

Annual Report of Accomplishments and Results

Maryland Joint Extension and Research Report

On the

Maryland Joint Extension and Research Plan of Work

As Submitted July 15, 1999

For

**Fiscal Year 2000
Ending September 30, 2000**

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Summary

This document constitutes the Annual Report of Accomplishments and Results for the fiscal year 2000 (October 1, 1999 to September 30, 2000) for the research and extension activities in Maryland subject to the Agricultural Research, Extension and Education Reform Act of 1998. This includes activities of the Maryland Cooperative Extension, a joint enterprise of the University of Maryland and the University of Maryland Eastern Shore, the Maryland Agricultural Experiment Station and the research activities at the University of Maryland Eastern Shore.

Accomplishments are reported for the five goals of the US Department of Agriculture as required. The report is organized as follows:

Part A. Planned Programs

- REE Goal 1. To Achieve an Agricultural Production System that is Highly Competitive in the Global Economy
- REE Goal 2. A Safe, Secure Food and Fiber System
- REE Goal 3. A Healthy, Well-nourished Population
- REE Goal 4. Achieve Greater Harmony (Balance) between Agriculture and the Environment
- REE Goal 5. Enhanced Economic Opportunity and Quality of Life for Americans

Part B. Stakeholder Input Process

Part C. Program Review Process

Part D. Evaluation of the Success of Multi and Joint Activities

Part E. Multi-state Extension Activities

Part F. Integrated Research and Extension Activities

Appendix: Tables of Resource Expenditures by Planning Goal (FORM CSREES-REPT (2/00) for:

- Multistate Extension Activities
- Integrated Activities (Hatch Act Funds)
- Integrated Activities (Smith-Lever Act Funds)

This report of accomplishments and results organizationally corresponds with the original plan of work submitted in 1999. The plan of work can be found at the following web site:

<http://www.agnr.umd.edu/intranet/plan99/powoutline.htm>

Parts B-F repeat some of the working from the original plan of work for clarity of presentation. Comments and explanations on the Accomplishments and Results added for this report are shown in *bold italics* in Parts B-F. Each Part begins on a separate page.

Part A. Planned Programs

REE Goal 1. To Achieve an Agricultural Production System that is Highly Competitive in the Global Economy.

Overview

There are 12,400 farms in Maryland, covering 2.1 million acres; 1.5 million acres are devoted to crops. Total land area in Maryland is 6.7 million acres. Maryland farms are typically small and their land is expensive. With 169 acres, the average farm in Maryland is the 10th smallest in the nation. The estimated market value of land and buildings per acre is \$2,911, the fifth most expensive in the nation. Even though Maryland has one of the most progressive Land Preservation Programs in the nation, three times more farmland is lost to development every year than is preserved. Between 1950 and 1999, the number of farms and acres of farmland has fallen 66 percent and 48 percent, respectively.

Total annual gross farm income in Maryland averages 1.5 billion dollars. The important commodities are poultry and eggs, nursery and greenhouse (fastest growing industry), dairy and milk products, feed/food/oil crops, meat animals, and vegetables & fruit. On average, the net income per farm in Maryland is \$29,387, while off-farm income averages \$20,000. Slightly more than half of the farmers describe farming as their principal occupation. A small percentage of producers account for the vast majority of agricultural sales. Farms with gross market sales exceeding \$100,000 represent 21 percent of Maryland farms by number, but their sales represent 86 percent of the total sales.

Maryland's principal agricultural advantage is location to markets. Grain farmers benefit from the poultry industry. Fruit, vegetable, dairy, beef, swine, horticultural products, and other specialty crops are sold to the five million people in the Washington-Baltimore region. The Port of Baltimore and Baltimore-Washington International Airport facilitate the export of products.

Maryland farmers are older and aging, reflecting a national trend. Maryland farmers average 53.9 years of age, compared to the U.S. average of 53.3. Their customers, Maryland citizens, demonstrate a strong tendency to purchase locally grown commodities and value-added products, support local farmers, and preserve open space. Maryland citizens want to preserve and protect such natural resources as the Chesapeake Bay, so environmental concerns about agriculture play an increasing and significant role in the operation of Maryland farms. The primary goals are:

- Adopt management practices for agriculture production that improve profitability and increase efficiencies.
- Adopt improved farm business management and marketing practices.
- Increase the use of appropriate production and marketing strategies for high value products.
- Increase the investment in agricultural human capital.
- Facilitate informed debates of public issues concerning the neighborhood effects of agriculture, such as nuisance concerns and environmental impacts.

Outputs

For REE Goal 1, Maryland Cooperative Extension educators developed 1,337 programs in 23 counties, Baltimore City, three regions of Maryland, state, multi-state, and national. Topics covered included best management practices, farm business, high value products, development of human capital in agriculture, and public issues education. These programs reached 54,797 people.

Outcomes and impacts were measured in individual programs. Examples of these are in the following section.

Maryland's own assessment of accomplishments. Maryland Cooperative Extension is accomplishing the goals of their five-year report. There is a balance of educational programs among the various goals and the Extension Administration Team is pleased with the accomplishments. Evaluations of outcomes from the five-year plan are conducted at the individual program level, not at the level of an aggregated REE goal.

Adopt management practices for agriculture production that improve profitability and increase efficiencies (Key Themes – Agricultural Competitiveness, Animal Health, Animal Production Efficiency, Grazing, Innovative Farming Techniques, Ornamental/Green Horticulture, Plant Health, Plant Production Efficiency, Precision Agriculture; Key Themes from Goal 4: Biological Control, Integrated Pest Management. Sustainable Agriculture)

The Maryland Agricultural Experiment Station supports over 100 faculty and over 100 graduate students. Research is conducted both in the laboratory as well as at 10 research farms located off the main campus. Much of the research supported by the Maryland Agricultural Experiment Station has focused upon protection of the Chesapeake Bay. Nearly 40% of all research supported, is directly related to the protection and restoration of resources of the Bay. The other major focus within this goal is the maintenance of profitable agriculture in an urban environment. Maryland farmers are under extreme pressure from a growing population. Issues such as land preservation, food safety and sustainable agriculture are high priorities.

Examples of research projects include the following:

a. Integrated Beef Cattle Research and Education Project

The integrated beef cattle research and education project includes research and demonstration efforts aimed at improving the efficiency, profitability and sustainability of beef cattle production.

Predicting Future Growth Potential; a long term study of the control of growth in beef cattle. The goal of this research is to develop a simple, rapid and inexpensive blood test to identify superior future breeding cattle at the earliest possible age.

Exploring the Use of Ultrasound; a comprehensive assessment of the use of ultrasound technology to evaluate carcass composition in live beef cattle. The goal of this work is to develop a rapid and accurate method to assess key carcass traits in the live animal, improve the

accuracy of selection for superior breeding cattle, and reduce carcass variation at the time of processing .

Alternative Beef Cattle Feeding Systems; an evaluation of the use of available alternative and non-traditional feedstuffs in the diets of beef cattle. The goal of this work is to develop feeding systems which maintain animal performance, reduce total feed costs and utilize available byproduct or non-traditional feeds.

Year-Round Grazing Systems; a comparison of pasture and forage production systems to provide extended and year-round grazing opportunities for beef cattle. This includes the combined use of adapted cool and warm season grasses and interseeded legumes to extend the grazing season and provide adequate nutrient flow for all classes of beef cattle.

Assessing Emerging Animal Health Technology; an evaluation of the efficacy and economics of emerging animal health products. Studies have been conducted on the impact of a new sustained release dewormer on growth performance of nursing beef calves and on the efficacy of a complete metaphylaxis program to control bovine respiratory disease in recently weaned feeder cattle.

b. Impact

- earlier and more accurate selection of breeding cattle resulting in significantly reduced whole herd production costs (\$300-\$350/head) compared to traditional post weaning growth evaluation practices.

- earlier and more rapid assessment of key carcass characteristics associated with added value in beef breeding bulls and heifers.

- reduced cash feed costs at all stages of the beef production cycle equivalent to a savings of \$60 to \$140 per head per year.

- improved rate of weight gain and feed efficiency in growing calves with subsequent savings of \$18 to \$21 per head per year.

- reduced morbidity and mortality in young growing beef calves with an overall improvement in production efficiency and profitability.

Research focused on improved methods of early selection will reduce the number of head needed to provide future breeding stock thereby reducing feed needs, waste production and land use by individual beef producing units. Improvements in growth rate, feed efficiency and product (carcass) composition will result in a more consumer friendly product produced more efficiently at a reduced cost. The use of alternative feedstuffs and improved use of pastures and forage will reduce animal competition for human foods such as grains. Advances in the control and maintenance of animal health will reduce the therapeutic use of animal health products, improve beef quality assurance and increase consumer confidence in the safety and integrity of the food supply.

- c. Source of Federal Funds: Maryland Agricultural Experiment Station, Private Donor Support
- d. Scope of Impact: National

a. Using Plant Systems to Clean Up Organic Contamination In Soil

Intrusions of a broad range of chemical contaminants via soil into vulnerable ecosystems is a serious problem in the State of Maryland, as it is in the region, the nation and, indeed the world. The diverse nature of chemicals that are released into the environment in Maryland reflects the State's broad natural resource base, and geopolitical location, and hence its wide ranging social, economic and national security activities and institutions. Thus, chemicals from agriculture, manufacturing, mining, recreation as well as defense industry activities, have all recently been implicated in environmental degradation issues within the State. Traditional disposal methods such as excavation and subsequent landfilling or incineration are no longer acceptable options for treating contaminated soils. These methods are prohibitively expensive and usually only represent contaminant relocation, or transfer to another matrix without guarantee of permanent destruction. On the strengths of research, and technology development and demonstration over nearly two decades, biologically-based treatment methods, collectively known as *bioremediation*, are now recognized as cost-effective and environmentally more responsible alternatives for the cleanup of many organic contaminants. One biologically-based method, *phytoremediation* takes advantage of plant systems for cleaning up contaminants in soil and water. This approach is particularly appealing because it employs a well-known system, plants to accomplish environmental cleanup. Using a Maryland Agricultural Experiment Station grant, we recently investigated the feasibility of using forage crops to clean up organic contaminants including PCBs, PAHs and TNT in soil. Our results show that some grasses and legumes do indeed possess potentials for enhancing the removal of organic contamination including contamination by PCBs which are considered to be among the most recalcitrant environmental pollutants. Investigations are continuing to enable understanding of the mechanisms and processes that are involved in contaminant removal by specific plant species, and strategies that may be used to enhance the processes further.

b. Impact

Technologies and practices that take advantage of naturally-occurring, biologically-based approaches for remediating polluted soils are usually orders of magnitude less expensive than traditional methods that depend on containment, or removal, transfer and disposal (so-called dig, haul, bury, or burn) methods. This is one driving force in industry's acceptance of these approaches.

Environmental degradation caused by chemicals from agriculture, manufacturing, mining, recreation as well as defense industry activities is a major problem in the State of Maryland, as it is in the region and indeed the world. Traditional methods for dealing with pollutants have long involved containment, or transfer and disposal strategies. It is now well recognized that these approaches do not always ensure destruction of pollutants; rather they usually only delay the time that contaminants will eventually intrude into vulnerable ecosystems, possibly with more severe impacts. Technologies and practices developed from these research activities offer

permanent, cost-effective and more acceptable alternatives to current methods of dealing with environmental contamination.

Naturally-based systems for dealing with pollution issues are now well-accepted by the public, private industry and government agencies as alternatives to traditional pollutant cleanup methods. This development is a result of vigorous research over nearly two decades, and relatively recent successful demonstrations of various biologically based technologies alone, or in combination with other practices to safely and permanently clean up pollution. The use of plant systems for eliminating or mitigating environmental pollution is receiving particularly high levels of acceptance because of the aesthetics and relative simplicity of using well-known systems (plants) to address pollution in place (i.e. *in situ*), thereby avoiding the disruptive processes (removal, transportation, shutdown of operations) and liabilities associated with traditional cleanup methods.

c. Source of Federal Funds: MAES Competitive Grant

d. Scope of Impact: International

a. Monitoring Approaches and Alternative Control Tactics to Facilitate IPM for Landscape Plants.

This research develops management approaches that reduce the reliance on synthetic pesticides to manage insect pests in landscapes and nurseries. We have investigated the roles of the fertilization, irrigation, exposure to sunlight, colonization, vegetational complexity and the impact of natural enemies in contributing to the pest status of the azalea lace bug on azaleas. Fertilization, irrigation, exposure to sunlight and colonization events contributed little to the population dynamics of this pest. Vegetational diversity and natural enemies are the major determinants of the status of this insect as a pest in landscape habitats. A second project evaluates boxwood cultivars for their levels of resistance to the boxwood leafminer. This project was conducted at the US National Arboretum and Longwood Gardens and significant levels of resistance to the boxwood leafminer were detected. The mechanism of resistance appears to be antibiosis rather than antixenosis or tolerance. An evaluation of pheromone lures was performed for clearwing borers common in the mid-Atlantic region. A check list of borers caught by commercially available lures was completed. Several formulated biological control agents are under evaluation in nursery and landscape settings.

b. Impact

Economic

By understanding the effect of vegetational diversity on pest occurrence landscapes can be designed to reduce the potential for pest populations to reach outbreak levels. This in turn reduces the maintenance costs associated with landscape management. By producing boxwood that are resistant to their major insect pests nursery growers can realize a significant competitive advantage. Consumers who use these resistant cultivars lower their maintenance costs. Plant growers and landscape managers who use pheromone traps will treat clearwing borers in a more efficacious manner thereby reducing losses in production

and maintenance. Using microbial biological agents reduces the reliance on synthetic pesticides in nurseries and landscapes.

Product Quality

Product Quality is improved through pest resistant landscape design, use of resistant plant cultivars, and pinpoint application of insecticide treatments will result on better plant quality.

Environmental

Reduced use chemical insecticides to produce plants and maintain landscapes will reduce adverse impacts on beneficial insects and nontarget organisms found in nurseries and landscapes. Reduced insecticide inputs reduce the risk of environmental contamination in the sensitive ecosystems surrounding the Chesapeake Bay.

Human/Animal Health

A reduction in insecticide sprays to control insect pests reduces exposure of humans and animals to dangerous insecticides thereby reducing health risks. The use of biological control agents instead of these insecticides further reduces risks to animals and humans.

Social

Maintaining the beauty of landscape plants increases the aesthetic quality and value of home, commercial, and institutional landscapes.

c. Source of Federal Funds: Hatch Project MD-H-188

c. Scope of Impact: National

Maryland Cooperative Extension educators developed 860 programs which were held in 23 counties, Baltimore City, three regions in Maryland, state-wide, multi-state, and national. Topics covered were best management practices for plant, poultry, and animals systems; geographic information systems and biotechnology; optimizing pasture and forage resources on the farm; economically sound alternatives that mitigate runoff of nutrients and pesticides from the farm; and the use of nutrient management plans on small farms. These programs reached 38,420 people.

Examples of educational programs include the following:

a. Using Animal-harvested Forages to Increase Farm Profits:

The objective of this Extension program is to increase farm profitability through the reduction of farm expenses with a secondary objective of attracting the next generation to the farm by improving the farm family's quality of life.

Farmer-to-farmer discussion groups such as pasture walks provide a viable means of disseminating information. These two-hour workshops take place on farms currently practicing management-intensive grazing (MiG). Producers are able to witness first-hand, the practices that make MiG effective. This year, 98 producers participated in four walks in the region. An

additional 147 producers were reached with research-based information on grazing systems during the Western and Central Maryland Research and Education Centers' field days and small farmer workshops in Frederick and Howard Counties. During 2000, nine dairymen have requested individual assistance in setting up at least a portion of their operation into grazing. This is a dramatic increase over the past several years and reflects the need for producers to cut production cost to remain competitive.

b. Impact

Quality of life also improves on the farm that converts to MiG. Farmers using MiG have time to spend with their spouses and children away from the farm since the cows are now doing most of the work. The children can safely help around the farm since large pieces of machinery are not frequently used. Two of our farms have converted to seasonal milking, giving them two months each year that they do not need to milk cows. This has allowed them to take extended family vacations. The young people on these farms enjoy being on the farm and look forward to the time when they can farm as well. Older generations still present on the farm that were skeptical of the change to MiG, now tell me that if they would have known 40 years ago that dairy farming could be done like this, they would have switched to MiG back then.

In an effort to answer the most frequently asked question about grazing, this agent, in cooperation with an agent in a neighboring county, have expanded our grass variety trial research at the WMREC. We have completed one year of data collection on the 18 annuals (6 harvest) and 38 perennials (10 harvest) in our replicated plots. The annual data has been summarized and published as an Extension Report. The perennial data will not be summarized until we have completed three years of data collection. To simulate grazing, these plots are harvested every 13 to 30 days. Nearly 2000 lunch bag sized-samples were collected, weighed, dried and weighed again as part of this project.

In addition to the small 5 foot by 10 foot plots that we machine harvest, we also maintain plots in the 10-acre pasture area at the WMREC to evaluate animal preferences on the different area grass varieties. Fifteen to 20 dairy heifers from the CMREC are used in this area. The heifers are moved every 2-3 days throughout the system of 1-acre paddocks within the 10-acre area. We work with the Animal Use Committee on campus to ensure proper care of the livestock. In March 2000, this agent constructed 4,200 feet of interior fence and 28 gates necessary to manage the area as a MiG system. The fence is constructed of many different post and wire types and the 14 different gate handles are being evaluated as part of this demonstration project.

This work on grass research has resulted in one state fact sheet and one referred journal article this year. This agent was co-author of both. This agent also developed Grass-based Livestock Systems: An Introduction to Management-intensive Grazing, a 23-slide, 50-minute PowerPoint presentation that is used with dairy and livestock audiences to introduce the concepts of management intensive grazing.\

c. Source of Federal Funds: Smith-Lever 3B&C and state general funds

d. Scope of Impact: Multi-County Specific

a. Vegetable and Fruit Production:

Plum Pox Virus: Plum Pox Virus was discovered in Adams County, PA in the fall of 1999. A major education and survey program was undertaken in Maryland. The Maryland/DE Peach School 2000 highlighted the importance of this disease and the survey work to find its presence or absence in Maryland. All commercial peach orchards in the state were surveyed and tested, over 11,000 samples – all negative.

Strawberries (Double Cropping Pumpkins Plastic Mulches): Annual strawberry plasticulture work at the Wye Research and Education Center over the last 10 years, including the double or multi-cropping, has been highlighted at 11 regional meetings in 2000.

Impacts. Results and outcomes include the following:

- Over 800 growers and industry people reached
- Work at the Wye Research and Education Center has shown three successful crops in two years on semi-permanent raised beds is possible on Maryland's Eastern Shore
- Technique has application to organic growers and direct marketers as well as commercial growers with a reduction of input costs and a 66-2/3% reduction in plastic mulch going to landfills (three crops, two years)
- 10 growers in 2000 in Mid-Atlantic region tried double-cropping or multi-cropping plastic raised beds successfully
- Specialist was asked to write section on this for inclusion into NRAES book on pumpkins

c. Source of Federal Funds: Smith-Lever 3B&C and state general funds

d. Scope of Impact: Multi-County Specific

Adopt improved farm business management and marketing strategies (Key Themes – Agricultural Profitability, Risk Management)

Maryland Cooperative Extension educators offered 251 programs in 20 counties, Baltimore City, three regions in Maryland, state, multi-state, and national. Topics included improving profitability, liquidity, solvency of farm operations through improved record-keeping systems; increasing the use of information systems; improving short and long-run business planning; managing agricultural enterprises through a better understanding of tax policies, federal programs, and other federal/state policies; and reducing financial risks through forward pricing, crop insurance mechanisms, and diversification of farm level enterprises. These programs reached 4,476 people.

Examples of educational programs include the following:

a. The Dairy Analysis Program:

The Dairy Analysis Program involved 26 farms completing 1999 financial data during 2000. Using Spreadsheets developed by the regional specialist with input from this agent, each farm business completed an income statement using data largely derived from tax form Schedule F. Spreadsheet #2 converted the income statement into income and costs per hundred-weight of milk. This is an enterprise analysis. All 26 farms completed their enterprise analysis. Fifteen of the farms completed a year-end balance sheet, which allowed these businesses to do accrual

adjustments on their income statements. Due to the private nature of the information, all work is done with individual dairy farm businesses.

This program evolved from the Pro-Farm Training. Dairy farmers needed an enterprise analysis tool for long term and short-term decision making. The regional specialist and this agent developed this program to continue our Pro-Farm teaching. This is the third year for this program, and 24 of these farms have completed 5 years of dairy farm analysis data.

b. Impact

The analysis of each farm business tells a different story. The spreadsheet, which is a teaching tool, is also an evaluation tool as year-to-year financial data records the progress of the farm business and the outcomes of management decisions made. Fifteen farms are improving decisions managing expenses to reduce debts and 6 young Mennonite farmers are positioning to buy farms. Five farms are using their analysis to improve decision-making as they expand or convert to grazing. The goal of this program is to improve the record keeping, business analysis, and decision-making skills of participating farm business and gradually increase the number of county farm business managers learning these skills.

The summary of these farms and 20 others across the state comprise the MD Dairy Industry Association and others as a source of information on milk production costs in MD.

c. Source of Federal Funds: Smith-Lever 3B&C and state general funds

d. Scope of Impact: Multi-County Specific

a. Pro-Farm Financial Management and Computer Record Keeping Program:

This method helps farm managers improve their record keeping and financial management skills so that they can enhance the profitability, liquidity, and solvency of their farm businesses. A secondary objective of the program is that farm managers will improve their computer skills and incorporate computer technology into the management of their farm operations. These objectives are accomplished by conducting 9 hour-long workshops spread over 2-3 days. Farm managers learn the "Six Easy Steps to Farm Financial Management which include: balance sheet, projected cash flow, weekly record keeping, projected vs. actual cash flow comparison, inventory adjusted income statement and enterprise analysis." Farm managers are taught how to do these steps on a computer using the "Quicken" and "Quickbooks" record keeping programs and the Excel spreadsheet. Four of these workshops were conducted for 49 farm managers in 2000. Team teaching with Extension Educators is used in conducting these workshops. This specialist develops and provides materials and teaching time is equally divided between regional specialist and Extension Educators.

b. Impact:

Farm managers attending the workshops report that they have upgraded from using hand record keeping systems to using computers. Most are using the Quicken, QuickBooks or Excel programs and others have purchased more comprehensive computer accounting programs. This Extension method has been conducted since 1994. This effort has contributed to a high percentage of computer use among Maryland Farm Managers. According to a survey conducted by the National Agricultural Statistical Service, Maryland ranks 6th in the nation for the percentage of Farm Managers that own or lease computers (43%). Maryland ranks 4th in the

nation for the percentage of Farm Managers who use computers for the farm business (33%). Maryland ranks 3rd in the nation for the percentage of Farm Managers that have internet access (25%).

c. Source of Federal Funds: Smith-Lever 3b&c and state general funds

d. Scope of Impact: Multi-County Specific

Increase the use of appropriate production and marketing strategies for high value products (Key Themes – Adding Value to New and Old Agricultural Products, Diversified/Alternative Agriculture, Niche Market, Organic Agriculture, Small Farm Viability).

Maryland Cooperative Extension educators offered 135 programs in 13 counties, three regions in Maryland, state, multi-state, and national. Topics included increasing access to markets by profitably selling high-quality ornamental horticultural products; practicing post-harvest handling techniques to increase product quality and improving market access; adding value to traditional agricultural products; and increasing economic bargaining power of small and part-time farmer by cooperative bargaining. These programs reached 2,916 people.

Examples of educational programs include the following:

b. Major Program Area: Small Farm Profitability:

According to the 1997 U.S. Census of Agriculture, the number of full-time farms decreased 12 percent from 1992 to 1997. The USDA defines a small farm as one having a gross farm income of less than \$100,000 per year; therefore 85 percent of the farms in Frederick County are small farms. The future of agriculture and Extension depends on the sustainability of these farms as agricultural small businesses. Educating new farm operators on the basics of agriculture, farm/business management, and marketing are essential to their financial success.

This agent developed the 21, two-hour classes in the "Beginning a Profitable Small Farm Operation" series to provide education on many subject matter needs of this audience. Agent taught 10 of the 21 classes while MCE regional and State specialists, FCS and AGNR educators taught the others. Building on the belief that the public has a taste for diversity, Agent developed and taught a supplemental educational program entitled "Opportunities for Small Animal Enterprises on the Farm". This program consisted of two, two-hour classes which featured the production, management and marketing of meat rabbits, meat goats, and range-free poultry.

The small farm series was attended by a total of 85 persons and 15 attended the small animal course. In post-program evaluations, the participants rated all of the classes as excellent. Results of a follow-up survey conducted at the end of the year show that the 31 respondents: *Gained a Better Understanding of Farm Operation 4.6 (5- Best), Utilized Information Taught 3.9 (5- Best), More Clearly Defined Farming Operation 4.9 (5-Best).*

b. Impact.

The small farm program has been a centerpiece of this Agent's overall educational initiative since 1996. In fall 2000, *The Washington Post* published a feature article on this small farm

program and the National Public Radio network broadcast nationally a feature story on the small farm program that included the recording of this Agent teaching a class. In fall 2000, the *Frederick News-Post* published a feature story on some of the small animal graduates who have developed profitable free-range poultry operation; the Associated Press picked up this story.

c. Source of Federal Funds: Smith-Lever 3B&C and state general funds

d. Scope of Impact: Multi-County Specific

a. The Promotion of High Value Alternative Crops for Southern Maryland Tobacco Farmers:

Programs and research projects have been implemented to facilitate the successful transition of Southern Maryland tobacco farmers into the production of other high value crops. Southern Maryland farmers have expressed interest in the adoption of alternatives to tobacco, and they often request production budgets for horticultural crops. The Educator co-authored "Vegetable Enterprise Guide 1999", which was made available to growers at the winter 2000 production meetings. During the past three years, seven alternative crop research projects have been designed and conducted by the Educator, which have included the following tobacco-alternative crops: apples, peaches, blueberries, sugar snap peas, broccoli, Chinese cabbage, sweet potatoes, sweet corn, gourds, pumpkins, ethnic produce, cover crops, and hay and straw production (see applied research).

b. Impact.

From the following research projects, programs have spawned to enable local producers to comfortably engage change:

- Blueberry Production and Research: Many of Southern Maryland soils, if amended with organic matter, would prove to be adequate for economical yields of high bush blueberries. In 2000, a research study was initiated via a \$1,000 MCE competitive award to examine high bush blueberry production on poultry litter amended silt loam soils. The research is being conducted at the Upper Marlboro REC, and will allow teaching and demonstration of high bush blueberry production. This project will allow farmers the opportunity to gather first hand knowledge of another cropping alternative by attending production clinics and field days.
- Ethnic Vegetable Project: This year at the Upper Marlboro REC an ethnic vegetable plot was established in order to examine growth of ethnic vegetable for evaluation of yield and utility. Interest has been raised, and a grant was awarded by the Tri-County Council, for a multi-discipline research team to develop production methods and markets, in the Southern Maryland region, for ethnic vegetables.
- Southern Chapter of the Maryland Small Farm Cooperative: The Southern Maryland Small Farm Cooperative is struggling to attain members, however, in 2000 it was able to begin marketing fruits and vegetables through the Cooperative. The new board elect has a list of interested buyers and recently a committee has been formed to seek a permanent location for the Cooperative. If the Southern Maryland Chapter is successful it will certainly aid farmers in the transition from tobacco, or low value agronomic crops, into high value horticultural crops. A successful cooperative may also facilitate niche market development for ethnic or organic crop production.

- Apple and Peach Research and Demonstration Orchard: The Upper Marlboro research and demonstration apple and peach orchard, now in its second year, has successfully provided excellent venue for four fruit production clinics and field days in 2000. Growers have expressed eagerness to follow the orchard into its upcoming production years. This project will continue to show the value in fruit production as a viable alternative industry for Southern Maryland farmers.
- Southern Maryland Vineyard Project: The Educator in 2000, and two other Southern Maryland Educators, has organized a vineyard research team in order to develop a research vineyard at the Upper Marlboro REC. This vineyard project has been awarded a grant from the Southern Maryland Tri-County Council for the development of a mechanism to create alternative crops and agriculture industries capable of replacing the loss of tobacco in Southern Maryland. The vineyard team has selected the site and preparations are being made to plant the vineyard in April 2001.

c. Source of Federal Funds: Smith-Lever 3b&c and state general funds.

d. Scope of Impact: Multi-County Specific

Increase the investment in agricultural human capital (Key Themes – Managing Change in Agriculture)

Maryland Cooperative Extension educators offered 13 programs in 6 counties, three regions in Maryland, state, multi-state, and national. Topics included farmers understanding issues facing agriculture and improving their leadership skills; improving management and personnel skills; and farm families improving the transfer of management skills from one generation to the next. These programs reached 2,610 people.

Examples of educational programs include the following:

a. Lead Maryland:

Maryland's increasing urbanization puts new pressures on agriculture, at the same time that farms and agribusinesses struggle to remain economically viable, environmentally friendly, and good neighbors. To meet these challenges, leaders committed to the future of Maryland agriculture must be able to resolve complex problems successfully in skillful, thoughtful and innovative ways. In 1997, Maryland Cooperative Extension initiated a study group, with representatives from the major agricultural organizations in the state, to explore what could be done to strengthen leadership within the agricultural community. Eighteen months later a partnership including the University of Maryland College of Agriculture and Natural Resources, the Maryland Department of Agriculture, the Maryland Farm Bureau, the Maryland Grain Utilization Board, and the Maryland Agricultural Education Foundation was formed. From the beginning it was expected that this partnership would be only a starting point and that many other organizations would contribute to the program. In September 1998, an executive director was hired to lead Maryland's first agricultural leadership program – LEAD Maryland. Twenty percent of the program costs were to be supported by tuition and the remaining costs were to be covered by public and private donations.

In February 1999, the first class of LEAD Maryland was instituted. Twenty-three Fellows were selected for the 18-month program. The students completed 8 three day seminars, a three day trip to Washington DC, and a ten day international trip to look at the European market. Teaching methods included field visits, assessments, panels, case studies, presentations, and self-discovery. At the last seminar, a Kellogg Foundation representative met with the Fellows and published a written report commending the program. In September 2000, all 23 Fellows were recognized for the completion of the 37-day program. Since then, three of the Fellows were elected to the LEAD Maryland Advisory Board. LEAD Maryland's Class II, consisting of 23 new Fellows, started in February 2001 and the graduates of Class I continue to be involved in nurturing the program and mentoring the new Fellows.

b. Impact. LEAD Maryland has attracted support from over 15 local, state and national organizations and is recognized statewide as a premier leadership program.

c. Source of Federal Funds: Smith-Lever 3b&c and state general funds.

d. Scope of Impact: Multi-County Specific

Facilitate informed debates of public issues concerning the neighborhood effects of agriculture, such as nuisance concerns and environmental impacts. (Key Themes – relevant themes were not listed in Appendix)

Maryland Cooperative Extension educators offered 78 programs in 15 counties, three regions in Maryland, state, and multi-state. Topics included increasing the knowledge of citizens to better participate in community decisions; better understanding of the role of agriculture in providing them a safe, affordable supply of food and fiber; and public officials making better informed decisions about the neighborhood effects of agriculture. These programs reached 6,375 people.

Examples of educational programs include the following:

a. Focus on the Farm:

Focus on the Farm is an ongoing cable television show designed to provide non-farm audiences an awareness and understanding of production agriculture and insight into local and national agricultural issues. The 30-minute shows are framed in a talk show format intertwined with video footage shot on location. This Agent serves as Host and Executive Producer of the show. My duties include script writing, planning the central theme, obtaining guests, narration over video footage and shooting video footage at remote locations. A total of seventeen 30-minute shows were filmed and aired in 2000. "Focus on the Farm" can be seen on the local access cable television channel. Each show airs on Monday at 10:30am, Tuesday at 4:30pm, Thursday at 8:30pm and Saturday at 5:30pm on Cable channel 21.

b. Impact. Over 400,000 Montgomery County households have cable television access. The themes of the shows taped in 2000 included: Growing Christmas Trees; The Master Gardener Program; Ethanol Production; USDA Radio Productions; The Local 4-H Program; Maryland's Ag in The Classroom; The Montgomery County Rustic Roads Program; Fences for Livestock; The Local Fruit and Vegetable Industry; The Challenges Facing Young Farmers; Beef

Production; Maryland's Institute of Applied Agriculture; The Montgomery County Fair; 4-H in Action; The Friends of the Ag History Farm Park; Beekeeping, and Farm Financial Planning.

c. Source of Federal Funds: Smith-Lever 3b&c and state general funds.

d. Scope of Impact: Multi-County Specific

a. Working with County Agriculture Commission:

This Extension Educator participated as an advisor to the Calvert County Agriculture Commission in planning and conducting a farm tour (advisor, planning team, presenter) in July, 2000. Approximately 800 members of the public toured three Calvert County farms and saw examples of crop and animal production as well as conservation and best management practices. In a team effort with the FCS Extension Educator, this Extension Educator conducted a grain educational activity for children at the farm tour. Fifty children constructed grain sculptures in plastic cups using corn, wheat and soybeans. Other team efforts with the FCS Extension Educator on this topic were conducting the Brainy Grainy Game at the Calvert County Fair with 400 children and adults participating and a tomato planting project at Maryland Day (College Park) with 300 children and adults participating.

b. Impact: The public has a better understanding of agriculture.

c. Source of Federal Funds: Smith-Lever 3b&c and state general funds.

d. Scope of Impact: Multi-County Specific

REE Goal 2. A Safe, Secure Food and Fiber System

Overview

There is a need to improve food safety at all points in the food production and distribution chain. Although few data are available specifically for Maryland, the issues in our state are similar to the national issues outlined in the Food Safety Initiative. These issues affect everyone from food producers and processors to retailers, food service handlers, and consumers. HACCP is a systematic way of implementing preventative measures to ensure food safety and includes contamination prevention, detection, and ongoing monitoring. As a part of HACCP and new food safety inspection initiatives, rapid pathogen detection and food borne illness monitoring programs will be needed from the farm to the processing plant to the retailer. Model HACCP programs for these various clientele need to be available. Extension and Experiment Station research programs need to develop better pathogen detection and monitoring techniques. The HACCP, Good Manufacturing Practices (GMP), and Sanitation Standard Operating Procedures (SSOP) requirements must be met, but the average small to medium food producer, processor, direct marketer, distributor, and retailer in Maryland will need support and training to do so.

Consumers are frequently unaware of basic tenets of food safety: the importance of cooking and

storage temperatures and the need to wash hands and utensils frequently. Consequently, as much as 50 percent of food borne illness is estimated to be caused by improper handling or preparation by the consumer.

The primary goals are:

- Decrease the number of Maryland citizens at risk for insufficient food availability to meet nutrient needs.
- Improve consumers' knowledge and practice of safe food handling.
- Improve the knowledge and practice of safe food production and handling by commercial and public food industry.

Outputs.

For REE Goal 2, Maryland Cooperative Extension educators developed 324 programs which were held in 22 of the 23 counties, Baltimore City, all three regions in Maryland, state-wide, multi-state, and national. Topics covered were food insecurity and hunger, food safety for consumers and food safety for commercial enterprises. These programs reached 9,636 people.

Outcomes and impacts were measured in individual programs. Examples of these are in the following section.

Partners in these programs included Maryland Food Council, Center for Poverty Solutions, Maryland Food Bank, Capitol Area Food Bank, Maryland Food Hospitality Education Foundation, Restaurant Association of Maryland, school systems, county health departments, the Maryland Department of Health and Mental Hygiene, county social services departments, the Maryland Department of Human Resources, the Eastern Shore Health Education Center. Cooperation with other members of the land grant system included VA, West VA, DE, NJ, and PA.

Maryland's own assessment of accomplishments. Maryland Cooperative Extension is accomplishing the goals of their five-year plan. There is a balance of educational programs among the various goals and the Extension Administration Team is pleased with the accomplishments. Evaluations of outcomes from the five-year plan are conducted at the individual program level, not at the level of an aggregated REE goal.

Decrease the number of Maryland citizens at risk for insufficient food availability to meet nutrient needs (Key Theme – Food Security, Food Resource Management)

Maryland Cooperative Extension educators developed 74 programs which were held in 12 counties, Baltimore City, three regions in Maryland, state-wide, multi-state, and national. Topics covered were food sources and availability, purchasing and preparation. These programs reached 2,002 people.

Examples of educational programs include the following:

- a. Baltimore City. Three Step Nutrition Education Program. This was developed to optimize food security and nutrient intake of former welfare recipients and their families through

enhanced nutrition knowledge and food management skills. Forty-seven former welfare participants were introduced to basic principles of nutrition, menu planning, budgeting, and food safety.

b. Impact. Pre and post assessments were used to measure changes in knowledge and/or skill related to nutrient functions and sources, menu planning and evaluation, maximizing the food dollar and application of safe food handling principles. A pre/post test consisting of 24 items was conducted. Data analysis indicate that the difference between the means was significant at the $p=.001$ level.

c. Source of Federal Funds – Smith-Lever 3B&C and state general funds

d. Scope of Impact –City Specific

a. Kent County. Food Shopper Skills. Five hundred and sixty-five WIC families participated in a 20-minute class teaching good food economics. Using a window-paning technique nine food shopping skills were identified. Participants then distinguished and discussed the merits of a \$20 bag of "good groceries" and \$20 bag of "poorly selected" groceries. Participants identified barriers to making good choices when shopping and identified cooking skills as an area for further programming.

b. Impact. Participants changed food purchasing behaviors leading to increased nutritional quality of meals and prioritizing purchases to buy the basics first. Meals in Minutes" will be written into the next year's WIC POW.

c. Source of Federal Funds - Smith-Lever 3b&c and state general funds

d. Scope of Impact –Multi-county Specific

Improve consumers' knowledge and practice of safe food handling (Key Theme – Food Safety)

The effects of washing with 10% salt and phosphate solutions on physical, sensory, and microbial properties of frozen chicken breasts were studied. Washing with trisodium phosphate (TSP) or sodium tripolyphosphate (STPP) significantly improved microbial, textural, and sensory properties of frozen chicken breasts.

a. UMES. Inoculated chicken breasts with *Salmonella* and *Campylobacter* were washed with salt and various phosphate solutions, including TSP, STPP, and TKPP. Injury and survival of *Salmonella* and *Campylobacter* during storage were measured. Water-binding ability, shear force, ice crystal formation, and the change of myofibrils of washed frozen chicken breasts were also measured.

b. Impact - This study provides much-needed food safety guidelines for poultry products, both in retail markets and in the consumer's kitchen as well as helped to improve the quality of frozen

poultry products produced by U.S. poultry industry that competes in foreign poultry markets. The results were shared with a local poultry industry and presented at 2000 and 2001, the National Food Technology Conference.

c. Source of Federal funds - USDA/CSREES, Evans-Allen. (\$80,488)

d. Scope of Impact - national and regional.

Maryland Cooperative Extension educators developed 182 programs which were held in 20 counties, Baltimore City, two regions in Maryland, state-wide, multi-state, and national. Topics covered were proper food storage, safe food handling practices, sanitation, environmental issues relative to food safety. These programs reached 5,752 people.

Examples of educational programs include the following:

a. Baltimore County. Food safety incidence and awareness have been increasing in recent years and consumer confidence in the safety of food has declined. Programs were developed to educate participants on the risks, occurrence and prevention of food-borne illness. Participants in food safety programs were taught about the incident rates of food-borne illness, bacterial growth, handwashing and safe purchasing, storage and preparation of food. Class format involved hands-on activities, lecture, and group discussion. Participants have included foster parents, day care employees, Women, Infants and Children (WIC) recipients, Family Studies teachers, public school students and food bank employees, parents, volunteers and directors. Regional farmers were also instructed on safe handling, storage and shipping of fresh fruits and vegetables.

b. Impact. – This educator reached 343 individuals in 22 educational programs. One six-month evaluation mailed to 25 individuals had a response rate of 38%. Ninety percent indicated at least one lifestyle change since the program. Most changes included increased awareness of the danger of food at room temperature (“the two hour rule”), increased hand washing and prevention of cross contamination. Most indicated that they had an increased awareness of methods to prevent food borne illness. End-of-the class evaluations were conducted for one class. Responses were extremely favorable. One hundred percent indicated that the hand washing information and activity was useful, 95% indicated increased knowledge about handling and storage of high-risk food items and 90% indicated increased knowledge of bacteria and 100% indicated that they would make at least one change in how they handled and/or stored food.

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds

d. Scope of Impact –County Specific

a. Wicomico County. Food borne illness is a serious matter. More than ten million people become sick each year from it, and a thousand die. Symptoms such as stomach cramps, vomiting, and diarrhea cause much pain and distress, and some financial losses. Many of us have experienced these systems. We may have not realized the cause could be from eating foods

that were improperly handled, stored or prepared. The FCS educator reached a total of 125 senior citizens and 145 adults who provide food for children and others outside of the home in a series of food safety and nutrition education programs. The objective was to enable participants to recognize the cause of food borne illness and make appropriate changes to insure a healthy and safe food supply.

b. Impact. A pretest, posttest and follow-up evaluation was given to the participants. The pretest revealed that 65% of the participants had a good knowledge of food safety practices. The posttest revealed that 97% of the participants gained new knowledge of food safety practices. The follow-up evaluation of 75 participants revealed that they had put into practice some of the recommendations addressed at the food safety seminars.

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds

d. Scope of Impact – County Specific

Improve the knowledge and practice of safe food production and handling by commercial and public food industry (Key Theme – HACCP, Foodborne Illness)

Maryland Cooperative Extension educators developed 68 programs which were held in 15 counties, Baltimore City, two regions in Maryland, state-wide, multi-state, and national. Topics covered were Hazard Analysis Critical control Points (HACCP), Good Manufacturing Practices (GMP), and Sanitation Standard Operating Procedures (SSOP). These programs reached 1,882 people.

Examples of educational programs include the following:

a. Wicomico/Somerset Counties. Feeding the Community – SAFELY. Two programs with 145 participants were taught using the MCE sponsored Community Food Safety program and kit. Participants were representing community groups that prepare and serve food.

b. Impact. Follow-up evaluations show that 98 participants would use a modified HACCP plan in planning meals, pre test results were 75% passing, post test 100% passing. Twelve community groups received certification of completion.

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds.

d. Scope of Impact –Multi-county Specific

a. Calvert County. Feeding the Community – SAFELY. In response to a county outbreak of 30 cases of hepatitis caused from improper handwashing, this Educator initiated and conducted four food safety workshops for restaurant managers and employees. Using a food safety curriculum developed in Maryland and distributed in FY2000, these classes were offered in cooperation with the Health Department who provided mailing labels for all food service businesses in Calvert

County. With the Extension flyer, the County Food Sanitarian included a letter” strongly recommending” the class to food service workers. During the 2.5 hour class offered monthly (September-December) in different areas of the county, at least one County Food Sanitarian was present to answer questions about the Maryland regulations. 110 food service/restaurant employees from 25 businesses or occasional food handlers (3 churches, 3 service organizations) participated. This Educator taught three additional food safety classes that reached 78 child care providers or senior citizens. 50 high school “high risk” students were taught the food safety program as part of the Food Stamp program.

b. Impact. Identical pre and posttests comprised of 12 questions were given to the restaurant employee and child care provider classes. Only 9% of the class participants passed the pre-test; 92% passed the post-test. A certificate of attendance was mailed to persons who passed the post-test. A follow-up evaluation sent to 67 (restaurant) participants who passed the post-test was returned by 18 (27%). As a result of attending the MCE program on food safety, 100% said the workshop and certificate helped them in their food service job, 100% said they have a better understanding of the types of foods that cause food borne illness, 100% said they more often wash their hands with soap and water for 20 seconds before handling food, 89% said they more often cool foods quickly through the danger zone (most common problem in food borne illness), 100% said they had a better understanding of how important their actions were in food service.

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds.

d. Scope of Impact – County Specific

REE Goal 3. A Healthy, Well-nourished Population

Overview.

Consumers need to choose healthier food behaviors because heart disease, cancer, excess weight and obesity, and osteoporosis lead to increased morbidity, lower quality of life, and, ultimately, premature death. People need to understand food composition and preparation techniques to select and prepare nutritious foods. Otherwise, they may avoid nutritious foods and use more expensive and less nutritious foods or mistake the description "low fat" for "low calorie." Consumers need integrated food and nutrition education programming, which must address the interaction of nutrition, diet, fitness, and lifestyle issues, physical fitness, to be successful in reducing chronic disease risk.

As a result of MCE programs, it was expected that an increased number of consumers would:

- Follow the recommendations of the U.S. Dietary Guidelines and Food Guide Pyramid, including the consumption of five fruits and vegetables per day.
- Correctly use food labels to follow the U.S. Dietary Guidelines and the Food Guide Pyramid.
- Access Extension information on diet, nutrition, and healthy lifestyles.
- Reduce their incidence of diet-related health problems by evaluating their eating patterns and lifestyle practices relative to cardiovascular disease, cancer, diabetes, obesity, and osteoporosis risk and identifying low-risk dietary and lifestyle factors to minimize cardiovascular disease, cancer, diabetes, obesity, and osteoporosis incidence.

- Limit their fat intake to 30 percent or less of energy intake.
- Increase their consumption of calcium-rich food sources.
- Increase physical activity and physical fitness and achieve or maintain a healthier weight.

Outputs. For REE Goal 3, Maryland Cooperative Extension educators developed 1,014 programs which were held in all 23 counties, Baltimore City, two of the three regions in Maryland, state-wide, multi-state, and national. Topics covered were those related to a healthy diet. These programs reached 42,182 people.

A new consumer publication, “Healthy Eating for 2-5-Year-Old Children”, was developed and printed. “Kitchen Science”, activities combining food science and nutrition for youth ages 11-13, was developed.

Outcomes and impacts were measured in individual programs. Examples of these are in the following section.

Partners in these programs included county health departments, the Maryland Department of Health and Mental Hygiene, county social services departments, the Maryland Department of Human Resources, the Eastern Shore Health Education Center. Cooperation with other members of the land grant system included VA, West VA, DE, NJ, and PA.

Maryland’s own assessment of accomplishments. Maryland Cooperative Extension is accomplishing the goals of their five-year plan. There is a balance of educational programs among the various goals and the Extension Administration Team is pleased with the accomplishments. Evaluation of outcomes from the five-year plan are conducted at the individual program level, not at the level of an aggregated REE goal.

Improve Maryland citizens’ knowledge and practice of healthy diet and nutrition behaviors (Key Theme – Human Nutrition, Human Health)

Maryland Cooperative Extension educators developed 1,014 programs which were held in 23 counties, Baltimore City, all three regions in Maryland, state-wide, multi-state, and national. Topics covered were U S Dietary Guidelines, Food Guide Pyramid, consumption of five fruits and vegetables per day, use of food labels, lifestyle practices relative to disease, physical fitness. These programs reached 42,182 people.

Examples of educational programs include the following:

- a. Allegany County. Four one-hour cholesterol education programs were conducted for 101 participants. The targeted audience was predominately senior citizens. In addition, a complete cholesterol curriculum with handouts was developed and presented to EFNEP nutrition assistants for use with their clientele statewide. In addition to classes, National Cholesterol Education Month was promoted through public service announcements on WNTR and WROG radio stations. The educator worked with five supermarket managers on cholesterol education by providing 500 flyers for use with in-store promotions. Approximately 200 cholesterol brochures were distributed to senior centers.

b. Impact. End-of-class evaluations showed that 95% of participants planned to monitor their blood cholesterol levels more closely, use nutrition strategies to better manage cholesterol, use techniques from class to limit fat in the diet, increase fiber consumption, and use the Food Guide Pyramid to guide eating.

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds

d. Scope of Impact – County Specific

a. Montgomery County. Diabetes Education – Clases para Diabeticos Latinos-Education y Clases do cocina. A need was identified in Montgomery County to provide information and practical instruction to Diabetics in the Latino community. A large number of Latinos in the county have no health insurance and therefore do not have access to health and nutrition education. A collaboration was formed with the Montgomery County Health Department and the Spanish Catholic Center. Clases para Diabeticos Latinos was planned, advertised, and executed by the 3-person team. An animated power point presentation (35 slides) was developed, nutrition lessons planned, and recipes and handouts developed, tested and translated. Flyers and displays were placed at the Wheaton Library and the Spanish Catholic Center. The program was advertised on a local Spanish radio station. The four part series of classes were conducted in February, May, August and November 2000. A nurse conducted follow-up Hemoglobin A1C tests (definite blood test that indicates how well the blood glucose levels have been controlled for the past 2-3 months), and initial surveys were completed to provide base line data for evaluation. The classes covered general information on diabetes, problems associated with the disease and the methods of controlling it. Food and nutrition demonstrations provided a means of reinforcing and applying the recommendations given in the classes.

b. Impact.

- A total of 53 patients and 20 family members participated in the classes in fy2000.
- The mean reduction of Hemoglobin A1C levels was 1.2%. (A 1% increase in Hemoglobin A1C values is associated with a \$600-\$2000 greater per person treatment cost).
- 11 Universities have requested the program on a CD-ROM.
- The results were presented at 3 National conferences in fy2000.
- There is a waiting list of 60 patients wanting to participate in the classes.

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds

d. Scope of Impact – County Specific

a. Multi-County. Weekend of Wellness (WOW). The WOW program has evolved over the last decade moving initially from a weight loss program to a wellness program.

b. Impact. 53 follow up evaluations were sent with 28 (53%) returned. Participants reported the following: thirty percent increased physical exercise with 19% exercising 20-30 minutes most days; 9% needed no change. Thirteen percent are now closer to their healthier weight (total weight loss of about 100 pounds) with 8% needing no change. Twenty-one percent includes

more seafood in their diet; 13% needed no change. Thirty-four percent reported eating healthier meals and snacks. Reported changes include increase of fruits and vegetables, smaller portion sizes in general and less meat and fat. Thirty-six percent reported protecting their back by lifting heavy items correctly. Thirty-eight percent have found appropriate ways to reward themselves for successes. Forty-five percent have more confidence in interpreting and using nutrition information to take charge of their own nutrition health and well being. Lastly, 42% can evaluate fad diets more accurately.

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds.

d. Scope of Impact – Multi-county Specific

REE Goal 4. Achieve Greater Harmony (Balance) between Agriculture and the Environment

Overview

Maryland has abundant water resources. Surface water provides more than 80 percent of the state's water supply; however, ground water supplies approximately 85 percent of the total water used in Southern Maryland and the Eastern Shore. Studies have shown that both ground and surface waters contain high levels of the nutrients nitrogen and phosphorus (N and P), which adversely affect water quality, aquatic organisms, fisheries, and human health.

Under the Chesapeake Bay agreement, there is to be a 40 percent reduction in nutrient loading into the bay by the year 2000. In agriculture areas, there are concerns about the management of inorganic and organic sources of nutrients and chemicals. In urban areas, nutrients and pesticides enter Maryland's water supply through excessive use of pesticides and fertilizers in horticultural landscape applications (commercial, public, and private). According to the 1990 census, one in five residences in Maryland have private septic systems bringing the state's total to 316,000. It is estimated that 60 percent of these systems are failing and that they contribute substantial amounts of nitrate to ground water. Other water-related issues include salt water intrusion in coastal areas caused by high water demand and competition for finite supplies of water among residential, agricultural, and industrial uses.

Economic and demographic changes have led to a continuing loss of agricultural and forest land. These losses raise concerns about the continuing viability of agricultural and forest industries, green ways, open space for wildlife, recreational areas, amenities, and environmental quality in general. And the losses are likely to continue to the year 2020 at a rate of over 10,000 acres per year.

Maryland's population is expected to reach 5.5 million by the year 2000. This population growth and redistribution, as well as commercial and industrial development, will consume farm, horticultural, and forest land. At the same time, this growing population also will demand more

services and products from agricultural, horticultural, and forest industries. Conflicts between agricultural and urban land uses and their impacts on natural resources occur as development takes place in once-rural areas. As development occurs, farm and forest land is fragmented and/or lost, reducing the open space and biological diversity of the area. This forest and habitat fragmentation reduces our ability to manage and maintain the resources of a healthy state. Currently, land-use planning and management issues are being addressed by a wide variety of public and private organizations, which often lack coordination and consistency among their programs and policies. Integrated resource management and landscape diversity are key components of land-use planning, but are often not considered.

The contamination of surface and subsurface water supplies due to non-point source agricultural runoff is among the most serious environmental problems facing American agriculture today. About 60% of the rivers and lakes in the United States are polluted by agricultural runoff; rivers primarily by sediments, and lakes by nutrients. Additionally, surface and groundwater are contaminated by a variety of pesticides, and nutrient sources such as fertilizers and manure. Non-point load of nutrients to surface waters in different regions of the U.S.A. is among the highest priorities in the country. One of the challenges for developing economically sustainable agriculture is to simultaneously reduce non-point source pollution problems and maintain farm and rural industrial incomes at reasonable levels. One solution is watershed-scale planning and management which makes it possible to target Best Management Practices (BMPs) for the greatest improvement in water quality even though watershed planning is much more complicated than field or farm scale planning.

As an 1890 Land Grant institution, UMES is committed to continue the services and applied research we provide our area farmers, watermen and resort residents (Eastern Shore tourism industry). We expect to bridge the agricultural, environment, and renewable natural resource programs and find ways that farmers and businessmen can be economically enhanced while not harming the environment and do so with concern and sensitivity to all facets. Presently many of our scientists (and those at College Park) are seeking solutions to resolve a recent Delmarva disaster that placed farmers, watermen and environmentalists at odds, and resulted in what is believed by the poultry industry to be a rush to judgment by politicians. During the summer of 1997, Delmarva made national news because of fish kills and lesionous fish in the Pocomoke River. The river provides a habitat for numerous fish species and other aquatic organisms and it serves as a source of revenue and recreation for the inhabitants of its watershed. *Pfiesteria Piscidia* has been implicated as the cause of the lesions and subsequent death of hundreds of fish. Toxins produced by this microbe are also thought to be deleterious to human health. The primary goals are:

- Adopt management practices for agricultural production that enhance natural resources.
- Improve the application and adoption of land-applied biosolids, manures, composted materials, and other organic byproducts.
- Improve water quality through the adoption of sound environmental stewardship practices by the public and municipalities.
- Maintain a water supply capable of supporting both commercial and private needs today and in the future by protecting and conserving surface and ground-water resources.
- Promote environmentally sound land use plans that manage growth and value the benefits to society of farms and forest lands.

- Increase recycling and appropriate product disposal.
- Promote the use of rural and urban forest stewardship practices to maintain a sustainable forest resource.
- Improve fish and wildlife habitat and species diversity, as well as promote the use of new management techniques that manage wildlife and control damage to property, crops and people.

Outputs

For REE Goal 4, Maryland Cooperative Extension educators developed 588 programs in 23 counties, Baltimore City, three regions of Maryland, state, multi-state, and national. Topics covered included water quality, water supply, land-use, recycling, forestry, and fish & wildlife. These programs reached 29,814 people.

Outcomes and impacts were measured in individual programs. Examples of these are in the following section.

Maryland Cooperative Extension is accomplishing the goals of their five-year plan. There is a balance of educational programs among the various goals and the Extension Administration Team is pleased with the accomplishments. Evaluation of outcomes from the five-year plan are conducted at the individual program level, not at the level of an aggregated REE goal.

Improve the application and adoption of land-applied biosolids, manure, composted materials, and other organic byproducts. (Key Themes – Agricultural Waste Management, Nutrient Management, Soil Quality, Yard Waste/Composting)

Maryland Cooperative Extension educators developed 74 programs in 9 counties, three regions of Maryland, state, multi-state, and national. Topics covered included farmers increasing their use of nutrient management plans; farmers avoiding the over-application of phosphorus on soils already deemed to be overloaded; and the farmers and citizens properly applying composted materials, manure, and other organic products to the land. These programs reached 2,330 people.

Examples of educational programs include the following:

- a. Recycling of horticultural products, the composting of municipal wastes, and the incorporation of composted materials and products into substrates or landscape soils: Research and education projects investigating the a) use of composted materials as part of a soil-less substrate in an environmentally conscious nursery production system for herbaceous and woody plant materials, b) the incorporation of composted organic wastes into ground cover landscapes as a substitute for conventional fertilizers, and c) comparison of two methods of trickle irrigation of nursery stock grown in composted organic modified nursery substrates were completed.

County Nutrient Management Program: Work continued in enrolling new agricultural businesses in the Nutrient Management program during January 2000, through December 2000, bringing the total number of nutrient management plans to one hundred sixty seven with 10,926 acres of cropland. All of the agricultural businesses were provided a written nutrient

management plan with one-on-one technical service provided by the Nutrient Management Advisor.

One hundred fifteen cornfields consisting of 688 acres that received applications of animal waste and starter fertilizer were analyzed for nitrogen levels with nitrogen quick test. There was a total reduction of 12,500 pounds of nitrogen from what the cooperators normally applied.

Twenty-eight clientele, representing agricultural business, farmers, and government agencies, received eight hours of classroom instruction in a series of two four-hour seminars. The clientele were instructed in basic soil sciences, animal waste and sludge management, and the implications of the 1998 Maryland Water Quality Act. Seventeen of the participants took the examination to qualify as a certified Nutrient Management Consultant. Nine individuals passed the examination. This agent, along with an extension educator from a neighboring county and the nutrient management advisor, were the instructors.

Impact. Twenty-seven clientele participated in a nutrient management field day. The participants learned the procedures and techniques of planning, organizing and generating, a phosphorus site index analysis for cropland. This in-depth analysis will be needed on cropland that phosphorus exceeds the recommended levels as prescribed by the Water Quality Act of 1998. Thirty-three clientele were provided one-on-one or small group instruction and technical assistance on the utilization of animal waste on their cropland. Clientele increased their knowledge and adopted best management practices. Seven articles on the Nutrient Management Program were written and published in the weekly newspaper column "Garrett County Farm-O-Gram".

c. Source of Federal Funds: Smith-Lever 3b&c and state general funds.

d. Scope of Impact: Multi-County Specific

Improve water quality through the adoption of sound environmental stewardship practices by the public and municipalities. (Key Themes – Biological Control, Integrated Pest Management, Pesticide Application, Riparian Management, Soil Erosion, Water Quality: Key Themes from Goal 1: Home Lawn and Gardening)

Maryland Cooperative Extension educators developed 223 programs in 18 counties, Baltimore City, three regions of Maryland, state, multi-state, and national. Topics covered included proper applications of nutrients and pesticides by homeowners; increase knowledge of septic systems; municipalities adopt environmentally sound practices of water and nutrient management; green industries practice bay-wise techniques; developers, loggers, and landowners reduce soil erosion; and increased installation of riparian buffers by landowners. These programs reached 10,156 people.

Examples of educational programs include the following:

a. Private Well and Septic System Management:

The goal of this program is to educate homeowners on the importance of the maintenance of their private drinking water and on-site sewage systems. It is important for homeowners to understand how water moves through the earth and how a failing or neglected septic system

could contaminate the water they get from their wells and directly affect personal and environmental health. The National Environmental Training Center for Small Communities invited the Regional Specialist to consult with them, and offer training of the program to a national audience of educators. Other educators are now using the Regional specialist's training materials and program nationally.

For the last several decades, water quality programming has been directed at agriculture and industry. However, many Maryland residents lack education on their role in water quality degradation, even though mismanagement of homes and yards can contribute to water quality problems. This program has been designed to educate homeowners on how they directly affect water quality. Private septic systems are known polluters of the environment. Most homes with on-site wastewater treatment systems also have private wells for drinking water. It is imperative that both systems are maintained when they are in close proximity. The Maryland Department of Environment estimated that more than 30,000 of the existing 424,000 septic systems in the state are known to be failing, with estimates of 60% suspected to be failing! Yet, thousands more are being installed each year. Most of these failures are due to neglect, as the systems have not been properly maintained. In addition, urban residents are moving to more rural areas and are not familiar with the maintenance requirements of a septic system or well. Realtors and builders selling the homes do not provide information on these systems. Worse, the word-of-mouth information people pass along is usually incorrect.

Thirteen workshops were presented to more than 400 homeowners throughout the State of Maryland and neighboring states. Participants are taught ground and surface water hydrology, how they affect water quality, and well and septic system maintenance.

b. Impact. Surveys handed out during the workshops are returned by more than 70% of the participants. A sampling of 121 survey results from 5 programs show that 100% of the attendees found the program to be informative. 94% of respondents say the workshop increased their knowledge a great deal on the topics presented. The topics are: natural factors (precipitation, geology) which affect the quality of well water and septic system operation; human activities or conditions that can cause ground water contamination; the purpose, function, and maintenance of septic systems; the function structure, and maintenance of water wells; reasons for protecting ground water, and the value of periodic testing of private drinking water; the function, comparison, and purchase of treatment devices for water quality problems; where to go for additional information and where to locate records on their well and septic system. 68% have had or will have their water tested, and 79% have had, or will have their septic system pumped.

The Maryland State Realtors Commission, in accordance with the Maryland Realtors Continuing Education Program, has approved and recommended the Regional Specialist's program for continued education credits. Out of 95 Realtor participant surveys, 95% stated they left the workshop with above average or extensive knowledge on the subjects presented. All 95 (100%) indicated the presentation met the stated objectives, was understandable, interesting and valuable. 100% indicated their intention to personally use the information presented, as well as provide the information to their clients. Reaching thousands of Realtors throughout the state, an effective front line for dispersal of this information, will allow a more efficient transfer of this knowledge to the hundreds of thousands of homeowners with these systems. To date, over 450 Realtors, from four regional associations, have attended this program. The program will continue to expand to all county Realtor Associations in the coming years.

c. Source of Federal Funds: Smith-Lever 3B&C and state general funds

d. Scope of Impact: City Specific

a. Improving Water Quality by Adopting Environmental Stewardship Practices:

Even though the program on "Riparian Buffer Systems" was developed in 1998, there is still a demand for programs and resource materials. Two new fact sheets and a magazine were developed in 2000 to support these continuing demands for educational materials. In cooperation with an extension specialist, two fact sheets were developed, entitled, "When a Landowner Adopts a Riparian Buffer-Benefits & Costs" and "Riparian Buffer Financial Assistance Opportunities". Over 1,000 copies have been distributed since their printing (Spring 2000). Also in cooperation with an extension specialist, a magazine was developed, entitled, "Riparian Buffers-Linking Land and Water". Nationwide, VA, VT, ME, KS, OH, WVA, NC, TN, GA, and Canada (Nova Scotia) have requested training materials, fact sheets, and videos. Seven states (PA, NJ, KY, NY, CT, MN, CA) have adopted our two-day training program model to initiate a training program in their state. The audience includes professional resource managers, such as foresters, wildlife biologists, extension agents, planners, engineers, and landowners. Over 6,000 of our seven fact sheet series on riparian buffers and over 5,000 copies of our video entitled, "Riparian Buffers - The Link Between Land & Water", have been distributed world wide, to include Puerto Rico, Germany, Albania, and England. In addition to the 1,400 participants in our satellite-training program held in 1998/99, it is estimated an additional 4,000 professionals have been trained through the adoption of MCE educational materials and training models. The web site (www.riparianbuffers.umd.edu) received over 2,000 hits and is considered the central location for riparian buffer information by MD, DNT and USDA-NRCS. Surveys to evaluate the effectiveness of our training programs held in 1998/99 will be sent out in January 2001. These surveys/evaluations were not completed in 2000 due to the time dedicated to the research project noted below.

b. Impact. As a result of this overall educational program, it is estimated over 200 miles of buffer in MD have been balanced or enhanced. MD goal is 600 miles. This was a cooperative effort between an extension assistant and this regional specialist. This regional specialist's role was to design, coordinate and develop educational materials and training curriculum. This regional specialist presented three landowner based educational programs to 125 participants and one program for five visiting scholars from Argentina. Self-appraisal pre and post-tests given also indicated the level of knowledge increased by 1.5-2, on a scale of 1-5. In addition, the Montgomery County Planning Commission used the video in an educational program broadcast over a county cable network to schoolchildren in Montgomery County. The video and fact sheets are also used as part of the environmental science curriculum at Bowie High School. This regional specialist was also invited by EPA to participate in a Mid-Atlantic Watershed Roundtable discussion in New York. Our Riparian Buffer program was being used as a model for educational programming. Assisted in developing, designing and implementing a field-focused research project on assessing riparian buffers in cooperation with four campus-based faculty members. Developed field collection criteria and assisted in training field crews in data collection. 300 field sites were evaluated. In the second component of the research project, this regional specialist assisted in developing procedures and questions for a telephone survey reference to riparian buffer adoption and values of educational materials in motivating

landowners to install a buffer. This project is part of a 4-year research program, with 2001 being the final year. This regional specialist will be evaluating the impact of educational materials in motivating landowners to install a buffer.

c. Source of Federal Funds: Smith-Lever 3b&c and state general funds.

d. Scope of Impact: Multi-County Specific

Maintain a water supply capable of supporting both commercial and private needs today and in the future by protecting and conserving surface and ground water resources. (Key Themes – Drought Protection and Mitigation, Water Quality)

Maryland Cooperative Extension educators developed 54 programs in 9 counties, 3 regions in Maryland, state, multi-state, and national. Topics covered included communities and individuals adopting water conservation practices; and communities and municipalities officials receiving training in ground-water protection standards under the National Drinking Water Act. These programs reached 1,642 people.

Examples of educational programs include the following:

a. Ground and surface water hydrology:

Each citizen of the state affects Maryland's water resources. Understanding the relationship between water resources and our actions is necessary in order to be able to relate our everyday activities to the consequences as they present on water quality. Using a ground water flow model, developed by the University of Wisconsin, as the main teaching tool, participants are able to visualize ground and surface water interaction. Demonstrations on how quickly surface contamination can reach ground water, such as inappropriate and excessive fertilizer and herbicide applications, reckless disposal of motor oil and other hazardous materials, along with contamination from landfills, leaking underground storage tanks, septic systems, etc., drive home the impact each individual has on water quality.

Twenty-six seminars were presented to approximately 1,115 Maryland residents. School children of every age have been taught throughout the state, along with farmers, greenhouse and nursery operators, environmental and community groups, local government officials and 4H youth.

b. Impact. Exit surveys from a total of 75 greenhouse and nursery growers who attended 5 different programs in the past 2 years gave the Regional Specialist the rating available. (5, on a scale of 1-5.) 94% of the participants rated the program as interesting and/or informative. 94% said they anticipated using the information given, and 93% said the speaker presented the material effectively.

c. Source of Federal Funds: Smith-Lever 3b&c and state general funds.

d. Scope of Impact: Multi-County Specific

Maintain a water supply capable of supporting both commercial and private needs today and in the future by protecting and conserving surface and ground-water resources.

(Key theme - Water Quality)

Overview - Research

The contamination of surface and subsurface water supplies due to non-point source agricultural runoff is among the most serious environmental problems facing American agriculture today. About 60% of the rivers and lakes in the United States are polluted by agricultural runoff; rivers primarily by sediments, and lakes by nutrients. Additionally, surface and groundwater are contaminated by a variety of pesticides, and nutrient sources such as fertilizers and manure. One of the challenges for developing economically sustainable agriculture is to simultaneously reduce non-point source pollution problems and maintain farm and rural industrial incomes at reasonable levels. One solution is watershed-scale planning and management which makes it possible to target Best Management Practices (BMPs) for the greatest improvement in water quality even though watershed planning is much more complicated than field or farm scale planning.

As an 1890 Land Grant institution, UMES is committed to continue the services and applied research currently provided to area farmers, watermen and resort residents (Eastern Shore tourism industry). We expect to bridge the agricultural, environment, and renewable natural resource programs and find ways that farmers and businessmen can be economically enhanced while not harming the environment and do so with concern and sensitivity to all facets.

Primary Goals

- o Adopt management practices for agricultural production that enhance natural resources.
- o Improve the application and adoption of land-applied biosolids, manures, composted materials, and other organic byproducts.
- o Improve water quality through the adoption of sound environmental stewardship practices by the public and municipalities.
- o Maintain a water supply capable of supporting both commercial and private needs today and in the future by protecting and conserving surface and ground-water resources.
- o Promote environmentally sound land use plans that manage growth and value the benefits to society of farms and forest lands.
- o Increase recycling and appropriate product disposal.
- o Promote the use of rural and urban forest stewardship practices to maintain a sustainable forest resource.

- o Improve fish and wildlife habitat and species diversity, as well as promote the use of new management techniques that manage wildlife and control damage to property, crops and people.

Adopt management practices for agricultural production that enhance natural resources.

Because of the intense competition between farming and the urban population in Maryland, much of our work has focused upon the reduction of chemicals and other exogenous inputs to farming systems. In particular, Maryland leads the nation in the development of nutrient management programs for control and reduction of nutrients on cropland. This effort began with the Pfiesteria outbreak of 1997 and has focused on the reduction of phosphorus to farmland. Further, due to the high cost of land and labor in Maryland, we have examined ways to reduce costly pesticide use on both cropland and in the greenhouse. Many of the best programs for reduced pesticide use in the US were developed in Maryland.

Examples of research projects include the following:

a. Intensive Nutrient Management for Efficient Crop Production

Research program explores the fate of nutrients in agroecosystems. Efficiency of nitrogen and phosphorus utilization during different phases of numerous crop rotation systems and the evaluation of the potential for nutrient losses from production soils are the primary objectives of this research program. Nutrients applied to agricultural lands, either as purchased synthetic fertilizers, animal manures, or biosolids have three alternative fates: be utilized by the growing crop; be retained in the soil as components of dynamic nutrient cycling processes; or be lost from the soil by water transport or atmospheric volatilization processes. Nutrient losses from soil can result in detrimental impacts on surrounding natural waters including accelerated eutrophication, aquatic habitat degradation, and impairment of drinking water quality. The goal of our research is to maximize the efficiency of crop nutrient utilization while minimizing the potential for nutrient losses from agricultural land.

b. Impact

The overwhelming majority of the 2 million acres of cropland in Maryland are fertilized with either purchased synthetic fertilizers or animal manures. These nutrient inputs contribute to the cost of production of all commodities. Efficient use of applied nutrients is essential to minimize production costs and sustain farm profitability. Evaluation of nutrient application rate and timing in Maryland's numerous crop production systems permits identification of the most agronomically and economically efficient nutrient management practices. Refinement of soil testing and other methods used to evaluate soil nutrient availability to crops enables managers to more accurately determine the quantity of fertilizer nutrient input necessary to optimize production and yield.

Adequate nutrient availability to agronomic crops is essential for both maximum production quantity and commodity quality. Grain and forage quality is affected by the

balance of nutrients available to the crop during its growth. Soil and plant analyses are useful diagnostic tools for evaluation and management of nutrient availability that in turn determines commodity quality.

Although applied nutrients are essential in Maryland's crop production systems, over application of nitrogen and phosphorus may pose an environmental risk. Nitrogen and phosphorus transport from agricultural soils to surface waters can contribute to the eutrophication of these natural water bodies and spark declines in water quality. Nitrogen leaching through soil to groundwater has been documented as a human health hazard as well as an environmental hazard. Management of nitrogen and phosphorus inputs to cropping systems that ensure adequate nutrient availability to the growing crop while minimizing the potential for excess or residual nutrients to runoff the soil surface or be leached out of the crop root zone has been a primary research focus. Management of soils that have historically received over applications of phosphorus and reducing the potential for phosphorus losses to adjacent water resources is a rapidly expanding research priority.

Preservation of a sustainable agriculture industry in the rapidly urbanizing mid-Atlantic seaboard is a daunting social challenge. Sustainable agriculture is not possible without the use of sustainable nutrient management practices. Environmental protection, habitat preservation, and water quality issues are part of our society's daily conservation and agricultural nutrient management plays a premier role in this social debate.

c. Source of Federal Funds: Hatch Project MD-B-182

d. Scope of Impact: National

Improve the application and adoption of land-applied biosolids, manures, composted materials, and other organic byproducts.

a. Determination of Practical Approaches for Decreasing Phosphorus in Poultry Litter

The primary focus of the research work being done in my laboratory is on ways to reduce phosphorus in poultry litter through nutritional and bird management changes. A project entitled "Feed Changes to Reduce Phosphorus Retention in Broilers" is a long-term project through which we seek to find answers in five key areas:

1. Phosphorus requirements of broilers in a four phase feeding program (starter, grower, finisher, and withdrawal)
2. Determination of the best combination of feed additives (phytase, other enzymes, organic acids, probiotics, vitamin D metabolites, etc.) that minimize litter phosphorus at the least cost.

3. Through collaborative work determine the effect of the use of feed additives not only on total litter phosphorus but also on the solubility, run off characteristics and plant availability of the phosphorus in the litter.
4. Determination of management changes that could help improve the retention of phosphorus and other nutrients and decrease phosphorus and other nutrients in litter.
5. Develop a cost benefit compute model that will allow for the determination of the best combination of feed additives and management changes that minimize phosphorus in litter at the lowest cost under different sets of circumstances (feed additives cost and availability, phosphorus application limits, ingredient costs, broiler prices, etc).

To maximize the use of the technology developed for broilers we will also apply this technology to minimize phosphorus in manure of other monogastric animals such as fish (stripped bass) and pigs.

Another area of interest is to develop nutritionally sound feed management programs that supply the needs of exotic animals.

b. Impact

Minimizing waste from broiler production:

The economic well being of animal agriculture depends in part on the development of strategies that give producers the ability to meet new environmental regulations. Over the last 10 years, environmental issues have focused producer, legislative, and public attention on optimizing animal waste management. New legislation in several states has limited the amount of phosphorus and nitrogen application to soils. Recently, legislation has shifted from a nitrogen to a phosphorus base (i.e. limiting excess phosphorus application to soil based, in part, on soil phosphorus content). This shift can limit the amount of manure applied to any given cropland by nearly 50 to 70%. In areas of intensive animal agriculture (Delmarva Peninsula, North Carolina, etc.) this has resulted in an insufficient amount of cropland for application of manures and may result in the added expense of manure transport out of these regions.

Maximizing the amount of diet phosphorus by poultry as well as feeding poultry at requirement levels will result in a large reduction of phosphorus in poultry litter. This lower phosphorus content will allow for increased and better litter use rates and will reduce environmental pollution and eutrophication caused by excessive soil P content.

The goal of this research is to find economically viable options that allow for poultry production to maintain current productivity numbers but greatly decrease phosphorus in litter. This benefits consumers, the environment, poultry growers and poultry companies.

Impact of work done on Exotic Animal Nutrition:

The aim of this work is to find diets that meet the needs of different exotic animals. A part of this work focuses on endangered species (such as the maned wolf). Many of these species are endangered because of loss of habitat in the wild. Species Survival programs seek to promote reproduction of these species in captivity with the hope that these animals can, in the future, be released into protected wild habitats. Finding diets that promote health and reproduction in these endangered species will take us a step closer to preserving these species for future generations.

c. Source of Federal Funds: Maryland Dept. of the Environment; Delmarva Poultry, Industry, Inc.; Maryland Agricultural Experiment Station

d. Scope of Impact: International

Improve water quality through the adoption of sound environmental stewardship practices by the public and municipalities.

a. Constructed Wetlands for Treating Dairy Wastewater

The focus of this research is to evaluate the effectiveness of wetlands constructed for treating dairy milkhouse waste. We are collecting monthly data on a suite of water quality parameters from various locations within wetland-based treatment systems. The parameters we analyze include biological oxygen demand (BOD), chemical oxygen demand (COD), nitrogen (ammonia, nitrate, nitrite, and total nitrogen), phosphorus (ortho-phosphate and total phosphorus), total suspended solids (TSS), pH, electrical conductivity, dissolved oxygen, and temperature. These data allow us to quantify the treatment effectiveness of the various components of the systems. Additionally, we are monitoring vegetation in the wetlands to assess changes in community structure in response to wastewater constituents. Vegetation characteristics we are monitoring include species composition and abundance in permanent plots, the species composition of buried seeds (i.e., the seed bank), and standing biomass of dominant species. Because of the importance of peat formation in the retention of certain nutrients (phosphorus in particular), we are initiating studies of the decomposition rates and nutrient retention capacity in various wetland plant species.

b. Impact

On a regional scale, it is generally less expensive to implement measures for nutrient and solids control rather than to restore ecosystems damaged by these substances. On a local scale, constructed wetlands may be less expensive to operate than conventional wastewater treatment systems. Additionally, with a trend toward having more animals per unit area of farmland, these systems may also have the benefit of requiring smaller land area than some waste management practices.

A better understanding of the factors controlling the effectiveness of wetland-based treatment systems will improve their design and implementation.

Milkhouse wastes contain high concentrations of solids and nitrogen and phosphorus compounds. These substances can result in eutrophication of downstream water bodies, damaging or altering aquatic ecosystems and the socioeconomic values that depend on them. Wetlands naturally remove solids and nutrients from water flowing through them, and we are harnessing this capacity to remove potentially damaging substances from wastewater before it is discharged to the environment. We have found that constructed wetlands significantly reduce concentrations of nutrients, solids, and oxygen demanding substances in dairy wastewater.

Reducing the quantities of nutrients and solids discharged to aquatic ecosystems will improve the health of aquatic animals. Lower nutrient levels may also prevent outbreaks of microorganisms dangerous to human health such as the dinoflagellate *Pfiesteria piscicida*.

Constructed wetlands offer an alternative to energy- and labor-intensive conventional technologies that may be more socially acceptable in some areas.

c. Source of Federal Funds: MAES, USDA/SARE

d. Scope of Impact: International

Outcomes and impacts were measured in individual programs. Examples of these follow.

This project attempted to determine the effects of treating soils with agricultural gypsum (GYP); fluidized bed combustion fly ash (FBC) and anthracite refuse ash (AFA) to control phosphorus (P) loss from P-enriched soils on the Eastern Shore of Maryland. It also monitored possible groundwater contamination and, the loss of Nitrogen (N) and P due to surface run-off following the application of poultry litter to P enriched soils on the Eastern Shore of Maryland.

a. **UMES** - Forty-eight surface runoff boxes (amended with five gallon collection containers inserted in the soil) were treated with GYP, FBC and AFA. Treatments were applied to the top two inches of soil (5.08 cm) at four rates (0, 10, 20, and 40 g kg⁻¹) to minimize P loss from soils. Corn (*Zea mays*) was planted in collection boxes to determine if the levels of available P not bound by GYP, FBC and AFA would be sufficient to produce standard corn yields. Twenty-four lysimeters were also installed at two depths (30 and 60 cm) and treated with the above amendments to minimize P leaching from the soil profile into ground water. Kentucky 31 *fescue* was planted to the soil of each lysimeter. Soil, water and sediment, and plant samples have been collected for the first year of the study and are being analyzed. Similar activities and data collection will continue for years two and three. Results from this study will be used to provide

farmers with Best Management Practices (BMPs) recommendations to improve management of P losses from soils amended with poultry litter due to surface runoff and leaching.

b. Impact -The further establishment of evidence that low cost coal combustion by-products have the ability to bind and complex phosphorus (P) in soils treated with high amounts of poultry litter over long periods of time. This will make a significant contributions to helping mitigate P run-off and P deposition into ground water that eventually find its way into the Chesapeake Bay, other coastal bays and, ground water aquifers.

c. Source Of Funds- Capacity Building/CSREES/Evans- Allen (\$80,475)

d. Scope of Impact - Regional-Delmarva Peninsula and Arkansas

a. UMES - Maryland was responsible for the providing the guidelines and materials for the inter-laboratory study conducted by New York, Illinois and Maryland. This was a part of the ASTM standardization process for the pipette method. The ASTM draft was approved by the sub-committee and has been submitted to ASTM F23 Main Committee for balloting. A draft has also been submitted to ISO to be considered as an ISO standard. In addition, Maryland worked with National Institute of Occupational Health (Spain) and Federal Agricultural Research Center (Germany) to compare the proposed ASTM pipette test method with gutter and atomizer methods to measure protection provided by textile materials against liquid pesticides.

b. Impact – The new standard test method has the potential to be used by researchers, industry, and organizations in the US and other countries to measure the performance of textile materials against liquid pesticides. Better screening methods will be developed, and workers will be better protected.

c. Source of Federal Funds – Evans-Allen- 1890 (\$43,691)

d. Scope of Impact - National

Promote environmentally sound land use plans that manage growth and value the benefits to society of farms and forest lands. (Key Themes – Land Use)

Maryland Cooperative Extension educators developed 87 programs in 17 counties, 3 regions in Maryland, state, multi-state, and national. Topics covered included public officials increase knowledge of land planning; citizens gain knowledge in the process of developing land-use policies; and citizens and officials improve their knowledge of the economic and ecological importance of agricultural, forest, and wildlife resources. These programs reached 8,899 people.

Examples of educational programs include the following:

a. Land-Use Planning:

This specialist participated with the Delmarva Land-Use Project, a multi-state research and educational program with University of DE and American Farmland Trust. Four training events were conducted in the three-state Delmarva Peninsula to over 120 people. Land-use planning

workbooks were provided to all participants and an evaluation showed that nearly all had used their workbook after the training.

- b. Impact. These efforts led to several individual county educational programs being offered. Another outcome of this project is that this specialist participated in the formation of the National Center for Smart Growth which now conducts land-use training for county officials through a professional training series at the University of Maryland's School of Public Affairs.
- c. Source of Federal Funds: Smith-Lever 3b&c and state general funds.
- d. Scope of Impact: Multi-County Specific

Increase recycling and appropriate product disposal (Key Themes – Recycling)

Maryland Cooperative Extension educators developed 20 programs in 7 counties, 3 regions in Maryland, multi-state, and national. Topics covered included citizens improving their knowledge of recycling and purchasing environmental sensitive products and adopting these measures; and citizens learn which household products are toxic to the environment and dispose of them properly. These programs reached 1,110 people.

- a. The Queen Anne's county Bay-Wise Master Gardeners, lead by this county educator, have taken on a recycling/hazardous household waste project as the result of training provided by Extension educators. Having learned about hazardous household products, alternatives to them and proper disposal of them, as part a their Bay-Wise advanced training last year, they have devised an outreach program that they taught at the local 4-H camp to youth, ages 8-10. "C-W-D", short for caution, warning, danger - the signal words found on common household products found in most homes - is the name of the children's program designed to teach children about the dangers of hazardous household chemicals.
- b. Impact. Sixty-one children attended two one-hour sessions in June. They learned about the dangers associated with household chemicals, safe storage, alternatives and environmental effects.
- c. Source of Federal Funds: Smith-Lever 3b&c and state general funds.
- d. Scope of Impact: Multi-County Specific

Promote the use of rural and urban forest stewardship practices to maintain a sustainable forest resource. (Key Themes – Forest Resource Management, Natural Resources Management)

Maryland Cooperative Extension educators developed 58 programs in 10 counties, 3 regions in Maryland, state, multi-state, and national. Topics covered included forest landowners, youth, urban citizens, and conservation groups gaining knowledge in forest stewardship; forest landowners developing and implementing a forest management plan; forest landowners gain knowledge about alternative income enterprises; and natural resource professions will gain knowledge and enhance skills in forest management, alternative income enterprises,

technological applications, and public policy conflict resolution. These programs reached 3,062 people.

Examples of educational programs include the following:

a. Coverts Project – Volunteer program trains opinion leaders how to improve wildlife habitat through sound forest management practices. Volunteers share information with others in their communities:

This agent provides leadership and makes critical decisions for the Coverts Project, organized the 3.5 training workshop with 18 inside sessions and two half-day field tours, and teaches 11 of the inside sessions and both field sessions. Entire program is linked to the DNR Forest Stewardship Program. Under direction of the agent, the project assistant, maintains regular communication with cooperators by E-mail and other means, develops newsletters, and provides follow-up and support for cooperators. The extension assistant maintains the database.

About 700 applications were mailed to recruit 45 qualified applicants, of which 30 were selected for the 3.5-day training workshop. A reference manual, signs, business cards, brochures and other aids were developed for program.

b. Impact. Cooperators reported an average knowledge gain of 1.7 points on a scale of 1 to 5 when comparing knowledge level prior to, and after completion, of the training workshop (an increase from 1.4 the previous year). Three newsletters were developed by the project assistant under agent direction to communicate regularly.

Since 1990, 263 cooperators have been trained - 26 cooperators in 2000. This agent, extension assistant, and cooperators organized a one-day refresher course attended by 26 cooperators that focused on walking a forest property with a consultant forester to discuss marketing and management considerations and how to share information with others.

The annual 1999 survey was sent to 218 active cooperators with 70 being returned from cooperators. Results indicated the following: 5,985 people received information on forest/wildlife management of the Coverts project from all efforts, with 1,247 of those being personal contacts. 63% had organized some event that included forestry or wildlife information, many were field tours. 20% used the media to inform people and 36% distributed written information. 70% took steps in managing their own properties on a total of 13,112 acres mentioned. About 30% reported that other woodland owners had sought professional management assistance as a result of their efforts. Cooperators reporting 1,711 hours devoted to outreach to friends, neighbors and community. Cooperators managing their own properties spent 11,716 hours. 90% of cooperators indicated they would like to continue as cooperators for the next year.

A large number of cooperators are now involved in leadership roles in state and local natural resource organizations and give credit to Coverts for motivating this interest. A Coverts cooperator initiated the Governor's Task Force on Forestry, and two cooperators sit on the panel. This has contributed to a task force recommendation to the Governor this year for \$50,000 in state funding to support the Coverts Project.

c. Scope of Federal Funds: Smith-Lever 3b&c and state funds.

d. Scope of Impact: Multi-County Specific

- a. Forest Stewardship: This regional specialist approached the Maryland Environmental Trust (MET) and private land trusts to continue an ongoing educational program on incorporating forest stewardship into conservation easements. Lack of long-term forest stewardship is a major concern in the forestry community. MET asked agent to be part of a panel at the Mid-Atlantic Land Trust conference to share his ideas.
- b. Impact: As a result of the ongoing educational efforts the last three years, MET this year developed special legal easement language that incorporates forest stewardship into a conservation easement. MET director has worked with two clients this year using this language which is resulting in working out problems with enforcement and monitoring.
- c. Source of Federal Funds: Smith-Lever 3b&c and state general funds.
- d. Scope of Impact: Multi-County Specific

Improve fish and wildlife habitat and species diversity, as well as promote the use of new management techniques that will manage wildlife and control damage to property, crops, and people. (Key Themes – Wildlife Management)

Maryland Cooperative Extension educators developed 72 programs in 5 counties, 3 regions in Maryland, state, multi-state, and national. Topics covered included rural landowners gain knowledge of wildlife management and improve wildlife habitat; urban citizens improve knowledge of urban wildlife management; natural resource professionals gain knowledge and improve their skills in wildlife management; urban and rural homeowners and agricultural businesses increase knowledge and understanding of deer and other problem wildlife species and employ wildlife damage control techniques; and local governments gain knowledge about deer and develop successful management strategies. These programs reached 2,615 people.

Examples of educational programs include the following:

a. Wildlife Habitat:

This regional specialist provided training to five 4-H youth in wildlife management in support of the Nat'l 4-H Wildlife Judging contest. Designed the field exercise and management planning questions for the state wildlife-judging contest. Since the state 4-H specialist in Natural Resources resigned in the spring of 1999, planning efforts for a statewide volunteer training program and regional wildlife training programs were put on hold. Presented a program on wildlife management to twenty-five 4-H youth at the Lower Shore 4-H winter fair. As a result of this program, two 4-H'rs participated in the state wildlife contest held at Keedysville. Also in response to 4-H youth interest in wildlife judging, this regional specialist developed a draft MD wildlife-judging manual. This manual will be edited and printed in 2001. In cooperation with an extension educator, developed and wrote a fact sheet entitled, "Wildlife Plantings-Food & Cover Plants". This fact sheet incorporates food and cover plantings, fertilizer recommendations and planting rates for a variety of wildlife species. Over 1,000 copies have been distributed since its printing in the spring of 2000.

b. Impact. Based on conversations with farmers, wildlife biologists, and extension agents, an estimated 20 farmers have adopted wildlife planting as a result of this fact sheet. This regional specialist taught a class on ecology and ecosystem services to 25 Master Gardeners at Adkins Arboretum. End of class evaluations were high (4.7) for teaching effectiveness and delivery (4.7).

c. Source of Federal Funds: Smith-Lever 3b&c and state general funds.

d. Scope of Impact: Multi-County Specific

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

Overview.

Maryland youth, families, and communities are the core components in increasing quality of life and economic opportunity. Currently, 13 percent of Maryland children ages 18 and under live in poverty. A single parent heads more than one fifth of families with children. Increases in parenting outside of marriage continue to create difficult consequences for women, children, and taxpayers.

The current welfare-to-work effort in Maryland requires families to develop the skills and resources needed for independent living by placing a 60-month maximum time limit for welfare benefits. As parents leave welfare to go to work, additional childcare providers are needed.

The process of public decision-making is currently a source of much dissatisfaction to citizens and policy makers alike. Land use, food safety, and childcare are examples of potential issues involving public decision-making. Because of the inherent difficulty of the situation, it is not uncommon for critical public decisions to be postponed, indefinitely tabled, or solved in uninformed ways.

Societal and governmental needs are growing more complex, fractionated, and global. Increasingly, citizens are asked to share leadership roles in their communities. New and replacement intergenerational leaders must be prepared for these civic challenges. Youth and adult leaders must have the skills, confidence, and ability to lead diverse groups in difficult situations involving polarization of opinion, civic disengagement, and conflict.

Volunteers provide educational, economic, social, and psychological benefits to families, individuals, organizations, and communities. About 4,000 adults and 2,000 youth leaders serve as Extension volunteers. Effective selection, training, involvement, and management are essential steps in maintaining and strengthening all volunteers.

The primary goals are:

- Resolve differences between competing interests
- Increase ability of Extension faculty to lead public issues education programs
- Increase the abilities of Extension volunteers to successfully carry out Extension programs
- Adopt effective leadership practices
- Increase leadership ability
- Adopt effective and responsive policies and programs
- Strengthen skills and knowledge to achieve economic stability
- Develop and accept individual, parental, home, financial, and/or community responsibility through work, family, and community involvement.
- Enhance the attractiveness of Maryland youth to potential employers to enable youth to be productive, contributing members of a global society

- Increase the ability of Maryland youth to have caring relationships with family members, peers, and others in their communities
- Increase the abilities of Maryland youth to be competent youth leaders with a strong commitment to civic and social responsibility
- Strengthen Maryland youth's understanding of the importance of good health and safe and healthy lifestyles.

Outputs.

Maryland Cooperative Extension educators developed 3,248 programs which were held in all 23 counties, Baltimore City, all three regions in Maryland, state-wide, multi-state, and national. Topics covered were youth development, volunteer leadership and training, family life, family economic stability, public issues education, training of local officials, and resolving differences. These programs reached 141,064 people.

Outcomes and impacts were measured in individual programs. Examples of these are in the following section.

Partners in these programs included financial industry, many youth-serving agencies and groups, childcare provider organizations, National 4-H Council, county health departments, the Maryland Department of Health and Mental Hygiene, county social services departments, the Maryland Department of Human Resources, the Eastern Shore Health Education Center. Cooperation with other members of the land grant system included VA , West VA, DE, NJ, and PA.

Maryland's own assessment of accomplishments. Maryland Cooperative Extension is accomplishing the goals of their five-year plan. There is a balance of educational programs among the various goals and the Extension Administration Team is pleased with the accomplishments. Evaluations of outcomes from the five-year plan are conducted at the individual program level, not at the level of an aggregated REE goal.

Resolve differences between competing interests (Key Theme – Conflict Management)

Maryland Cooperative Extension educators developed 36 programs which were held in 10 counties, Baltimore City, two regions in Maryland, state-wide, multi-state, and national. Topics covered were identifying policy alternatives and their consequences, negotiating skills, identifying common ground, planning and implementing steps to reduce friction, appraising community benefits resulting from resolution of differences.. These programs reached 892 people.

Examples of educational programs include the following:

- a. Developing Consensus Agreements Among Stakeholders. Institute for Governmental Service (IGS). In June of 1999 the Governor's Chesapeake Bay Cabinet created the Maryland Public Drainage Task Force to develop recommendations that would enhance the environment and protect the agricultural community by considering changes to public

drainage ditches. The Maryland Departments of Agriculture and Natural Resources chose diverse members for the Task Force – including one Extension Educator -- to reflect the interests, experience, and expertise among stakeholder groups. The departments also asked an Extension Specialist from IGS to facilitate the Task Force. Two additional Extension Specialists also provided expert information to the Task Force. After eleven official meetings, over more than a year's time, the Task Force negotiated a consensus set of seven recommendations. These recommendations are included in a report titled "Moving Water" and were presented to the Bay Cabinet on February 14, 2001. At that meeting, the Bay Cabinet agreed, unanimously, to implement the recommendations in the report.

- b. The consensus agreement will have far-reaching and long-term effects on academic research, design, maintenance, and governance of Maryland's Public Drainage Ditches. For example, the agreement calls for: (1) a new framing of the issue – to acknowledge both the need to protect the economic well-being of people who depend on effective land drainage, while at the same time enhancing the environment that is affected by public ditches; (2) research on and application of Best Management Practices (with State budget support) for designing and maintaining public ditches; (3) a shift in the responsibility for the costs of land development on public ditches away from Public Drainage Associations and toward the land developers who create such costs; (4) an interagency group to oversee implementation of the agreement.
- c. Source of Federal Funds. Smith-Lever 3 b&c and state general funds. Two Federal Agencies – specifically the NRCS/USDA and Army Corps of Engineers – served on the task force and are expected to help implement the recommendations.
- d. Scope of impact – State of Maryland, particularly the Eastern Shore. The Task Force Report may be useful to other states that face similar conflicts over drainage.

Adopt effective and responsive policies and programs; Increase ability of Extension faculty to lead Public Issues Education programs; Increase the abilities of Extension volunteers to successfully carry out Extension programs; (Key Theme – Community Development)

Maryland Cooperative Extension educators developed 554 programs which were held in 23 counties, three regions in Maryland, state-wide, multi-state, and national. Topics covered were policy development, public issues processes, conflict management, negotiating, and collaboration skills, framing public policy issues and including public issues education (PIE) in scope of work. Also, strategic planning processes, financial management, performance measures, and organizational climate, assessing local needs, evaluating the effectiveness of programs as part of the "Excellence in Governance Certificate Program." These programs reached 13,104 people.

Examples of educational programs include the following:

- a. Academy for Excellence in Local Governance. Institute for Governmental Service (IGS). The Academy is a voluntary certificate program open to all local officials in Maryland. It is a

collaborative partnership involving IGS, the Maryland Municipal League, the Maryland Association of Counties, and the Maryland Local Government Insurance Trust. An Extension Specialist initiated the program and chaired the organizing committee for the first 4 years of development. Fellows must complete 6 core classes and 6 electives for a total commitment of approximately 25 instructional hours. The official program was initiated in 1998 and now has 312 Fellows, of which approximately 65% are elected county and municipal officials. Because of its growth, IGS has hired a part time coordinator to manage the program.

b. Impact. The first class of 33 Fellows graduated in June 2000; the second class of Fellows (approximately 70) will graduate in June 2001. A *Resource Guide for Small Jurisdictions – Where Can I Find Help* was published.

c. Source of Federal Funds. Smith-Lever 3b&c and state extension funds; tuition from Fellows

d. Scope of impact. State of Maryland.

a. Strategic Planning for Jurisdictions and State Agencies. Institute for Governmental Service (IGS). At the request of jurisdictions and state agencies, IGS provides strategic planning assistance, which generally results in a strategic plan for the organization. The assistance involves conducting a SWOT analysis, visioning, identification of issues, and writing goals and action plans. The activity can be as brief as one day but generally takes place over a series of meetings over several months. A written report lays out the plan, which provides direction to the organization over the next several years. In FY 2001, Extension Specialists provided strategic planning assistance to 3 jurisdictions with total populations of 28,722 and one state agency.

b. Impact. The Town of Bel Air completed a strategic planning process and drafted a plan. The City of Hyattsville and the City of Seat Pleasant completed phases of strategic planning. The Maryland Environmental Service – a quasi-public state agency -- drafted a strategic plan, which is now in final review status.

c. Federal Funds. Smith-Lever 3b&c and state extension funds; small fee charged to jurisdictions and agency.

d. Scope of Impact. State of Maryland.

a. Local Government Personnel Management. Institute for Governmental Service (IGS). At the request of small local governments, IGS provides technical assistance to municipalities to help local officials improve the management of their jurisdictions. In FY 2000, Extension specialists provided assistance to the Town of Capital Heights, Rising Sun, and St. Michaels. The populations of these jurisdictions total 6,197. The assistance involves meeting with local officials and drafting manuals. The materials drafted are reviewed by elected officials and often put into law.

b. Impact. The Town of Capital Heights has adopted the Personnel Rules and Regulations as part of their town ordinance. The Towns of Rising Sun and St. Michaels are reviewing the materials and expect to adopt the Personnel Rules and Regulations as part of their towns' ordinances in the near future. These Rules and Regulations will affect jurisdictions governing

- c. Federal Funds. Smith-Lever 3b&c and state extension funds; small fee charged to towns.
- d. Scope of Impact. Town of Capital Heights, Town of Rising Sun, Town of St. Michaels.
 - a. Developing Working Agreements Across Jurisdictional and Agency Boundaries. Institute for Governmental Service (IGS). In the summer of 2000, the Maryland Department of the Environment requested the creation of an Anacostia Trash Committee, to include representatives from the Federal Government, District of Columbia Government, Maryland State Government Agencies, Prince George's County (Maryland) Government, Montgomery County (Maryland) Government, Washington Regional Public Agencies, and Nongovernmental Organizations concerned about trash in the Anacostia River. An Extension Specialist from IGS is facilitating the development of a strategic plan, for trash removal and prevention, and a policy statement to be signed by the Mayor of the District, Governor of Maryland, and Montgomery and Prince George's County Executives. The Committee has met over the past eight months and expects to conclude its work in mid 2001.
 - b. Impact. The plan and policy agreement may significantly affect public funding for education for trash pollution prevention, investments in infrastructure -- such as screens for storm sewers -- and public services such as street sweeping and the policing of the illegal trash-dumping.
 - c. Source of Federal Funds. Smith-Lever 3 b&c and state general funds. One Federal Agency -- the National Park Service -- serves on the Committee.
 - d. Scope of impact -- DC and the State of Maryland in the Anacostia Watershed.

Adopt effective leadership practices; Increase leadership ability of Youth, Adults, Extension Personnel (Key Theme – Leadership Training and Development)

Maryland Cooperative Extension educators developed 187 programs which were held in 16 counties, Baltimore City, two regions in Maryland, state-wide, multi-state, and national. Topics covered were assessing leadership skills, team building, conflict management, communication, personnel and volunteer management, motivation, and team building. These programs reached 3,871 people.

Examples of educational programs include the following:

- a. LEAD Maryland. Institute for Governmental Service (IGS) and Extension Ag Educator and Extension Administration. In February 1999, the first class of LEAD Maryland, an agricultural leadership program, was instituted. Partners in the program include the College of Agriculture and Natural Resources, the Maryland Department of Agriculture, the Maryland Farm Bureau, the Maryland Grain Utilization Board, and the Maryland Agricultural Education Foundation. The purpose of LEAD is to provide men and women interested in agriculture the opportunities to improve leadership, develop a network of diverse people, and increase understanding of critical issues. Twenty-three Fellows were selected for the 18-month program. An executive director was hired. The students completed 8 three day seminars, a three day trip to Washington DC, and

a ten day international trip to look at the European market. Teaching methods included field visits, assessments, panels, case studies, presentations, and self-discovery. In September 2000, 23 Fellows were recognized for the completion of the program. Following completion of an application process and interviews, 23 new Fellows were selected to start Class II in February 2001.

b. Impact. All 23 Fellows of Class I completed the 37-day program. At the end of the program, Kellogg Foundation met with the Fellows and published a written report commending the program. Three of the Fellows were elected to the LEAD Maryland Advisory Board. All of the graduates continue to be involved in nurturing the program and mentoring the new Fellows. The program has attracted support from over 15 local, state and national organizations.

c. Source of Federal Funds. Smith-Lever 3b&c and state extension funds and over \$220,000 from non-profits and foundations in the state and country; tuition from Fellows.

d. Scope of Impact. State of Maryland

a. Building Teens for Better Communities (BTBC). Institute for Governmental Service (IGS) and 4-H Youth Development. BTBC began as a tri-state effort to test the youth as partners approach with the implementation of a small-scale community development project. Four teams of 26 youth and eight adults learned and practiced leadership skills, developed new perspectives on community and worked on a community project. An additional 15 teens and 3 adults participated in the latter phase of the program. The teams came from diverse backgrounds including a rural church group, a suburban 4-H teen council, a newly formed teen association in an urban working class community, and a teen group in an urban public housing project. The 18-month project included focus groups, two regional conferences, site visits, and assessments. Cooperating with IGS and the Maryland Cooperative Extension were the Maryland 4-H Tech Corps, Maryland Safe and Sound Program, Rutgers Cooperative Extension, Center for Innovation for Community and Youth Development at the National 4-H Center, Hagerstown Boys and Girls Club, Hagerstown Housing Authority, Baltimore County Recreation and Parks, Maryland Save Our Streams, and the NJ Kids Educational Enrichment Programs.

b. Impact. Three of the four teams successfully completed their community projects. Assessments done at the beginning of the project and the end indicate the teens changed positively in terms of their perceptions of self-empowerment, ability to talk to outside groups, and planning skills. Two new teams were started. A handbook, *Building Teens for Better Communities Tool Box*, was published and distributed to Extension across the country. Two workshops were presented at the National 4-H annual meeting and abstracts published. *Municipal Maryland* accepted an article for publication for the spring of 2001.

c. Source of Federal Funds. Smith-Lever 3b&c and state extension funds and two Maryland Cooperative Extension Program Development grants and Northeast Regional Rural Development Center grant.

d. Scope of Impact. MD, DE, NJ, WV

- a. Developing the Leadership Capacity of Citizens and Public Officials Institute for Governmental Service (IGS). Since January 1999, Extension Specialists at IGS have coordinated and provided most of the teaching for a leadership program called the Water Resources Leadership Initiative (WRLI). During that period, 43 individuals have become active Fellows in WRLI. While most WRLI Fellows are Marylanders, a person from VA (a local Extension Educator) and a person from PA are also in the program. WRLI Fellows meet with IGS faculty and with other teachers for six three-day sessions during their first year of the program. During their second year, the Fellows complete applied practicum projects. Thirteen Fellows have completed their practica and graduated; fourteen are working on their practica; and fifteen have completed the first of their six sessions.
- b. Impacts. Fellows increase their leadership capacity by enhancing their knowledge and skills about water policy development, collaborative group processes, and leadership knowledge and skills. In addition, they are creating a network of people – across state, agency, and organizational boundaries – for working together to solve water issues.
- c. Source of Federal Funds – Smith-Lever 3 a&b and state general funds. Start-up funds provided by the Economic Development Administration through the Rural Development Center, University of Maryland Eastern Shore. The program has become self-supporting. Federal agencies that are participating in the program include: EPA and NRCS/USDA.
- d. Scope of Impact – MD, PA and VA, to date. We have also visited and interacted with people in NC and DE. We plan to visit WV later this year.

Strengthen skills and knowledge to achieve economic stability (Key Theme – Estate Planning, Family Resource Management, Retirement Planning)

Maryland Cooperative Extension educators developed 594 programs which were held in 22 counties, Baltimore City, three regions in Maryland, state-wide, multi-state, and national. Topics covered were basic money management, credit use, insurance coverage, estate and retirement planning, savings and investments. These programs reached 12,998 people.

Examples of educational programs include the following:

- a. Maryland Cooperative Extension Personal Finance Seminar for Professionals. Financial educators and counselors have an increasing need to keep current with an ever- changing body of knowledge. Since 1989, Maryland has offered an annual financial education seminar to meet the needs of educators in the employment of the financial industry, Land Grant Universities and the military. Nine hours of general sessions were presented by nationally recognized authors, Janet Bodnar, Jerry Mason, Steve Rhode and Mike Kidwell as well as industry leaders, Sam Gerdano, Executive Director of the American Bankruptcy Institute and Dayana Yochim of The Motely Fool. Thirteen concurrent sessions were held to meet the needs of military personnel as well as the university and industry representatives. A focus on the scams and frauds which plague the

under-educated and the impoverished spotlighted the program with many of the presenters from governmental agencies.

b. Impact. Evaluation from the 17-hour seminar attended by 125 participants (85 evaluations returned) indicated that the participants felt presentations were excellent (4.4-4.1 on a 5-point positive Likert Scale). They “learned a great deal” (4.4 to 4.1), and felt it was “very useful in my work” (4.4 to 4.2). Participants rated the seminar at 4.5 in "well worth my time to attend." Comments such as "best seminar I have attended in the last 18 months" and "thanks for three great days" were encouraging as well as the 2-1/2 pages of suggested topics and speakers. Participants reported that they counseled or educated in excess of 41,000 clients/families per year.

c. Source of Federal Funds – Smith Lever 3b&c and state general funds. This project is self-funded through registration fees. Human Resources allocation ranged from one month of educator time (25 days) for the Chair to one day's time for facilitators.

d. Scope of Impact. National. Participants came from U.S. military, credit unions, housing non-profits, housing management agencies, financial institutions, six State Cooperative Extensions and credit counseling non-profits.

a. Anne Arundel County. 43 classes were attended by 1,723 participants in the area of financial stability. Developed a partnership with the Employee Assistance program of the National Security Agency and taught 16 sessions of the series Financially Fit to 720 employees. One session was linked via a technology center to 3 worksites in Europe.

b. Impact. Pre-Post tests (N=564) showed: 53% developed a spending plan; 32% requested a credit report; and 43% of those requesting a report corrected an error in their report.

c. Source of Federal Funds – Smith-Lever 3b&c and state extension funds

d. Scope of Impact – County Specific

a. Baltimore City. Taught and designed basic money classes (49) with 639 participants. Some of the target audiences included those who were restructuring their lives: transitional housing residents, welfare to work recipients, and recovering addicts. Parents and community leaders also participated in the program. Teaching was conducted in neighborhoods where participants lived by this educator. Class materials were modified by this educator to meet audience needs and comprehension.

b. Impact - Impact information was obtained with the aid of program coordinators from some of the institutions served. Designed an evaluation form used with 100 participants which showed: 50 used a spending plan; 64 tracked expenses; 57 organized financial records; 52 set up an emergency fund; 63 obtained their credit report; and 51 shopped for the best credit terms.

c. Source of Federal Funds – Smith-Lever 3b7c and state general funds.

d. Scope of Impact – City Specific

a. Caroline County. Coordinated 18 hours of financial counselor training and taught for 15 hours to three agency personnel and one licensed realtor. Community organizations and agencies (AARP Volunteer Income Tax Assistance, Caroline Department of Social Services Energy Assistance Program and Caroline Mental Health) provided three hours of instruction. At the end of the 18-hour training, three customers returned evaluations. After the training, customers felt confident in: 1) (33%) establishing goals and analyzing the debt situation; 2) (66%) setting up a spending plan and establishing the need for an updated will; and 3) (100%) organizing records, reviewing insurance coverage, reviewing income tax forms, encouraging savings, and counseling others on what they learned.

b. Impact – Eight months later, two volunteer Financial Counselors returned a questionnaire. 186 families had been assisted with financial counseling. Of those families, 124 had received assistance in developing a money management plan, 37 had received assistance in developing a debt repayment plan, and 123 had requested and reviewed their credit report. If the 186 families saved just \$25 late fee on one credit card, that is a total savings of \$4650.

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds.

d. Scope of Impact – County Specific

Develop and accept individual, parental, home, financial, and/or community responsibility through work, family and community involvement (Key Theme – Child Care/Dependent Care, Parenting)

Maryland Cooperative Extension educators developed 384 programs which were held in 22 counties, Baltimore City, three regions in Maryland, state-wide, multi-state, and national. Topics covered were caregiving, understanding children and their development, modeling appropriate behavior, nurturing family members, advocating for families. These programs reached 24,501 people.

Examples of educational programs include the following:

a. Maryland Cooperative Extension Child Care Provider Training. Regulated child care providers in Maryland are required to have continuing education hours in health and safety and child development and curriculum to maintain their licensure. These hours are reviewed every year and must come from approved trainers in the state. Maryland Cooperative Extension has been an approved trainer since 1994. Family child care providers and child care center directors and teaching staff are the primary audience for MCE's training. Others who attend include parents, Head Start and public school teachers and unregulated child care providers. Training covers topics in child development, curriculum, health and safety, business management and topics of professional development (such as stress management). Topics are offered at beginning, intermediate or advanced levels of professional development, depending on the needs of the audience. MCE frequently partners with other child care/early childhood groups to conduct training, thereby broadening our reach and enhancing the quality of our programs.

b. Impact. Each year MCE trains approximately 2000 regulated providers in the state. FTE commitment to our training varies, but an Extension educator in each county offers, on average, 3 hours per month. Evaluation data from 6 hour continuing training conferences attended by 30 to 150 participants, reveals that participants feel more competent in their work with children and feel more committed to the profession of child care. In addition, participants report more contacts with others in their field, and a greater sense of support for their work from other professionals and from parents.

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds.

d. Scope of Impact – State Specific. Collaborators include Child Care Administration, Maryland Committee for Children (state), and local child care resource and referral and professional child care associations.

a. Calvert. The welfare to work grant started 7/97 and now includes Life Skills classes and mentoring program. During FY2000, 62 days (95 hours) of Life Skill classes (series offered 5 times/year) were taught. 31 clients started the 12-day course and 11 (30%) completed all requirements for the course. 20 did not complete the course because 16 started a paid job and others were sanctioned, moved, or left because of health problems. All participants took a pretest and identical posttest comprised of 40 questions.

b. Impact. For 5 students who took both tests, the mean pretest score was 58%; the mean posttest score was 93% and shows a 35% increase. An exit questionnaire (without names) showed 100% reported receiving sufficient information regarding each subject area and reported being very satisfied with the primary class instructor. A follow-up evaluation sent to 9 persons was returned by 6 (66%) – a high response rate for this audience (the mentors helped). As a result of taking this course, 5 felt more confident about managing work, family and home, 5 used one or more of the time management tools (appointment book, home filing system, etc.). All made progress toward achieving the personal/financial goals set in class; all used a budget, tracked spending and used unit pricing for food, all increased number of fruits and vegetables consumed; 66% spent more time listening, reading or doing other activities with their child; 66% tried alternative disciplining practices with their child like those discussed in class. 5 of the 6 respondents had a paid job. During FY2000, 35 mentees worked with 34 community mentors toward the goals of balancing work and family and strengthening job skills (several mentees were employed during the year but still need job skills strengthened). We visited 65 churches, spoke to 450 church members to describe the mentor problem, and trained 12 church representative mentors. 23 other mentors were either trained or continued their service from 1999. 34 mentee matches have been established and meet one hour or more each week to work on goals. In FY2000, at one point, all but one mentee was employed.

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds. FY 2000 grant funding from the County Department of Social Services for 1 year until June 30, 2000 was \$58,170; FY 2001 funding (1 year until June 30, 2001) was \$49,000 with an additional \$31,000 carry-over funds.

d. Scope of Impact – County Specific

Enhance the attractiveness of Maryland youth to potential employers to enable youth to be productive, contributing members of a global society; Increase the ability of Maryland youth to have caring relationships with family members, peers, and others in their communities; Increase the abilities of Maryland youth to be competent youth leaders with a strong commitment to civic and social responsibility; Strengthen Maryland youth's understanding of the importance of good health and safe and healthy lifestyles.

Maryland Cooperative Extension educators developed 384 programs that were held in all 23 counties, Baltimore City, all three regions in Maryland, statewide, multi-state, and national. Topics covered were enabling youth to be productive, contributing members of a global society; have caring relationships with family members, peers and others; competent youth leaders with a strong commitment to civic and social responsibility; and understanding of the importance of good health and safe and healthy lifestyles. These programs reached 100,336 people.

Examples of educational programs include the following:

(Key Themes – Children, Youth, and Families at Risk)

a. Reaching Diverse Audiences: Montgomery County 4-H Helps People with Autism. The Maryland Public Law 94-142 Mainstream program has increased the awareness of disabled youth needs for the 4-H program. This 4-H horticulture project engages students and staff from Maryland Community Service for Autistic Adults and Children (CSAAC), the Montgomery County 4-H educator and the extension master gardeners.

The CSAAC serves children and adolescents with autism between the ages of 9 to 21 years of age. CSAAC participants reside in the county and attend community schools.

The staff member of CSAAC and the extension educator saw potential in horticulture therapy and designed the program to teach horticulture/gardening skills and basic food and nutrition. The extension educator arranged for the program to be conducted at the Agricultural History Farm, Montgomery County extension garden site.

CSAAC, located in suburban Maryland, started the horticulture program for students with autism in 1998. These severely mentally challenged youth have the support of one staff person. The 4-H program uses its hand-on approach to teach horticulture and gardening skills that include soil preparation, planting and garden maintenance. The CSAAC staff and the extension master garden volunteers work under the leadership of the extension educator. The master gardeners provided the student with four 4' x 18' demonstration plots on the grounds of the extension office. The students and their teacher spend approximately 56 hours annually from April to October tending the gardens and participating in experiential education programs such as nutrition, safety, arts and crafts, horticulture and related environmental issues. The master gardeners teach safe and effective methods of managing gardens. The skills and experiences gained in horticulture and gardening are valuable career development opportunities that provide the mentally challenged with insight and exposure to the industry. This team effort provides a

rich and practical experience for the target audience. The 4-H educator spends approximately .10 % FTE annually coordinating the program. The program was selected by the CSAAC staff to achieve the students' career objectives. The extension educator and the master gardeners designed the project to correspond with the students' abilities and personal needs. The 4-H office, the master gardeners and the extension horticulture unit provide gardening tools and seeds for the project. The students make weekly visits to the garden to weed, water and harvest the vegetables.

b. Impact. The students work with great interest and enthusiasm in the gardens. The CSAAC staff shared that the weekly gardening experience is a highlight for the students; gardening skills and work in a non-formal setting were cited as benefits of the program. The master gardeners enjoy working with the students and gain great personal satisfaction observing their progress. The 4-H program increased its awareness of autism and need for other programs for the mentally and physically challenged. For three years, twenty students with autism and one teacher participated in the horticulture gardening program. The program will be continued in 2001 because of its value to the students. Severely mentally challenged youth:

- Learned skills in growing, cultivating and harvesting a garden.

- Increased skills in preparing nutritional meals at the site and home.

- Exhibited vegetables, flowers and crafts at the county fair.

- Increased their self-esteem by receiving cash awards and ribbons at the fair.

- Used and improved fine motor skills with 4-H projects.

- Displayed enthusiasm and interest in all projects.

- presented the 4-H educator and the master gardeners their "Outstanding Community Support Award."

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds.

d. Scope of Impact – County Specific

a. Baltimore Full Partners-Teen Corps. There is a need to develop programs that engage youth, the community, and organizations to work in partnership to build safe, healthy and sustainable communities. The Baltimore Full Partners (Maryland Cooperative Extension-Baltimore City 4-H, Fellowship of Lights Youth and Community Services, and The Safe and Sound Campaign for Children and Youth) collaborate to strengthen Baltimore City communities through partnerships and increased opportunities for youth. This comprehensive leadership development program involves 40 youth and 30 community volunteers.

The Educator trained youth and community volunteers to act as mentors for the program. Training areas consisted of leadership development, entrepreneurship, conflict resolution, team building, service learning and organizing. The Educator provides support weekly to the youth and adult volunteers by assisting in developing lesson plans, researching resources, and supervising monthly Teen Corps meetings.

Youth and adult volunteers from the BFP are located in eight community sites throughout Baltimore City. They are engaged in community mapping and asset-based activities to determine the types of resources and interests of the members in their community. As a result, tutorial,

science, entrepreneurship, service learning, public speaking and training activities/clubs have been established. Each month during Teen Corps meetings youth and adults from the eight communities meet at a local recreation center to report on their accomplishments, receive training, and develop action plans for collective community activities.

Impacts. As a result of our efforts, youth and adults in Baltimore City develop, share, and demonstrate skills in leadership development, entrepreneurship, service learning, and community organizing. It exemplifies the best practices of Community Youth Development. Community Youth Development is a method for involving youth and adults together in creating social change. It harnesses the power of youth to affect community development, and similarly engages communities to embrace their role in the development of youth.

- From 1998-1999, the BFP have reached 2,700 community and agency leaders through workshops, trainings, the media, and outreach efforts.
- Twenty youth and twenty adults were trained as Study Circle facilitators (a problem solving and action planning technique). As a result, ten youth and ten adults partnered to facilitate study circles on race relations and community development to 80 youth at the state 4-H Teen Focus Conference.
- Thirty youth and thirty adults developed and implemented the largest National Safe Night USA (a crime and violence prevention program) in Baltimore City, involving 200 youth between the ages of 12-15.
- Two youth and two adults presented the BFP model at the NAE4-HA Conference in Pittsburgh, Pa.
- Youth and adults partnered to sponsor a tribute to Martin Luther King Day celebration involving 120 youth.
- Fifteen youth and fifteen adults partnered to supervise and teach eighty-three 8-13 year old residential campers from Baltimore City in leadership, conflict resolution, team building, cultural diversity, environmental science, and entrepreneurship skill development.
- Fifteen youth and eight adults were trained as entrepreneurship facilitators. As a result, four youth and two adults facilitated a workshop entitled “Strategies for Engaging Youth in Entrepreneurship” at the 7th National Youth Entrepreneur Symposium, King of Prussia, Pa.

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds. Extension Educator co-authored and implemented the Baltimore Full Partners Action Plan and outcome models and submitted them to the national partners (National 4-H Council, National Network for Youth, and the Academy for Educational Development). As a result, the program received a total of \$21,000.

d. Scope of Impact –City Specific. Collaborators: Fellowship of Lights Youth and Community Services, and the Safe and Sound Campaign for Children and Youth.

Youth Development (Key Themes –Character/Ethics Education)

a. Carroll County 4-H Kids On The Block Program. The Carroll County 4-H Kids On The Block Disability Awareness Puppeteering Program is designed to provide youth with the knowledge to interact positively with all individuals. The Carroll County 4-H Youth Development Program and County Public Schools have cooperated to provide this program which began as a result of Maryland’s Public Law 94-142 (main streaming) which increased the number of disabled youth in the 4-H program as well as the local school system.

The program presents four disabilities/differences that are coordinated each year with the school's second and fourth grade health curriculum. Current topics are blindness, downs syndrome, multiculturalism and deafness for second grade and cerebral palsy, cancer, diabetes and learning disabilities for fourth grade. This program is presented to over 4,000 youth each year. In 2000, 26 teens volunteered as puppeteers.

This program is designed to be interactive and hands-on. At the end of each script, students have the opportunity to ask questions directly to the puppets. The puppeteers remain in character and answer the questions reinforcing important points of the particular disability/difference. In addition, there are demonstrations on real-life instruments used by the disabled in their day-to-day lives to show students so they are able to increase their knowledge about the disabilities.

b. Impact. A pre/post test determined if the youth were learning about disabilities--94% of the students improved their individual scores on the post-test. Another evaluation determined that in 6 of the 8 situations, students had a changed reaction to encountering a person with that disability. These results indicate that not only are students learning about specific disabilities, but they are also learning how their reactions can make a difference. In addition, a packet of hands-on activities was distributed to the teachers, designed to allow students to experience what life is like for an individual with a disability. The teachers incorporated the activities into their class curriculum.

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds

d. Scope of Impact –County Specific

a. Baltimore City. While the economic status of many in America has improved, there are still many people who are in need of food. The rural areas and some neighborhoods in the inner cities are especially hard hit. Additionally, a large amount of food is being wasted. Statistics for 1996 indicate that over 120 million tons of food were wasted in this country. According to the Maryland Food Committee, the growing number of needy individuals is overwhelming food providers and soup kitchens. Many are turned away each day because there is not enough food to give. More and more children (at least 40,000 in Baltimore alone) go to bed hungry each night.

Working in conjunction with the Baltimore Area Gleaning Network, the Center for Poverty Solutions, Heritage United Church of Christ, and the Unity United Methodist Church, Baltimore City 4-H'ers, parents and volunteers are gleaning and distributing fresh produce to those in need of food. Additionally, 4-H'ers are baking, on a monthly basis, 6-three pound Macaroni and Cheese Casseroles for Our Daily Bread Soup Kitchen. Gleaning is done one Saturday morning per month. 4-H'ers with adult volunteers leave as early as 6:30 a.m. Produce is picked for Baltimore and/or Washington D.C. Food Banks. The 4-H'ers also pick produce to bring back and distribute directly to persons in need in the city.

b. Impact. Baltimore City residents are enjoying the fresh produce that the 4-Hers have gleaned and the casseroles that they prepare. They are gifts of food and of caring. In addition, their efforts have merited a grant. Extension Educator assisted the volunteer and youth in writing a "2000 Feeding the Hungry Grant". Kraft Foods, Inc. funded this grant for \$ 1250.

c. Source of Federal Funds – Smith-Lever 3B&C and state general funds

d. Scope of Impact – City Specific

Youth Development (Key Themes –Jobs/Employment, Workforce Preparation)

a. Focusing on the Middle: Parkland 4-H After School Program. Parkland Middle School is an urban school with more than 1200 students in the 6th, 7th, and 8th grades. The enrollment is 34.4% Hispanic, 28.6% white, 23.8% African American, 13.0% Asian and .3% American Indian. The ESL/International student population is at 29% and growing. More than 51% of the students are eligible for free and reduced meal 1999-2000. The 4-H after school program had a three-fold objective: (1) to recruit and mobilize community volunteers, (2) to create and conduct activities with appeal to the age level and (3) to contribute to the cognitive and social growth of the students. Programs were presented after school for one hour and fifteen minutes. One extension specialist and one extension educator each gave approximately .10% of FTE to the project. Approximately 175 students participated. The "hands-on" 4-H programs reinforced basic education principles and taught important life skills.

b. Impact. Students found 4-H activities interesting, challenging and enjoyable. The 4-H program provided opportunities and achievements for students not involved in other activities. Teachers were amazed with the interest and work of students who displayed little enthusiasm to the school curriculum. The after school program provided a consistent program and a safe environment with caring adults. The 4-H experiential activities reinforced the school curriculum, developed important leadership skills, self-esteem, increased project and life skills, and introduced wholesome activities for hobbies and fun. An advisory council was formed composed of teachers, community agencies, church, parents, and interested adults and students. The linkage to the faith community, and the school community and volunteers was greatly enhanced by the 4-H connection. One church provided approximately one-half of the thirty-five volunteers in the program. They also provided approximately 200 sweaters, jackets, and coats for refugee children. A fund was created to purchase shoes for students.

The rapport and partnership with the principal and teachers at Parkland provide a strong foundation to expand comprehensive programs to the classroom and after school program for 2000-2001. A group of retired chemical engineers spent the summer designing a science program for after school that will be funded with a grant from their professional organization. Plans with the guidance department will add a career program to the classroom that will culminate with the first career day for the middle school. Coordination with Linkages to Learning will extend the program to include economic and social issues faced by students and their parents.

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds.

d. Scope of Impact – County Specific

a. Maryland 4-H Mini-Societies. The Maryland 4-H Mini-Society is a 4-H outreach to underserved youth. The programs are in three counties in the Baltimore-Washington corridor and Baltimore City, the major urban areas of Maryland. Mini-Society taps a large diverse population to include African-Americans, El Salvadorans, Koreans, Chinese, Japanese and others of Hispanic and Asian heritage creating awareness that entrepreneurship is a viable option of employment. This experiential education program engages the target audience in creating a society to include currency, government, flag and civil servant jobs that they apply, interview and conduct. The youth created a wide variety of businesses and services that increased their skills in law, government, ethics and economics. Critical thinking, problems solving and other life skills of youth are enhanced. One hundred two youth ages eight to thirteen participated in four mini-societies in Montgomery County and Baltimore City.

b. Impact. Children are captivated with the power and responsibilities they have in Mini-Society. Participants expressed satisfaction in the program in these ways, "It was fun especially when running the business." "In 4-H Mini-Society you have fun and at the same time you learn." "It was the best time learning." One community partner in a subsidized housing development said, "This is a great program. The skills that they learned will be very useful. We need more programs like this." Extension Educators are ecstatic about the enthusiasm and interest the participants displayed in Mini-Society. Parents felt the program provided insight about the workings of economics and decisions required in society. Youth are players in the educational process of Mini-Society creating many teachable moments. They formed corporations, advertisements, market surveys, and dealt with issues like, scarcity, competition, supply and demand, and the legality of contracts. They learned and used new terms in town meetings, trials and other businesses. Youth increased their skills in math, writing, spelling and vocabulary in the program. Leadership skills and team effort were greatly increased as the youth developed products and services to sell.

c. Source of Federal Funds – Smith-Lever 3b&c and state general funds. Approximately .10 % FTE each for one specialist and four extension educators. Ewing Marion Kauffman Foundation Grant for \$20,125.

d. Scope of Impact –Multi-county Specific. Collaborators included:
Anne Arundel County: Hot Spots (Governor's Program on Crime Prevention)

Baltimore City: Edgecombe Circle Elementary School and the 4-H Residential Camp
Howard County: Community Homes Housing Development and Howard Co Board of Education
Montgomery County: Rock Creek Terrace Housing Development and Parkland Middle School

Key Themes – Agriculture Communications, Enhancing Customer Service/Satisfaction
Information Technologies

All of these themes are being addressed by the Communications and Information Technology (CIT) unit. It is currently undergoing major restructuring and realignment of resources to better serve the information and technology needs of the entire College, including instruction, Extension, research and international programs. The new structure includes 4 major areas, each headed by a unit coordinator reporting directly to the Associate Dean for CIT: media services, marketing/media relations, information technology, and distance learning. CIT is not an academic department, rather a service and program unit working directly with campus and field faculty to further the outreach mission of the College.

Within CIT, there is an increased awareness of teamwork, mutual respect, open communication and respect for cultural differences. Currently, 23% of the staff is African American and 52% female. Strategies used to achieve a heightened awareness of mutual respect, teamwork, and open communications have included:

- Statewide focus group meetings and listening sessions
- Full staff retreat to discuss focus group findings and explore group strategies
- Individual team meetings
- Regular staff meetings held at two locations, both campus and Riverdale, the site of our printing facilities
- Open door policy encouraging casual drop ins for information sharing and problem solving
- On-line anonymous suggestion box
- Weekly coordinators meetings in an informal setting for information sharing on projects and problem solving.

A major goal of CIT is to continue to encourage open communications, trust and mutual respect among staff and between staff and faculty who seek our services. Quality media products are derived from creative and motivated minds. To achieve true success, CIT must strive for an organization climate where each member is valued and rewarded not only for quality work but for teamwork and mutual respect as well.

Major initiatives for CIT, include:

- Implementation of new college web site for seamless entry and access to information, template designs for each county
- Migration from reliance on print media to web-based media products and distribution
- Increased faculty development for field faculty in information technology and distance learning applications
- Increased emphasis on marketing Extension to new and underserved audiences
- Implementation of satellite based Internet programs (funded by NSF)

- Upgrading bandwidth and technology resources at each regional research and education center.
- Pilot testing of videoconferencing using IP (H.323)

Key Themes - Multicultural and Diversity Issues

MCE is using diversity management principles and practices to implement an initiative aligned with the AGNR and UMCP Diversity Initiatives and Strategic Plans.

The plan's purposes are 1) attracting and retaining a more diverse work force, 2) creating a positively charged work climate, and 3) attracting new audiences to extension programs.

Accomplishments/ Key Outcomes

In its startup year, the initiative plan was written and the following outcomes were achieved in MCE:

- Established State Search Committee and trained them to recognize intercultural qualifications of prospective job candidates, resulting in positive screening for diverse candidates
- Developed informal internal EEO/AA resolution process for MCE and fielded a trained corps of twenty-four faculty EEO/AA Advisors.
- Streamlined Internal Compliance Review Process with updated data collection through MCERS Reporting System.
- Developed and implemented new Program Accessibility and Media Statement policies, including a "Making Programs Accessible" guide furnished to all county offices.

2001 Goals

1. Implement diversity/audience expansion training for MCE at Annual Conference (3-01).
2. Integrate diversity-related outcomes and activities into individual and county plans of work.
3. Work with region and county directors to establish meaningful diversity-related goals including employment and programs, establish baseline measures, and evaluate progress.

Part B. Stakeholder Input Process

The College of Agriculture and Natural Resources following the lead of the University of Maryland began the process of developing a strategic plan for the college including both Maryland Cooperative Extension and the Maryland Agricultural Experiment Station. The process is drawing near completion and draft plans are now available to faculty, staff, students and stakeholders. The information from the Key Informant process described below was used as an input in the plan development process. The strategic plans are available as follows:

For the University:

http://www.inform.umd.edu/provost/Strategic_Planning/Plan.html

For the College: <http://www.agnr.umd.edu/Dean/StrategicPlan/Mission.html>

Administrative Committees

The Dean's Leadership Council met during the reporting period and provided important feedback from the client groups they represent. In addition the Dean and Director is able to seek specific input from this group as need arises.

Extension Advisory Councils

County Extension Advisory Councils (EAC) meet on a regular basis in most of Maryland's counties and Baltimore City. The EAC's provide insight into and support for the local extension programming. The Regional Extension Directors meet with the EAC's for the counties in each region on a regular basis. In addition the Assistant Directors/Program Leaders and Associate Director often meet with these EACs. Maryland Extension Advisory Council (MEAC) met twice during the reporting period with participation by a wide array of citizens and MCE administrators. The MEAC has been found to be less than efficient in providing desired input into the programs of the state. Reorganization of the MEAC is underway.

Outcomes 2002

The planning document, Outcomes 2002: A Framework for Our Future, drafted in 1997 continues to serve as a guide for extension programming in Maryland. Discussions are underway to revise this framework with the intent of extending its reach into the next 5-year period 2002-2007. Additional public input will be sought as this plan is revised by early 2002.

Key Informant Process

A Key Informant Survey was designed to acquire input from stakeholders. The goal was to hear from Maryland citizens who are not part of the usual clientele of Maryland Cooperative Extension and the Agricultural Experiment Station. In the fall of 1999, two questionnaires (community and food systems) were developed and pilot-tested with the Maryland Extension Advisory Council. During the winter, three counties pilot-tested the process and questionnaire. From April until October, MCE personnel collected data from over 200 persons who represented selected sectors of the community and food system. All counties and Baltimore City were represented. It is expected that in the coming year, the results will be shared within the College and with community groups, local and state officials, and other interested groups. MCE will use the information as it begins the planning process for its next five-year plan.

Customer Questionnaire

No customer questionnaires were used during the reporting period.

User Input Through WWW

The WWW was not used for user input during the reporting period.

Part C. Program Review Process

Merit Review Process

Maryland Cooperative Extension like most other Cooperative Extension System institutions has not historically developed a wide-ranging merit review process in the past. The Plan of Work is an articulation of MCE's approach to Merit Review.

Local Program Reviews

Each MCE Extension Educator is required to develop or update an Individual Extension Plan (IEP), also called a Job Description in some MCE documents) each year. These IEP's are updated annually and reviewed internally by Region Extension Directors and State Program Leaders for 4-H Youth Development; Family and Consumer Sciences; and Agriculture and Natural Resources. IEPs are shared with the Educator's County/City Extension Advisory Council for merit review and comment. The EAC's are widely representative of the clientele of the county or Baltimore City. ***This update of IEPs continues as described for the current reporting period.***

Each county has developed (and annually updates) a unit plan of work (UPOW). This UPOW is developed and updated with the local Extension Advisory Council. All academic departments with MCE Specialist faculty also develop similar unit plans of work. The MCE State Program leaders and administration determine the level of conformity with the County/City UPOWs and review these plans. These will be available for review on the MCE internal web site. ***This effort continues but on an irregular basis. Efforts will be made to renew this process in the coming year.***

State Program Reviews

Ideas and issues arising from local and departmental UPOWs are developed into a state plan of work (SPOW). The State Plan of Work takes on two separate forms; the Joint Extension/Research Plan of Work as submitted to the US Department of Agriculture and a local document (currently identified as Outcomes 2002). The SPOW is sent to select 1862 and 1890 extension administrators for merit review. The Northeast Region's Extension Directors have agreed to participate in a shared review of State Plans of Work. ***Review efforts have not been completed as of this reporting period.***

MCE will ask selective individuals to provide a review of the Joint Extension/Research Plan of Work to establish their evaluation of the merit of the Plan. Selected individuals will include Cooperative Extension program leaders in other states, an 1890 administrator from another state and selected clientele members in the state. The merit review process will focus on the three primary programming areas of MCE; Agriculture and Natural Resources, Family and Consumer Sciences and 4-H Youth Development. ***This review has been postponed.***

Comprehensive Program Reviews

MCE will conduct a comprehensive and detailed program review of each of the above program areas listed above at least every 4 to 6 years. An outside review panel selected specifically for the purpose of the review will conduct these reviews. This panel will seek input from local and state stakeholders as well as well faculty as they assess the overall program in the selected area. The first such review occurred in MCE in the fall of 1996 when a detailed review of the 4-H Youth Development program was conducted. This review, conducted by a panel of 4-H Youth Development professionals from other states, resulted in a review document that is currently being used to guide major changes in the program directions of the program. A 4-H Review Summary is provided as a part of this Plan of Work. *During the reporting period a strategic plan was under development for the 4-H Youth Development programming area.*

MCE will initiate similar program reviews in Agriculture and Natural Resources and Family and Consumer Sciences programming areas over the next five years. These reviews while costly provide considerable guidance to the administration on formulating programming responses to the plan of work. *No action has been taken on these reviews as of this reporting period.*

Peer Review Process

Peer Review has long been a part of the Maryland Agricultural Experiment Station's approach to funding research as required under the Hatch Act. This process will be continued on all specific projects. *All aspects of this review process continue during the reporting period. Additional efforts are underway to more completely define the efforts of the Northeast region as defined below.*

Hatch Projects. Peers in compliance with the guidelines of USDA review all state research projects funded by federal formula funds externally.

Regional Research Projects. A peer committee in compliance with the guidelines of USDA reviews all regional research projects funded by federal formula funds.

Northeast Research, Extension and Academic Programs. A peer committee in compliance with the guidelines of USDA reviews all NREAP and related projects funded by federal formula funds.

MAES/MCE Competitive Grants. All projects funded through the MAES/MCE Competitive Grants program are reviewed in accordance with the federal guidelines for project review by a panel of scientist from UMCP, UMES and other research institutions located in Mid-Atlantic region including USDA-BARC, Johns Hopkins University, University of Delaware and Virginia Polytechnic Institute and State University.

In addition, this specific Plan of Work will be sent to panel of agricultural scientist to assess the proposed research plans.

Several units of the College have undergone external review processes that include Extension and Research efforts of the unit. The Department of Biological Resources Engineering was reviewed for accreditation in the fall of 1999. The Department of Agricultural and Resource Economics is undergoing review in early 2001 and the Department of Veterinary Medicine was also review in 2000. The Landscape Architecture program of the Department of Natural Resources Sciences and Landscape Architecture was evaluated for accreditation.

Part D. Evaluation of the Success of Multi and Joint Activities

Substantial cooperation exists between research and extension in Maryland's two land-grant institutions. This cooperation starts with the administrative level linkages and includes joint appointments and a competitive grants program.

UMCP Administration. This cooperation is directed by the administration of Maryland Cooperative Extension and the Maryland Agricultural Experiment Station which are managed by Dr. Thomas A. Fretz, Dean of the College of Agriculture and Natural Resources, Director of Maryland Cooperative Extension and Director of the Maryland Agricultural Experiment Station, and his designated Associate Directors. They form a single management team of agriculture research, extension and education at the University of Maryland, College Park.

UMES Administration. The UMCP administrative team and the agricultural extension and research administrative team of the University of Maryland Eastern Shore work closely in developing programs for Maryland. Dr. Henry Brooks is the Administrator of 1890 Extension Programs at UMES where extension is a campus wide effort. Dr. Henry Brooks reports directly to the UMES President. He is also a part of the MCE administrative team. Dr. Carolyn Brooks is the Dean of the School of Agricultural and Natural Sciences at UMES. She also works closely with MCP administrative team to bring closer ties to MAES.

Joint Appointments. MCE and MAES jointly fund a number of UMCP academic department faculty members. These joint appointments provide for integrated approaches to applied research and extension. Most State Specialists (all faculty members in academic departments) with MCE appointments have at least a partial appointment in MAES. Scientist/Specialists with such appointments are in a position to assess the needs of agricultural and related clientele through personal contacts or through MCE field faculty (Extension Educators). They can with these assessments design both applied research approaches and extension education programs to meet the identified needs. The strength of joint appointments in academic departments is the synergy of work relationships with research scientist working on more basic research needs.

Competitive Grants Program. MAES provides primary funding for and manages a competitive grants program for agricultural and natural resources research scientists in Maryland. Funding is open to any University of Maryland System institution. The competitive grants program is jointly managed by UMES and UMCP. The program encourages cooperative research/extension submission. Faculty members with primarily MCE appointments have been major recipients of funding through these grant efforts. Each year a set of funding priorities is established which seek to address priority needs in the state. Field faculty are encouraged to participate in the program and often collaborate with research scientists and extension specialists to request funding.

The efforts identified above continue to provide for effective collaboration among institutions and disciplines --- research and extension --- in Maryland. Collaborations among campus and field faculty are increasing, as are multi-disciplinary approaches to problems solving research. This is evident in some of the Planned Activity reports in Part A of this report. Critical needs are being met using “multi” approaches in the area of land use, animal waste management and farm profitability. Additionally, MCE has increased its research base for programs in Family, Youth and Communities by placing MCE funded positions in primarily research and instruction based departments of Nutrition and Food Sciences (in AGNR) and Family Studies (College of Health and Human Performance). These efforts closely link research efforts (not all funded by MAES) with the needs of communities in the state.

Multi-state programming efforts are also strong in the Northeast region. Maryland is a participant in these efforts. This is especially true in agricultural Extension programs. Maryland and Delaware continue to seek ways of sharing resources across boundaries. Efforts have begun with Virginia to seek ways of sharing programming resources, where appropriate, more effectively between the states.

Part E. Multi-state Extension Activities

Multi-State Collaboration

Maryland's two Land-grant institutions have sought to collaborate with other states in providing the highest of quality research and extension education programs possible. These efforts are essential to efficient use of resources and in establishing sound research methodology. Maryland has been a participant in the Northeast Regional Research program for a number of years. Joint Research programs have been developed using the regional research approach. These projects are well established in the region.

- Northeastern Groups
 - NorthEast Research Association (NERA)
 - NorthEast Extension Directors (NEED)
- Northeast Region Joint Research-Extension Plan
- Regional Projects
 - NorthEast Research Extension Project (NEREP)
 - NorthEast Research Project (NERP)
 - NorthEast Research Extension and Academic Projects (NEREAP)
- 1890 Region
 - Association of Research Directors
ARD was formed and incorporated in 1972 to coordinate most of the food and agricultural research activities among the 1890 Land-grant Universities, USDA, and other colleges and universities. Through this body, regional research projects are formulated whereby several interested institutions participate. Over the years three such efforts have occurred and supported by several 1890 Land-Grant universities on high priority issues.
- 1890 Extension Directors'

Multi-state extension efforts are extensive for MCE. As a small state with many bordering states and counties, efforts are often targeted to clients in Delaware, Pennsylvania, and West Virginia as well as Maryland. These programs (usually in the agricultural sciences) are often done in cooperation with extension educators in the adjoining states. Recent efforts include workshops on precision agriculture, computer use, risk management, greenhouse IPM, nursery nutrient management and vegetable production. In addition, biosecurity efforts in the poultry industry extend throughout the Delmarva Peninsula states of Maryland, Delaware and Virginia. While evaluation is still underway, these programs appear to have met client expectations in many areas of concern.

These efforts decrease the need for duplicative faculty (especially Specialists) in the various states resulting in greater efficiency of program delivery. In some programming areas, the clients from several states may be required to develop a critical mass for program delivery.

Part F. Integrated Research and Extension Activities

Integration of Research and Extension efforts are described to some extent in a previous section. MCE and MAES programs are both managed by administrators in the College of Agriculture and Natural Resources housed only a few feet apart. These arrangements, along with the joint funding efforts described above, are paramount in developing a close and effective integration of research and extension. Not all aspects of Extension or Research have a counterpart in the other unit. For example, historically MAES has provided little funding in the areas of human sciences resulting in a low level of research output in this critical area. Research results were sought from other institutions to assist the Extension areas. MAES recently funded an important applied research effort in human sciences that will be carried out by in part by Extension specialist in MCE.

The effective utilization of joint appointments provides much of the integration of Research and Extension. Extension Specialists at the campus level are rarely hired without a joint appointment in either research or academic programs. Most new hires are well versed in research methodologies and expect to collaborate with other researchers in developing both Extension and Research programs. This is an effective integration process.

Appendix: Table of Resource Commitments by Planning Goal

The following three pages contain the required FORM CSREES-REPT (2/00) in facsimile form for:

- Multistate Extension Activities
- Integrated Activities (Hatch Act Funds)
- Integrated Activities (Smith-Lever Act Funds)

The forms are submitted in electronic form and are not signed.

U. S. Department of Agriculture
 Cooperative State Research, Education and Extension Service
 Supplement to the Annual Report of Accomplishments and Results
 Multistate Extension Activities and Integrated Activities

Institutions University of Maryland
University of Maryland Eastern Shore
 State Maryland

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

Title of Planned Program/Activity	Actual Expenditures				
	<u>FY2000</u>	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	<u>FY2004</u>
<u>Goal 1 - To Achieve an Agricultural production system that is highly competitive in the global economy</u>	<u>\$295,994</u>				
<u>Goal 2 - A safe, secure food and fiber system</u>	<u>\$35,307</u>				
<u>Goal 3 - A healthy, well-nourished population</u>	<u>\$116,272</u>				
<u>Goal 4 - Achieve greater harmony (balance) between agriculture and the environment</u>	<u>\$213,177</u>				
<u>Goal 5 - Enhanced economic opportunity and quality of life for Americans</u>	<u>\$110,974</u>				
Total	<u>\$771,724</u>				

 Director April 1, 2001
 Date

Form CSREES-REPT (2/00) Facsimile

U. S. Department of Agriculture
Cooperative State Research, Education and Extension Service

Supplement to the Annual Report of Accomplishments and Results
Multistate Extension Activities and Integrated Activities

Institutions University of Maryland
University of Maryland Eastern Shore
 State Maryland

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

Title of Planned Program/Activity	Actual Expenditures				
	<u>FY2000</u>	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	<u>FY2004</u>
<u>Goal 1 - To Achieve an Agricultural production system that is highly competitive in the global economy</u>		\$438,858			
<u>Goal 2 - A safe, secure food and fiber system</u>		\$27,460			
<u>Goal 3 - A healthy, well-nourished population</u>		\$41,190			
<u>Goal 4 - Achieve greater harmony (balance) between agriculture and the environment</u>		\$270,438			
<u>Goal 5 - Enhanced economic opportunity and quality of life for Americans</u>		\$2,296			
Total		\$780,242			

 Director April 1, 2001
Date

Form CSREES-REPT (2/00) Facsimile

U. S. Department of Agriculture
Cooperative State Research, Education and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Multistate Extension Activities and Integrated Activities

Institutions University of Maryland
 University of Maryland Eastern Shore
State Maryland

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

Actual Expenditures

Title of Planned Program/Activity	<u>FY2000</u>	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	<u>FY2004</u>
<u>Goal 1 - To Achieve an Agricultural production system that is highly competitive in the global economy</u>		<u>\$470,142</u>			
<u>Goal 2 - A safe, secure food and fiber system</u>		<u>\$27,324</u>			
<u>Goal 3 - A healthy, well-nourished population</u>		<u>\$40,986</u>			
<u>Goal 4 - Achieve greater harmony (balance) between agriculture and the environment</u>		<u>\$226,613</u>			
<u>Goal 5 - Enhanced economic opportunity and quality of life for Americans</u>		<u>\$7,348</u>			
Total		<u>\$772,413</u>			

Director April 1, 2001
Date

Form CSREES-REPT (2/00) Facsimile