2013 University of Maryland - Eastern Shore and University of Maryland Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

The 2013 Accomplishment Report consists of the University of Maryland Extension (UME) at University of Maryland College Park and University of Maryland Eastern Shore, Maryland Agricultural Experiment Station (MAES), and Agricultural Experiment Station (AES) results and accomplishments. UME and MAES at the University of Maryland College Park (UMCP) are in partnership with AES at 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 strategic plan to reflect the priorities of the University of Maryland and the National Institute of Food and Agriculture. This plan provides the framework for the 2013 Annual Report of Accomplishments. Similarly, MAES and AES developed its POW for 2013-2017 using the framework identified by NIFA. However, UME is now launching a new strategic plan that may have implications for the 2016-2021 Plan of Work.

The plan for UME emphasizes key outcomes, impacts in critical areas, and "marshaling our intellectual resources" into non-formal educational programs that work together to deliver measurable results for the economy, the environment, and the community. This approach parallels that of UMCP, UMES, MAES, AES, and the College of Agriculture and Natural Resources to achieve impact on the big societal issues important to Maryland and, ultimately, to the global community.

The UME impact areas (referred to as Initiatives 1-4) represent major programmatic initiatives that UME directs resources to accomplish. These impact areas are a broad-based method of dividing the critical needs identified by the planning process into manageable units. Key outcomes are the goals within each impact area. Impact leadership teams consist of field-based Extension Educators, Extension Specialists, and Faculty Extension Assistants who work together to provide overall statewide leadership for programmatic efforts. These teams are responsible for collectively achieving the goals, measuring the impacts using suitable evaluation methods and tools, and reporting findings to stakeholders. Impact teams are linked to each other through common target and primary audiences served, the topics and subjects taught, and outcomes and impacts achieved. Impact leadership teams, across the major programmatic initiatives, develop signature programs that are replicable, measurable, and recognized at the state and national levels.

The MAES and AES coordinates its research projects in the challenge areas identified by the USDA-NIFA. Its research focus ranges from plant and animal genomics to nutrients, health, environment, and economics of production systems. Both basic and applied research are conducted by the faculty to cover the topics of important value to animal and plant production systems with both environmental and economic sustainability.

The four major program areas in the UME and MAES strategic plans are:
Initiative 1: LOCAL FOOD & AGRICULTURE SYSTEMS
Key Outcome: Agriculture and food production will be sustainable and profitable and produce a safe, abundant, affordable, and accessible food supply.
This initiative is reported under Planned Program, "Global Food Security and Hunger."

Initiative 2: ENVIRONMENT AND NATURAL RESOURCES

Key Outcome: Individuals and communities will become stewards to manage the environment for the mutual benefit of people, ecosystems, wildlife, natural resources, and economic interests.

This initiative is reported under Planned Programs, "Climate Change" and "Sustainable Energy."

Initiative 3: HEALTHY LIVING

Key Outcome: Youth, individuals, and families will make informed decisions about their health, finances, food, housing, and overall well-being.

This initiative is reported under Planned Programs, "Childhood Obesity," "Food Safety," and "Family & Community Resiliency."

Initiative 4: RESILIENT COMMUNITIES

Key Outcome: Improve human capacity to achieve desired community outcomes and be prepared to respond to uncertainties of economics, health, climate, and security.

This initiative is reported under Planned Programs, "Childhood Obesity, Food Safety," and "Family & Community Resiliency."

Total Actual Amount of professional FTEs/SYs for this State

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	85.0	15.0	54.0	15.0
Actual	80.0	15.0	45.0	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

The merit review process for UME faculty occurs annually when the faculty member is formally evaluated by the Program Leader (Assistant Director). The AGNR Program Leader evaluates AGNR Educators and Specialists; FCS Program Leader, the FCS Educators and Specialists; and the 4-H Program Leader, the 4-H Educators and Specialists. Input is obtained from the County Extension Director (CED) or Area Extension Director (AED). Emphasis is placed on program impacts and the difference made to constituents and the residents 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.

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.

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

Brief explanation.

Stakeholder participation is encouraged through local Extension Advisory Councils, 4-H Club leaders (volunteers), and various surveys targeted to UME clients. Social media strategies are also now being used to solicit feedback (Facebook, web sites, blogs). In 2013, feedback sessions were held throughout the State of Maryland to solicit feedback for the new 2014-18 strategic plan.

The administrative officers of the MAES, AES, 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 current the research and education issues examined by research and extension in the State's two land-grant universities. 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, Department of Housing and Community Development, Maryland Department of the Environment, and many other similar groups. Both research and extension faculty also seek stakeholder inputs through their participation and presentation of their projects to stakeholder audiences in state, regional, and national workshops and conferences.

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
- Use External Focus Groups
- Open Listening Sessions

- Needs Assessments
- Use Surveys

Brief explanation.

End-of-class surveys are used to gather input from individuals attending UME workshops and other events. In addition, follow-up surveys are conducted with stakeholders.
The UME Facebook page is used as a method to solicit feedback from our stakeholders.
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 MAES, AES, 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 and 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. 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, Rural Maryland Council, MARBIDCO, 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
- Meeting with the general public (open meeting advertised to all)
- Survey of the general public
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Survey specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public

Brief explanation.

UME draws upon the expertise of approximately 145 UME 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 the updated data from the 2010 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 and AES have 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 and AES scientists also have identified USDA-ARS scientists from Beltsville, Maryland, and State College, Pennsylvania 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 and AES scientists to respond to questions from the public across the state. Therefore, MAES and AES collect input from all these entities by participating in joint committee meetings and other related communication platforms (e.g., workshops, conferences, etc.). MAES has also 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 2013 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
- Other (Strategic Plan Development)

Brief explanation.

This information was used to: Set program priorities for our strategic plan 2009-2013; 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 and AES 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

In 2013, the educational demand continued for agricultural literacy, home gardening, food preservation, health and health insurance literacy, financial literacy, beginning and small farmers, and agricultural production for youth and adults. 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 continue to ask for information on growing home gardens and food preservation. A resurgent interest continues in home food preservation.

MAES and AES 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; ecosystem health using bioindicators, 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 and the Chesapeake Bay via runoff; development of bioenergy using new technologies such as

anaerobic digesting of animal waste; identification of grass genotypes that are non-food sources; combustion of biomass such as switch grass, etc.; 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
3062333	1223203	2811496	1401357

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	3062333	1223203	2811496	1440164
Actual Matching	3062333	1223203	2811496	1401357
Actual All Other	5987237	0	508614	0
Total Actual Expended	12111903	2446406	6131606	2841521

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	0	0	0	1223283

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger

☑ Reporting on this Program

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	10%	10%	15%	0%
205	Plant Management Systems	10%	10%	10%	0%
216	Integrated Pest Management Systems	15%	10%	10%	0%
301	Reproductive Performance of Animals	0%	0%	0%	33%
302	Nutrient Utilization in Animals	0%	0%	0%	24%
311	Animal Diseases	10%	10%	10%	0%
503	Quality Maintenance in Storing and Marketing Food Products	5%	10%	5%	0%
511	New and Improved Non-Food Products and Processes	0%	0%	0%	10%
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	10%	10%	10%	0%
608	Community Resource Planning and Development	10%	10%	10%	0%
704	Nutrition and Hunger in the Population	10%	10%	10%	0%
723	Hazards to Human Health and Safety	0%	0%	0%	33%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	26.0	4.0	15.0	4.0
Actual Paid Professional	24.0	4.0	23.0	2.8
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
918700	366961	1405748	330295
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
918700	366961	1405748	404256
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1796171	0	254307	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• UME and MAES will have a combined focus to ensure that Maryland agriculture and food production will be sustainable and profitable and produce a safe, abundant, affordable, and accessible food supply.
• Research coordinated through MAES and AES on crop and animal breeding, specialty crops, market analysis, economic sustainability, policy analysis, and protective clothing will be performed, while UME will be involved in local and regional efforts to assist agricultural and natural resource entrepreneurs.
• Research conducted through MAES and UME will generate vital information to increase productivity using genomics, breeding, and adaptation of alternate crops with economic and environmental sustainability.
• Through UME's Impact Teams and MAES's research projects, the following planned program activities will be emphasized: IPM; Value Added & Specialty Crops; Grow It-Eat It; Annie's Project; Best Management Practices in Crop and Animal Agriculture; Technologies for the Genetic Improvement of Crops and Animals; Agronomic Fruit & Vegetable Production; Dairy Analysis; and Small/Beginning Farmers Program.
• On-line educational programs, field trials, twilight tours, seminars, workshops, on-farm research & demonstrations and individual farm consultations will be used to educate Maryland farmers, Agriculture industry professionals, Soil Conservation District personnel, USDA-NRCS conservationists and extension faculty.
• New research and technologies developed by the MAES and AES will be transferred via UME on-farm demonstrations and twilight tours.
• Training programs will be developed to improve nutrient management practices, IPM, diagnostic skills, identification and control of invasive species, water management practice improvements and reductions, biosecurity and animal health.
• UME will seek funding to develop and pilot test an online youth quality assurance program.

2. Brief description of the target audience

- Food Stamp Recipients
- Limited Income Families
- School age youth on free-reduced meals
- New immigrants
- Students
- Plant growers and Breeders

- Retailers
- Producers
- Female Farmers
- Pesticide Handlers
- Protective Clothing Manufacturers

3. How was eXtension used?

UME educators are involved in several communities of practice.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	67655	192	40032	0

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	6	49	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- IPM (Green Industry & Agronomic Crops): Fact sheets, short courses, workshops, field trials, twilight tours, curriculum, websites, grants awarded.

Year	Actual
2013	138

Output #2

Output Measure

- Community Resource & Economic Development: Publications, seminars, workshops, grants and curriculum developed.

Year	Actual
2013	32

Output #3

Output Measure

- Biosecurity, BMP's and Animal Health: In-service training, seminars, publications, grants, presentations, websites, research trials, and workshops.

Year	Actual
2013	42

Output #4

Output Measure

- Pasture Management, Rotational Grazing & Dairy Analysis: Pasture walks, variety trials, in-service training, grants, publications, budgets, websites, farm analysis performed & workshops

Year	Actual
2013	190

Output #5

Output Measure

- Grow It-Eat It: Number of workshops, publications and grants.

Year	Actual
2013	159

Output #6

Output Measure

- Agronomic, Fruit & Vegetable Crop Production: Number of variety trails, twilight tours, seminars, workshops, publications, and grants.

Year	Actual
2013	150

Output #7

Output Measure

- Small/Beginning Farmers and Annie's Project: Number of workshops, number of participants; publications, grants and new partnerships.

Year	Actual
2013	17

Output #8

Output Measure

- Small/Beginning Small Ruminant Farmers: Number of workshops, roundtables, and research trials.

Year	Actual
2013	25

Output #9

Output Measure

- Personal Protective Technologies: Number of publications, surveys, research-based performance guidelines and standards, wear studies, research trials, and new partnerships.

Year	Actual
2013	5

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	IPM (Green Industry & Agronomic Crops): Number of IPM scouts and producers that can identify threshold level; number of pest management programs; Number implementing research based recommendations; certification in Pesticide Safety; field trails.
2	Community Resource & Economic Development: Number of business people, advisory groups, development agencies, rural leaders and potential farmers interested in developing new AGNR businesses; Favorable policies created to encourage AGNR enterprises; New AGNR businesses established; Business and marketing plans developed; Number of Communities integrating UME information for land use decisions and improved growth management concepts; Pubs developed; Number of people downloading AGNR enterprise information from MREDC web site; and Regional collaborations.
3	Bio-security, BMPs and Animal Health: Number of educational seminars held for producers, allied industry personnel and government workers; number of producers implementing biosecurity and BMP measures; new training curriculum developed; and number of resources and collaborative efforts with Extension Disaster Education Network (EDEN).
4	Farm Management & Agricultural Profitability: Number of farmers/livestock owners adopting best management practices; Number of farmers/livestock owners adopting rotational grazing strategies; Number farmers (Dairy, Beef, Equine, Sheep/Goats) increasing profitability as a result of these programs; new variety trails; Extension, NRCS and SWCD personnel trained; new practices (BMPs & rotational grazing) recommended; and number of dairy farmers implementing changes as a result of Dairy Analysis.
5	Home Food Production: Number of Master Gardeners trained; Number of people establishing new back yard gardens; number of new community supported agriculture (CSA) gardens established; and Number of new "Salad Tables" established.
6	Agronomic, Fruit & Vegetable Crop Production: Number of producers attending programs, twilight tours and workshops; Number producers/growers developing basic diagnostic skills in identifying invasive insects, diseases and weeds; Number of producers who write and update their own nutrient management plan; Number of producers adopting production management practices that will improve their profitability; Number of producers selling products at local markets; Number of producers who increase profitability; Number adopting field research practices dealing with improved crop varieties, invasive species, weeds and diseases; Number adopting methods to be more efficient in their water use in livestock and crop production.
7	Small/Beginning Farmers (Agronomic & Green Industry): Number of new farm enterprises established as a result of our programs; Number successfully completing Annie's Project; Number of women who have implemented change in their family farming operation after attending Annie's Project; Number of new/beginning farmers and Annie's Project graduates participating in additional UME AGNR programs, twilight tours and workshops; and number of farmers who become certified in nutrient management planning and/or pesticide safety.
8	Small/Beginning Small Ruminant Farmers: Number of workshops, roundtables and research trials held for small and beginning small ruminant farmers.
9	Personal Protective Technologies: Number of publications, surveys, research-based performance guidelines and standards, wear studies, research trials, and new partnerships.

Outcome #1

1. Outcome Measures

IPM (Green Industry & Agronomic Crops): Number of IPM scouts and producers that can identify threshold level; number of pest management programs; Number implementing research based recommendations; certification in Pesticide Safety; field trails.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Nursery, greenhouse and landscape management is Maryland's second largest agricultural industry (valued at $1.96 billion in 2008). This industry requires cost-effective and environmentally safe materials and methods to control insects and diseases and to efficiently use water and nutrients. The IPM program was developed to help Maryland greenhouse and nursery managers stay on top of current insect, disease and fertility problems with greenhouse crops and to sustain and expand the use of IPM techniques.

What has been done
Stakeholders were trained in how to use ecologically based IPM strategies for managing key physiological disorders, diseases, nematodes, insects, and weed pests associated with vegetable plantings. MAES developed practical programs for educators, growers, and their advisors that are environmentally sound, healthy, socio-economically viable and have practical applications for all vegetable growers.

Results
Research has led to improved understanding of the phylogeny of the insect order Lepidoptera (moths and butterflies, 155,000 species), which includes countless pest species. The resulting publications, based on gene sequencing analysis, have led to new classifications for the Lepidoptera as a whole, and for pest-rich groups including Tortricidae (leaf roller moths) and Pyraloidea (stem borers, corn borers and relatives. From a survey of 200 Maryland vegetable growers conducted during the winter of 2012, 47 or 23.5% of the respondents indicated they

would adopt a new or different pest-control approach as a result of our extension efforts and on average the survey respondents indicated that our efforts resulted in increased profitability.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
216	Integrated Pest Management Systems

Outcome #2

1. Outcome Measures

Community Resource & Economic Development: Number of business people, advisory groups, development agencies, rural leaders and potential farmers interested in developing new AGNR businesses; Favorable policies created to encourage AGNR enterprises; New AGNR businesses established; Business and marketing plans developed; Number of Communities integrating UME information for land use decisions and improved growth management concepts; Pubs developed; Number of people downloading AGNR enterprise information from MREDC web site; and Regional collaborations.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Maryland´s small livestock farmers want to capitalize on their urban location and strong demand for locally-produced meats. However, they need a core knowledge and skill set in family-friendly meat products and packaging, how to work with their meat processor, marketing options, and food safety regulations and licensing requirement in Maryland.

What has been done
UME developed the program, "Managing Risks in the Farm to Table Marketing Model for Small Farm Meat Producers in Maryland." The curriculum was developed and four training sessions were held. Instructors included trained professionals, Extension Educators, and farmers already

engaged in this style of production and marketing. Each participant was offered the opportunity to formulate a marketing plan for their products.

Results

Participants gain knowledge and skills in product development, understanding food safety and regulatory requirements, identify a processor(s) for their products, and understand different marketing options. 60 Participants identified best fit livestock enterprise and have resource contacts for outreach and support across the farm-to-table continuum. 42 Participants develop a written marketing plan for the farm-to-table meat enterprise. Eleven participants established at least one new marketing outlet for their product as a result of participating in the three workshops. Eight producers looking to sell their products retail on and/or off the farm secured all the required licenses and permits in Maryland.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Bio-security, BMPs and Animal Health: Number of educational seminars held for producers, allied industry personnel and government workers; number of producers implementing biosecurity and BMP measures; new training curriculum developed; and number of resources and collaborative efforts with Extension Disaster Education Network (EDEN).

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Animal agriculture is the largest component of Maryland agriculture based on value of production. According to the 2007 Census, Maryland agriculture totaled $1.2 billion dollars of farm gate receipt, of which 66% was animal generated. To ensure long-term sustainability and profitability, it is critical to educate producers about evolving best management practices. These best management practices include but are not limited to: biosecurity, quality assurance, nutrition, health, food safety, marketing, breeding, etc. In addition, it is imperative to educate consumers about animal agriculture to ensure social acceptance and understanding of animal production across the state and nation.

What has been done

MAES research in animal science has established methodologies for site-specifically altering nucleotides within the animal genomes using advanced genome editing tools. UME animal sciences faculty provided educational programs on animal best management practices (such as bio-security, nutrition, health, food safety, marketing, breeding, etc.) to youth and adult audiences and develop educational materials in the area of animal agriculture to support those teaching efforts.

Results

The ability to specifically "edit" the animal genomes will usher us into the genomics era, and accelerate decade's long progress attained by traditional breeding to meet global challenges faced by animal agriculture. MAES researchers have been working to reduce the contamination of meat and meat products with Salmonella enterica serovars Typhimurium and Eneteritidis, enterohemorrhagic E. coli and Campylobacter jejuni in pre- and post-harvest levels.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases
601	Economics of Agricultural Production and Farm Management

Outcome #4

1. Outcome Measures

Farm Management & Agricultural Profitability: Number of farmers/livestock owners adopting best management practices; Number of farmers/livestock owners adopting rotational grazing strategies; Number farmers (Dairy, Beef, Equine, Sheep/Goats) increasing profitability as a result of these programs; new variety trails; Extension, NRCS and SWCD personnel trained; new practices (BMPs & rotational grazing) recommended; and number of dairy farmers implementing changes as a result of Dairy Analysis.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Urban sprawl leads to high land values placing added pressures for a decreasing farmland base, increase traffic on county roads, and increased scrutiny on environmental issues such as water and air quality. To compete with the large farms being constructed in the mid-west and west, Maryland farmers must become efficient in other ways - reduced labor cost, reduced feed cost through improved pasture management and increased revenues from value-added products.

What has been done
University of Maryland Extension has developed a comprehensive 5-session course to grazing and pasture management. This course is geared not only to the full-time livestock producer but to the small part time and backyard farmer as well. The course was held on location in each county so that participants received a mixture of classroom and field based education relevant to their geographical location.

Results
As a result of the program, participants indicate they will begin taking consistent soil samples, are going to make use of the available nutrients provided by manure and fertilizers, are going to identify competitive weeds and determine the best control method, are going to identify the best forages for their location,will manage their current forage stands, and are going to introduce rotational grazing management systems on their farms.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
503	Quality Maintenance in Storing and Marketing Food Products
601	Economics of Agricultural Production and Farm Management

Outcome #5

1. Outcome Measures

Home Food Production: Number of Master Gardeners trained; Number of people establishing new back yard gardens; number of new community supported agriculture (CSA) gardens established; and Number of new "Salad Tables" established.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Home, school, and community food production is increasing in Maryland. Many Marylanders lack the experience or knowledge to create and maintain a garden of their own.

What has been done
The Grow It Eat It campaign (started in 2009) developed into a successful joint program between the Master Gardener program and the Home and Garden Information Center. GIEI's goals are to: 1) increase the number and productivity of MD food gardens and gardeners; 2) teach sustainable garden practices; 3) create an engaging, interactive network of food gardeners using social media tools; 4) answer plant and pest problems; and 5) reach new audiences (especially young people, non-whites, and low-income communities).

Results
Approximately 75,000 residents received GIEI information and instruction through classes and events in 2013. Approximately 7,500 GIEI seed packets were distributed to residents through UME educators and volunteers. A 30-hour Youth Gardening for Nutrition course was implemented in three counties for 48 teachers and Master Gardeners, resulting in increased school garden production.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
216	Integrated Pest Management Systems
503	Quality Maintenance in Storing and Marketing Food Products

Outcome #6

1. Outcome Measures

Agronomic, Fruit & Vegetable Crop Production: Number of producers attending programs, twilight tours and workshops; Number producers/growers developing basic diagnostic skills in identifying invasive insects, diseases and weeds; Number of producers who write and update their own nutrient management plan; Number of producers adopting production management practices that will improve their profitability; Number of producers selling products at local markets; Number of producers who increase profitability; Number adopting field research practices dealing with improved crop varieties, invasive species, weeds and diseases; Number adopting methods to be more efficient in their water use in livestock and crop production.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Maryland is home to a robust agriculture industry with a proud tradition of supporting economic development, providing safe and affordable foods and maintaining essential open space and working lands for all to enjoy. Maryland farmers tend 1.25 million acres of grain crops, 75,000 acres of vegetable and fruit crops, 260,000 acres of forage crops and pasture acreage. Farmers need to be profitable through crop production efficiency and land management.

What has been done
MAES research is developing strategies to reduce nutrient losses from Maryland Cropland. The primary goal of this research is to understand the mechanistic drivers of nutrient loss from Maryland cropland and to develop management practices that reduce nutrient losses while maintaining agricultural productivity. The purpose of this research is to maintain agricultural production in Maryland while reducing nutrient losses to levels deemed necessary to restore water quality in Chesapeake Bay.

Results
The primary conclusions of this research have been that 1) the dominant route of nitrogen loss

from cropland is through nitrate leaching into shallow groundwater, 2) nitrogen and phosphorus losses in surface runoff are highly sensitive to how nutrients are applied, 3) cereal grain winter crops can be used to reduce nitrate leaching and total nitrogen losses by more than 50 percent, and 4) dissolved and total phosphorus losses are increased by shifting to no till production methods in areas of low erosion potential.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
608	Community Resource Planning and Development

Outcome #7

1. Outcome Measures

Small/Beginning Farmers (Agronomic & Green Industry): Number of new farm enterprises established as a result of our programs; Number successfully completing Annie's Project; Number of women who have implemented change in their family farming operation after attending Annie's Project; Number of new/beginning farmers and Annie's Project graduates participating in additional UME AGNR programs, twilight tours and workshops; and number of farmers who become certified in nutrient management planning and/or pesticide safety.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Farming is a unique business that has strong ties to family, values and land. These strong ties

lead to the need for outreach and education on risk management topics such as financial planning, estate planning, marketing, communication, computer programs, budgeting, insurance and much more.

What has been done

The MidAtlantic Women in Agriculture program engages, educates and empowers women on common issues in risk management. Annie's Project is a national farm management program for women with approximately 24 hours of classroom time. It provides tools and resources for women in agriculture to gain more knowledge of farm operations and the business. It empowers women with the knowledge to make educated decisions for their family and their future.

Results

Participants leave the program with a high intent to write business and marketing plans, use computers, check credit reports, prepare financial statement, update estate plans, and positively increase community and family relations. Writing business and marketing plans was an action that participants wanted to do (96%) and 39% actually followed through. Checking credit reports, updating estate plans, and positively increasing family communications were the actions that the greatest majority of participants engaged in.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
216	Integrated Pest Management Systems
311	Animal Diseases
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices
608	Community Resource Planning and Development

Outcome #8

1. Outcome Measures

Small/Beginning Small Ruminant Farmers: Number of workshops, roundtables and research trials held for small and beginning small ruminant farmers.

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
For the last 25 years, rapid changes in the demographics of the United States have increased the demand for lamb and/or chèvon (goat meat). Conversely, meat goat production in the U.S. has declined in contrast to consumption, creating a gap filled by imports and an opportunity for local producers. Estrus synchronization, targeting peak demand dates, will enhance opportunities of increased revenue for small farmers.

What has been done
Small test trials at the UMES Small Ruminant Farm using the EAZIBREED(TM) CIDR® sheep inserts have given inconsistent results when used in Katahdin cross bred ewes and cross bred Kiko and Boer does. However, the use of this FDA-approved product in small ruminants greatly encourages producers because it would allow them to target lamb and chèvon demand peaks during the year.

Results
The experience gained on sheep and goat breeding while conducting multiple trials at UMES has facilitated outreach efforts carried out by UME at UMES to train sheep and goat producers to improve ewe and doe nutrition and management. In addition, several seminars and roundtables trained farmers and students focusing on improving the survival of lambs and kids.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals

Outcome #9

1. Outcome Measures

Personal Protective Technologies: Number of publications, surveys, research-based performance guidelines and standards, wear studies, research trials, and new partnerships.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Personal protective technologies (PPT) are often used to protect individuals exposed to occupational hazards in the workplace. Conformity assessment of these products helps to ensure that the products meet the minimum performance criteria established for the product. In the United States, a committee was convened by the Institute of Medicine (IOM) at the request of the National Institute of Occupational Safety and Health (NIOSH) to examine the conformity assessment process used for PPT (excluding respirators) in the United States. The committee report entitled "Certifying Personal Protective Technologies" recommends that a comprehensive framework be established to serve as the basis for PPT conformity assessment.

What has been done
NIOSH Personal Protective Technology Conformity Assessment working Group is working on the development of a framework recommended by the IOM committee. In addition, conformity assessment standards are being established by standards development organizations. The principal investigator as UMES serves as the technical contact for ASTM International standards as well as International Standards Organization standards related to protective clothing for pesticide operators, working with experts from several countries to ensure that the performance specifications used as the basis for certifying products are consistent globally.

Results
Research conducted at UMES during current and previous research projects has been used for establishing performance requirements. ISO 27065:2011, Protective clothing - Performance requirements for protective clothing worn by operators applying liquid pesticides, was approved in 2011, and ASTM F2669-12 - Standard Performance Specification for Protective Clothing Worn by Operators Applying Pesticides was revised in 2012. A Japanese Industrial Standard (JIS), bases on ISO 27065:2011, has been approved. In addition, ASTM F2962-13 Standard Practice for Conformity Assessment of Protective Clothing Worn by Operators Applying Pesticides was approved as a standard in 2013.

4. Associated Knowledge Areas

KA Code	Knowledge Area
723	Hazards to Human Health and Safety

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.)
- Other (Urban sprawl and State Budgets)

Brief Explanation

Overall, we have been able to meet our strategic goals through the use of Impact Teams and more focused programs.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

A medium-term outcome of Annie's project is to help ensure the economic viability of farming operations. Data obtained from the participants indicate that the program is successful in this regard. When asked if Annie's Project has increased their profitability 43% responded that yes it has. A range of dollar increases were then available for selection. The average Annie's project participant since 2008 has increased farm profitability between $2,152.17 and $3,770.07 with the average participant increasing farm profitability by $3,110.12.

Since 2008 Annie's Project has expanded and reached 14 unique sites in Maryland and Delaware

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change

☑ Reporting on this Program

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	10%	10%	15%	57%
111	Conservation and Efficient Use of Water	10%	10%	5%	0%
112	Watershed Protection and Management	15%	20%	10%	15%
123	Management and Sustainability of Forest Resources	5%	5%	5%	0%
131	Alternative Uses of Land	10%	5%	5%	0%
132	Weather and Climate	0%	0%	0%	10%
133	Pollution Prevention and Mitigation	10%	10%	25%	18%
205	Plant Management Systems	15%	10%	10%	0%
216	Integrated Pest Management Systems	10%	10%	10%	0%
403	Waste Disposal, Recycling, and Reuse	5%	10%	15%	0%
608	Community Resource Planning and Development	10%	10%	0%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	16.0	3.0	11.0	3.0
Actual Paid Professional	16.0	3.0	6.0	3.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
612467	244641	337379	333352
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
612467	244641	337379	498550
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1197447	0	61034	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• UME and MAES will have a combined focus to help producers plan and make decisions in adapting to changing environments, sustaining economic vitality, and taking advantage of emerging economic opportunities offered by climate change mitigation technologies.
• UME and MAES will also develop research and education programs that generate knowledge to develop agriculture systems that maintain high productivity in the face of climate changes and reduce greenhouse gas emissions.
• In an effort to meet these objectives, UME and MAES will develop research and action teams that will focus on: Alternative energy and biofuels; Aquatic resources; Biodiversity/ecosystem services; Energy conservation; Forest resources; Integrated Pest Management; Invasive and exotic species; Land Use; Nutrient management; Recreational resources; Waste management; Waste utilization and resource recovery; Watershed restoration; and Wildlife resources.
• UME and MAES will conduct workshops, demonstrations, symposia, twilight tours, forums and research to educate producers, farmers and citizens about adapting management practices to benefit the environment and minimize climate change impacts.
• MAES and UME will develop and expand collaborative research and education programs with partners and stakeholder and develop new web based and media educational materials.

2. Brief description of the target audience

- Maryland citizens;
- Master Gardeners and Naturalists;
- Land developer and owners;
- UME and MAES faculty;
- USDA-NRCS conservationists;
- Soil Conservation District personnel;
- MDA program staff;
- MDE program staff;
- Producers;
- Farmers;
- Nursery and Greenhouse industry personnel;
- Forest landowners;

- 4-H youth;
- County planning and zoning program staff;
- AGNR industry;
- Nonprofits;
- Appropriate state and municipal government officials;
- Primary and Secondary Science Teachers;
- Media; and
- Maryland homeowners.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	834409	1778030	9616	0

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	18	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Nutrient Management Planning, Waste Management Systems, Composting and Water Resources (Agronomic, Livestock & Green Industry): Short courses; Workshops; Twilight tours; Field days; Seminars; In-service training; Grants; Publications; and Websites.

Year	Actual
2013	26

Output #2

Output Measure

- Chesapeake Bay, Water Resources, Nutrient Management and Composting (Residential): Water Resources-Short courses; In-service training; Volunteers trained; and New relationships, policy & technology developed.

Year	Actual
2013	198

Output #3

Output Measure

- Management and Sustainability of Forest/Wildlife Resources (Forest landowners, Forest Industry and Loggers): Publications; Workshops; Distance Education Courses; Field trials; Demonstrations; Grants; and Web sites.

Year	Actual
2013	52

Output #4

Output Measure

- Alternative Crop Production: Workshops; Seminars; In-Service training programs; Variety trials; Field days; Twilight tours; Publications; Grants; and Participants in alternative/ethnic crop production programs.

Year	Actual
2013	0

Output #5

Output Measure

- Nursery & Greenhouse Crop Production: Workshops; Seminars; Twilight tours; Field days; Grants; In-service training programs; Web sites; Publications; and Producers attending educational programs.

Year	Actual
2013	0

Output #6

Output Measure

- Pesticide Safety Education: Workshops; Seminars; Demonstrations; Grants; Web sites; Publications; and Participants in educational/certification programs.

Year	Actual

2013	50

Output #7

Output Measure

- New Technologies-Using High Tunnels to Remain Competitive in a Global Market: Workshops; Field trials; Demonstrations; Twilight tours; Grants; Publications; and Participants in educational programs.
  Not reporting on this Output for this Annual Report

Output #8

Output Measure

- Master Gardener Program: Workshops; Seminars; Advanced training; Grants; Publications; and Participants in educational programs.

Year	Actual
2013	87

Output #9

Output Measure

- Surface Water Pollution and Harmful Algal Bloom Production in Estuarine Waters: Number of field demonstrations, fact sheets, and water quality testing.

Year	Actual
2013	4

Output #10

Output Measure

- Use of Beneficial Microorganisms to Enhance the Productivity of the Green Industry in Maryland: Number of research trials and publications.

Year	Actual
2013	6

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Nutrient Management Planning, Waste Management Systems, Composting and Water Resources (Agronomic, Livestock & Green Industry): Number of producers implementing nutrient management plans; plans written; Producers relate nutrient management to water quality; Producers trained in plan writing; Policy makers and farmers understand the scientific issues of land applied poultry litter and poultry stockpiles; Producers using compost technology; and Policy makers access UME information.
2	Chesapeake Bay, Water Resources, Nutrient Management and Composting (Residential): Number of lawn care companies reporting fertilizer use and eliminating P from maintenance; Adoption of composting; Water wells tested; Septic tanks improved; Number of citizens adopting practices of landscape ecology and understanding the relationship among pesticides, poor septic systems and environmental health.
3	Management and Sustainability of Forest/Wildlife Resources (Forest Landowners, Forest Industry & Loggers): Number of forest landowners and loggers gain knowledge of forest stewardship and practices; Joined forests associations; Understand wildlife damage control measures; Forest Stewardship Plans implemented; and Master loggers trained.
4	Alternative Crop Production: Number of farmers growing new alternative crops; New farm enterprises; Farm markets selling new alternative crops and/or value added crops; and New varieties researched.
5	Nursery & Greenhouse Crop Production: Number of IPM scouts and producers that can identify threshold pest levels; Research based recommendations implemented, such as efficiency of water use and energy; Certification in pesticide safety; Field trials developed; Nutrient management plans developed; Growers that adopt sustainable practices that will improve crops with reduced losses; Growers implementing sustainable practices that reduce losses and reduce environmental impacts; and New crop varieties planted based on UME/MAES research.
6	Pesticide Safety Education (Agronomic & Green Industry): AGNR producers/farmers/applicators that are certified in pesticide safety; Pesticide safety practices implemented such as wearing a respirator, gloves and showering after application; Increase in knowledge of IPM techniques; Extension programs that incorporate audience response system technology, such as "clickers" into PSEPs, thus enhancing the learning environment, stimulating deeper thinking and maximizing the likelihood of a positive behavioral change; and Producers that understand the health risks associated with pesticides and their application.
7	New Technologies in a Global Market: New high tunnels established; Producers who have implemented research based practices; New varieties established; Applied research- variety trials; Producers who have increased profitability as a result of installing high tunnels; Request for workshops, seminars and twilight tours; Producers who participate in USDA's high tunnel cost share program; and Cooperators in on-farm research projects.
8	Environmental Stewardship: Master Gardeners programs developed and delivered by MGs; Plant Clinics held; and MGs who participate in MD Master Naturalist Program.
9	Surface Water Pollution and Harmful Algal Bloom Production in Estuarine Waters: Number of field demonstrations, fact sheets, and water quality testing.
10	Use of Beneficial Microorganisms to Enhance the Productivity of the Green Industry in Maryland: Number of research trials and publications.

Outcome #1

1. Outcome Measures

Nutrient Management Planning, Waste Management Systems, Composting and Water Resources (Agronomic, Livestock & Green Industry): Number of producers implementing nutrient management plans; plans written; Producers relate nutrient management to water quality; Producers trained in plan writing; Policy makers and farmers understand the scientific issues of land applied poultry litter and poultry stockpiles; Producers using compost technology; and Policy makers access UME information.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

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.

What has been done
The MAES research project, "Calculating A Statewide Nutrient Mass Balance to Guide Strategic Nutrient Management Planning in Maryland" seeks to guide nutrient management planning and policy initiatives at the farm, watershed, state and regional scale and to document how individual and statewide efforts to improve nutrient management have affected the nutrient balance in Maryland today and provide recommendations based upon the findings.

Results
This research has formed the base for changes in application of fertilizer as well as with the interpretive categories as to where fertilizer can be applied. It has been relied upon by the Bay Program and the Goveror's BayStat Cabinet for the development and promulgation of new regulations.

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 #2

1. Outcome Measures

Chesapeake Bay, Water Resources, Nutrient Management and Composting (Residential): Number of lawn care companies reporting fertilizer use and eliminating P from maintenance; Adoption of composting; Water wells tested; Septic tanks improved; Number of citizens adopting practices of landscape ecology and understanding the relationship among pesticides, poor septic systems and environmental health.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Poor water quality in the Chesapeake Bay and its tributaries leads to a decline in the health of the ecosystem. Oftentimes, problems come with sediment erosion, whether it is from construction, agriculture, deforestation, reduction of buffers or changes in land use. Loss of natural filters, for instance oyster reduction due to disease and over-fishing, exacerbate water quality problems. Furthermore, management issues related to pest management, septic systems, lawn care, deforestation, air deposition (particulate matter, ammonia, vehicle emissions), and climate change also impact the stability of natural systems and the improvement of water quality.

What has been done
MAES research is being conducted on "Calculating A Statewide Nutrient Mass Balance to Guide

Strategic Nutrient Management Planning in Maryland." The goal of this research is to guide nutrient management planning and policy initiatives at the farm, watershed, state and regional scale and to document how individual and statewide efforts to improve nutrient management have affected the nutrient balance in Maryland today and provide recommendations based upon the findings.

Results

This research has shown that the Phosphorus Site Index may not be sufficient to determine when to apply and where not to apply fertilizer to certain farm fields. In addition, a revised, Phosphorus Site Index (now termed the Phosphorus Management Tool) is needed which may result in more restrictive manure management for some livestock farmers or farmers who utilize animal manures on specific fields. The research has formed the base for changes in application of fertilizer as well as with the interpretive categories as to where fertilizer can be applied and has been relied upon by the Bay Program and the Governor's BayStat Cabinet for the development and promulgation of new regulations.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Management and Sustainability of Forest/Wildlife Resources (Forest Landowners, Forest Industry & Loggers): Number of forest landowners and loggers gain knowledge of forest stewardship and practices; Joined forests associations; Understand wildlife damage control measures; Forest Stewardship Plans implemented; and Master loggers trained.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual

2013 0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In many Maryland waters and in the Chesapeake Bay, a challenge is to improve water quality and maintain viable natural resources. Forestland is a critical component towards meeting this challenge as it functions as a buffer, reducing the nutrients and sediment entering waterways which adversely affect water quality, aquatic organisms, fisheries, and human health. A healthy forest directly impacts water quality and is a benefit to all Maryland citizens.

What has been done

The General Forestry Course educates the forest landowners to the benefits of forestland and provides them with the tools they need to properly manage their forest. The course instills an appreciation for forests and a desire to learn more about this vital natural resource and the steps they can take to ensure and maintain a healthy forest. Students design a framework for a forest stewardship plan at the end of the course.

Results

A 5-year survey for students enrolled in years 2000-2007 who successfully completed the course had designed a framework for a forest stewardship plan. Of these individuals, 61% had a forest stewardship plan and 31% indicated that it was a result of the course. Plans impacted 1,983 acres. Twenty-five percent receive advice from a professional forester while 34% utilized a state forestry division and 26% utilized local Extension offices.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

Alternative Crop Production: Number of farmers growing new alternative crops; New farm enterprises; Farm markets selling new alternative crops and/or value added crops; and New varieties researched.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The planting of vineyards is one of the most rapidly expanding agricultural ventures in Maryland. Local growers are looking more toward high value crops such as grapes to maximize profitability on small acreage. Growers in Southern Maryland are seeking alternatives to tobacco. With this rapid expansion comes a concomitant increase in demand for information on site evaluation and establishment and maintenance details.

What has been done
To satisfy the great demand for current viticulture production information a comprehensive research and extension program was established. Research priorities include cultivar testing, cultural practices, and pest management. The extension component includes specific programs designed for beginners.

Results
Regional research and development on varieties, canopy management and training systems continues to give invaluable information on variety performance that is integrated in regional variety recommendations. This variety and wine research/demonstration has resulted in the dissemination of 4 new and exclusive varieties to the commercial Maryland grape industry.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
216	Integrated Pest Management Systems
608	Community Resource Planning and Development

Outcome #5

1. Outcome Measures

Nursery & Greenhouse Crop Production: Number of IPM scouts and producers that can identify threshold pest levels; Research based recommendations implemented, such as efficiency of water use and energy; Certification in pesticide safety; Field trials developed; Nutrient management plans developed; Growers that adopt sustainable practices that will improve crops with reduced losses; Growers implementing sustainable practices that reduce losses and reduce environmental impacts; and New crop varieties planted based on UME/MAES research.

Not Reporting on this Outcome Measure

Outcome #6

1. **Outcome Measures**

Pesticide Safety Education (Agronomic & Green Industry): AGNR producers/farmers/applicators that are certified in pesticide safety; Pesticide safety practices implemented such as wearing a respirator, gloves and showering after application; Increase in knowledge of IPM techniques; Extension programs that incorporate audience response system technology, such as "clickers" into PSEPs, thus enhancing the learning environment, stimulating deeper thinking and maximizing the likelihood of a positive behavioral change; and Producers that understand the health risks associated with pesticides and their application.

Not Reporting on this Outcome Measure

Outcome #7

1. **Outcome Measures**

New Technologies in a Global Market: New high tunnels established; Producers who have implemented research based practices; New varieties established; Applied research- variety trials; Producers who have increased profitability as a result of installing high tunnels; Request for workshops, seminars and twilight tours; Producers who participate in USDA's high tunnel cost share program; and Cooperators in on-farm research projects.

Not Reporting on this Outcome Measure

Outcome #8

1. **Outcome Measures**

Environmental Stewardship: Master Gardeners programs developed and delivered by MGs; Plant Clinics held; and MGs who participate in MD Master Naturalist Program.

2. **Associated Institution Types**

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
133	Pollution Prevention and Mitigation
205	Plant Management Systems
216	Integrated Pest Management Systems
403	Waste Disposal, Recycling, and Reuse

Outcome #9

1. Outcome Measures

Surface Water Pollution and Harmful Algal Bloom Production in Estuarine Waters: Number of field demonstrations, fact sheets, and water quality testing.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
UMES and collaborating USDA-ARS scientists are addressing the issue of the implied link between the increased use of urea fertilizer and a coincidental increase in toxic algal blooms in the tributaries adjacent to the Chesapeake Bay.

What has been done
Twenty-five existing sites located in the tidal and estuarine portion of the Manokin River are being periodically sampled for runoff and leachate water samples after rain events. Water samples are being analyzed for all forms of N and P, pH, total solids, and other parameters.

Results
Preliminary data indicate that dissolved P in leachate and in runoff is highly correlated to rainfall events and timing of litter application. Additional data are being analyzed and summarized for future presentations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation

Outcome #10

1. Outcome Measures

Use of Beneficial Microorganisms to Enhance the Productivity of the Green Industry in Maryland: Number of research trials and publications.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	6

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The green industry is the second largest agriculture sector in Maryland; however, the lower shore region only represents a small portion of horticultural sales and services (3%) in Maryland. Trial

gardens provide a forum for research that allows growers to choose the most suitable plants by comparing new varieties with traditional ones.

Concerning beneficial microorganism research, many greenhouse and nursery production operations use a combination of fertilizers, growth regulators, fungicides, and insecticides to mass-produce ornamental plants in high volumes on small acreages. Consequently, non-point sources of pollutants are having a negative impact on the quality of water in watersheds and aquifers throughout the United States.

What has been done

The floral trials, which were conducted from June to August, provided the participating seed companies (PanAmerican Seed Company, Ball FloralPlant, Burpee H G, and Kieft) with unbiased evaluations of how their plant varieties performed in the landscape under local growing conditions.

Also, for the beneficial microorganism research, several studies (Poinsettia Study, Hot Pepper Study, Sweet Pepper Study, and the Beet Study) were conducted to determine the how soil type, fertilizer rate, and treatment influenced plant growth and development.

Results

Twelve floral varieties received a rating of 3.5 and above. The seed companies received a written report on the trial garden evaluations. Research projects evaluating the responsiveness of beneficial microorganisms on the production practices of vegetables grown in a greenhouse environment will continue. Results from the initial studies will be used to enhance future studies.

Various plants were grown in the greenhouse in a randomized complete design. Shoot height and chlorophyll data will be conducted on a regular basis throughout the growth of the plants. During the flowering stage, destructive sampling was conducted. The height of the shoots, length of the roots, chlorophyll content, and the shoot and root dry weight was measured to determine the effect of treatment on plant growth. The data will be analyzed using Statistix v.9. Analysis of variance to compare treatments. The level of significance of $p<0.05$ will be considered statistically significant. Tukey's HSD test will be used to compare treatment means.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
132	Weather and Climate

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.)
- Other (funding)

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. A strategic staff plan has been developed for UME that focuses on providing adequate geographic and programmatic coverage of tenure-track educators and faculty educator assistants. However, UME is still limited in climate change expertise and is working to develop that expertise among educators, specialists, and researchers.

The limitation for research 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. Again, UME, MAES, and UMES need more positions and expertise in this area, which requires additional resources.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Since 2012, Maryland Sea Grant and Partners have engaged in a Climate Change Adaptation Survey and regional Climate Forums as part of a statewide needs assessment. In 2012, the Partners conducted a climate user needs survey, which was sent to approximately 300 individuals representing coastal community staff in municipal and county governments. A total of about 100 responses were collected (~34% response rate). Preliminary finding indicate that when asked about barriers to climate change adaptation, staff time and funding were considered significant barriers for communities to engage in climate adaptation/hazard resilience. Top risks they identified were flooding and sea level rise. According to survey results, about 42% of respondents are in 'understanding' phase (vs 19% in planning, and 4% in implementation). The findings (summary forthcoming) will help inform the future training, technical assistance and funding assistance by Maryland's CoastSmart Communities Program, and subsequently the Coastal Training Program and Maryland Sea Grant. The 2012 and upcoming 2014 Climate Forums bring together researchers and outreach providers doing work in climate change adaptation in Maryland to enhance capacity to address coastal hazards and climate change. Researchers will be able to use information from this project to target and justify research proposals addressing climate information needs.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Family & Community Resiliency

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
703	Nutrition Education and Behavior	10%	20%	30%	0%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	5%	5%	30%	0%
724	Healthy Lifestyle	10%	20%	20%	0%
801	Individual and Family Resource Management	10%	0%	0%	0%
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	5%	5%	0%	0%
806	Youth Development	60%	50%	20%	0%
	Total	100%	100%	100%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	20.0	3.5	13.0	4.0
Actual Paid Professional	20.0	3.5	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
765583	305801	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
765583	305801	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1496809	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• The traditional rural economic development tools of available land and cheap labor no longer apply. Rural entrepreneurship and sustainable development of our rural landscapes hinge on utilizing technology, new partnerships with urban stakeholders and decision makers, and retaining our human resources by developing profitable and community-centric businesses.

• Communities value a well-trained workforce and will pursue opportunities to increase the skills levels of citizens, especially young people. A well-trained workforce benefits communities, increasing attractiveness for businesses to establish in a locale.

• Attracting successful businesses equips communities to be more sustainable, expanding their economic base.

• Training and education will result in stronger leadership and civic engagement.

• Increasing and building stronger and civically-engaged leaders will strengthen communities.

• Leadership can be defined in many ways and can be demonstrated by individuals, groups, and communities.

• Identify existing resources and data that would feed into the needs and resources assessment regarding intentional engagement work within and around community development by a University System.

• Community mapping and resource assessment

• Define and develop, for community members to participate in, quality, research-based programs in economic development, agricultural and natural resources, family asset management, and youth development.

• Define and develop, for community members to participate in, quality events and opportunities, such as train-the-trainer educational experiences. These events would focus on building leadership, entrepreneurship, workforce readiness and Science, Technology, Engineering and Mathematics (STEM).

• Develop Webinars, fact sheets, seminars, workshops, entrepreneurial coaching, and meetings to support program efforts

• Develop leadership training workshops

• Identify, recruit, and develop emerging leaders

• Train leaders how to develop their own public actions on issues affecting their community

• Train leaders how to create space and venues for community residents to discuss public issues

• Delivery of signature programs that incorporate a leadership development/civic engagement component

• Contributions to eXtension.org Community of Practice focusing on Financial Security

• Implement "Reading Makes Cents" Curriculum on financial literacy for school-age youth

• Deliver Basic Financial Education for First Term Soldiers at Walter Reed

• Implement Financial Education Program for Geographically Dispersed Military Families

- Development of a Deployment Database of Resources for Military Families to support financial literacy and family resiliency topics
- Development of a distance education counseling network for isolated and geographically dispersed military families
- Financial education for University of MD faculty and staff
- Financial Education for MSRP participants

2. Brief description of the target audience

- Youth and adult residents of Maryland
- Collaborative partners
- County/City Extension Advisory Councils/Boards
- Community members including young people and adults.
- Community decision makers
- Businesses
- Transitional workforce
- Community decision makers
- Immigrants
- Limited resource individuals and families
- People engaging in Urban Agricultural Enterprises
- Businesses in the community
- First Term Soldiers
- Geographically dispersed military families
- Employees
- Retirement system participants

3. How was eXtension used?

Faculty members participate in several Communities of Practice.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	131981	136	60920	0

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	22	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2013	2724

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Nutrition: The number of individuals who demonstrate adoption of healthy eating practices based on the 2005 My Pyramid and the 2005 Dietary Guidelines for Americans, including the number who adopt or plan to: Choose a variety of colors of fruits and vegetables; choose high fiber foods; choose lower fat dairy products; choose smaller portions of foods; choose whole grain foods; read food labels before making purchase; make foods at home instead of buying convenience foods; plan meals before shopping at grocery store.
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	Volunteer Development: The number of UME trained 4-H volunteers who provide leadership and guidance for 4-H youth development programs.
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	Youth Outreach: Teen and adult volunteers in after school and military partnership programs and youth enrolled.
6	Healthy Living: Read labels before using hazardous household chemicals; Identify potentially hazardous products that affect indoor quality; take steps to control humidity in homes; use safe practices with household products to improve indoor air quality. Health Literacy: increased awareness of how to access research-based health information; understand connection between health literacy and financial literacy.
7	Financial Literacy Education: 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

Nutrition: The number of individuals who demonstrate adoption of healthy eating practices based on the 2005 My Pyramid and the 2005 Dietary Guidelines for Americans, including the number who adopt or plan to: Choose a variety of colors of fruits and vegetables; choose high fiber foods; choose lower fat dairy products; choose smaller portions of foods; choose whole grain foods; read food labels before making purchase; make foods at home instead of buying convenience foods; plan meals before shopping at grocery store.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Less than 30% of adult Marylanders consume five servings of fruits and vegetables each day, the minimum amount generally recommended for good health by the Centers for Disease Control and Prevention (CDC). Eating more fruits and vegetables is associated with less obesity and better health, yet the percentage of obese youth and adults in Maryland and in the U.S. has doubled over the past 25 years (CDC). Many Marylanders desire fresh, locally grown vegetables but lack the space, time, or knowledge to create and maintain a garden of their own. Importantly, a large percentage of low-income residents have limited access to fresh produce.

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
FSNE has 12 county-based projects and was offered in 21 counties and Baltimore City, reaching 35,490 participants for a total of 311,398 contacts. In FY13, FSNE trained over 1,600 collaborators to expand the reach and teaching of FSNE to youth and adults within the state. Overall, adults increased their consumption of fruits and vegetables as
snacks, adults almost doubling their consumption of frequently eating two or more vegetables at

their main meal, students increasing their likelihood of eating fruits and vegetables as part of their lunchtime meal, and gardening programs increased the taste preference for 11 different vegetables.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Although the food supply in the United States is among the safest in the world, foodborne illness contributes to many cases of sickness and death each year. The Centers for Disease Control and Prevention (CDC) estimate that 48 million people get sick, over 128,000 are hospitalized, and at least 3,000 people die each year from foodborne illness caused by contaminated foods.

What has been done
In an effort to bring awareness to foodborne illnesses in Southern Maryland, educators partnered with local churches, child care providers, agency food service staff, the Office on Aging, Southern Maryland Food Bank, assisted living personnel and the Calvert Board of Education and other interested members of the community to provide up-to-date food safety training.

Results
In 2013 a total of 24 food safety classes in Southern Maryland were taught reaching 618 participants. One hundred ten food safety certificates were distributed and 12 participants

received 2 CEUs enabling recipients to meet job requirements, remain employed and participating organizations to remain in compliance with funding sources.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Volunteer Development: The number of UME 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	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
With the typical busy lifestyle of Americans, it is important that organizations effectively recruit volunteers to support their ability to deliver programs to the community. In order to maintain enough adult volunteers to meet the needs of the many young people across the state, UME must continually recruit new individuals to serve as volunteers. Volunteer recruitment has become a necessary driving force behind all successful volunteer-based organizations and is thus being emphasized by UME leadership.

What has been done
The Maryland 4-H Volunteer Association develops and supports volunteers to serve the needs of 4-H volunteers and members throughout the state. The Association supports the delivery of information, service, and human and economic resources available to volunteers as provided by the 4-H program; provides means for Maryland 4-H volunteers to exchange mutually beneficial 4-H experiences and ideas; assists in providing training opportunities for Maryland 4-H volunteers; and serve as mentors to new 4-H volunteers and/or new clubs.

Results

Members of the Volunteer Association report contributing over 2,890 hours of volunteer time to the Maryland 4-H program; this is valued at $21.83 per hour for a total of $63,088.70. The long-term impact of the program is that: 1) volunteers will have increased skills and knowledge to provide extraordinary learning experiences for youth; 2) there will be increased awareness of 4-H program as a provider of youth development programs for youth; and 3) it will increase the skills and knowledge of Extension professionals in delivering and managing volunteer programming.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

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	Actual
2013	0

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. The Maryland 4-H Volunteer Association provides multiple professional development training opportunities in a variety of formats.

Results

UME has approximately 63,300 youth learning about science, engineering, and technology; 23,000 engaged in citizenship learning and activities; and, 38,000 participating in building healthy lifestyle programs. The total number of adult volunteers is 6,189. The total number of youth volunteers is 8,718. The total 4-H enrollment is 92,651.

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

Youth Outreach: Teen and adult volunteers in after school and military partnership programs and youth enrolled.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Currently, the state of Maryland has nearly 26,500 military youth aged six to eighteen. Additionally there are nearly another 16,000 under the age of six. Maryland's military includes Army, Navy, Marines, Air Force and Coast Guard in Active Duty, Guard and Reserves represented in nineteen counties of our twenty-three counties and Baltimore City. Every county has at least four of the five military branches represented. At any given time at least twenty percent of our military youth are affected by the deployment of a loved one.

What has been done
Maryland 4-H Military Projects are a statewide, outreach effort in which 4-H Professionals, military staff, and volunteers are implementing 4-H curricula into existing military programs. Military youth (ages 5-19) are becoming involved in 4-H through their county/city Extension office and local installations. Maryland also supports Army and Navy 4-H military club programs in Europe. Maryland 4-H partners with Operation Military Kids to meet the needs of geographically dispersed

military youth. There are 4-H Youth Development Programs at Youth Centers on each military installation.

Results

Every year Maryland 4-H military programs reach hundreds of military children across Maryland through programming, activities and camps. These opportunities support the youth where they live and connect them to their communities for on-going support and community engagement. This, in tern, offers peace of mind to our service members on deployment that their children and families are being looked after while they are away; offers the youth the awareness that they are not alone in their experiences; and gives the community the opportunity to give back to our military families.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #6

1. Outcome Measures

Healthy Living: Read labels before using hazardous household chemicals; Identify potentially hazardous products that affect indoor quality; take steps to control humidity in homes; use safe practices with household products to improve indoor air quality. Health Literacy: increased awareness of how to access research-based health information; understand connection between health literacy and financial literacy.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There is evidence that there is a direct link between health and the built environment. Indoor air pollution is one of the top four environmental health risks. In exchange for super-insulated homes, there is a reduction in air flow causing sick buildings and an increase in health problems, including allergy and asthma symptoms. Hazardous chemicals, such as volatile organic compounds, which are found in many household items and emitted into the air contribute to

respiratory symptoms and are carcinogenic. Mold, indoor pest problems and home safety issues are also factors affecting human health.

What has been done
Using the National Center for Healthy Homes curriculum, all-day train-the-trainer courses were delivered to health workers in Chestertown, Kent County, Odenton and Salisbury. As community health workers, these participants are on the front-line and best able to share this information with their clientele. Plans to expand the program into Central and Western Maryland have been made.

Results
Participants in healthy homes interventions increase their awareness of healthy homes principles and use research-based strategies to improve personal and family health by improving the health of their homes or the homes of their clients. There is increased awareness of healthy homes (including workplaces and schools) strategies for: 1) improving safety, drinking water quality, indoor air quality; 2) reducing harm from lead paint, smoke, chemicals, and other environmental hazards; 3) increasing home environmental health literacy and awareness; and 4) sustaining and expanding a network of key partnerships.

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
806	Youth Development

Outcome #7

1. Outcome Measures

Financial Literacy Education: 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 Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Based on the District Court of Maryland, from 2002 - 2009, Baltimore landlords filed a yearly average of 155,870 court complaints for eviction alleging tenant (mostly limited and moderate income residents) nonpayment of rent. In Baltimore City, tenant eviction is commonly associated with homelessness.

What has been done

The objective of the Tenant Eviction Education Program is to develop a community education approach to bring awareness and help decrease the number of repeat offenders of home eviction in Baltimore. This education approach is a process that includes an annual awareness seminar entitled Tenant Eviction Prevention Seminar, followed by direct teaching, and 11 financial management classes (budgeting, saving, credit and banking) in government subsidized community housing units for limited and moderate income residents.

Results

There have been approximately 1700 participants who report increases in likeliness to pay credit card bills on time, pay more than the minimum on credit cards, request and review credit reports annually, establish a debt repayment plan, set savings priorities and goals, establish an emergency fund, save regularly or increase savings, track income and spending, compare wants versus needs, and set financial goals.

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

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Sustainable Energy

☑ Reporting on this Program

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%	32%
112	Watershed Protection and Management	0%	0%	0%	28%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%	0%	0%	8%
204	Plant Product Quality and Utility (Preharvest)	0%	0%	0%	10%
205	Plant Management Systems	0%	0%	0%	8%
206	Basic Plant Biology	0%	0%	0%	7%
403	Waste Disposal, Recycling, and Reuse	40%	30%	50%	0%
511	New and Improved Non-Food Products and Processes	0%	0%	0%	7%
601	Economics of Agricultural Production and Farm Management	60%	70%	50%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	1.0	4.0	1.0
Actual Paid Professional	4.0	1.0	4.0	5.2
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
153117	61160	224920	376356
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
153117	61160	224920	249275
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
299362	0	40689	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Short course and training seminars for industry personnel and growers;
- Conduct basic and applied research in alternative fuel sources, energy saving techniques and recycling of green waste products;
- Contribute to trade and peer reviewed journal publications.

2. Brief description of the target audience

- Nursery, greenhouse, poultry growers and managers;
- In-state bioenergy industry;
- Research community at large.
- Distillers grain producing industry
- Fuel ethanol production industry
- Animal and poultry industry

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	224	0	1988	0

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	4	2	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- 1. Alternative Energy Options and Energy Conservation & Efficiency (Agronomic, Poultry, Dairy & Green Industry): Number of workshops, seminars & twilight tours; Publications; Grants; Extension faculty engaged in programs.

Year	Actual
2013	17

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	1. Alternative Energy Options and Energy Conservation & Efficiency (Agronomic, Poultry, Dairy & Green Industry): Number of participants attending programs; Growers implementing new energy savings/conservation options; New energy systems installed; and Producers who participate in USDA's Rural Energy Audit Program.

Outcome #1

1. Outcome Measures

1. Alternative Energy Options and Energy Conservation & Efficiency (Agronomic, Poultry, Dairy & Green Industry): Number of participants attending programs; Growers implementing new energy savings/conservation options; New energy systems installed; and Producers who participate in USDA's Rural Energy Audit Program.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done
MAES researchers have designed small-scale digesters at the USDA-BARC facility, coordinated workshops at this location, and created Fact Sheets to show individual families, farmers, government officials, and policy makers how they can also use digesters to process their waste into energy and water while keeping pollutants such as methane and nutrients out of air and water bodies.

AES researchers have integrated yield monitors for combine harvesters, on-the-go and prescription map based variable rate nutrient applicators and other computerized machineries; remote sensing using a color infrared (CIR) digital camera from manned airplanes, kites, and other in-situ tools; and software tools for planning, management, and mapping of geo-located field data utilizing the rapid advances of geospatial information technologies into precision agricultural practices.

Results
MAES research on waste to energy has both value added benefits to the farmstead and communities while reducing greenhouse gas emissions and nutrient runoff to water bodies. Dairy manure from a Maryland farm, chicken droppings from Maryland's Eastern Shore or even human waste in Haiti, the research is using anaerobic digesters to capture it all to heat homes, cook food

and generate power while keeping methane, a powerful greenhouse gas, from escaping into the atmosphere. This research has shown farmers how co-digestion ratios affect methane production as well as hydrogen sulfide production, which must be scrubbed out of the biogas before use in an engine generator set.

For AES researchers, research-related activities included the responses of Aquamax (drought-resistant) and non-Aquamax seeds planted under three irrigation treatments (rain-fed only, partial season, and full season) with six nitrogen levels at three blocks. One-hundred and eight plots were hand-harvested and weighted, and the moisture content was measured. Non-Aquamax outperformed Aquamax for all nitrogen treatments. There were no statistically significant effects of irrigation. For the bioenergy part of the project, to date, the implementation of fossil fuel efflux remediation by microalgal photobioreactors has shown some promise.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
206	Basic Plant Biology
403	Waste Disposal, Recycling, and Reuse
511	New and Improved Non-Food Products and Processes
601	Economics of Agricultural Production and Farm Management

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Childhood Obesity

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
703	Nutrition Education and Behavior	70%	70%	70%	0%
724	Healthy Lifestyle	30%	30%	30%	0%
	Total	100%	100%	100%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	9.0	1.5	5.0	1.5
Actual Paid Professional	8.0	1.5	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
306233	122320	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
306233	122320	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
598724	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Develop/implement training for cafeteria/food service workers using Walk the Line curriculum.

- Workshops and professional development for Growing Healthy Habits, Farm-2-School, and Walk the Line.
- Create effective materials and programs that meet standards of health literacy.
- Investigate taste preference and trying new fruits and vegetable measures for statewide evaluation.
- Educational programs for cafeteria and food service workers and school administrators.
- Educational programs targeting pre-schoolers and their parents through train-the-trainer approach for child care and pre-school teachers.
- Up For the Challenge curriculum implemented for school-age youth in 3 sites targeted to geographically dispersed military families/youth.
- Contribute articles and expertise to eXtension.org Community of Practice for Food, Fun, and Fitness
- Develop Social Marketing and Social networking strategies to engage target audiences in Healthy Living dialogue
- Conduct applied research to inform educational program interventions.

2. Brief description of the target audience

- School-age youth
- Parents of school-age youth
- Teachers
- Cafeteria/Food service workers
- School administration
- Providers of before and aftercare
- Limited Income Mothers and Children
- Food Stamp recipients
- Geographically dispersed military families

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	42793	0	37398	0

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	8	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- 1. Growing Healthy Habits: # workshops; # train-the-trainer sessions; # school gardens developed; # community gardens developed; # new partnerships to implement GHH.

Year	Actual
2013	1959

Output #2

Output Measure

- 2. Walk The Line: # sessions conducted; # school cafeteria workers trained; # cafeterias participating
  Not reporting on this Output for this Annual Report

Output #3

Output Measure

- 3. Farm 2-School: # Sessions conducted; # schools participating; # farmers participating; # New partnerships developed.

Year	Actual
2013	0

Output #4

Output Measure

- 4. Eating Smart/Being Active: # youth served; # sessions; # supporting resources developed.

Year	Actual
2013	1209

Output #5

Output Measure

- 5. Up For the Challenge: # sessions conducted; # youth reached; # teachers/afterschool providers trained; # schools implementing

Year	Actual
2013	1648

Output #6

Output Measure

- 6. Strong Women, Healthy Hearts: # women completing program; # sessions conducted; # partnerships developed to implement program
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	1. Fruit & Vegetable Consumption: # youth planning to increase consumption of fruits and vegetables.
2	2. Healthy Eating & Physical Activity: # of individuals and families who gain awareness, knowledge, or skills regarding healthy eating and physical activity
3	3. Policy Change: # schools, businesses and organizations with increased awareness of needed systems changes that will positively impact intake of healthier foods.
4	4. Systems Changes: # schools, businesses or organizations making systems changes to promote healthy lifestyles
5	5. Physical Activity: # youth and adults including physical activity in daily routine at least three times weekly

Outcome #1

1. Outcome Measures

1. Fruit & Vegetable Consumption: # youth planning to increase consumption of fruits and vegetables.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

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 is vital to improving health and well-being.

What has been done
The UME 4-H youth development program provides Healthy Living programs in foods and nutrition, overall health, and personal safety. Up for the Challenge: Lifetime Fitness, Healthy Decisions is a fitness, nutrition and health curriculum for school-aged, middle school and teen youth.

Results
The Up for the Challenge curriculum has been distributed to over 120 Army installations worldwide to be used by Army Child and Youth Services staff in military after-school programs for youth ages 5-18. Both the Food Stamp Nutrition Education and Expanded Food and Nutrition Education Programs are using the UFC curriculum in after-school and in-school settings.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

724 Healthy Lifestyle

Outcome #2

1. Outcome Measures

2. Healthy Eating & Physical Activity: # of individuals and families who gain awareness, knowledge, or skills regarding healthy eating and physical activity

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

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
The Eating Smart-Being Active curriculum was developed for teaching limited resource adults with young children how to make healthy lifestyle choices. Lessons are designed to teach the main messages of the Dietary Guidelines for Americans 2010 and MyPlate.

Results
Adult low-income participants of the Eating Smart-Being Active curriculum ate more fruits and vegetables after completing the program. Not only did participants eat more fruits and vegetables each day, they ate more different kinds of fruits and vegetables each day, and they tried more new fruits and vegetables than before the program. Educators and participants found that the curriculum helped family members to use labels to make healthy, cost-saving decisions.

4. Associated Knowledge Areas

KA Code	Knowledge Area

703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #3

1. Outcome Measures

3. Policy Change: # schools, businesses and organizations with increased awareness of needed systems changes that will positively impact intake of healthier foods.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

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
ReFresh is a partnership between Maryland State Department of Education (MSDE) and the University of Maryland Extension (UME) to utilize partnerships between food service staff, instructional staff, and UME educators within the school setting to work to increase students preference and selection of fruits and vegetables. FSNE provided classroom-based nutrition education in low income schools and in the development of the ReFresh curriculum for 4th and 5th grade students.

Results
Students in intervention schools offering the ReFresh program were found to consume more fruits and vegetables after the program than students in control schools. Students in intervention schools showed a higher likelihood of eating fresh fruits and vegetables at lunch and reported eating larger amounts of fruits and vegetables consumed than children in control schools.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

4. Systems Changes: # schools, businesses or organizations making systems changes to promote healthy lifestyles

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Children spend a large number of hours within the care of a childcare provider who greatly influences their food choices and physical activity behaviors. Centers provide a means to reach multiple individuals who influence the lives of an individual child, the childcare provider, and the parent while also influencing the environment. Preventing childhood obesity at an early age can have a lasting impact on the health and well-being of a child.

What has been done
FSNE collaborates with childcare centers and family care centers to improve the nutrition and physical activity of preschool age children and adults. While childcare centers are one location to execute the goals of this initiative, similar nutrition education outreach programs are offered in Judy Centers, Head Start Centers, Young Parent Support Centers, and other locations where low-income parents with preschool aged children can be reached.

Results
Pre‐ and post‐test surveys were completed at the beginning and end of the 1-2-3 Feed Me program to determine the impact of the curriculum on child care provider feeding practices. In most cases, participants planned to use improved feeding practices at the end of the session compared with the feeding practices they reported using at the beginning of the session. Participants reported that they were planning to show the children in their care that they enjoy

eating healthy foods always or often. Participants who planned to always or often cook with the children also increased. Participants who planned to eat with the children in their care increased as well.

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

5. Physical Activity: # youth and adults including physical activity in daily routine at least three times weekly

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Childhood obesity and quality early childhood education and care are top priorities nationally and in Maryland. Over 25% of the U.S. preschool population (2-5 year olds) is overweight or obese. Nearly one third of low income 2-4 year olds is overweight or obese, with an obesity rate of 15.7% in Maryland preschoolers. In fact, obesity rates in all children have doubled or tripled since 1980 due to a variety of lifestyle factors, such as reduced activity and consumption of added sugars and solid fats.

What has been done
Utilizing the Let's Move Child Care initiative's web-based resources, training was developed for child care providers on implementing strategies in their home or center to increase children's physical activity, improve meals and snacks, and reduce screen time.

Results

In 2013, twenty one trainings (twelve 1½-2 hour, two 2-hour, and seven 6-hour) were conducted by five UME FCS Educators in six counties. In total, 512 Maryland providers completed LMCC training and 466 of these completed a LMCC Checklist Quiz (self-assessment of child care practices. A summary of 330 Southern Maryland end of training provider self-assessments indicate that providers are getting ready to, are making progress on, or are meeting best practices.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

During FY13, 123 Feed Me was pilot tested across Maryland. Sixty child care providers attended one of three pilot sessions. Fifty-two percent of the participants worked in family day care homes, 39% worked in child care centers and 9% worked in Early Head Start or Head Start centers. The majority of the pilottest participants (98%) found the session to be very helpful or helpful. Pre and posttest surveys were completed at the beginning and end of the session to determine the impact of the curriculum on participants' feeding practices. Fortysix participants completed a pre and posttest. In most cases, participants planned to use improved feeding practices at the end of the session compared with the feeding practices they reported using at the beginning of the session. For example, at the end of the pilot session, 94% of participants reported that they were planning to show the children in their care that they enjoy eating healthy foods always or often, whereas at the beginning of the session, only 63% of participants reported doing this. Participants who planned to always or often cook with the children also increased from 31% at pretest to 69% at posttest. The percentage of participants who planned to eat with the children in their care increased from 65% at pretest to 80% at posttest.

The Let's Move Child Care evaluation plan and tool have been developed and will be used for follow up assessment to determine number of providers that have implemented

action plans, met best practice goals and earned a LMCC recognition certificate, and their challenges and successes in creating healthier child care environments.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Food Safety

☑ Reporting on this Program

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	0%	0%	0%	15%
205	Plant Management Systems	0%	0%	0%	15%
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	0%	0%	0%	25%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	100%	100%	100%	45%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	9.0	1.5	5.0	1.5
Actual Paid Professional	8.0	1.5	0.0	3.5
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
306233	122320	843449	400161
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
306233	122320	843449	249276
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
598724	0	152584	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Develop technical assistance programs for UME
- Develop and/or adapt food safety materials and resources for UME Educators
- Collaborate with local, regional, and national partners
- Develop safe food educational materials/ resources and disseminate USDA food safety materials to consumers and producers
- Conduct trainings and workshops, including train-the-trainer workshops
- Conduct evaluations
- Promote and support Maryland Farm to School and other agricultural literacy programs
- Conduct data analysis, needs assessments, environmental scans, and asset mapping
- Network internally and externally with collaborators, partners, and affiliates
- Raise community and stakeholder awareness of local food issues
- Contribute to relevant eXtension Communities of Practice
- Develop online food safety modules
- Conduct social marketing awareness education focusing on food safety
- Conduct basic and applied research to inform program development regarding food borne illnesses and beneficial and safe compounds in the food.

2. Brief description of the target audience

- Consumers: Youth, adults, older adults
- Commercial: Fruit and vegetable producers
- Food service workers, childcare workers, community-based organizations
- Service agencies related to food production, promotion, consumption, protection, education
- Seafood industry
- Regulatory agencies
- Scientific community

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	2407	0	0	0

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	12	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- 1. Food Safety Practices: # training sessions; # trained; # courses developed; # publications; # Mass Media

Year	Actual
2013	2221

Output #2

Output Measure

- 2. Good Agricultural Practices (GAP): # of fruit and vegetable farmers implementing Good Agricultural Practices;# of fruit and vegetable producers attending GAP training; # of GAP workshops, seminars, consultations.

Year	Actual
2013	140

Output #3

Output Measure

- Food safety and GAP research: Number of publications, surveys, certified organic sites, site tours, seafood samplings, and new partnerships.

Year	Actual
2013	10

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	1. Food Safety Practices: Participants will gain basic food safety knowledge and skills, resulting in an intent to adopt the following: Follow the key safe food handling recommendations (clean; separate; cook; chill) -Wash hands before working with food -Clean food preparation utensils and surfaces -Wash fruits and vegetables before eating and preparing - Keep raw food/meat separate from ready to eat foods -Cook and chill food to safe temperature using a food thermometer -Store foods at a safe temperature using an appliance thermometer
2	2. Good Agricultural Practices (GAP): Maryland's fruit and vegetable producers implement Good Agricultural Practices in their operations to prevent contamination and ensure a safe food supply.
3	Food Safety and GAP Research: Number of publications, surveys, certified organic sites, site tours, seafood samplings, and new publications.

Outcome #1

1. Outcome Measures

1. Food Safety Practices: Participants will gain basic food safety knowledge and skills, resulting in an intent to adopt the following: Follow the key safe food handling recommendations (clean; separate; cook; chill) -Wash hands before working with food -Clean food preparation utensils and surfaces -Wash fruits and vegetables before eating and preparing - Keep raw food/meat separate from ready to eat foods -Cook and chill food to safe temperature using a food thermometer -Store foods at a safe temperature using an appliance thermometer

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

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. In addition, the U.S. agriculture and food systems are vulnerable to disease, pest, or poisonous agents that occur naturally or are intentionally or unintentionally introduced.

What has been done
MAES Research has been working to reduce the contamination of meat and meat products with Salmonella, E. coli and Campylobacter in pre- and post-harvest levels. The research team has investigated the alternative for synthetic chemicals and antibiotics used in farm animals and food production with cheap, consumer friendly and bioactive extractions from the natural fruits byproducts such as berry pomace and citrus oils. Work is also taking place on development of an animal vaccine to prevent the contamination of zoonotic pathogens in meats.

Results
This research will provide several benefits, including increased safety, enhancement of product nutritional values, replacement of conventional antibiotics, reduced gastrointestinal diseases, and improved public health.

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

2. Good Agricultural Practices (GAP): Maryland's fruit and vegetable producers implement Good Agricultural Practices in their operations to prevent contamination and ensure a safe food supply.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The University of Maryland College of Agriculture and Natural Resources (AGNR) is partnering with Maryland Department of Agriculture (MDA) in providing training sessions and materials for agricultural producers wishing to implement GAPs and or work toward GAPs certification. This work is based on recent (2011) federal legislation and UME grower survey in which the three most cited obstacles hindering the development of a GAPs plan were: 1) growers don't know enough about GAPs (26.80%); 2) growers don't think GAPs applies to their size operation (18.40%); and 3) growers don't have enough training to do a GAPs plan (13.60%).

What has been done
From 2010 to 2013, sixteen GAP training programs were conducted (10 producer GAPs trainings, 5 beginning farmer GAPs trainings, and 1 UME educator training.

Results
Survey results show that growers have an elevated awareness and implementation of GAPs and that there is a significant increase in the proportion of smaller vegetable growers who were GAPs certified. This increased awareness and certification will lessen the risks of food-borne illnesses because of contamination of fruits and vegetables.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Food Safety and GAP Research: Number of publications, surveys, certified organic sites, site tours, seafood samplings, and new publications.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The United States is the third leading seafood nation in the world and its average seafood consumption grew from 12.5 pounds per capita in 1980 to 15.8 pounds in 2009. Currently, there is a lack of knowledge about the prevalence of foodborne pathogens and antibiotic residues in imported and domestic seafood.

What has been done
A total of 432 imported and domestic seafood samples were collected and tested in monthly intervals from three retail stores on the Delmarva Peninsula. Each sample was weighed and stored for testing for foodborne pathogens and antibiotic residues.
Also, several experiments were conducted to standardize the methods for the detection of Campylobacter and Salmonella in seafood.

Results
Presentations of the research findings were given at professional meetings, through personal communication to the scientific community, the seafood industry and the state and regulatory agencies.

The analysis of domestic and imported seafood samples for antibiotic residues will provide valuable information about the prevalence of antibiotic residues in samples for further risk assessment upon which seafood safety policy decisions can be made.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
205	Plant Management Systems
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes
- Government Regulations
- Competing Public priorities

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}