

2009 University of Maryland and University of Maryland - Eastern Shore Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

The 2009 Accomplishment Report consists of the University of Maryland Extension (UME) and Maryland Agricultural Experiment Station (MAES) results and accomplishments. UME and MAES at the the University of Maryland College Park (UMCP) are in partnership with the University of Maryland Eastern Shore (UMES) and as such they coordinate their research and extension activities to the maximum extent possible.

In 2009, UME developed a new strategic plan to reflect the priorities of the University of Maryland and the National Institute of Food and Agriculture. The new strategic plan forms the framework for the 2011-2015 Plan of Work and annual Accomplishment Reports for those years. Similarly, MAES has developed its POW for 2011 -2015 using the framework identified by NIFA. This report is the last to be written within the framework of the past UME 2006-2011 strategic plan.

The past five-year strategic plan, **Building a Stronger Maryland**, emphasized three major areas that impacted all of Maryland:

Quality of Life

Quality of Life is defined as "Living and working in an environment that enables individuals and families to attain their basic needs and provides the opportunity for personal and community development."

Situation: Quality of life involves everything impacting our daily lives from our environment, quality of food, and socio-economic position to communication and personal growth in family, work, and social interactions. Although to achieve one's life goals is a continued pursuit by most, not everyone is as fortunate as others and some individuals and their communities still require basic services for their education, health and welfare. Abraham Maslow's motivational theory regarding the hierarchy of needs is most relevant here. It provides the building blocks behind the motivation for achieving personal satisfaction and feeling a sense of worth and accomplishment.

In the pursuit of a "Quality of Life" it was necessary for UME and MAES to develop research and implement educational programs to help people sustain and improve their quality of life by achieving their physical, psychological, and materialistic needs.

Economic Prosperity

Economic prosperity encompasses "The financial and related factors leading to improvement in the well being of individuals, families, communities, and businesses."

Situation: Economic prosperity is relative to socioeconomic levels and expectations. For some individuals and families, economic prosperity may mean securing employment and having sufficient resources to meet their basic needs. On the other hand, acquiring business skills, exploring career opportunities, and managing personal finances by reducing debt, increasing savings, and planning for retirement and estate settlement increase economic stability and feelings of prosperity for people at all income levels. Economic prosperity includes collaborative learning with industry that strengthens market positions and profitability in an increasingly global economy. Since many traditional businesses are under economic stress as markets change, future prosperity is likely to depend on innovation, adding value and accurately identifying customers and their needs. Regulatory compliance and quality issues often affect production costs and the marketability of products or services, directly affecting profitability. Therefore, our research and educations programs were and continue to be designed to answer these relevant questions.

Environmental Stewardship

Environmental stewardship can be defined as "Educating the public regarding the management of our environment (ecosystems and natural resources) for this generation and for those yet to come."

Situation: Ecosystems are a critical component of a sustainable and economically viable production system. Studies have shown that both ground and surface waters contain high levels of nitrogen and phosphorus (N and P), sediments and toxic contaminants. These contaminants adversely affect water quality, aquatic organisms, fisheries, and human health. Various regulations, programs and legislations are in place with the goal of reducing these sources of pollution. The Chesapeake Bay Program had a goal of 40% reduction of nutrients into the Bay by 2010. Although progress was made, efforts are on the way to implement a more aggressive BMP implementation plan called "2-year Milestone" in order to reduce

the nutrient and sediment loads to desired levels. The Water Quality Improvement Act of 1998 mandates that farmers have and implement nutrient management plans. There are now new storm water runoff regulations to help control storm water, create remediation of soil and groundwater, and reduce air pollution. Previous legislation requires that restricted use pesticides may only be used by certified applicators.

Our research also found that runoff from agricultural fields that had been amended with poultry litter may induce endocrine disruption in fish population. Investigations into the identification of the impact of climate change and land use on the distribution of diseases-vector mosquito populations were established to shed light on the human health concerns. This component of research is just gaining momentum.

Urbanization, development and the subsequent construction and use of waste-water treatment plants contribute significantly to contamination. Urbanization and development also compromise open space. In urban areas, toxins and nutrients enter Maryland's environment through excessive use of pesticides and fertilizers from commercial, public and private applications. Sediment enters Maryland's surface water from erosion originating from exposed soil, mainly from construction sites and home landscapes. There is concern that as much as 30 percent of the nutrients entering the Bay is caused by air deposition (rainfall). Commercial and non commercial pesticides are used in Maryland in the indoor and outdoor environment.

For this report, these three areas are all subsumed under the five categories of NIFA and one additional UME category: Global Food Security and Hunger, Climate Change, Sustainable Energy, Childhood Obesity, Food Safety, and Family & Community Resiliency.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	120.0	12.0	73.0	15.0
Actual	80.5	16.5	49.5	14.5

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

- Internal University Panel
- External University Panel
- External Non-University Panel
- Combined External and Internal University Panel
- Combined External and Internal University External Non-University Panel
- Expert Peer Review

2. Brief Explanation

Extension Faculty Reviews:

The merit review process currently used to evaluate University of Maryland Extension (UME) faculty has been used successfully for many years with minor changes. The evaluation process occurs annually when the faculty member is formally evaluated by the Regional Extension Director (RED) with input from the County Extension Director (CED) or Area Extension Director (AED), and Assistant Director (AD). Emphasis is placed on impacts and the difference made to constituents and the citizens of Maryland during the preceding 12 months. Each faculty member is evaluated on individual merit. Documents used for the merit review are approved Individual Extension Plan (IEP), Curriculum Vitae, MCERS reports, and Teaching Effectiveness Summary.

Research Faculty Reviews:

All research faculty have a departmental home, and while there are subtle differences between the departments, they all have a peer-review system wherein assigned faculty or a faculty committee review the annual performance criteria of each faculty member and assign a merit ranking. These criteria, from a research

perspective, are evaluated, in general, on grantsmanship, publications, the quality of the journal (based on a citation index), and invited and/or contributed scientific talks and seminars. These are also the same criteria that are used to evaluate promotion and tenure decisions. The peer committee recommendations are reported to the respective department chair who provides his/her input and then provides a final ranking and conducts the annual review. This process is followed for tenured, tenure-track, and research faculty appointments.

Programmatic Reviews:

Programmatic reviews are conducted at the departmental level at the request of the dean, associate dean, and/or department chair. They generally range in the five to ten year cycle. These reviews are conducted by a panel of external reviewers from prestigious departments, institutions, or federal agencies that have similar departmental or agency diversity in programmatic issues. Individual programs are rarely reviewed independently but within the context of how they fit in the mission of the college and department.

Project Reviews:

All research projects funded through MAES undergo both internal and external review. There is an internal review of federal projects by at least two faculty with knowledge of the discipline, a review by the associate dean for research and associate director for MAES, and USDA. The one exception is that MAES offers an internal competitive grant program for faculty within the college and UMES to afford preliminary research findings that increase competitiveness for these faculty to be successful in competing for competitive grants such as AFRI (formerly NRI) and other funding sources. The panel evaluations are a set of standardized criteria such as clarity of objectives, relationship to college's mission, quality of proposed research, deliverables, etc. Currently this process is conducted for Hatch funding only. Plans are being considered for the same internal process for McIntire-Stennis and Animal Health and Disease funding as well. Multi-state project reviews are administered through NERA (Northeastern Regional Association).

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public
- Survey of selected individuals from the general public

Brief explanation.

Starting in the Fall of 2008 and continuing into the Spring of 2009, the new UME strategic plan was shaped and written. The input from that process was used to guide program work during 2009. In 2008, a county customer satisfaction survey was piloted. In 2009, a statewide survey of UME customers was conducted to determine their satisfaction level with services and programs, what other programs they would like to see offered that would help them meet their needs, and any other comments they would like to share. UME field-based educators solicit feedback from local Extension Advisory Councils and other stakeholder groups. Survey work with all groups participating in programs is performed on a regular basis to assess needs. Extension Advisory Councils provide guidance and feedback about current programs and concerning emerging needs and community priorities.

During Spring 2008, the Agribusiness Council was reconstituted to reflect all the disciplines and research areas represented within the College of Agriculture and Natural Sciences and the Experiment Station. Research proposals seeking external funding often are required to include stakeholder input, thus research faculty have contact with stakeholders to obtain input during the initial stages of the project development. Most often, this input provides guidance in developing formula funded projects.

2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Open Listening Sessions
- Use Surveys

Brief explanation.

The UME Customer Satisfaction Survey was a scientific sample of UME customers. The UME customer database was an aggregate of all county and city customer databases across all program areas. End-of-class surveys are used to gather input from individuals attending UME workshops and other events.

The College of Agriculture and Natural Resources utilizes a Dean's Leadership Council consisting of a broad cross-section of agricultural industry leaders to provide input on major directions for the College's research, teaching and extension agenda. The Advisory Council meets periodically to discuss rising issues in the State.

The administrative officers of the Maryland Agricultural Experiment Station and UME sit on and attend a wide array of committees with the State's agricultural leaders. Such continuous contact with the agricultural leadership including the Maryland Secretaries of Agriculture, Natural Resources and Environment provides additional contact to keep research and education issues examined by the research and extension in the State's two land grant universities current. The groups include the Maryland Agricultural Commission, the Maryland Grain Producers Association, the Delmarva Poultry Industry, the Southern Maryland Agriculture Commission, the Maryland Association of Soil Conservation Districts and many other similar groups.

2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Survey of the general public
- Meeting specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public

Brief explanation.

UME draws upon the expertise of approximately 125 MCE Educators, Specialists, and administrators in ongoing, informal needs assessment. UME field-based educators solicit feedback from local Extension Advisory Councils and other stakeholder groups. Survey work with all groups participating in programs is performed on a regular basis to assess needs. Analysis of secondary data for Maryland is also used, including data from the U.S. Census, USDA National Agricultural Statistics, Maryland Departments of Planning, Agriculture, Natural Resources, Economic Development, and Maryland Department of Health and Mental Hygiene (and many more) and environmental scanning at the national, regional, state, and local levels.

MAES has identified state agencies such as the Maryland Department of Agriculture, Maryland Department of Natural Resources, and Maryland Department of Environment as stakeholders for the important role that they play in economics, environmental, diseases, and public policies related to diverse land uses. MAES scientists also have identified USDA-ARS scientists from Beltsville, Maryland, as stakeholders due to their common research interests. In addition, our own UME educators are the best research stakeholders because they often use the results of research conducted by the MAES scientists to respond to questions from the public across the state. Therefore, MAES collects input from all these entities by participating in joint committee meetings and other related communication platforms. MAES has just formed a Faculty Research Council composed of both research and extension faculty that will serve as another body of stakeholder input to identify research needs in 2010 and beyond.

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

Brief explanation.

This information was used to: Set program priorities for our strategic plan 2006-2011; determine statewide staffing plans for UME; develop new job descriptions for county and regional extension positions; develop new initiatives for the College and UME; allocate financial resources, primarily operating expenses for program and curriculum development; and, to assist in revamping strategic initiatives as needed to deal with current budgetary shortfalls and staffing challenges.

MAES used the information obtained from the stakeholders to focus on research issues that are important to the state with respect to production, marketing, economics, public/economic/environmental policies, biotechnology, ecosystem services, animal and human health, energy issues, etc. This information, combined with the national priorities set by USDA-NIFA was used to set the research priorities and monitor progress.

Brief Explanation of what you learned from your Stakeholders

UME field-based educators solicit feedback from local Extension Advisory Councils and other stakeholder groups. Survey work with all groups participating in programs is performed on a regular basis to assess needs.

During Spring 2008 the Agribusiness Council was reconstituted to reflect all the disciplines and research areas represented within the School of Agricultural and Natural Sciences and the Experiment Station.

This information was used to: Set program priorities for our strategic plan 2006-2011; determine statewide staffing plans for UME; develop new job descriptions for county and regional extension positions; develop new initiatives for the College and UME; allocate financial resources, primarily operating expenses for program and curriculum development; and, to assist in revamping strategic initiatives as needed to deal with current budgetary shortfalls and staffing challenges.

UME and MAES are still vital to the citizens of Maryland. The agriculture community requested that UME spend more time in community resource and economic development, primarily providing support for the small and beginning and young farmers. Topics included: Business and market plan development; Inter-generational transfer of assets; Niche markets; Home based businesses; Rural urban interface issues; and Agricultural awareness. In order to meet this need, there was support for the establishment of a Maryland Rural Enterprise Development Center (MREDC). In addition, there is a need for enhanced support for the agriculture producers (broadly) of the State in the way of plant clinics and diagnostics. As a result, UME developed a new Plant Protection Center to include not only plant clinics and diagnostic support, but also academic programs and internships for students.

In 2008-2009, more demand was placed on Extension for agricultural literacy, including understanding the national, state, and local food systems. Maryland's citizens want to know where their food comes from and how to prepare it in ways that are healthy and affordable. In addition, customers asked for information on growing home gardens and food preservation.

Stakeholders are also concerned about how to control chronic diseases that results from non-healthy lifestyles (for example, diabetes education). Family financial issues have dominated many stakeholders' lives in 2008-2009 and they are seeking financial management education.

MAES researchers in cooperation with the UME educators learned that their research should focus on issues needing answers through research; thus, they focused on topics of both state and national importance. Topics included the development of new BMPs to reduce negative agricultural impacts on water quality, especially the Chesapeake Bay; development of new varieties of crop seeds that are disease resistant; genomics on plants and animals for efficient storage of nutrients and reduction of such nutrients as phosphorus in the animal waste, thus helping to minimize nutrient loading to stream systems via runoff; study of the H1N1 virus and its vector of transmission; and alternate uses of tobacco such as pharmaceutical purposes.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
3170379	1246601	2678533	1361341

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	3170379	1246601	2678533	1370763
Actual Matching	3170379	1246601	2678533	1361341
Actual All Other	0	0	0	268494
Total Actual Expended	6340758	2493202	5357066	3000598

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from				
Carryover	0	0	0	0

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Global Food Security and Hunger
2	Climate Change
3	Family & Community Resiliency
4	Sustainable Energy
5	Food Safety
6	Childhood Obesity

V(A). Planned Program (Summary)**Program # 1****1. Name of the Planned Program**

Global Food Security and Hunger

V(B). Program Knowledge Area(s)**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	15%	10%	10%	0%
123	Management and Sustainability of Forest Resources	5%	10%	10%	0%
205	Plant Management Systems	15%	10%	10%	15%
216	Integrated Pest Management Systems	15%	10%	10%	0%
306	Environmental Stress in Animals	0%	0%	0%	5%
307	Animal Management Systems	0%	0%	0%	10%
308	Improved Animal Products (Before Harvest)	0%	0%	0%	15%
311	Animal Diseases	5%	10%	10%	0%
313	Internal Parasites in Animals	0%	0%	0%	5%
315	Animal Welfare/Well-Being and Protection	0%	0%	0%	5%
601	Economics of Agricultural Production and Farm Management	10%	10%	10%	0%
602	Business Management, Finance, and Taxation	10%	10%	10%	0%
604	Marketing and Distribution Practices	5%	10%	10%	0%
608	Community Resource Planning and Development	10%	10%	10%	0%
701	Nutrient Composition of Food	0%	0%	0%	30%
703	Nutrition Education and Behavior	0%	0%	0%	15%
801	Individual and Family Resource Management	10%	10%	10%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	35.0	6.0	20.0	3.0
Actual	27.0	5.0	25.0	5.4

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c 951114	1890 Extension 373981	Hatch 1339267	Evans-Allen 158760
1862 Matching 951114	1890 Matching 373981	1862 Matching 1339267	1890 Matching 284325
1862 All Other 0	1890 All Other 0	1862 All Other 0	1890 All Other 92379

V(D). Planned Program (Activity)

1. Brief description of the Activity

1. IPM

A team was developed to deal with agronomic and green industry crops. This team developed a statewide plan and submitted a competitive grant under the eIPM RFA. This process helped UME develop a more organized statewide IPM program. First detector training was also developed to support the National Plant Diagnostic Network (NPDN). As a result, three of our faculty received a National NPDN award for their effort. Publications, twilight tours, and educational events were used to train producers and homeowners about IPM.

As related to the green industry, short courses and training seminars were held for industry and IPM information was disseminated electronically. Field trials were also conducted to evaluate low risk pesticides, biological control, and alternative control options.

2. Community Resource & Economic Development

In 2008, a new Maryland Rural Enterprise Development Center (MREDC) was established and in 2009 a Director was appointed to lead the Center. A web site was enhanced to meet the needs of a broad audience base ranging from traditional row crops to ethnic vegetables to poultry production. This Center provided opportunities for individuals to explore, develop, and refine their AGNR based businesses. Short courses, iPod broadcasts, webinars, and individual consultation were used to assist AGNR businesses. A youth focused entrepreneurship team continued work from previous years, but included a focus of youth community gardens in urban settings. In addition to nutrition and production focus, youth developed entrepreneurial skills through sales at public markets.

MAES researchers examined the beneficiaries of the agricultural subsidies. Research found that farmers renting the land that they cultivate capture 75% of the subsidies and that landowners' shares increase as the rental for farmland increases in some areas.

3. Marketing Maryland Agricultural Commodities

Numerous competitive grants were awarded to support the AGNR marketing efforts of the MREDC. New fact sheets, posters, brochures, news releases, and web sites were used to support this effort with the cooperation of other organizations and agencies.

4. Alternative Crops

Field variety trails were conducted to evaluate alternative crops at UM Research & Education Centers and at selected agricultural producers sites. Twilight tours were held focusing on new enterprises and alternative crop options, such as organic and ethnic vegetable, pumpkin, and high tunnel production. Collaborated with Maryland's Future Harvest organization in organizing a Mid-Atlantic "Farming for Profit and Stewardship Conference." Developed four new organic crop enterprise budgets and initiated a new "Organic Crop Production Manual." A multi-million dollar grant was secured through NIFA's Specialty Crops Program in cooperation with several other institutions and private enterprises to develop precision irrigation and nutrient management for greenhouse production, nurseries, and green roof systems.

5. Pasture Management

Pasture walks continue to be an excellent venue to educate landowners, with over 10 held statewide. Competitive grants were awarded to establish variety trails. Annual bulletins highlighting variety trial data were distributed. Financial analysis was performed on several dairy farms to evaluate effectiveness of pasture management.

6. Biosecurity and Animal Health

Applied research and Extension educational programs were conducted in the areas of composting large and small animal carcasses, Avian Influenza (AI), viral diseases, and Infectious Laryngotracheitis (ILT). Publications, conferences, workshops, newsletters, and refereed publications were used to transfer the new technology and education to producers.

7. Dry Poultry Litter

Assessed the ability of a new subsurface application technology that places dry poultry litter beneath the soil surface under no-till cultivation thereby reducing nutrient run-off effects on surface waters.

8. Enhancing the Profitability of the Green Industry

Developed a university floral trial garden that would provide information to enhance the profitability of the lower shore region's green industry and ultimately become an All-American Selections (AAS) Display Garden.

2. Brief description of the target audience

1. IPM

Crops: Crop scouts; Certified Crop Advisors; Chemical reps; Industry personnel; Extension faculty; Master Gardeners; Farmers.

Green Industry: Arborist, landscape managers, professional ground managers, greenhouse growers, cut flower growers, homeowners, Master Gardeners; Agency personnel (MDA, MCE, USDA); Certified pesticide applicators in categories III, IV, V; Private pesticide applicators; Technicians; Undergraduate and Graduate students; General public (e.g. Master-gardeners); IPM consultants; Landscape architects; Community Gardeners; Builders and Developers; Municipalities; Federal, state & local agencies; Scientific Community.

2. Community Resource & Economic Development

Southern Maryland Agricultural Development Commission; MARBIDCO; Chesapeake Fields; Garrett-Preston Rural Development Association; Rural Development Center at UMES; Local Agricultural Development Specialists; Planning and Zoning Boards; Farmers; Forest Landowners; General public; Food processors; Producers; Growers; Grain marketing clubs; Farmers markets; Local economic development offices; Mid-Atlantic Direct Marketing Association. Youth audiences and 4-H volunteers carry out entrepreneurship focused projects within urban agriculture.

3. Marketing MD. Agricultural Commodities

County agricultural marketing specialists; Farmer markets, Farmers; Maryland citizens; Local economic development offices.

4. Alternative Crops

Producers; Transitional farmers; New &/or beginning farmers; Farmers markets; Local restaurants; MARBIDCO; County agricultural marketing specialists; Maryland Department of Agriculture; National Colonial Farms; and the Scientific Community.

5. Pasture Management

Individual landowners; agribusinesses; horse owners; dairy farmers; beef producers; sheep and goat producers; USDA conservationists.

6. Bio-security and Animal Health

Farmers; youth; MDA; Agricultural industry; Small and Beginning farmers; Backyard livestock owners; Extension faculty; Research faculty; and the Scientific Community.

7. Dry Poultry Litter

Students (undergraduate and graduate); stakeholder farmers; additional state and federal collaborators

8. Enhancing the Profitability of the Green Industry

Commercial plant growers, plant breeders, retailers, and local home gardeners

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	54000	1500	780	1
Actual	55800	20000	1304	500

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2009

Plan: 1

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	8	40	
Actual	10	100	110

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- 1. IPM: Fact sheets; short courses, field trials, curriculum, websites linked, grants awarded.

Year	Target	Actual
2009	65	76

Output #2

Output Measure

- 2. Community Resource & Economic Development: Publications; advisory committees, new enterprises, relationships, laws, programs, curriculum

Year	Target	Actual
2009	170	147

Output #3

Output Measure

- 3. Biosecurity and Animal Health: In-service training, training kits, seminars, publications, grants, presentations, websites linked.

Year	Target	Actual
2009	45	43

Output #4**Output Measure**

- 6. Pasture Management: Pasture walks, variety trials, in-service training, grants, publications, budgets, practices implemented, websites

Year	Target	Actual
2009	50	56

Output #5**Output Measure**

- 7. Family Financial Management: Workshops, seminars, publications, in-service training, volunteers, partnerships, new enterprises, grants.
Not reporting on this Output for this Annual Report

Output #6**Output Measure**

- 4. Marketing Maryland Agricultural Commodities: Number of programs, publications, new enterprises and grants.

Year	Target	Actual
2009	{No Data Entered}	60

Output #7**Output Measure**

- 5. Alternative Crops: Number of programs, workshops, fact sheets & twilight tours.

Year	Target	Actual
2009	{No Data Entered}	48

Output #8**Output Measure**

- 8. Dry Poultry Litter: students received research training; Master's thesis; presentations; collaborative research partnerships were strengthened; faculty, students, and research staff received training in rainfall simulations and lysimeter construction technology

Year	Target	Actual
2009	{No Data Entered}	8

Output #9**Output Measure**

- 9. Enhancing the Profitability of the Green Industry: Local green industry professionals were provided information obtained from the floral trails and seed companies were provided information on how their new flower varieties perform on the lower eastern shore of Delmarva.

Year	Target	Actual
2009	{No Data Entered}	300

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	1. IPM: Number of IPM scouts and producers that can identify threshold level; pest management programs; implementing research based recommendations; certification in Pesticide Safety; field trails.<
2	2. Community Resource & Economic Development: Number of: business people, advisory groups, development agencies, rural leaders interested in developing ANR businesses and having access to knowledge. Alternative enterprises and food processing & safety programs.
3	3. Bio-security and Animal Health: Number of: educational seminars held for producers, allied industry personnel and government workers; training kits developed and distributed.
4	4. Pasture Management: Number of: farmers adopting best management practices and increasing profitability; new variety trails; NRCS and SWCD personnel trained.
5	5. Family Financial Management: Number of: volunteers trained; new partnerships developed; new enterprises; people improving financial security.
6	6. Marketing Maryland Agricultural Commodities: Number of marketing & business plans developed; Number of farmers requesting marketing and business plans; Number of farmers markets encouraging locally grown produce; Number of schools utilizing locally grown produce.
7	7. Alternative Crops: Number of farmer growing new alternative crops; Number of new farm enterprises; Number of farm markets selling alternative crops; Number of new varieties researched.
8	8. Reduction of phosphorous run-off no-till soils under subsurface poultry litter application, reduction of nutrients loading from land to the water bodies
9	9. Enhancing the Profitability of the Green Industry: the number of local green industry professionals and consumers that visit the trial garden and/or are provided with evaluation results and information via the website and/or email distribution list.

Outcome #1**1. Outcome Measures**

1. IPM: Number of IPM scouts and producers that can identify threshold level; pest management programs; implementing research based recommendations; certification in Pesticide Safety; field trails.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	1450	1833

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

In southern Maryland, the tobacco buyout program has created an atmosphere where farmers are investigating alternative crops, such as greenhouse bedding plants. In western Maryland greenhouse bedding plant and vegetable production are expanding. These new growers need information on diagnosing insect and disease problems. They need information on IPM practices to increase the efficiency of their operations and reducing crop losses. They have rudimentary skills in nutrient management and monitoring of pH and nutrient levels in greenhouse crops.

What has been done

Developed curriculum on disease detection and management, insect and mite detection and management and water and nutrient management geared toward new greenhouse enterprises. Updated Total Plant Management for Greenhouse Management manual/CD to be sold to growers attending the trainings. Workshops were held with 59 attending (Southern MD, 26; Garrett County, 18; & St. Mary's County, 15).

Results

A written survey of the 59 growers showed that 86% felt they improved their understanding of diseases, insects and nutrient management monitoring techniques. Seventy nine percent felt they improved their ability to correctly select the least toxic fungicide or insecticide to control greenhouse insect and disease. Ninety-five percent felt they could now correctly calibrate a fertilizer injector and understood how to use a pH and soluble salt meter to monitor nutrient and pH levels in their greenhouse soils.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems

Outcome #2**1. Outcome Measures**

2. Community Resource & Economic Development: Number of: business people, advisory groups, development agencies, rural leaders interested in developing ANR businesses and having access to knowledge. Alternative enterprises and food processing & safety programs.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	2200	4779

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

AGNR listening sessions indicate an overwhelming need for education programs in financial issues, business planning, sustainable agriculture, entrepreneurship, value-added, alternative enterprises/crops, land use planning, farm profitability and support for small and beginning farmers, rural-urban interface conflicts and AGNR marketing. The Maryland Rural Enterprise Development Center (MREDC), is a new Extension initiative providing farmers, agricultural entrepreneurs, and new and beginning farmers a much needed resource.

What has been done

MREDC is a virtual center that is entirely web-based. The resources on MREDC allow clients to view a wide variety of resources and references concerning over 200 different topics ranging from how to structure and implement a business plan to how to grow a specific fruit. It includes interactive business assessment and planning tools, resources covering such topics as: business development, entrepreneurship, access to expertise, new and next-generation farmer programs, food processing, and enterprise specific modules. More than 130 refereed publications have been contributed to the scientific body of knowledge.

Results

In the first nine months of the new web site there has been 133,605 hits and 24,708 pages visited. As of mid-December 2009, twenty businesses and/or entrepreneurs have made contact for business planning assistance through the MREDC site. Additional topic areas include food processing and youth entrepreneurship, and targeted county resources have been added to the site in response to clients' requests. MREDC has also worked at developing a rural business development network. MREDC is now working in collaboration with the Maryland Rural Council, the Maryland Agriculture and Resource-Base Industry Development Corp (MARBIDCO), and the Maryland Technology Development Corp (TEDCO) to deliver business, product, and financial support.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

608

Community Resource Planning and Development

Outcome #3**1. Outcome Measures**

3. Bio-security and Animal Health: Number of: educational seminars held for producers, allied industry personnel and government workers; training kits developed and distributed.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	100	150

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

A disease outbreak such as Avian Influenza (AI) or exotic Newcastle disease in Maryland's poultry would economically impact poultry growers and processors, and in the case of H5 or H7 AI, would present potential human health risks. These diseases can cause epidemics on poultry farms, loss of export markets, and long expensive quarantines, resulting in large financial losses.

What has been done

State and regional biosecurity educational workshops for small flock owners were conducted to deliver program information. These workshops are an extension of the small flock biosecurity and poultry management handbook. These workshops provided small flock owners the opportunity to ask specific biosecurity and poultry health management questions related to their operation. In addition, these workshops provided Extension the opportunity to build a relationship with small flock owners. Also, novel research was conducted on vaccine development for animal and human diseases.

Results

Five biosecurity workshops were held with approximately 150 in attendance. Educating small flock owners on biosecurity through fact sheets, workshops, and web-based materials has led to better AI prevention and control measures. It is difficult to determine the economic impact of a proactive educational program, however, it is estimated the value of these programs has saved the industry millions of dollars in losses. This project provided small flock owners access to biosecurity training geared toward their needs, and supplied them with the tools and resources to help them prevent, control, or rapidly respond to any avian disease outbreak. Approximately 37 refereed publications were developed in disease identification and vaccine development.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases

Outcome #4**1. Outcome Measures**

4. Pasture Management: Number of: farmers adopting best management practices and increasing profitability; new variety trails; NRCS and SWCD personnel trained.

2. Associated Institution Types

- 1862 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	1200	1280

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Nearly one third of the state's milk supply is from Washington County. In addition, this County ranks third in beef cattle and sixth in sheep production. Urban sprawl leads to high land values, placing added pressures for decreasing farmland and increasing scrutiny on environmental issues such as water and air quality. To compete with the large farms being constructed in the mid-west, our farmers must become efficient in reduced labor cost, reduced feed cost, and increased revenues from value-added products.

What has been done

Organized and taught three county dairy and livestock pasture walks in cooperation with WV and PA. Pasture management information was also posted on a website. Organized and taught seven management workshops where forage/pasture management was the sole topic or an integrated topic. Utilized results of applied research and farm demonstrations to prepare teaching materials for seminars, pasture walks, farm consultations, newsletter articles, and newspaper column.

Results

Eighty dairy and livestock producers from the tri-State area participated in pasture walks and learned improved management techniques for selecting and implementing alternatives in forage production and feed management systems. Four farms have continued in a grant funded program to convert a total of 200 acres of crop land into pasture. In addition, one-hundred sixty four small and part-time farmers learned new pasture management techniques through four workshops and an onsite pasture management workshop at the WMREC grass variety plots. Evaluations indicated an increase in knowledge of identifying different grass species. As an outgrowth of the Pasture Walk program, two small discussion groups, Farmer Circles, have formed and are growing.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems

Outcome #5

1. Outcome Measures

5. Family Financial Management: Number of: volunteers trained; new partnerships developed; new enterprises; people improving financial security.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	500	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

These accomplishments are being reported on in the Family & Community Resiliency section of the report.

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
801	Individual and Family Resource Management

Outcome #6

1. Outcome Measures

6. Marketing Maryland Agricultural Commodities: Number of marketing & business plans developed; Number of farmers requesting marketing and business plans; Number of farmers markets encouraging locally grown produce; Number of schools utilizing locally grown produce.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	135

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

The Baltimore-Washington Corridor is the 4th largest population region in the country with tremendous direct marketing opportunities such as farmers' markets, on-farm retail, community supported agriculture produce subscription models, Internet, and restaurants. These retail outlets provide a low-cost way for farmers to enter the world of direct marketing and enhance their profitability. However, many vendors lack effective direct marketing skills.

What has been done

Programs, newsletter, marketing update articles, and one-on-one consultations were used to teach and transfer the seedbed of knowledge needed to start growing more direct marketing efforts among producers. Presentations were given on topics such as "How to Direct Market Farm-Raised Fruits and Vegetables" and delivered at seven different grower meeting across Maryland and including the Mid-Atlantic direct Marketing Conference held in Dover, DE. Attendance at these presentations totaled 269.

Results

As a result, attendees had an increased understanding of the components of different direct markets outlets, the opportunities and threats involved in pursuing any of these outlets, contact information for different outlets, and the profit potential for each. Follow-up surveys indicated at least 11 producers decided to add some component of direct marketing to their enterprise plan as a result of the program and follow-up consultations. This can be verified by follow-up requests for information and direct contacts. The Pennsylvania Vegetable Growers Newsletter requested permission to reprint the direct marketing articles in their publication which serves vegetable growers throughout the mid-Atlantic region.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #7**1. Outcome Measures**

7. Alternative Crops: Number of farmer growing new alternative crops; Number of new farm enterprises; Number of farm markets selling alternative crops; Number of new varieties researched.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	135

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Both economic and environmental issues have caused many producers to reevaluate their operations. Growers are looking for crops that provide a good return and can be produced with less pesticide and fertility inputs and less labor. One possible way to increase profitability is the production of traditional crops in a way to capture early or late season markets. High tunnels are proving to be the tool that growers need to capture these markets but there are many unanswered questions regarding cultivar selection and over all economics.

What has been done

The potential of various cultivars of vegetables in high tunnel structures has been examined, as well as providing information on price premiums captured by season extension and basic yield and production input information to provide information to growers. The potential of the following crops for early season production has been examined: various greens, salad tomatoes, onions, beets, radishes, cucumbers, peppers, eggplant, and heirloom tomatoes; for late season production: greens, various salad tomatoes, onions, beets, radishes, cucumbers, peppers, and eggplant. External funding under the USDA-NIFA's Specialty Crop Program was secured to conduct multi-institutional research on nutrient and water management in greenhouse crops and nursery crops.

Results

This has been an ongoing project encompassing a number of research and demonstration projects and educational outreach efforts. Over 1,000 people have been reached by these programs in the last five years. As a result, more than 60 tunnels have been built in Maryland, Virginia, West Virginia, Delaware, and Pennsylvania.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices
608	Community Resource Planning and Development

Outcome #8**1. Outcome Measures**

8. Reduction of phosphorous run-off no-till soils under subsurface poultry litter application, reduction of nutrients loading from land to the water bodies

2. Associated Institution Types

- 1862 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Agriculture is a major source of nutrients to the Chesapeake Bay. This situation affects the habitat of many seafood products and the economy in many ways on Delmarva. Given the proximity of the Delmarva Peninsula to the Chesapeake Bay and the large amounts of nutrient-rich litter applied annually to Delmarva soils, land application of litter represents a primary water quality concern to farmers, tourists, and watermen on the Peninsula.

What has been done

A study was designed to objectively determine the potential environmental benefits of subsurface application of dry poultry litter into no-till soils on Delmarva. Application of chemical precipitation technology to storm water drainage streams proved to be beneficial in reducing phosphorus loadings to natural surface waters. Also, nutrient management research continues to reduce nutrient discharge from agricultural lands that receive poultry litter or other forms of fertilizers.

Results

Clearly, subsurface application of poultry litter lowered the availability of litter P to runoff water over the short term. However, care must be taken with poorly drained soils (e.g., the Othello Series) to prevent the pockets of litter that is subsurface applied from eventually becoming sources of P due to rising water tables. In soils with shallow water tables, better mixing of litter with soil should help to lower these long-term P losses, as seen with disked litter. Therefore, more research is needed for the subsurface application technology to be mechanized and incorporated with an implement that mixes litter and soil within the narrow furrow created by the subsurface applicator for it to be a practical management option, especially over a wide variety of soils.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships

Outcome #9**1. Outcome Measures**

9. Enhancing the Profitability of the Green Industry: the number of local green industry professionals and consumers that visit the trial garden and/or are provided with evaluation results and information via the website and/or email distribution list.

2. Associated Institution Types

- 1862 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

In Maryland, the green industry is the second largest agriculture sector, with broiler production being the largest. However, the lower shore region, which includes Dorchester, Somerset, Wicomico, and Worcester counties, only represents a small portion of horticulture sales and services (3%) in Maryland.

What has been done

Developed a university trial garden would provide local green industry professionals and consumers with unbiased evaluations of plant cultivar performance in the landscape under local growing conditions.

Results

The university trial garden results have been shared with local green industry professionals and consumers; however, the impact of the trial garden has not been realized. Since the trial garden has become an AAS display garden, it is hoped that this new affiliation with AAS will attract more stakeholders and provide them with the unbiased information from the floral trials.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

Overall, we have been able to meet our strategic goals through the use of Impact Teams and more focused programs. We are also doing a better job at reporting impacts. We are still in a state hiring freeze and unable to fill critical county and state faculty vacancies, leaving several counties with minimum AGNR coverage.

On the producer side, input costs continue to rise, such as fuel, oil, seed, fertilizer and electricity. There is also an unsteady commodity market and a downward trend in the state and national economies, which have made it difficult for the farming community to be profitable.

There has also been a renewed interest in alternative energy sources as the price of oil and gas goes up along with a renewed interest in alternative and high value crops.

Research related to food security in terms of efficient, economic, and environmentally sustainable production produced more than 100 refereed publications with novel outcomes related to crop and animal genomics, animal and plant diseases, value added nutritional crop products, vaccine development, and economic analysis of the production.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)

Evaluation Results

Individual program results and impacts are included in the specific targeted goals already reported. We are transitioning to the use of audience response systems ("clickers") during our programs to measure knowledge gained and specific program indicator successes. We will be able to be more specific in our program impacts and results during the next reporting cycle as a result of using this new technology in the classroom.

Key Items of Evaluation

The majority of our program evaluations have been pre- and post-test at the actual teaching events. Some follow up surveys have occurred, however, this will increase over the next year. Through the leadership of our new Evaluation Specialist and creation of new Impact Teams, focused program evaluation tools are being developed to better measure financial and behavioral impacts of our programs.

Most of the research by MAES researchers focused on different aspects of food production. It involved research in genomics, value added nutrition to the crops, animal diseases, environmental consequences of crop and animal production systems, and development of technologies to reduce the pollutant loading into the environment.

V(A). Planned Program (Summary)**Program # 2****1. Name of the Planned Program**

Climate Change

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	10%	10%	10%	5%
102	Soil, Plant, Water, Nutrient Relationships	0%	0%	0%	10%
104	Protect Soil from Harmful Effects of Natural Elements	0%	0%	0%	10%
111	Conservation and Efficient Use of Water	10%	10%	10%	0%
112	Watershed Protection and Management	10%	10%	10%	10%
123	Management and Sustainability of Forest Resources	5%	5%	5%	0%
131	Alternative Uses of Land	5%	5%	5%	0%
133	Pollution Prevention and Mitigation	10%	10%	10%	5%
204	Plant Product Quality and Utility (Preharvest)	0%	0%	0%	5%
205	Plant Management Systems	15%	10%	15%	25%
215	Biological Control of Pests Affecting Plants	0%	0%	0%	20%
216	Integrated Pest Management Systems	10%	10%	10%	0%
402	Engineering Systems and Equipment	0%	0%	0%	10%
403	Waste Disposal, Recycling, and Reuse	5%	10%	5%	0%
405	Drainage and Irrigation Systems and Facilities	5%	10%	5%	0%
608	Community Resource Planning and Development	15%	10%	15%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	39.0	1.0	20.0	2.0
Actual	12.0	3.0	15.0	6.6

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c 634076	1890 Extension 249320	Hatch 321424	Evans-Allen 691277
1862 Matching 634076	1890 Matching 249320	1862 Matching 321424	1890 Matching 670985
1862 All Other 0	1890 All Other 0	1862 All Other 0	1890 All Other 53795

V(D). Planned Program (Activity)**1. Brief description of the Activity****Water and Nutrient Management (Green Industry) Nutrient and Water Management (Residential)**

To keep growers in compliance with Maryland's nutrient management law, programs were developed to assist growers write their own plans through a grower certification training program. To support the overall program, the following occurred: Applicator (voucher) training; Web-based and face to face courses for professionals; and publications. Research was conducted to find best fertilization patterns to help reduce losses to our water systems.

Nutrient and Water Management (Residential)

Developed curriculum and resources as needed (fact sheets, print and on-line, and self diagnostic web site); Conducted workshops, meetings, seminars, and classes such as: Weekly plant clinics, Master Gardener training, Bay-wise training for Master Gardeners and HGIC Phone Consultants.

Nutrient Management (Commercial Agronomic)

To assist commercial producers comply with Maryland's nutrient management law, programs and resources were developed, such as: Farmer training and certification; Fundamentals of nutrient management; Publications on soils, soil fertility, nutrient management planning, record keeping, and annual compliance reporting; and update NuManPro to reflect new recommendations.

Waste Management

Biosolids: Conducted applied research and educational programs on using biosolids in deep row application to help grow rapidly growing trees. Field days held to showcase techniques with a focus on MDE, DNR and industry.

Poultry Litter Stockpiles: Conducted applied research and educational programs on how to properly manage poultry litter stockpiles. Regional meetings conducted to help transfer the research findings and utilization of various types of pads beneath stockpiles.

Composting: Conducted a "Better Composting School" to include both large and small animals. This training was necessary for producers that wanted to receive cost share from MDA for conservation practices.

Coastal, Chesapeake Bay & Water Resources

Urban Nutrient Management: Conduct training programs for lawn companies and grounds managers to understand the proper application of fertilizers to residential areas. Conducted 2-half day courses for lawn care technicians with one section in Spanish to assist the migrant workforce understand proper fertilizer application.

Wells and Septics: Developed and conducted a Master Well Owners Network program that produces a network of trained volunteers to promote the proper construction and maintenance of private water systems.

Management & Sustainability of Forest Resources Land Use

Maryland's forest resources are vital to the health of the Chesapeake Bay and economy of the region. Workshops, correspondence courses, seminars and field days conducted to educate landowners and MD/DEL logger's management options. Volunteers trained as part of a Woodland Stewards program. Curriculum, publications, media releases, CD's, websites and videos were developed to support the educational effort.

Land Use

Conducted training programs for local government officials, community leaders and the general public on proper land use options. Educational programs developed to encourage protecting and enhancing working landscapes to help sustain a profitable AGNR business atmosphere. Also, research was conducted to evaluate the impact of different land use and cropping systems on water quality.

Integrating Specialty Crops:

Studied various organic practices for safe production of specialty crops on the Delmarva Peninsula. Surveyed stakeholders, established organic transition research site, assessed food quality and safety from food-borne microorganisms and heavy metals on plants.

2. Brief description of the target audience

Water and Nutrient Management (Green Industry)

Field container nursery and greenhouse producers; Agency personnel (MDA, UME, NRCS, SCD); Certified nutrient management professionals and growers throughout the NE region; Irrigation, IPM and Interiorscapes professionals; General public; Master Gardeners; Other State and National agencies (MDE, EPA, USDA); Policy makers; and arborists, landscape managers, professional ground managers and homeowners. Scientific community was another pool of the target audience that our researchers reached via refereed publications and scientific conferences.

Nutrient and Water Management (Residential)

Master Gardeners; Builders and developers; Real estate agents; Municipalities; Federal, state and local agencies; Private and non-profit organizations; Green industry; and Outdoor education centers; and the scientific community.

Nutrient Management (Commercial Agronomic)

Farmers applying nutrients to soil; private consultants writing nutrient management plans; UME, NRCS, MDE, Soil Conservation District professionals, and scientific community.

Waste Management

State agencies (MDE, MDA, & DNR); Government officials; EPA; AGNR producers; the Poultry industry; and scientific Community.

Coastal, Chesapeake Bay and Water Resources

Homeowners; Master Gardeners; Elected officials; UME faculty; MDE; Farmers; EPA; MDA; Tributary Strategy Teams; and scientific community.

Management and Sustainability of Forest Resources

Foresters; Wildlife biologists; Forest landowners; Farmers; Forest industry; Forestry associations; Master Gardeners; UME faculty, Urban-Forest Group in Baltimore-Washington Corridor, and scientific community.

Land Use

Elected officials, community leaders, the general public, research community on the issues of land use impact on water quality.

Integrating Specialty Crops:

Delmarva producers and consumers, scientists, and students

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	18000	14500	0	0
Actual	19014	18100	1048	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2009

Plan: 0

Actual: 0

Patents listed**3. Publications (Standard General Output Measure)****Number of Peer Reviewed Publications**

2009	Extension	Research	Total
Plan	5	20	
Actual	6	35	41

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

- 4. Nutrient & Waste Management (Commercial)-Programs, grants, in-service training, publications.

Year	Target	Actual
2009	85	83

Output #2**Output Measure**

- 3. Coastal, Chesapeake Bay, Water Resources & Nutrient Management(Residential); Water Resources-Short courses, in-service, volunteers, relationships, policy & technology.

Year	Target	Actual
2009	470	557

Output #3**Output Measure**

- 5. Management & Sustainability of Forest Resources-Publications, workshops, grants, plans

Year	Target	Actual
2009	66	86

Output #4**Output Measure**

- 2. Water, Nutrient Management, Energy Efficiency & Composting (Green Industry)-Publications, short courses, in-service

Year	Target	Actual
2009	38	41

Output #5**Output Measure**

- 1. Land Use: Publications; Partnerships, advisory committees, laws, Curriculum, Websites, Programs

Year	Target	Actual
2009	20	25

Output #6**Output Measure**

- Eighteen question organic survey developed and mailed to 300 producers and consumers on Delmarva

Year	Target	Actual
2009	{No Data Entered}	300

Output #7**Output Measure**

- An organic transition site established at the UMES Experiment station

Year	Target	Actual
2009	{No Data Entered}	1

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	1. Land Use: Number of: Communities integrating MCE information for land use decisions and improved growth management concepts; Publications developed and used to make land use decisions; Regional collaborations
2	2. Water, Nutrient Management, Energy Efficiency & Composting: Number of: Growers incorporating BMP's into management plans; Programs to improve water quality and nutrient management; Growers using information for changes. Horticulturists who understand energy saving and composting techniques; Homeowners and greenhouses adopting energy saving & green methods; Businesses using energy efficient equipment
3	4. Nutrient & Waste Management (commercial): Number of: producers implement nutrient management plans; plans written; producers relate nutrient management to water quality; advisors trained in plan writing. Policy makers & farmers understand the scientific issues of land applied poultry litter and poultry stockpiles; Policy makers access MCE information.
4	3. Coastal, Chesapeake Bay, Water Resources & Nutrient Management (Residential): Number of: Lawn care companies report fertilizer use and eliminate P from maintenance: Adoption of composting; water wells tested; septic tanks improved. Number of: Citizens adopt practices of landscape ecology and understand the relationship among pesticides, poor septic systems, & environmental health.
5	5. Forest Resources: Number of forest landowners gain knowledge of forest stewardship and practices, join forests associations, understand wildlife damage control measures and implement in plans.
6	New knowledge about Delmarva producers' and consumers' practices, preferences and needs related to organic agriculture

Outcome #1**1. Outcome Measures**

1. Land Use: Number of: Communities integrating MCE information for land use decisions and improved growth management concepts; Publications developed and used to make land use decisions; Regional collaborations

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	225	24

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Maryland is a rapidly urbanizing state. The preservation of its land as working landscapes is critical to both the economic stability and environmental quality of the State and the quality of life for its citizens. Elected officials, community leaders and the general public need to understand the complex relationships humans have with the environment and the impacts of poor land use laws and practices. Research also needs to evaluate the impact of this ecosystem transition from agriculture and forestry to an urban ecosystem on our water resources.

What has been done

UME has organized and delivered local Government Exchange Programs through its Collaboration of Land Use Educators (CLUE) Action Team. These programs provide the venue for local government officials to learn about environmental relationships, planning issues, working landscapes, and case studies of a variety of land use regulations that are favorable to preserving the integrity of working landscapes and also given the opportunity to discuss concerns in a neutral and open environment.

Results

Two local government exchange programs have been offered in the Western and Eastern regions of the State of Maryland. Forty-five officials attended these programs and left with a better understanding of complex environmental issues, options for good land use planning, and, most importantly, established a network to communicate and ask questions. This network is felt to be the most significant accomplishment of the programs because the attendees now know who to contact for specific issues. Also, through an open exchange of ideas, they learned they all had similar issues and concerns, which will hopefully lead to a more cohesive array of land use planning efforts statewide and better leveraging resources. Research focused on the impact of land use such as wetlands on soil morphology and the overall natural resources.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
112	Watershed Protection and Management
131	Alternative Uses of Land
133	Pollution Prevention and Mitigation

Outcome #2**1. Outcome Measures**

2. Water, Nutrient Management, Energy Efficiency & Composting: Number of: Growers incorporating BMP's into management plans; Programs to improve water quality and nutrient management; Growers using information for changes. Horticulturists who understand energy saving and composting techniques; Homeowners and greenhouses adopting energy saving & green methods; Businesses using energy efficient equipment

2. Associated Institution Types

- 1862 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	240	363

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Activities 1 & 4 are combined. Urban and suburban sprawl has led to the conversion of thousands of acres of native landscape into lawns and gardens. Most residents, planners, and developers do not recognize the urban landscape as part of the ecosystem, and they have failed to incorporate environmental and ecological concepts into their landscape plans. Studies have shown that both ground and surface waters contain high levels of the nutrients nitrogen and phosphorus (N and P), sediments and toxic contaminants, which adversely affect water quality.

What has been done

New educational strategies were developed through the Bay-Wise program of the State's advanced Master Gardener Training Program to help change views of the urban and suburban landscape and show how the environmental and ecological concepts of the late 20th and early 21st century can practically be used to transform these landscapes into a healthy ecosystem. In 2009, 22 workshops were conducted and 310 volunteers were trained. Also, research was directed into the impact of ecosystem changes on human and animal health.

Results

One hundred and six Master Gardeners learned the importance of water quality and how it can be maintained and improved during Bay-Wise Advanced Trainings. In end of class evaluations, 91% of Bay-Wise Master Gardeners said they would attract more beneficial insects to their landscapes, 99% would recycle yard waste, 91% would conserve water and 100% would mow higher to reduce weeds as a result of taking the class. Thirty-two of these Bay-Wise Master Gardeners had their home landscapes certified as ecologically sound demonstration sites in their own neighborhoods, and pledged to encourage others to do the same. In addition, 99 Master Gardener interns learned plants, botany, lawn care and an intro to Bay-Wise landscape management during part of their Master Gardener intern training. Most of the research focused on the preservation of the quality water and realized that using certain nutrient reduction technologies can help bind phosphorus in the drainage ditches and minimize its transport to downstream.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
403	Waste Disposal, Recycling, and Reuse

Outcome #3

1. Outcome Measures

4. Nutrient & Waste Management (commercial): Number of: producers implement nutrient management plans; plans written; producers relate nutrient management to water quality; advisors trained in plan writing. Policy makers & farmers understand the scientific issues of land applied poultry litter and poultry stockpiles; Policy makers access MCE information.

2. Associated Institution Types

- 1862 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	3760	3256

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Maryland Water Quality Improvement Act requires Maryland farmers as well as green industry businesses to develop and follow nutrient management plans that are approved by the State of Maryland. In the late 1990s, farmers approached the former Secretary of Agriculture with the request that a streamlined operation, with specific training program, be developed that would enable farmers to become certified to write their own nutrient management plans. The UME Nutrient Management Program responded with the development of the Farmer Training and Certification program.

What has been done

The Farmer Training Certification program was designed to educate farmers in the nutrient management planning process and to give them the necessary tools to complete nutrient management plans for their own operations. Numerous training programs were held statewide in a two-day training program. Ecological engineering research also produced models of the effects of microbial competition and hydrodynamics on the dissolution and detoxification of dense non-aqueous phase liquid contaminants. In addition, fruitful research activities developed a novel dual compartment, continuous-flow wetland microcosm research to assess cis-dichloroethene removal from the rhizosphere was established.

Results

In 2009, 39 farmers became certified to write their own nutrient management plans, with a total to date of 312 certified. A survey of participants revealed that as a result of the program many of them anticipated keeping better

records of crop yields and nutrient applications. Personal communication revealed that they enjoy the program and the opportunity to network with other farmers. Research was able to develop viable methods for detoxifying the contaminants.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
403	Waste Disposal, Recycling, and Reuse

Outcome #4

1. Outcome Measures

3. Coastal, Chesapeake Bay, Water Resources & Nutrient Management (Residential): Number of: Lawn care companies report fertilizer use and eliminate P from maintenance: Adoption of composting; water wells tested; septic tanks improved. Number of: Citizens adopt practices of landscape ecology and understand the relationship among pesticides, poor septic systems, & environmental health.

2. Associated Institution Types

- 1862 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	3350	3585

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Activities 2 & 5 are combined due to similar actions. Municipal waste is composed of 18% yard waste and 8% food waste and 41% paper products, all of which can be composted. Yard waste amounts to nearly 230 pounds and food waste another 100 pounds per person per year. Disposing of yard waste in landfills is expensive and environmentally unsound. Therefore, composting by Howard County residents is an important and environmentally significant project/topic on which to focus Master Gardener and community educational programs.

What has been done

Composting and vermicomposting classes were incorporated into the Howard County Master Gardener (MG) training program. Demonstration sites and compost/vermicomposting information were also incorporated into the Howard County elementary Science curriculum. Curriculum was created by the MG for use in the Elementary Science program. Additionally, two MG conducted classes on the subjects of composting and vermicomposting were delivered and MG collaborated with Howard County to establish five compost demonstration sites. Algae scrubber research to remove nutrients from runoff water was also established.

Results

In Howard County, the Master Gardener volunteers provided 435.45 hours in the planning meetings with nine Master Gardeners conducting on-site demonstrations. Based upon volunteer log sheets, 70 composting demonstrations were conducted. A total of 327 clients received instruction on composting and bins. Clients were asked to complete surveys on the class and their practices. MAES researchers found that algae scrubbers were effective in removing nutrients from runoff water and could be considered as a viable technology to reduce the pollutant loadings to the Coastal waters.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
608	Community Resource Planning and Development

Outcome #5

1. Outcome Measures

5. Forest Resources: Number of forest landowners gain knowledge of forest stewardship and practices, join forests associations, understand wildlife damage control measures and implement in plans.

2. Associated Institution Types

- 1862 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	660	840

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Private forest landowners (130,000) own 76% of the 2.6 million acres of forestland in Maryland. The average parcel size is 14 acres, with 75% owning 10 acres or less. The number of landowners who own less than 10 acres increased by 62% from 1977 to 2009. With budget restrictions, Maryland Forest Service cannot work with owners of small acres. Educational methods beyond the standard seminar are essential. The train-the-trainer model builds educational capacity. Multiple-day intensive workshops that include field experiences allow for in-depth training experiences.

What has been done

Maryland Woodland Stewards is a forest/wildlife volunteer program that educates forest landowners about forest stewardship in a 3.5 day workshop. Program participants commit to 40 hours of extension work in the following year, which may take a variety of forms, including formal presentations, letters to the editor, property tours, or informal discussions. Forest landowners also agree to develop a forest stewardship plan. The program targets forest landowners, but also welcomes educators and natural resource professionals. Investigations into the impact of climate change and land use changes on the distribution of disease-vector mosquito populations will play an

important role in prediction of future public health concerns. This is being extended to the forest-urban ecosystem interface.

Results

In 2009, 24 landowners and professionals from non-profits attended the program. Participants manage a total of 709 acres of forested land. Each participant received educational materials for use in their extension efforts. Each participant also completed an action plan detailing the steps they would complete in order to fulfill their 40 hours of extension work within the following year. Five work groups were formed by geographic region, and each group set a date to meet and plan future extension activities. Social ties were formed, paving the way for team projects. Participants were asked to rate their knowledge of forest and wildlife topics on a five-point scale before/after the workshop. The average change for each topic was an increase of 2.0 or 2.1 points, with an overall average of 2.0. MAES researchers found that mosquitoes were viable bio-indicators for evaluating the health of the ecosystem in light of climate variability.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
205	Plant Management Systems
608	Community Resource Planning and Development

Outcome #6

1. Outcome Measures

New knowledge about Delmarva producers' and consumers' practices, preferences and needs related to organic agriculture

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	300

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Producers and consumers who need information on how to produce organic crops.

What has been done

Survey has been analyzed and results are being shared.

Results

There is a need to provide Delmarva farmers with more information on how to grow and market organic produce and also the cost involved.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

Land Use: The targeted number for 2009 was incorrect, it should have been 25 not 225 based on the outcomes listed.

Nutrient & Waste Management (Commercial: The targeted numbers for 2009 were not met because of a decrease in funding and fewer nutrient management advisors writing plans.

The limitation for research side has always been shortage of funds! Our faculty achieved excellent research findings in the area of climate variability and land use impacts on our water resources and the environment despite limited funds.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Case Study

Evaluation Results

Planned program impacts are noted in the program outcomes section. The use of "clickers" during programs was established in 2009, with multiple survey results next year after further examination.

Our evaluations are based on the outcome of the research in terms of refereed publications. In this planned program area, our faculty produced approximately 25 refereed publications.

Key Items of Evaluation

UME hired an evaluation specialist to assist faculty members better capture financial and behavioral changes in the planned program. This will be reflected in 2010 accomplishment report.

Each department chair culminated the collective research outcome of their faculty and passed it onto the MAES Associate Director.

V(A). Planned Program (Summary)**Program # 3****1. Name of the Planned Program**

Family & Community Resiliency

V(B). Program Knowledge Area(s)**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
723	Hazards to Human Health and Safety	0%	0%	0%	100%
724	Healthy Lifestyle	10%	10%	0%	0%
801	Individual and Family Resource Management	40%	40%	0%	0%
806	Youth Development	50%	50%	0%	0%
	Total	100%	100%	0%	100%

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	15.0	5.0	10.0	6.0
Actual	18.5	0.0	0.0	0.3

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
792594	311650	0	130097
1862 Matching	1890 Matching	1862 Matching	1890 Matching
792594	311650	0	65310
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

1. Economic Stability & Financial Literacy: Development of MoneySmart Impact Team to design, implement, and evaluate financial literacy education for Maryland youth and adults; Basic financial literacy classes; Financial Security for Later Life seminars; active participation in eXtension.org to support FAQ development, articles for public site and COP leadership; Design & conduct capacity building opportunities such as the 21st Personal Finance Seminar for Professionals for partners, educators, agency reps, military financial counselors, and volunteers; develop partnerships to implement Maryland Saves and NEFE; Financial Education for First Term Soldiers at Walter Reed; identified 'Reading Makes Cents' as potential Signature Program for youth and made plans to develop evaluation and pilot in sites across the state.

2. Healthy Homes: Conduct workshops, train-the-trainer, and professional development opportunities for UME faculty and

other professionals and practitioners . Market and evaluate existing community programs for youth and families to meet the standards of health literacy (e.g., Safe Kids Days, Progressive Agricultural Foundation Safety Days, GreenFest) . Disseminate information at Health fairs, Home and garden shows, Maryland Day and other university showcase events Signature program development/Curriculum Development

Establish action teams with specific goals. For example: Healthy Homes and Agricultural Safety, Integrated Pest Management (IPM) for indoor environments

3. Youth Development:

In an effort to reach a group of children who otherwise never would have felt 4-H was for them, UME 4-H has put heavy emphasis on outreach programming particularly surrounding the areas of Science, Engineering, Technology and Math. Grants have been secured that began the process to start Robotics 4-H Clubs in all 23 Maryland Counties and Baltimore City. To support environmental education, programs were begun to support the Chesapeake Bay including the creation of "Oyster 4-H Clubs". Impact Teams began development of signature programs that support leadership development, life skill development, promote community service and engage volunteers.

2. Brief description of the target audience

1. Economic Stability & Financial Literacy: Employees, families, limited income individuals, volunteers, educators, high school students, University staff, community development corporations, financial institutions; Dept. of Social Services reps and clientele; public housing residents at risk of eviction; soldiers; Workforce Opportunities Program Clients through DSS; school-age youth.

2. Healthy Homes: UME faculty; other faculty and students; Professionals/Practitioners; Childcare providers; Youth/4-H; Families with specific health hazard; Older adults; military families; General audiences.

3. Youth Development: Children ages 8-19

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	150000	250000	12000	70000
Actual	4661	10000	84000	47801

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2009

Plan: 0

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	5	25	
Actual	3	0	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Factsheets & publications, curricula, meeting with partners, in-services, workshops

Year	Target	Actual
2009	1200	320

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	1. Nutrition: The number of individuals who demonstrate adoption of healthy eating practices based on the 2005 MyPyramid and the 2005 Dietary Guidelines for Americans.
2	2. Food Safety: The number of individuals that indicate change in behavior related to good personal hygiene including hand washing, cooking foods adequately, avoiding cross contamination, keeping foods at safe temperature
3	3. Volunteers: The number of MCE trained 4-H volunteers who provide leadership and guidance for 4-H youth development programs.
4	4. 4-H Clubs: The number of 4-H club leaders and volunteers who demonstrate an application of the essential elements of youth development and model experiential learning.
5	5. Youth Outreach: Teen and adult enrollment in after school and military partnership programs.
6	Financial Stability and Literacy: An increase in basic financial literacy; An increase in ability to make both short- and long-term decisions regarding credit, debt, estate planning, spending and saving

Outcome #1

1. Outcome Measures

1. Nutrition: The number of individuals who demonstrate adoption of healthy eating practices based on the 2005 MyPyramid and the 2005 Dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	12000	10000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Reported in Food Safety section.

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle

Outcome #2

1. Outcome Measures

2. Food Safety: The number of individuals that indicate change in behavior related to good personal hygiene including hand washing, cooking foods adequately, avoiding cross contamination, keeping foods at safe temperature

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

3. Volunteers: The number of MCE trained 4-H volunteers who provide leadership and guidance for 4-H youth development programs.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	3300	3500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Partnering with adult volunteers to offer youth development programs. The Search Institute research indicates that an essential contributor to a child's success into adulthood is having a significant adult in his/her life who is not the parent.

What has been done

Two face-to-face workshops have been conducted for youth development educators and four webinars focused on volunteer recruitment, development, and utilization. Six state wide workshops have been conducted for 4-H military program volunteers.

Results

Seventy three percent of participants indicate an enhanced confidence in conducting youth development programming on behalf of University of Maryland Extension.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

4. 4-H Clubs: The number of 4-H club leaders and volunteers who demonstrate an application of the essential elements of youth development and model experiential learning.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
------	---------------------	--------

2009

1400

800

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

The Maryland 4-H program's core mission is to help youth reach their fullest potential as individuals through the development of life skills. Studies indicated that participation in 4-H Clubs contributes to positive youth development and that youth who belong to 4-H clubs do better in school, are more motivated to help others, and are developing skills in leadership, public speaking, self-esteem, communication and planning, and are making lasting friendships.

What has been done

Essential elements of 4-H youth development have been incorporated into the training programs for volunteers. 4-H educators have been provided with a tool for self assessment of 4-H clubs to determine how well the essential elements of 4-H are incorporated into 4-H club programs.

Results

Limited statewide, defensible data are unavailable. To remedy that, UME 4-H has launched participation in the Study of Positive Youth Development with Tufts University. IRB approval is pending. All 23 counties and Baltimore City will participate with targets of 800 youth respondents.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #5**1. Outcome Measures**

5. Youth Outreach: Teen and adult enrollment in after school and military partnership programs.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	2000	2000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Maryland 4-H Youth Development needs to increase and strengthen after school programming efforts in partnership with other youth serving agencies, including military youth and family programs, to provide education, training, curricula resources, and 4-H club experiences that result in positive youth development outcomes for youth in after-school settings across the state, in local communities, and on military posts and bases.

What has been done

With continued funding from the Mott Foundation, Maryland 4-H youth development and Family Consumer Sciences programs provided training for 245 after-school staff and childcare providers who care for more than 3,000 elementary and middle school-aged youth in the after-school hours. Additionally Maryland 4-H conducted 27 4-H trainings at all Army, Air Force, and Navy military installation youth centers in Maryland, reaching over 231 front line staff across Maryland.

Results

4-H educators continue to report an increase in the number of youth enrolled in 4-H after-school programs and in the number of community partnerships developed to deliver 4-H programs to new audiences. Educators have put an enhanced focus on quality and depth of the sequential programs. This was a significant contributor to 4-H membership in Maryland increasing from 50,000 to 84,000 during 2009.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #6**1. Outcome Measures**

Financial Stability and Literacy: An increase in basic financial literacy; An increase in ability to make both short- and long-term decisions regarding credit, debt, estate planning, spending and saving

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	4029

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

A survey of 1,005 adults (age 18 and older conducted by ICR between May 28-31, 2009) asked the question: "What would you say you owe in monthly debt?" Of those age 50-plus, 14% owed more than their monthly income, 26% owed about 75% of their monthly income, 18% owed about half of their monthly income, and 38% owed less than half of their monthly income. Thirty percent of adults reported having credit card balances that aren't paid in full every month. Credit card debt is growing most quickly for Americans 65 and older with the average debt being \$10,235, an increase of 26% since 2005. Forty-six percent of adults reporting debts or loans tried to reduce the amount they spent or owed over the last six months. One in ten adults reported having filed for bankruptcy or having considered filing for bankruptcy.

What has been done

Development of MoneySmart Impact Team to lead, develop, implement, and evaluate financial literacy programs for youth and adults; Walter Reed Financial Readiness Program for First-Term Soldiers; 10 8-hour training

sessions on Dollars & Sense-Basic Financial Education and 3 hour course for Workforce Opportunities participants; Maryland Saves Campaign--"Rolling in the Dough" effort to increase savings; Personal Finance Management Conference for Professionals; Estate and Retirement planning; Basic Financial Literacy Education for UMD Faculty and Staff; Prescription For Financial Wellness Training for MSRP participants. Basic Financial literacy classes for public housing residents at risk of eviction.

Results

From survey data collected from 1206 responses, program participants in financial literacy programs indicated they intended to make the following changes:

60% plan to develop a spending plan.

66% plan to improve their money management habits.

60% plan to set financial goals more often.

58% plan to track family income and spending more often.

80% plan to review/update pension, annuity, Social Security and other retirement plans.

50% plan to shop for best credit terms more often.

50% intend to establish a debt repayment plan.

70% plan to request/review their personal credit reports.

69% plan to estimate retirement and/or future income needs.

43% intend to initiate or increase contributions to a retirement savings plan.

One example of a new program effort occurred in Wicomico County in an after school program serving an at risk student population in grades 6-8. Youth completed series of 7 finance lessons based on the Money Fundamentals curriculum. They then tracked any income and expense, as well as any effort to save by identifying the difference in basic wants, needs, and shared expenses. They also set personal saving goals. All participants started with no money on hand. At the end of the series, students had saved \$109.00. Students reported they were more aware of how to save money, that they can save money by using coupons when making purchases, and that if the purchase of wants is limited, money can be saved.

In Caroline County as a result of participation of 600 residents in the Dollars & Sense Workshop, evaluations show that 92% of participants (n=24) intend to develop a spending plan/budget, 87% intend to improve their money management (n=30), and 83% plan to set financial goals (n=29).

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

It is unclear how long this current financial crisis will last. While some indicators suggest that the recession is ending, it will likely be a year or more before the economy recovers. Almost all people are affected by the slowing economy, but the effects will be much harder for some groups to manage. Although Maryland ranks 10th lowest in unemployment, the rate increased 57% from August 2008 to August 2009 (the rate was 7.2 percent in August 2009, demonstrating an increase from 4.5 percent just one year ago). Loss of income-- from effects such as job loss and furloughs-- is expected to be a major problem. A \$2 billion

budget deficit is forecast for Maryland in 2011, and more cuts in public programs are expected in the near future.

The current financial situation also is impacting the ability for UM Extension to hire the personnel it needs to adequately address the issues associated with Family and Community Resiliency. At this point, no one is certain when the economic environment will improve, allowing us to lift a hiring freeze that has been in place for more than one year. Another factor significantly impacting the makeup of our communities is the increasing cultural diversity in our area, as well as the BRAC Military actions, which both bring opportunities as well as challenges to communities.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)

Evaluation Results

Financial literacy educational programs are evaluated most often using post/pre surveys of participating audiences. Individual programs may utilize additional evaluation strategies.

Specific evaluation results are included in impact statements in this section.

Key Items of Evaluation

V(A). Planned Program (Summary)**Program # 4****1. Name of the Planned Program**

Sustainable Energy

V(B). Program Knowledge Area(s)**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	0%	0%	0%	60%
403	Waste Disposal, Recycling, and Reuse	50%	50%	50%	0%
511	New and Improved Non-Food Products and Processes	0%	0%	0%	40%
601	Economics of Agricultural Production and Farm Management	50%	50%	50%	0%
Total		100%	100%	100%	100%

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Actual	3.0	1.0	3.0	0.8

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
158519	62330	214282	106195
1862 Matching	1890 Matching	1862 Matching	1890 Matching
158519	62330	214282	79609
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)**1. Brief description of the Activity****Energy Efficiency & Composting (Green Industry & Poultry Growers):**

Short course and training seminars for industry personnel and growers; Conduct field research in alternative fuel sources, energy saving techniques and recycling of green waste products; Trade and peer reviewed journal publications. Also, conducted research in efficient digestion techniques for cellulosic material for conversion to biofuel.

Conducted state wide 4-H science experiment day focused on bio fuels and alternative energy sources. Twenty three counties and Baltimore City held the events involving 750 4-H members.

2. Brief description of the target audience

Energy Efficiency & Composting (Green Industry & Poultry Growers): Nursery, greenhouse, poultry growers and managers.

Youth 4-H members participating in Science, Engineering and Technology focused projects.

For Research, the target audience was industry and the scientific community.

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual	62	120	925	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2009

Plan:

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan			
Actual	0	5	5

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- 1. Energy Efficiency (Poultry & Green Industry): Number of workshops; number of programs; number of publications; number of extension faculty engaged in programs, Also research on the conversion of biomass to bioenergy

Year	Target	Actual
2009	{No Data Entered}	16

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	1. Alternative Energy Options for Green Industry and Poultry Industry: Number of participants attending programs; number of growers implementing new energy savings options; Determine methods of biomass conversion to biofuels

Outcome #1**1. Outcome Measures**

1. Alternative Energy Options for Green Industry and Poultry Industry: Number of participants attending programs; number of growers implementing new energy savings options; Determine methods of biomass conversion to biofuels

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	189

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

With the increase in fuel prices, greenhouse owners and poultry growers are looking for alternative fuel sources to decrease their energy costs. Energy dependency on foreign oil needs to be addressed to keep agriculture profitable and viable in Maryland. The green industry relies on fossil fuels for transportation, plastic pots, fertilizers, and plastic for greenhouse coverings. The poultry growers also rely on fossil fuels and LP gas to heat the poultry houses. These input costs have significantly increased their production costs. Research is also needed to find efficient methods of converting biomass to bioenergy.

What has been done

In cooperation with the Maryland Greenhouse Growers Association and Maryland Nursery and Landscape Association, two conferences and one field day were organized with 117 in attendance. The field day focused on nursery and greenhouse growers who installed wind turbines and solar panels in an attempt to get more businesses to adopt this technology. Conference topics included the use of alternative methods of heating, energy savings techniques and green roof technology.

ANR scientists have isolated microbes from the rumen of cattle that are capable of converting biomass materials into ethanol, methane, propane, and other combustible fuels at a much greater concentration than ever reported for similar biofuel processes.

Results

Participant surveys conducted at the end of the meetings indicated three greenhouse growers planned to install solar panels, six intended to install geothermal heating and cooling systems, and two were going to investigate the use of wind turbines for their nursery and greenhouse operations. It was confirmed that one participant installed a 10 kilowatt solar panel system (48 panels) at his/her farm after attending the field trip and energy conference. Follow up surveys will determine additional implementation.

An efficient and quick method of converting biomass material into biofuels was devised and results published.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Economy
- Public Policy changes
- Other (Finding new technologies and methods)

Brief Explanation

UME has limited capacity to address this planned program. However, through the efforts of our Natural Resources Impact Team, it is planned to build capacity in this area and have an action team established within the next two years. The poultry, dairy, and green industry are very interested in alternative sources of energy and more energy savings techniques that make their operations more efficient and profitable.

Research on the conversion of biomass to bioenergy was at its infancy, but it is envisioned that with more research funding Maryland scientists will move forward in developing economically and environmentally sound methods to convert biomass and waste into biofuels.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- During (during program)

Evaluation Results

Since this is a new program effort, evaluation results are limited. However in future years, financial and behavioral impacts will be measures and quantified.

The youth focused biofuel science day project included extensive evaluation of the process and results of the experiments. Youth learned alternative fuel sources that are agriculturally focused and can help sustain the energy needs of our country.

Evaluation of the research is conducted through peer review process for publication in the refereed journals.

Key Items of Evaluation

V(A). Planned Program (Summary)**Program # 5****1. Name of the Planned Program**

Food Safety

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	100%	100%	100%	100%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Actual	10.0	2.0	7.0	6.7

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
317038	124660	803560	208586
1862 Matching	1890 Matching	1862 Matching	1890 Matching
317038	124660	803560	195802
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	122320

V(D). Planned Program (Activity)

1. Brief description of the Activity

1. Food Safety is For Everyone: Initiated FoodSmart Impact Team to lead, develop, implement, and evaluate food safety education programs for UME. Classes and workshops were conducted on integrating relevant food safety info into nutrition and health educational opportunities; Provided Faculty updates and training; Consumer Alerts to Faculty and public; Developed and implemented Online Food Safety Course for Child Care Providers; Conducted hand washing interactive exhibits at Maryland State Fair and county fairs; conducted food preservation workshops; developed collaborative effort with Home & Garden Info Center and Master Gardeners; Farm-To-School Initiative with emphasis on local, healthy veggies for schools; developed exhibits; developed fact sheet.; mass media; news articles; social marketing messages.

2. Molecular Characterization and Predictive Modeling of *Salmonella spp.*: Collaborations established, students were trained in microbiology and molecular biology, experiments were conducted, and abstracts have been submitted, presented and published.

3. Research was conducted on different aspects of food safety and quality including resistant pathogens, food safety risk analysis, anti-aging and cancer preventive effect of Se.

2. Brief description of the target audience

Consumers: Youth; Adults; Older Adults

Fruit and vegetable producers

Food service workers; childcare workers; community-based organizations

Service agencies related to food production, promotion, consumption, protection, education

Poultry industry, risk assessors, risk managers, and scientific community

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual	4059	10000	537	2000

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2009

Plan:

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan			
Actual	3	15	18

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Food Safety is For Everyone: # presentations; # participants; # fact sheets developed; # educational materials developed; # exhibits developed;

Year	Target	Actual
2009	{No Data Entered}	68

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Food Safety is For Everyone: # following key recommendations of food safety-clean, separate, cook, & chill; # planning to thaw frozen foods in refrigerator instead of on kitchen counter; # planning to use food thermometer to monitor temperature of potentially hazardous foods; # planning to wash fruits and vegetables before eating or preparing them to serve.
2	Molecular Characterization and Predictive Modeling of Salmonella spp. Recovered from Processed Poultry. Also, Immobilization of bioluminescent Escherichia coli cells using natural and artificial fibers treated with polyethyleneimine

Outcome #1**1. Outcome Measures**

Food Safety is For Everyone: # following key recommendations of food safety-clean, separate, cook, & chill; # planning to thaw frozen foods in refrigerator instead of on kitchen counter; # planning to use food thermometer to monitor temperature of potentially hazardous foods; # planning to wash fruits and vegetables before eating or preparing them to serve.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	1206

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

During the past 30 years, there has been an increased incidence of food borne illnesses. Currently, one in four Americans suffers from food borne illness each year. Some foods, such as fruits and vegetables, are often consumed raw or with limited preparation. It is important that producers and consumers practice safe food handling to decrease the burden of food borne illness.

What has been done

Food Safety Classes taught; Food Safety integrated into nutrition and food preparation classes; Food Preservation workshops conducted; online food safety course developed and implemented; Mass Media; newsletters; new partnerships developed; new farm to school initiative developed; fact sheet developed; exhibits and brochures developed; health fairs.

Research on the pathogenic prevention, anti-aging, anti colon cancer was conducted with excellent outcomes.

Results

After participating in Food Safety education, participants submitted the following evaluation data via surveys:
 53% plan to follow the key recommendations of food safety-clean, separate, cook, and chill (n=101).
 58% plan to thaw foods in the refrigerator rather than on the kitchen counter (n=57).
 55% plan to use a food thermometer more often to monitor the temperature of potentially hazardous foods (n=99).
 34% plan to wash fruits and vegetables more often before eating and/or preparing food (n=74).
 Five food Preservation classes were taught in two Maryland counties for the first time in recent years. More than 50 participants received research-based information on the correct, safe, and most up-to-date food preservation recommendations and guidelines. The hands on workshop was offered due to increased demand and interest in how to correctly and safely preserve the harvest from the garden and locally available produce while also retaining nutritional value.

As a result of these workshops, participants indicated they planned to:
 spice later and adhere strictly to reliable recipes; Follow recipe and not add additional items; can following recommended practices.

Research was published in refereed journals and some of the results of the research was used by our extension faculty to educate public on food safety from pathogens and its nutritional or health values.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #2

1. Outcome Measures

Molecular Characterization and Predictive Modeling of Salmonella spp. Recovered from Processed Poultry. Also, Immobilization of bioluminescent Escherichia coli cells using natural and artificial fibers treated with polyethyleneimine

2. Associated Institution Types

- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Food of animal origin, especially poultry and poultry products, has been implicated in outbreaks of human salmonellosis. Recently, a number of investigators have suggested that processing conditions may play a significant role in promoting/influencing the selection of antimicrobial resistant pathogens during processing. Little information is available about the association between the presence of virulence factors in Salmonella spp. and their potential for causing human illness. The main goal of this project is to characterize Salmonella spp. recovered from processed poultry.

What has been done

A total of 309 (146 pre- and 163 post-chill) isolates recovered from processed poultry were tested for the presence of Salmonella virulence genes invA, pagC, and spvC by PCR. Bioassays were used to evaluate aerobactin and colicin production.

Artificial and natural fibers treated with polyethyleneimine was successful in immobilizing the bioluminescent E. Coli, which has a great value in food inspection.

Results

All isolates contained invA and pagC but only 1.3 percent contained spvC. All spvC positive isolates were S. Typhimurium--one of them was recovered from pre-chill and the other three were recovered from post-chill. There was no significant difference ($P > 0.05$) in the presence of virulence factors between pre- and post-chill isolates. The results suggest that Salmonella isolates recovered from pre- and post-chill whole broiler carcasses can possess virulence factors and thus have the potential to cause salmonellosis. The research also indicates that chilling had no effect on virulence factors of Salmonella.

Two refereed publications resulted from this study of E. Coli immobilization.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Competing Programmatic Challenges

Brief Explanation

Due to a difficult economy that has resulted in a prolonged a hiring freeze, UME has limited faculty to address food safety programmatic needs or consumer requests. The hiring freeze may well continue into the next program year.

Limited budget has resulted in limitation in the laboratory equipment and hiring of graduate students to conduct further research in the overall food safety area at UMCP's College of Agriculture and Natural Resources.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)

Evaluation Results

Most evaluation data for Food Safety programs were collected via post/pre surveys. Specific program impacts and outcomes for this effort have been reported in the outcomes section.

Research outcome of the activities under Food Safety was evaluated both at the proposal stage (pre) and then at the time of publishing data in the refereed journals (post).

Key Items of Evaluation

V(A). Planned Program (Summary)**Program # 6****1. Name of the Planned Program**

Childhood Obesity

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
701	Nutrient Composition of Food	0%	0%	100%	0%
703	Nutrition Education and Behavior	60%	60%	0%	50%
724	Healthy Lifestyle	40%	40%	0%	50%
Total		100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Actual	10.0	2.0	2.0	0.1

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
317038	124660	0	75848
1862 Matching	1890 Matching	1862 Matching	1890 Matching
317038	124660	0	65310
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conducted classes and workshops; social marketing educational efforts; Implemented Food Supplement Nutrition Education Program (FSNE) in 10 MD Counties and Baltimore City; Implemented EFNEP in nine Maryland Counties year-round; additional summer EFNEP youth programs were implemented in six additional counties; In-service focusing on nutrition update for Faculty; developed new partnerships for program delivery; train the trainer program delivery; FSNE and FCS Program Evaluation websites to collect data focusing on childhood obesity and associated outcomes; Developed New Curriculum-"Growing Healthy Habits"; Implemented the following curricula focusing on healthy diets to reduce childhood obesity: Nutrition Nuggets, Health By Design, Growing Healthy Habits, Walk Ways, Up for the Challenge, 7-3-3-1- Healthy Families Having Fun, Integrating Nutrition into the School Curriculum; Smart Choices; Cooking with Kids; FUN; Power of Choice; Pyramid of Snacks; JumpSmart; Color Me Healthy; Media Smart Youth; Voluntary State Curriculum; My Pyramid for Adults & Youth; Berry Tales; Loving Your Family-

Family Meals; Eating Smart-Being Active. Developed Farm-to-school initiative to increase fresh local produce served in school cafeterias; worked with farmers markets to increase access to locally grown fresh fruits and vegetables to families; established community gardens to promote physical activity as well as increased consumption of fruits and vegetables. Preliminary plans began to initiate Walk Across Maryland for Youth - a fitness education program. Assessed current dietary patterns and activity levels at preschool settings through surveys of directors, teachers, and parents.

Conducted research on the food composition with respect to antioxidant and other nutritional properties affecting diet and human health. Role of 11 β -hydroxysteroid dehydrogenase -1 on obesity was studied. Also studies was the effect of zinc and many other compounds on human health.

2. Brief description of the target audience

Maryland Families; Food Stamp eligible families and individuals; Low income mothers & children; Teachers and other Professionals working with youth; Agency Representatives; Public Housing Residents; Child Care providers; children and youth across MD; Active duty and reserve children, youth, and families on and off bases; youth in after school settings

Target audience for Research activities are generally the scientific community and action agencies such as UME who take the research results and educate the public about healthy eating.

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual	101803	50000	89380	40000

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2009

Plan:

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan			
Actual	3	15	18

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # classes & presentations conducted; curricula published; fact sheets developed; eXtension contributions; inservice training sessions; train the trainer sessions; meetings with partners; summer day

Year

Target

Actual

2009

{No Data Entered}

10375

Output #2

Output Measure

- Creation of partnerships; marketing tools (brochures, posters); presentations, pilot studies

Year

Target

Actual

2009

{No Data Entered}

50

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	1. Choose a variety of colors of fruits and vegetables more often.
2	2. # of individuals and families who gain awareness, knowledge, or skills regarding healthy eating and physical activity and the relationship between them.
3	3. # participants reducing dietary fat intake by using lower fat or nonfat dairy products, lower fat meats, making wiser choices when eating out, and selecting lower fat snacks more often.
4	Healthy eating and physical activity in child care centers

Outcome #1**1. Outcome Measures**

1. Choose a variety of colors of fruits and vegetables more often.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	680

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

According to the Maryland Behavioral Risk Factor Surveillance Survey, 36% of Maryland residents are overweight or obese and 45% participate in no vigorous physical activity. Overweight children are more likely to remain overweight as adults and are at increased risk for coronary heart disease, high blood pressure, Type II diabetes, gallbladder disease, and some cancers. This epidemic, which causes about 300,000 premature deaths each year nationally, also accounts for approximately 9 percent of national health care expenditures.

What has been done

The HealthSmart Impact Team has been initiated and been charged with leading Healthy Lifestyles programming. One of its three major priorities is the reduction of childhood obesity through healthier eating and increased physical activity. Nutrition education programs in FSNE, EFNEP and FCS have focused efforts on increasing fruit and vegetable consumption in the diet. 360 educational sessions were conducted focusing on this program outcome. Additional indirect education was provided through PSAs, news articles, exhibits, and other social marketing efforts.

The effect of resveratrol and zinc on intracellular zinc status in normal human prostate (NHPrE) cells was studied. Also, antioxidant properties of grape seeds and Maryland grown soybeans were studied.

Results

57% of participants intend to choose a variety of colors of fruits and vegetables more often.

51% of participants intend to choose fruits and vegetables for snacks more often.

59% of participants intend to look for more ways to eat more fruits and vegetables more often.

Research on the nutritional values and their health impact produced approximately 15 refereed publications.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #2**1. Outcome Measures**

2. # of individuals and families who gain awareness, knowledge, or skills regarding healthy eating and physical activity and the relationship between them.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	720

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

The Maryland Behavioral Risk Factor Surveillance Survey indicates that 36% of MD residents are overweight or obese and 45% participate in no vigorous physical activity. Overweight children are more likely to remain overweight as adults and are at increased risk for coronary heart disease, high blood pressure, Type II diabetes, gallbladder disease, and some cancers. This epidemic, which causes about 300,000 premature deaths each year nationally, also accounts for approximately 9 percent of national health care expenditures.

What has been done

More than 600 educational sessions, including train-the-trainer sessions, were conducted that focused on the value and need for including at least 30 minutes of physical activity in daily activities. New curricula were introduced to encourage increased physical activity. Educators and volunteers have worked with schools to initiate school gardens that will provide increased opportunity for physical activity, as well as increased access to fresh vegetables. Other environmental changes in school cafeterias and school environments have been promoted to encourage increased physical activity and healthier eating. Social marketing messages, health fairs, PSAs, and news articles have been utilized to disseminate key messages. Collaborating with community health partners enables agencies to better address Childhood Obesity issue by sharing resources. During 2009, one educator strengthened relationships with the Montgomery County Health Department and Montgomery County Public Schools by increasing FSNE-funded nutrition programming by two sites. FSNE programming in Montgomery County currently includes five year-long programs at four elementary schools and one adult Community Service Center and 32 HeadStart locations. Health department staff is trained by this educator to use FSNE curricula in after-school and in-school programs.

Conducted 42 classes on healthy living for more than 700 Montgomery County and other citizens at venues including but not limited to Montgomery County Public Schools, Health Department, private non-profits, senior citizen centers and community action agencies.

Results

As a result of educational programs implemented in 2009, the following results were collected by end of program surveys from a total of 1206 participants who turned in evaluations.

65% of participants intend to include 30 minutes of physical activity into daily routine.

60% of participants intend to make small changes to increase physical activity.

60% of participants intend to try to balance calories in their food intake with physical activity in order to maintain a healthy weight.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #3

1. Outcome Measures

3. # participants reducing dietary fat intake by using lower fat or nonfat dairy products, lower fat meats, making wiser choices when eating out, and selecting lower fat snacks more often.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	1206

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Healthy eating habits along with regular physical activity have an important role in weight control. Despite the proven benefits of these healthy habits, the CDC State Indicator Report for Maryland shows that less than 16% of adults report eating the recommended daily servings of both fruits and vegetables. Unfortunately, the statistics for adolescents are worse, with only 11% reporting daily consumption of the recommended amounts. Finding ways to increase fruit and vegetable consumption while reducing fat consumption is key to improving health and well-being. Since lifelong dietary patterns begin in childhood, focusing on children, and those who feed children, is a logical focus of nutrition education interventions.

What has been done

Classes; workshops; train-the-trainer series; multi-session education; exhibits; social marketing messages; social media use to communicate recommended practices; Dietetic intern training; healthy food preparation workshops and demonstrations; child care provider training; after school sessions for 4-H Youth; summer day camps; in-school enrichment programs; systems environmental changes in schools; partnerships to develop educational programs.

Results

As a result of nutrition education programs across the state, participants reported the following plans to adopt recommended practices:

62% plan to choose low fat foods more often (n=122).

51% plan to choose lower fat dairy products more often (n=149).

53% plan to choose lower fat meats more often (n=53).

49% plan to choose lower fat snacks more often (n=78).

As a result of the new Grow It Eat It initiative, a Signature Program for UME, 77% of participants attending classes indicated they wanted to start a vegetable garden to have a healthier diet. In follow-up surveys at the end of the year, 70% of those contacted said that their food gardens contributed to a more healthy diet for their families.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #4

1. Outcome Measures

Healthy eating and physical activity in child care centers

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	50

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Overweight and obesity have reached epidemic proportions nationwide and have become two of the most critical issues of our time. Over the years, environmental changes have resulted in trends toward inactivity and poor diets. It has been stated that children establish eating habits early in life and these are often the results of interactions with parents and caregivers.

What has been done

The pilot study (surveys, observations, logs) is currently underway. This project will provide parents and caregivers with best practices for healthy meal planning and physical activity. A workshop/summit is being planned for parents and providers.

Results

Surveys, observations and logs will be analyzed to determine development of action plans for increasing healthy living (diet and physical activity).

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Economy
- Public Policy changes
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Public receptivity, lack of resources)

Brief Explanation

The current financial situation has led to an extended hiring freeze for University of Maryland Extension. Several FCS educators have retired during 2009, and we cannot replace them. Therefore, our outreach potential is more limited this year than in recent years,

Coupled with this situation is the fact that there are more people in need of nutrition education than ever before and the situation becomes even more critical. The number of families receiving food stamps is at an all time high in Maryland. Obesity rates for youth as well as adults is at an all-time high. In these difficult times, having food to eat becomes more important to parents and caregivers than worrying about healthy food to eat,

The diversity of Maryland's population continues to grow and expand. While we do have three bi-lingual educators on staff to serve our Hispanic audience, it is quite insufficient with the growing number of Hispanics who reside especially near major metropolitan areas. In addition, there are indigenous people from many countries in great need of nutrition education, yet we do not have the capacity to fill that need.

Research efforts are underway. However, additional funding would help to employ more graduate students to continue and expand research efforts.

V(I). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)

Evaluation Results

After-class surveys were used in most classes to collect quantitative data. Results associated with this outcome measure are from statewide data collection, from 1,206 total participants.

Specific outcome measures and results are included in impact statements for each outcome in this section.

Effective research was conducted on the nutritional values of food compounds and human health and was successfully published in refereed journals.

Key Items of Evaluation

Please note this is our first year to refocus outcomes to Childhood Obesity Priority area. In past years, these data has been reported under the Quality of Life outcome. Childhood Obesity will be included in the new 2011-2015 POW as a priority area. We will continue efforts to collect useful and validated data to reflect the impact our programs are making.