

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Agricultural Viability

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
205	Plant Management Systems	20%		20%	
211	Insects, Mites, and Other Arthropods Affecting Plants	20%		20%	
215	Biological Control of Pests Affecting Plants	20%		20%	
601	Economics of Agricultural Production and Farm Management	20%		20%	
604	Marketing and Distribution Practices	20%		20%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	70.0	0.0	36.0	0.0
Actual	41.0	0.0	19.0	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
1177924	0	1501360	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
3177068	0	3935384	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
360433	0	2873377	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Identify critical programmatic foci/needs based on Extension and stakeholder assessment. These can be broadly defined under three areas:

Production BMPs (nutrient, pest, waste/by-products management, water quality and quantity, energy)

Financial BMPs (marketing, labor, risk management, policy e.g. farmland preservation)

Ag Systems (sustainable ag, organic ag, new crops and use/alternative)

Develop an inventory of local (county based), regional and statewide programs designed to meet these needs; identify team members and their roles.

Create a multi-task effort to generate and share research-based information with clientele through demonstrations, educational meetings and workshops, certification programs, trainings, development of recommendation and decision making guides, etc.

2. Brief description of the target audience

Stakeholders (broadly defined to include producers, processors, marketers, end-users, policymakers, legislators).

Commercial agriculture producers and end-users (such as marketers, processors, consumers, etc.).

Municipalities and other governmental and non-governmental agencies, etc.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	8800	1317000	100	170
Actual	38750	467800	7680	800

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

Patent Applications Submitted

Year: 2010

Plan: 2

Actual: 7

Patents listed

Tech ID No. Patent/Trademark # Intellectual Property Title

2004-1677,704,716 Use of Geraniol Synthase
to Produce Geraniol

2005-0557,641,913 An Isolated Species of
Steinernematid Nematode and
Methods of White Grub Control Therewith

2006-076PP18,252 Cranberry Variety Named
NJS98-23 - Crisom Queen

2007-071PP 20,804 P3 Interspecific Ilex Hybrid
Designated 'Spartan'

2008-050PP21,170 Male Asparagus Hybrid
Plant NJ953

2008-051PP21,066 P3 Female Asparagus Hybrid
Plant NJ977

2009-030PP21,206 A Lily Plant Named 'BJM
006' - cultivar 46 (Jersey Flame)

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	55	20	
Actual	160	110	270

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- A variety of strategies will be implemented to reach target audiences. This will include and not be limited to workshops, field visits, classes, newsletters, media releases, electronic communications, and publications. In addition a trained volunteer teaching base will be developed. Quantitative reports of participation will be collected. 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	Short Term - Increases in knowledge and skills of agricultural and horticultural industry professionals will occur relating to: Nutrient management Pest management Waste/by-products management and utilization Improving water quality and conserving water Conserving energy Marketing skills Labor management Risk management Policy e.g. farmland preservation Sustainable ag and organic ag production methods New crops and use/alternative crops
2	Medium Term - Productive agricultural land is stabilized to meet the needs of the agricultural industry and the "open space" needs of people of NJ. Agriculture remains a relevant and viable economic sector as profits increase (through reduced costs and/or increased or new sales or revenue streams). Measurable reductions in environmental impact (clear and adequate sources of water, reduced waste, reduced soil losses, reductions in non-point source pollution, etc.) will occur through the adoption of improved and sound management practices. Overall state environmental quality will be enhanced by agriculture, such as through the utilization and recycling of biowastes generated by the non-ag sector or the enhancement of air quality. The products of NJ agriculture will add to the nutritional quality of New Jerseyans food supply.
3	Long Term - New Jersey's agriculture will remain a viable and important industry. New Jersey residents will recognize the importance of agriculture's contributions to societal well being (open space, quality of life) and will support the agricultural industry socially, politically and economically.
4	Medium Term - Native Bee Conservation and Crop Pollination: Productive agricultural land is stabilized to meet the needs of the agricultural industry and the "open space" needs of people of NJ. Agriculture remains a relevant and viable economic sector as profits increase (through reduced costs and/or increased or new sales or revenue streams). Measurable reductions in environmental impact (clear and adequate sources of water, reduced waste, reduced soil losses, reductions in non-point source pollution, etc.) will occur through the adoption of improved and sound management practices. Overall state environmental quality will be enhanced by agriculture, such as through the utilization and recycling of biowastes generated by the non-ag sector or the enhancement of air quality. The products of NJ agriculture will add to the nutritional quality of New Jerseyans food supply.
5	Medium Term - Resistance Management for Fresh-Market and Processing Vegetable Crops Grown in New Jersey: Productive agricultural land is stabilized to meet the needs of the agricultural industry and the "open space" needs of people of NJ. Agriculture remains a relevant and viable economic sector as profits increase (through reduced costs and/or increased or new sales or revenue streams). Measurable reductions in environmental impact (clear and adequate sources of water, reduced waste, reduced soil losses, reductions in non-point source pollution, etc.) will occur through the adoption of improved and sound management practices. Overall state environmental quality will be enhanced by agriculture, such as through the utilization and recycling of biowastes generated by the non-ag sector or the enhancement of air quality. The products of NJ agriculture will add to the nutritional quality of New Jerseyans food supply.
6	Medium Term - Breeding and Germplasm Enhancement for New Jersey Cranberry and Blueberry Industries: Productive agricultural land is stabilized to meet the needs of the agricultural industry and the "open space" needs of people of NJ. Agriculture remains a relevant and viable economic sector as profits increase (through reduced costs and/or increased or new sales or revenue streams). Measurable reductions in environmental impact

	(clear and adequate sources of water, reduced waste, reduced soil losses, reductions in non-point source pollution, etc.) will occur through the adoption of improved and sound management practices. Overall state environmental quality will be enhanced by agriculture, such as through the utilization and recycling of biowastes generated by the non-ag sector or the enhancement of air quality. The products of NJ agriculture will add to the nutritional quality of New Jerseyans food supply.
7	Medium Term - The Great Tomato Tasting: Productive agricultural land is stabilized to meet the needs of the agricultural industry and the "open space" needs of people of NJ. Agriculture remains a relevant and viable economic sector as profits increase (through reduced costs and/or increased or new sales or revenue streams). Measurable reductions in environmental impact (clear and adequate sources of water, reduced waste, reduced soil losses, reductions in non-point source pollution, etc.) will occur through the adoption of improved and sound management practices. Overall state environmental quality will be enhanced by agriculture, such as through the utilization and recycling of biowastes generated by the non-ag sector or the enhancement of air quality. The products of NJ agriculture will add to the nutritional quality of New Jerseyans food supply.
8	Medium Term - AgrAbility: Productive agricultural land is stabilized to meet the needs of the agricultural industry and the "open space" needs of people of NJ. Agriculture remains a relevant and viable economic sector as profits increase (through reduced costs and/or increased or new sales or revenue streams). Measurable reductions in environmental impact (clear and adequate sources of water, reduced waste, reduced soil losses, reductions in non-point source pollution, etc.) will occur through the adoption of improved and sound management practices. Overall state environmental quality will be enhanced by agriculture, such as through the utilization and recycling of biowastes generated by the non-ag sector or the enhancement of air quality. The products of NJ agriculture will add to the nutritional quality of New Jerseyans food supply.
9	Long Term - Farm Management: New Jersey's agriculture will remain a viable and important industry. New Jersey residents will recognize the importance of agriculture's contributions to societal well being (open space, quality of life) and will support the agricultural industry socially, politically and economically.
10	Long Term - Development and Use of Dollar Spot Tolerant Creeping Bentgrass for Golf Courses: New Jersey's agriculture will remain a viable and important industry. New Jersey residents will recognize the importance of agriculture's contributions to societal well being (open space, quality of life) and will support the agricultural industry socially, politically and economically.
11	Long Term - Nuances of Marketing Ethnic Specialty Vegetables & Herbs: New Jersey's agriculture will remain a viable and important industry. New Jersey residents will recognize the importance of agriculture's contributions to societal well being (open space, quality of life) and will support the agricultural industry socially, politically and economically.

Outcome #1

1. Outcome Measures

Short Term - Increases in knowledge and skills of agricultural and horticultural industry professionals will occur relating to: Nutrient management Pest management Waste/by-products management and utilization Improving water quality and conserving water Conserving energy Marketing skills Labor management Risk management Policy e.g. farmland preservation Sustainable ag and organic ag production methods New crops and use/alternative crops

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Medium Term - Productive agricultural land is stabilized to meet the needs of the agricultural industry and the "open space" needs of people of NJ. Agriculture remains a relevant and viable economic sector as profits increase (through reduced costs and/or increased or new sales or revenue streams). Measurable reductions in environmental impact (clear and adequate sources of water, reduced waste, reduced soil losses, reductions in non-point source pollution, etc.) will occur through the adoption of improved and sound management practices. Overall state environmental quality will be enhanced by agriculture, such as through the utilization and recycling of biowastes generated by the non-ag sector or the enhancement of air quality. The products of NJ agriculture will add to the nutritional quality of New Jerseyans food supply.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	55000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Optimizing Peach Fruit Quality by Improving Harvest and Postharvest Handling

Peach consumption has been flat or decreasing for the last 20 years. Increasing peach consumption requires that we provide peaches that are consistently high in eating quality. Storing peaches for too long or at inappropriate temperatures can result in development of flesh mealiness, "off" flavors, and internal browning. This disorder results in visually attractive but inedible fruit reaching the consumer. The industry urgently needs to develop and implement harvesting and handling protocols that preserve maximum fruit quality.

What has been done

A research project has been initiated to characterize peach and nectarine cultivar susceptibility to internal breakdown. Preliminary results indicate that most commercial eastern peach and nectarine cultivars are susceptible to internal breakdown when stored at supra-optimal temperatures (i.e. >40°F). Gloria, a stony-hard cultivar from the Rutgers Stone-fruit breeding program, had fruit that retained firmness during storage whether harvested at commercial maturity (Aug. 9) or at commercial maturity plus 2 or 4 days.

Results

Preliminary results have been of great interest to growers and packers. Decisions for cultivar planting are being made that will translate into production of the highest-value, best-adapted-to-marketing-channels peaches being planted, including new releases from the Rutgers Stone Fruit Breeding Program. This has the potential to result in increased demand and prices for peaches and, therefore greater profitability for the industry.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #3

1. Outcome Measures

Long Term - New Jersey's agriculture will remain a viable and important industry. New Jersey residents will recognize the importance of agriculture's contributions to societal well being (open space, quality of life) and will support the agricultural industry socially, politically and economically.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	70000	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Introducing New Crops, Nutraceuticals and other Value-Added Products

To maintain the viability of New Jersey agriculture it is essential to explore new crops, value-added products and nutraceuticals.

What has been done

NJAES researchers are identifying new uses of traditional fruits, vegetables and herbs and strengthening domestic and international programs on new crops and natural plant products.

Results

This program has contributed to the development and introduction of new varieties, new ethnic specialty produce, plant products and value-added products. Impact has been in the improved quality control of botanicals used for human health and nutrition through a robust focus on natural products chemistry. In 2010, we confirmed sources of resistance to basil downy mildew from other *Ocimum* species, a new disease in the USA, which can be used for breeding into sweet basil (*O. basilicum*). In 2010 researchers successfully demonstrated that both oregano and mint (as case studies representing all members of the Lamiaceae Family) contained powerful bioactive compounds distinct from their essential oils; some of these compounds specifically exhibit potent anti-inflammatory activity. Methods to enrich the anti-inflammatory components from less concentrated oregano and mint plant materials were developed; these products can be potentially commercialized as supplements to reduce pain and discomfort from inflammation in both humans and animals. A patent application was submitted for this process.

We also developed high oil and nepetalactone bearing catnip lines as sources of natural pest control agents. Internationally, we strengthened our market-first and scientific-driven models of international development and commercialization. Implemented in sub-Saharan Africa under the Agri-Business in Sustainable Natural African Plant Products (ASNAPP) network with leadership from Rutgers University and with strong public and private sector partnerships as a catalyst for market development, this program impacted on average over 5,0000 farmers in Ghana, Liberia, Senegal, and Zambia, with focus on African women. Since 2004, our programs have contributed to the introduction of new crops, the sustainable collection of indigenous African botanicals, and the development of new plant products that has lead to > \$25 million (\$US) in trade, with a production volume of 10,000 metric tons from sub-Saharan Africa. NJAES research has demonstrated that novel neuroprotectants derived from the seeds of *Pycnanthus angolensis* Warb. (*P. Kombo*), commonly known as African nutmeg, are efficacious in the treatment of neurological disorders, neuropathology, cognitive memory and cognitive deterioration including, but not limited to, ischemic stroke. This research finding and associated methods for preparing and purifying these compounds is the subject of a patent application submitted in 2010.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #4

1. Outcome Measures

Medium Term - Native Bee Conservation and Crop Pollination: Productive agricultural land is stabilized to meet the needs of the agricultural industry and the "open space" needs of people of NJ. Agriculture remains a relevant and viable economic sector as profits increase (through reduced costs and/or increased or new sales or revenue streams). Measurable reductions in environmental impact (clear and adequate sources of water, reduced waste, reduced soil losses, reductions in non-point source pollution, etc.) will occur through the adoption of improved and sound

management practices. Overall state environmental quality will be enhanced by agriculture, such as through the utilization and recycling of biowastes generated by the non-ag sector or the enhancement of air quality. The products of NJ agriculture will add to the nutritional quality of New Jerseyans food supply.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Native Bee Conservation and Crop Pollination

Eighty-five percent of the world's plant species are pollinated by animals. This makes pollinator conservation an essential part of land and natural resource stewardship programs. Effective conservation of pollinators is particularly important on New Jersey given our high population density and limited remaining natural lands. Government agencies such as NRCS are legislatively obligated to restore pollinators on lands they manage yet they currently lack science-based information about how to best accomplish this task. In addition, many private landowners are interested in restoring native pollinators on their property, both to pollinate home gardens and to help reverse declines in native pollinators.

What has been done

NJAES researchers are developing research-based knowledge about the habitat needs of New Jersey pollinators, experimentally testing restoration protocols to better understand the habitat needs of native pollinators, including how they are affected by global change and human land use; to develop science-based protocols for natural resource management of native pollinators. Research is also being conducted to quantify the contribution of native pollinators to crop pollination as well as the environmental determinants of this pollination; for example, to identify farm management strategies associated with native bee pollination. This information is then communicated to stakeholders including agricultural growers, private landowners, and state land management agencies, through presentations, training/workshops, and outreach publications.

Results

Agricultural growers in NJ and nationally are more aware of the role of native pollinators in crop pollination, and are more knowledgeable about how to manage habitat for native pollinators. NRCS is incorporating information from NJAES research into their land management programs

which cover thousands of acres throughout the state.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #5

1. Outcome Measures

Medium Term - Resistance Management for Fresh-Market and Processing Vegetable Crops Grown in New Jersey: Productive agricultural land is stabilized to meet the needs of the agricultural industry and the "open space" needs of people of NJ. Agriculture remains a relevant and viable economic sector as profits increase (through reduced costs and/or increased or new sales or revenue streams). Measurable reductions in environmental impact (clear and adequate sources of water, reduced waste, reduced soil losses, reductions in non-point source pollution, etc.) will occur through the adoption of improved and sound management practices. Overall state environmental quality will be enhanced by agriculture, such as through the utilization and recycling of biowastes generated by the non-ag sector or the enhancement of air quality. The products of NJ agriculture will add to the nutritional quality of New Jerseyans food supply.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Resistance Management for Fresh-Market and Processing Vegetable Crops Grown in New Jersey

The future of fresh market vegetable crops is essential to viable and sustained agriculture

production in New Jersey. It is essential that effective tools for managing diseases are adopted and implemented.

What has been done

1,500 fungicide resistance management guides were distributed to vegetable growers, crop advisors, extension personnel and industry representatives in the mid-Atlantic and surrounding region in a coordinated effort with extension vegetable pathologists from DE, PA, VA, and MD. Additionally in 2010, a fungicide resistance management (FRAC) table was developed for tomato growers in the Northeast and made available to growers, crop advisors, extension personnel and industry representatives in 13 states via the Northeast IPM center's website. Reduce use of fungicides that are no longer adequately effective because of resistance development, and provide the tools and knowledge to allow growers in the Northeast US to develop disease control programs with an emphasis towards fungicide resistance management for important tomato diseases.

Results

Annual fungicide resistance management guide has become an important IPM tool for vegetable growers. The guide helps stakeholders understand the importance of fungicide resistance management and how to mitigate its development.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #6

1. Outcome Measures

Medium Term - Breeding and Germplasm Enhancement for New Jersey Cranberry and Blueberry Industries: Productive agricultural land is stabilized to meet the needs of the agricultural industry and the "open space" needs of people of NJ. Agriculture remains a relevant and viable economic sector as profits increase (through reduced costs and/or increased or new sales or revenue streams). Measurable reductions in environmental impact (clear and adequate sources of water, reduced waste, reduced soil losses, reductions in non-point source pollution, etc.) will occur through the adoption of improved and sound management practices. Overall state environmental quality will be enhanced by agriculture, such as through the utilization and recycling of biowastes generated by the non-ag sector or the enhancement of air quality. The products of NJ agriculture will add to the nutritional quality of New Jerseyans food supply.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Breeding and Germplasm Enhancement for New Jersey Cranberry and Blueberry Industries

Rutgers NJAES and New Jersey are renowned for the leadership given to cranberry research and development. Continued attention to this important agricultural commodity is essential to the future.

What has been done

NJAES Researchers have continued their investigation of blueberry and cranberry evaluation and breeding. Researchers continue their efforts to identify cranberry and blueberry cultivars with the highest levels of compounds with antifungal and antibacterial properties. These efforts will inform breeding programs with the goal of producing varieties with enhanced health benefits.

Results

New propagation methods developed by this project have optimized the production of healthy, disease-free, true-to-type cranberry stolons, providing for the first virus-indexed and DNA fingerprinted cranberry varieties for the cranberry grower. Over 1,200 acres of the Crimson Queen, Demoranville, and Mullica Queen varieties have now been planted in five states (MA, NJ, OR, WA, WI), and four provinces in Canada, an almost four-fold increase over last year. Fact sheets on each of the varieties have been written and are being distributed to cranberry growers. The higher yield and fruit quality of the new cranberry varieties will contribute to higher productivity in food provision. The greater productivity of these varieties will increase the efficiency of US cranberry growers, enhancing US agricultural sustainability. The development of varieties with increased disease and insect resistance will reduce requirements for pesticides, resulting in reduced environmental impact, and safer food and water supply. US patent application and a Canadian Plant Breeders Rights application was submitted for a new cranberry variety, CNJ95-20-20, with exceptional traits for the fresh fruit market. Canadian Breeders Rights Application Cert. #3742, Grant-of-Rights was obtained January 2010 for cranberry variety 'NJS98-23'.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

- 211 Insects, Mites, and Other Arthropods Affecting Plants
- 215 Biological Control of Pests Affecting Plants
- 601 Economics of Agricultural Production and Farm Management
- 604 Marketing and Distribution Practices

Outcome #7

1. Outcome Measures

Medium Term - The Great Tomato Tasting: Productive agricultural land is stabilized to meet the needs of the agricultural industry and the "open space" needs of people of NJ. Agriculture remains a relevant and viable economic sector as profits increase (through reduced costs and/or increased or new sales or revenue streams). Measurable reductions in environmental impact (clear and adequate sources of water, reduced waste, reduced soil losses, reductions in non-point source pollution, etc.) will occur through the adoption of improved and sound management practices. Overall state environmental quality will be enhanced by agriculture, such as through the utilization and recycling of biowastes generated by the non-ag sector or the enhancement of air quality. The products of NJ agriculture will add to the nutritional quality of New Jerseyans food supply.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Great Tomato Tasting

A vast majority of New Jersey residents are not familiar with New Jersey agriculture and the programs of NJAES. Snyder Research and Extension Farm's Tomato Tasting event provides an opportunity to increase public awareness of the value of NJ agriculture.

What has been done

The Great Tomato Tasting Event is held annually at the Rutgers Snyder Research and Extension Farm. This is a four-hour open house that addresses consumer agricultural and horticultural education needs by featuring informal tastings of seasonal produce and more formal research evaluations of basil, apples, peach, and tomato varieties from experimental plots to gather adapt on consumer preference.

Results

Beyond tasting and learning about the many varieties of tomatoes, visitors are also taught about gardening, nutrition and the many programs Rutgers NJAES Cooperative Extension has to offer. Tours of the research plots expose attendees to the work of Rutgers NJAES scientists who solve problems for the residents of the state.

For first time attendees:

94.1% strongly agreed or agreed they have a better understanding of what the Rutgers Snyder Research Farm, the NJ Agricultural Experiment Station, and Rutgers NJAES Cooperative Extension do for NJ agriculture and home gardeners.

75.5% strongly agreed or agreed they are now more likely to utilize programs and services of Rutgers NJAES Cooperative Extension and Master Gardener volunteers as an educational resource.

As a result of attending the Tasting, have you taken advantage of other Rutgers NJAES programs and services?

- Attend workshop(s) 34.4%
- Contacted a County Extension Office 62.5%
- Subscribed to a newsletter 28.1%
- Taken a soil test 21.9%
- Joined/volunteered for a 4-H Club 6.3%

As a result of visiting the Tasting have you changed your gardening practices/landscapes to include:

- Cover crops 11.4%
- Deer resistant plants 48.6%
- Straw or plastic mulches 35.7%
- Water use / irrigation 28.6%
- Added plants to attract beneficial insects 44.3%

76.0% strongly agreed or agreed that as a result of visiting the Tasting, they now buy more produce at local farm, or farmers market, or roadside stand, and that they visit a local farm, farmers market, or roadside stand more frequently.

95.7% strongly agreed or agreed that they are now more likely to favor community initiatives aimed at preserving and strengthening agriculture in NJ.

71.7% strongly agreed or agreed that they are now more likely to utilize programs and services of Rutgers NJAES Cooperative Extension and Master Gardener volunteers as an educational resource.

85.7% strongly agreed or agreed that they are now more likely to purchase 'Jersey Fresh' tomatoes, peaches, apples and other produce.

The survey responses reflect great increases in knowledge, understanding, and support for local agriculture. Nothing convinces a consumer to change their buying habits more than tasting locally grown and harvested fruits and vegetables. This event has the synergistic effect of making visitors aware of Rutgers NJAES Cooperative Extension programs and the impact those programs have on local agriculture.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants
601	Economics of Agricultural Production and Farm Management

604 Marketing and Distribution Practices

Outcome #8**1. Outcome Measures**

Medium Term - AgrAbility: Productive agricultural land is stabilized to meet the needs of the agricultural industry and the "open space" needs of people of NJ. Agriculture remains a relevant and viable economic sector as profits increase (through reduced costs and/or increased or new sales or revenue streams). Measurable reductions in environmental impact (clear and adequate sources of water, reduced waste, reduced soil losses, reductions in non-point source pollution, etc.) will occur through the adoption of improved and sound management practices. Overall state environmental quality will be enhanced by agriculture, such as through the utilization and recycling of biowastes generated by the non-ag sector or the enhancement of air quality. The products of NJ agriculture will add to the nutritional quality of New Jerseyans food supply.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

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

AgrAbility

Farming has been and still remains the most dangerous occupation in the US and the world for that matter. Injury and death are all too common occurrences on the farm. Surveys have shown that after a farm accident everything changes except for the desire to keep farming. AgrAbility is a program designed to do just that.

What has been done

Agrability works with farmers on an individual basis to help farmers overcome handicaps both big and small in order for them to continue their life's desire namely farming. Educational brochures, videos, DVD's, displays, demonstrations, partnership networking, and other technologies are all used to accomplish the program's goals.

Results

More than 300 farmers have been made aware of AgrAbility and what it can offer to the Agricultural Community. DVD's on Arthritis and specialized Adaptive Equipment for farmers have

been distributed to the farm community. Work is ongoing with individual farmer clientele on a personalized basis. Training has been offered that demonstrates equipment adaptations to make farming possible after an accident or other handicap. Much of this equipment was developed out of need by farmers themselves after an accident has occurred. As a result of the AgrAbility farmers have been able to maintain the viability of their operations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #9

1. Outcome Measures

Long Term - Farm Management: New Jersey's agriculture will remain a viable and important industry. New Jersey residents will recognize the importance of agriculture's contributions to societal well being (open space, quality of life) and will support the agricultural industry socially, politically and economically.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Farm Management

The green industry in the northeastern U.S. is an important component of agricultural production with over \$2 billion in farm cash receipts, equating to 22.4% of all farm cash receipts in the northeastern U.S. It is the number one agricultural commodity in five northeastern U.S. states. Competition in the green industry has become fierce. Many factors have put downward pressure on price. These include the recent volatility of fossil fuels and general energy prices,

domestic competition, off-shore production, a weakened and stressed economy, and the growth of the mass market. Nationally, the number of producers continues to decline as a direct result of the newly defined economic risks.

What has been done

NJAES Specialists have developed programs to help producers in the northeastern U.S. develop strategic programs to reduce costs and increase profits in tough economic times. A combination of workshops, meetings, field visits, a newsletter, and The Rutgers Farm Management Website have been implemented to reach the target audience.

Results

Over 350 people now have access to the Excel version of the Greenhouse Cost Accounting Program. If these were only New Jersey producers, this would represent 100% of the greenhouses in New Jersey. The average greenhouse in the state is 25,000 square feet in size with annual sales of \$350,000. This means that greenhouses representing \$122.5 million in annual sales and 8.75 million square feet of production area are using the program. If by using this program they are 5% more efficient, this would represent \$6.125 million in sales and 437,500 square feet of production area. Comments from the workshop participants have all been positive, and they ask for more of this kind of information to help remain competitive. Requests for information come from New Jersey, many other states, and even other countries.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #10

1. Outcome Measures

Long Term - Development and Use of Dollar Spot Tolerant Creeping Bentgrass for Golf Courses: New Jersey's agriculture will remain a viable and important industry. New Jersey residents will recognize the importance of agriculture's contributions to societal well being (open space, quality of life) and will support the agricultural industry socially, politically and economically.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

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

Development and Use of Dollar Spot Tolerant Creeping Bentgrass for Golf Courses

Turfgrass is a valuable and rapidly expanding component of our urban and rural landscape. Turfgrass covers 12 million homes in the United States (Potter & Braman 1991) including over 60 million lawns and more than 16,000 golf courses (Emmons 2000). Golf courses are an important component of the turfgrass industry. They are a source of green space in the urban environment and offer recreation and enjoyment for approximately 36 million Americans. Golf courses also generate jobs, commerce, economic development, and tax revenues for communities throughout the country. A recent report by the World Golf Foundation stated that golf contributes \$62.2 billion worth of goods and services each year to the national economy (www.golf2020.com). Dollar spot disease, caused by the fungus *Sclerotinia homoeocarpa*, is considered the most common disease in the US. In fact, more money is spent to control dollar spot disease than any other turfgrass disease in the US. Creeping bentgrass, the most widely utilized turfgrass on temperate golf courses, is particularly susceptible to this disease. Most turfgrass managers spray fungicides every 7 to 14 days during the growing season for control of this disease as well as others. Moreover, isolates of the pathogen are resistant to several fungicide chemistries. Because so much pesticide is applied to golf courses for control of this disease it became apparent that a more comprehensive and environmentally sound approach was required to improve disease control, reduce fungicide usage, and maintain adequate turfgrass quality. The results have impacted turfgrass managers at the state, regional, national and global level.

What has been done

NJAES research has focused on identifying dollar spot resistance in creeping bentgrass. I conducted numerous field studies and planted hundreds of creeping bentgrass plants in spaced-plant nurseries to develop new cultivars and understand the inheritance of dollar spot resistance in creeping bentgrass. Results have been published in professional journals, trade magazines, proceedings, abstracts, and Extension publications. Findings were also disseminated at county, state, and regional meetings. Researchers have conducted studies to elucidate the mechanisms involved in how creeping bentgrass responds to the causal agent and on the narrow-sense heritability and gene action of dollar spot resistance. County agents and turfgrass managers were informed of results via field days, and Extension Fact sheets. More than 350 golf course superintendents attended the field day held at Hort Farm II, North Brunswick, NJ in August, 2010.

Results

Through this research, six commercially available cultivars and five experimental selections of creeping bentgrass with dramatic improvements in resistance to this pathogen have been developed. The new cultivars developed through this effort have ranked at the top of the National Turfgrass Evaluation Program's national bentgrass test for the past six years (www.ntep.org) at multiple locations throughout the country. They are currently being used on top-tier golf courses including those hosting major golf championships like the US Open. The use of these resistant cultivars in the marketplace has helped to significantly reduce pesticides applied to the environment. A golf course in Buffalo, NY is using one of these resistant cultivars and spends

only \$5,000 per year on fungicides for the control of dollar spot whereas a typical golf course with a dollar spot susceptible cultivar could spend up to \$30,000-\$40,000 per year, a savings of more than 86%. In addition to economic savings, the environmental benefits (e.g., reduced non-target effects on other organisms) from reduced fungicide applications is recognized. Moreover, the reduced frequency of fungicide applications resulting from this program has decreased the potential for fungicide resistance.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #11

1. Outcome Measures

Long Term - Nuances of Marketing Ethnic Specialty Vegetables & Herbs: New Jersey's agriculture will remain a viable and important industry. New Jersey residents will recognize the importance of agriculture's contributions to societal well being (open space, quality of life) and will support the agricultural industry socially, politically and economically.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Nuances of Marketing Ethnic Specialty Vegetables & Herbs

Growing ethnic populations of first and second generation immigrants in the Mid-Atlantic Region and along the East Coast offer farmers marketing opportunities to provide fresh produce native to these groups' homelands. Asian and Hispanic populations are growing at rapid rates in the region, and specialty groceries and restaurants are increasing to serve ethnic foods to both

the ethnic populations and the general public. Providing the fresh produce common in these cuisines is an additional niche for fresh produce growers.

What has been done

In response to a need for East Cost farmers to remain economically viable, a U.S. Department of Agriculture, National Research Initiative study was initiated to document and quantify the current available market opportunities so that farmers may engage the market by growing crops targeted from a supplier and consumer demand perspective. Targeted Audience includes existing vegetable growers and new/beginning farmers exploring alternative markets. Local participation includes several existing vegetable growers, one new recent immigrant farmer, and several beginning farmers. All have shown positive returns on ethnic crop enterprises added to their new or existing operations.

Results

Three new farms have been established in Atlantic County producing ethnic crops. Three existing Asian farmers have expanded their operations and markets based on opportunities presented through this program. Likewise, several existing vegetable growers in and around Atlantic County have adopted new ethnic crops and expanded their markets.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

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 and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Comparisons between program participants (individuals, group, organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

See Qualitative Outcome or Impact Statements

Key Items of Evaluation