

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

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

V(C). Planned Program (Inputs)

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

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

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

1. IPM

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

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

2. Community Resource & Economic Development

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

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

3. Marketing Maryland Agricultural Commodities

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

4. Alternative Crops

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

5. Pasture Management

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

6. Biosecurity and Animal Health

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

7. Dry Poultry Litter

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

8. Enhancing the Profitability of the Green Industry

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

2. Brief description of the target audience

1. IPM

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

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

2. Community Resource & Economic Development

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

3. Marketing MD. Agricultural Commodities

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

4. Alternative Crops

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

5. Pasture Management

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

6. Bio-security and Animal Health

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

7. Dry Poultry Litter

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

8. Enhancing the Profitability of the Green Industry

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

V(E). Planned Program (Outputs)

1. Standard output measures

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

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

Patent Applications Submitted

Year: 2009

Plan: 1
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	8	40	
Actual	10	100	110

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Target	Actual
2009	65	76

Output #2

Output Measure

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

Year	Target	Actual
2009	170	147

Output #3

Output Measure

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

Year	Target	Actual
2009	45	43

Output #4

Output Measure

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

Year	Target	Actual
2009	50	56

Output #5

Output Measure

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

Output #6

Output Measure

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

Year	Target	Actual
2009	{No Data Entered}	60

Output #7

Output Measure

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

Year	Target	Actual
2009	{No Data Entered}	48

Output #8

Output Measure

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

Year	Target	Actual
2009	{No Data Entered}	8

Output #9

Output Measure

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

Year	Target	Actual
2009	{No Data Entered}	300

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

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

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	1450	1833

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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

What has been done

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

Results

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

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	2200	4779

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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

What has been done

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

Results

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

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	100	150

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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

What has been done

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

Results

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

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases

Outcome #4

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	1200	1280

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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

What has been done

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

Results

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

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	500	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #6

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	135

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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

What has been done

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

Results

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

4. Associated Knowledge Areas

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

Outcome #7

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	135

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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

What has been done

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

Results

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

4. Associated Knowledge Areas

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

Outcome #8

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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

What has been done

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

Results

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

4. Associated Knowledge Areas

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

Outcome #9

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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

What has been done

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

Results

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

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

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

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

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

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

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

1. Evaluation Studies Planned

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

Evaluation Results

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

Key Items of Evaluation

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

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