in 2001 and 2002. The control of these tough weeds, especially yellow nutsedge, is perhaps the most significant contribution to vegetable production in the past decade. Continued research is

under way to extend the label to watermelons and between the rows of summer squash grown on plastic mulch.

- **NJ/Delaware Weed Science Cooperative Agreement**

New Jersey and Delaware work collaboratively to share specialist expertise in weed control. Delaware provides field and forage crop weed management expertise and New Jersey nursery/turf expertise to Delaware. In FY 2001, soybean herbicide demonstration plots were established in NJ. The plots were used to educate over 60 growers at an Extension twilight meeting about newly developed herbicide resistant soybeans and weed control management strategies. Specialists continued to deliver a strong multistate outreach program to a diverse clientele in weed management in turfgrass and ornamentals. The information was also presented at field crop growers meeting. Presentations in the form of seminars and workshops to commercials and public clientele (landscape contractors, golf course superintendents, parks and recreation) on integrated weed management in turfgrass and ornamentals were conducted in Delaware. There is also year round interaction with the Delaware Cooperative Extension in the form of published fact sheets, email and phone calls.

- **Northeast and Mid-Atlantic Direct Marketing**

This collaborative effort with states throughout the region (NJ, NY, PA, MD, VA) and direct marketing organizations is co-coordinated by New Jersey. The major event is an annual conference in which educational programs and exhibits are a major component. The FY01 conference was held in Virginia. The 3 day conference attracted 325 attendees.

- **US Environmental Protection Agency Region 2/Cornell and Rutgers**

Through collaborative funding provided by EPA, Cornell and Rutgers Cooperative Extension, and USDA-CSREES, the liaison works out of the EPA Region 2 offices in New York City to facilitate a cooperative educational partnership among the sponsoring agencies. Work of the liaison focuses on water quality and watershed protection/place-based environmental protection initiatives, including the agricultural dimensions of these issue areas.

With this leadership to a team representing four universities (Rutgers University, Cornell University, University of Virgin Islands and University of Puerto Rico) and EPA, a grant was obtained for Regional Water Quality project coordination from USDA-CSREES.

The liaison for EPA Region 2 initiated an agriculture team within the regional office; supported Region 2 in national dialogues, work with teams on EPA's agricultural initiatives (regulatory and assistance), and supported the regional office in its participation in a national outreach effort directed to the state commissioners of agriculture. He also provided leadership to developing an animal agriculture regulatory/technical assistance (CAFO/AFO) project to be conducted in New Jersey in association with several other federal and state partner agencies.

The liaison continues to provide similar support and participation in other EPA Region 2 initiatives and dialogues in the areas of: nonpoint source water pollution (funding, regulatory initiatives, etc.); pollution prevention initiatives; innovations work group (to improve agency efficiency and effectiveness). He also routinely participates in senior staff meetings of the EPA Region 2 Division of Environmental Planning and Protection.

- **4-H Juried Curriculum and Related Educational Product Development**

The National 4-H Experimental Learning Design Team oversees the efforts of the 4-H juried curriculum. The affiliate Extension Specialist in Educational Design serves on this national team and provides guidance to youth curriculum for the state. Guidance is provided for the development of all youth curriculum to ensure that they conform to the 4-H experimental learning criteria and standards. Over 50% of the materials used to support the New Jersey 4-H Youth Development program are national juried pieces. In addition to serving on the jury the NJ specialist is a member of the Experimental Learning Design Team which coordinates experimental learning curriculum development and other supporting activities.

The Somerset County 4-H Agent serves the liaison to NASA Education and Public Outreach Forum. In this role she assisted in the development of national educational materials for youth.

- **Regional Research Projects**

As a part of regional projects NE-183 and NC140 a New Jersey County Ag Agent contributes to the demonstration and outreach of results from apple, semi-dwarf apple, apricot, sweet cherry, varietals and rootstock trials. This is done through several field days to various clientele each year and via websites. This team continues to make significant progress in meeting the needs of apple growers.

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Institution Rutgers University
State New Jersey

Check one: X **Multistate Extension Activities**
____ **Integrated Activities (Hatch Act Funds)**
____ **Integrated Activities (Smith-Lever Act Funds)**

	Actual Expenditures				
Title of Planned Program/Activity	**FY 2000**	**FY 2001**	**FY 2002**	**FY 2003**	**FY 2004**
PENN-JERSEY Livestock/Crops	4,000	4,000	17,770		
MAC-PATHWAYS/Food Policy & Food Systems Web	21,500	25,000	27,448		
Mid-Atlantic Fruit, Veg., Crop Manuals/Conference	4,000	4,000	7,511		
Weed Science – NJ/Delaware	2,500	2,500	2,912		
Northeast Direct Marketing	1,000	1,000	752		
EPA-2/Cornell & Rutgers	13,000	13,000	8,000		
4-H Jury Curriculum & Related	1,000	1,000	1,166		
Regional Research Projects	1,423	1,500	1,850		
Other	0	0	0		
Total	48,423	52,000	67,409		

Adesoji Adelaja — **Director**
April 29, 2003 — **Date**

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F. Integrated Research and Extension Activities

Turfgrass Breeding and Management

A team of turfgrass specialists including breeding, biotechnology, management, pathology, entomology, and weed control science are focusing on the development of new varieties and management practices for production and maintenance of turfgrass in New Jersey. The objective is to explore and develop turfgrass that exhibit qualities that make them resistant to damage by weed control chemicals, foot traffic and mowing. The team has also examined the potential for gene flow between the hybrids and non-transgenic varieties. Another project focuses on the effectiveness of nematodes for control of turfgrass pests, such as white grubs. As noted previously, approximately 195 turfgrass varieties from this program are currently licensed to and are being marketed by commercial seed companies. These specialists continue to participate in a multistate effort to develop best management practices for turf systems in the eastern US.

The Extension Specialist's extension and research programs continue to focus on integrated crop management to reduce fungicide usage on turf. In particular, the specialist has developed collaborative projects on the etiology and control of four devastating diseases of turf (i.e. anthracnose, gray leaf spot, dollar spot, and bentgrass dead spot. During this period, the specialist was invited to present his research to colleagues and turf professionals in nine states (i.e., Utah, Connecticut, Kansas, Texas, West Virginia, Wisconsin, North Carolina, New York) and Canada. The specialist also received invitations to present his research in Toronto, Canada and the American Phytopathological Society in Salt Lake City, Utah, August 2002. The specialist extended results of his program to practitioners in New Jersey via 31 Extension presentations, three workshops, and four field days.

Another specialist continues to develop and evaluate the experimental herbicide MON-44940 as a potential new management tool for selective control of Poa annua and Poa trivialis in cool season turfgrass. He has also initiated research to evaluate the potential of ALS – inhibiting herbicides, currently labeled for use in agronomic crops, for postemergence weed control in turfgrass. Initiated research in the development and evaluation of weed management strategies utilizing glyphosate resistant bentgrass, including the identification of herbicide alternatives for control and management of transgenic bentgrasses. Initiated research projects to assess the potential use of glyphosate tolerant fescues for weed management in turf. Continue to evaluate control of summer annual grasses and broadleaf weeds in landscaped turf to support Extension recommendations. Studies to evaluate the use of guinclorac for crabgrass control in cool season turfgrass have been completed. Continue to evaluate and develop the experimental herbicide flumioxizon for use in field and container grown ornamentals. Comprehensive field studies have been conducted over the past two years.

Plant Production Systems

Current multistate efforts are employing active collaborations to address researchable problems confronting the rapidly expanding landscape (environmental) plant industry. The nationwide membership of this research group provides an excellent means for researchers in states with similar production, marketing, or management problems to cooperate as a team. The NJ program continues to supports the NJ commercial greenhouse industry and is contributing to a NASA funded NSCORT project to develop closed plant production systems for long duration space missions. An economic analysis of the greenhouse, nursery and sod sector of in the U.S. was conducted, and a website was made available to provide the industry's producers and managers with useful budget and accounting

information. A strawberry research project evaluates the productivity and profitability of a plasticulture system conducive to moderate climate sites and possibly harsher climate sites. Vegetable and fruit breeding and evaluation are providing new cultivars of important horticultural commodities for use by NJ growers. Also, current research is investigating the use of supplemental lighting for commercial plug production and ventilation of greenhouses.

Food Safety

A CSREES Integrated Research, Education, and Extension grant proposal (Reducing risk of Clostridium spp. Food poisoning using predictive modeling, $251,792) was recently funded in our lab. This grant has allowed us to further enhance our research/outreach integration in the predictive modeling area. This research supports one graduate student but has also given us the additional expertise we needed to help two local companies when USDA threatened to shut them down for violations in cooling times and temperatures

The food science specialist continues to provide food processors and retailers a tool for predicting the risk of food borne illness from two major bacterial species. He has developed a good agricultural practice training program to improve the safety of produce grown in NJ. Also a fact sheet on the new FDA regulations for fresh juice was developed for producers. In partnership with the NJ Department of Labor, a training program has been developed to teach food safety, good manufacturing practices and HAACP to food companies. Additionally, the Food Microbiology Risk Reduction project monitors and reports on the safety of products and practices in the University Dining Halls.

Nutrient Management and Recycling

Teams are working on developing methods for efficient and ecologically sound utilization of nutrients for crop production. Established soil fertility research methods will be used to examine relationships between plant response and nutrient supply in soils. Projects include the investigating, the effect of land application of municipal collected shade tree leave on soil quality and crop production, and the environmental and economic impacts of nutrient management on dairy forage systems (as a contribution to a multistate research project). An additional research and education program focuses on diverting food wastes to animal feed instead of landfilling or incinerating. This program has resulted in the publishing of a book (Food Waste to Animal Feed) and numerous scientific and popular articles, development of six national symposia, numerous invited presentations, and the creation of the Food Recovery and Recycling Association of North America. Solid waste management (sewage, food, animal) presents numerous problems in our densely populated state. Agents and specialists have developed an extensive set of guidelines on the use of sewage sludge on agricultural land which is forming the basis of an “agricultural management practice” promulgated right-to-farm rule for NJ. Guidelines on food wastes and horse manure are based on applied research are forthcoming.

The proper use of non-traditional organic wastes can reduce farmers’ costs for fertilizers and improve the soil quality while providing local means for municipalities and companies to reduce organic wastes. Best management practices entitled “Best Management Practices for the Use of Non-Traditional Organic Wastes in Agriculture” were developed. They will be used by growers, extension agents, NRCS staff, NJDEP staff and NJDA staff. These practices will help reduce non-point source pollution in New Jersey while keeping organic wastes out of landfills and thereby extending their useful lifetimes.

Agricultural Financial Management

This is multifaceted program with the New Jersey Farm Management Program as its centerpiece. The latter program funded through a multi-year grant from the NJ Department of Agriculture provided formal training to over 4000 producers in the areas of management, marketing, finance and investment. Another component of this overall program is participation in Northeast Farm Management Working Group focusing on risk management. As part of a Northeast Sustainable Agriculture Research and Extension project, 80 budgets were developed for conventional, IPM and organic production systems. A series of budgets for conventional, ICM, and organic production methods were made available on line for crop and livestock budgets in New Jersey. Related activities include participation in two additional multistate research projects focusing on the marketing and production of (1) fruits and vegetables and (2) environmental plants.

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State New Jersey

Check one: ____ Multistate Extension Activities
__X__ Integrated Activities (Hatch Act Funds)
_____ Integrated Activities (Smith-Lever Act Funds)

	Actual Expenditures				
Title of Planned Program/Activity	**FY 2000**	**FY 2001**	**FY 2002**	**FY 2003**	**FY 2004**
Animal Production Efficiency	39,755	20,858	52,228		
Field and Forage Crops	35,821	17,465	35,173		
Turfgrass Breeding and Management	54,413	73,470	58,809		
Plant Pest Management	32,588	-	-		
Plant Production Systems	42,578	126,517	127,809		
Food Safety	16,425	8,354	9,577		
Food Security	19,941	-	-		
Human Nutrition	8,732	-	-		
Nutrient Management/Recycling	23,365	33,365	39,078		
Agricultural Financial Management	16,491	17,440	9,650		
Total	294,109	297,469	332,324		

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	Actual Expenditures				
Title of Planned Program/Activity	**FY 2000**	**FY 2001**	**FY 2002**	**FY 2003**	**FY 2004**
Field and Forage Crops Management	7,880	9,556	-		
Turfgrass Breeding and Management	37,293	60,516	96,598		
Plant Pest Management	13,122	-	-		
Plant Production Systems	58,715	81,937	47,066		
Food Safety	11,666	-	9,415		
Environmental Quality (now part of Nutr. Mgt/Recycling)	19,997	-	-		
Nutrient Management/Recycling	13,087	13,246	23,000		
Agricultural Financial Management	7,720	8,895	9,030		
Animal Production Efficiency	-	4,990	-		
Total	169,480	179,140	185,109		

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