

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Climate Change - Home, Garden and Environment

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	20%		20%	
111	Conservation and Efficient Use of Water	20%		20%	
131	Alternative Uses of Land	20%		20%	
205	Plant Management Systems	20%		20%	
721	Insects and Other Pests Affecting Humans	20%		20%	
	Total	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	3.0	0.0	3.2	0.0
Actual Paid Professional	22.2	0.0	4.6	0.0
Actual Volunteer	3948.0	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
482345	0	433126	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1963389	0	1314254	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
325994	0	1382024	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Identify critical programmatic foci/needs based on Extension and stakeholder assessment broadly defined under two areas:

- Environmentally sound gardening/lawn care
- Home horticulture-lawn, garden and grounds management
- Commercial horticulture - professional management and maintenance
- Environmentally sound household, structural pest control
- Home pest control-termites, carpenter ants,, etc.
- Human-health related pest control-bed bugs, mosquitoes, ticks, etc.
- A school IPM program will be developed to train end-users sound management techniques,

Develop an inventory of local (county based) and 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, including research, demonstrations, educational meetings and workshops, certification programs, trainings, etc. Research on plant cultivars that exhibit increased disease and insect resistance , as well as reduced need for fertilizer and irrigation water, will lead to reduced dependence on chemical control of pests and disease, lessening the impact on the environment.

2. Brief description of the target audience

Stakeholders:

- Homeowners and residential clientele
- Commercial horticulture professionals (management and maintenance)
- Commercial pest control operators
- Public health officials
- Local environmental commissions or others that have interest in these areas
- Municipalities and other governmental and non-governmental agencies, including Parks Commission, Public Health, Mosquito Commission, schools, etc.
- Volunteers (trained via Master Gardener Program, Environmental Stewards Program), youth and others who can support and benefit from these efforts
- Underserved and underrepresented audiences

3. How was eXtension used?

RCE faculty participated in Animal Waste Management CoP. Answered ask the expert questions and developed collaborative educational products.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	41448	5170	15069	14839

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	19	0	19

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, publications. In addition a trained volunteer teaching base will be developed. Quantitative reports of participation data will be collected.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Short Term - Increased knowledge and improved decision making skills of professionals and volunteers (Master Gardeners and Environmental Stewards) working in commercial horticulture professions (management and maintenance), commercial pest control operators, public health officials, municipalities and other governmental and non-governmental agencies. Increased number of trained youth and adult volunteers, and measurable impact of their assistance on clientele. Increased number of certified pest control operators. Increased number of youth and adult clientele utilizing Extension information and service to improve their own and others knowledge and decision making skills.
2	Medium Term - Educated youth and adult clientele, both professional and residential, utilize their newly gained knowledge and skills to implement and make changes such as: Efficient and effective pest control techniques. Proper utilization of fertilizers and other soil amendments as needed based on soil testing. Proper selection of plant materials to reduce need for chemical inputs. Reduction in the damage caused by structural pests. Reduction in health related incidents and costs association with human health vectors (ticks, mosquitoes). Protect health and safety of school children. Enhance or maintain environmental quality.
3	Long Term - New Jersey's residents will reside, work and play in a healthy, safe, and sound environment-in their homes, gardens, schools, parks and workplaces.
4	Medium Term - Animal Waste Management Program for New Jersey Livestock Producers - Educated youth and adult clientele, both professional and residential, utilize their newly gained knowledge and skills to implement and make changes such as: Efficient and effective pest control techniques. Proper utilization of fertilizers and other soil amendments as needed based on soil testing. Proper selection of plant materials to reduce need for chemical inputs. Reduction in the damage caused by structural pests. Reduction in health related incidents and costs association with human health vectors (ticks, mosquitoes). Protect health and safety of school children. Enhance or maintain environmental quality.
5	Long Term - The North Jersey Ornamental Horticulture Conference - New Jersey's residents will reside, work and play in a healthy, safe, and sound environment-in their homes, gardens, schools, parks and workplaces.
6	Long Term - Safe Practices for Urban Gardening Program - New Jersey's residents will reside, work and play in a healthy, safe, and sound environment-in their homes, gardens, schools, parks and workplaces.

Outcome #1

1. Outcome Measures

Short Term - Increased knowledge and improved decision making skills of professionals and volunteers (Master Gardeners and Environmental Stewards) working in commercial horticulture professions (management and maintenance), commercial pest control operators, public health officials, municipalities and other governmental and non-governmental agencies. Increased number of trained youth and adult volunteers, and measurable impact of their assistance on clientele. Increased number of certified pest control operators. Increased number of youth and adult clientele utilizing Extension information and service to improve their own and others knowledge and decision making skills.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Medium Term - Educated youth and adult clientele, both professional and residential, utilize their newly gained knowledge and skills to implement and make changes such as: Efficient and effective pest control techniques. Proper utilization of fertilizers and other soil amendments as needed based on soil testing. Proper selection of plant materials to reduce need for chemical inputs. Reduction in the damage caused by structural pests. Reduction in health related incidents and costs association with human health vectors (ticks, mosquitoes). Protect health and safety of school children. Enhance or maintain environmental quality.

2. Associated Institution Types

- 1862 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)

2013 PCO & Health Officers Day

Licensed pesticide applicators and public health officers are faced with new challenges each year when making decisions about how to control insects and animals that threaten human health.

These professionals also are required to attend continuing education programs to remain current in their profession and to maintain their licenses and/or certification.

What has been done

The PCO & Health Officers Day is an annual continuing education program for licensed pesticide operators, public and environmental health officers. Annually RCE brings together experts in household and indoor pest control, rodent control, rabies, an indoor environmental quality and animal control to lecture about the current best management practices in their fields. 2013 topics were: Wildlife Damage and Disease Issues in NJ; Rodent Control; Bedbug Biology and Control; Mosquito Control; and, Rabies in NJ.

Results

Participants were surveyed at the end of the workshop. 77% of participants had an increased understanding of human health issues associated with wildlife. 85% of participants stated they had improved their confidence in managing rodent populations. 87% stated they had a better understanding of bedbug biology and how to control bedbug infestations. 74% stated they had improved their knowledge of mosquito control techniques and strategies. 87% of participants stated they had learned important new information about rabies in NJ. 62% of participants believe that as a result of this training they will be applying less pesticides in the coming season.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
131	Alternative Uses of Land
205	Plant Management Systems
721	Insects and Other Pests Affecting Humans

Outcome #3

1. Outcome Measures

Long Term - New Jersey's residents will reside, work and play in a healthy, safe, and sound environment-in their homes, gardens, schools, parks and workplaces.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
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2013

0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Rutgers Environmental Stewards

Environmental issues are among the most serious problems faced statewide and nationally. A six year NJDEP study concluded in March 2003 on comparative risk from environmental stressors concluded that the top four environmental issues in New Jersey were 1.land use change, 2.indoor pollution, 3.invasive species and 4.outdoor air pollution.

What has been done

A RCE County Agricultural Agent provided leadership to the Rutgers Environmental Stewards. A structured volunteer training and management program focused on the environment to provide significant value-added to New Jersey. RCE formed a partnership with Duke Farms Foundation to create a statewide Environmental Stewardship certification program. Cooperators include the NJDEP, NJ Audubon, the Association of NJ Environmental Commissions, and a rapidly expanding list of environmentally related organizations from government, academia and the non-profit sector. An advisory council was formed to guide the Rutgers Environmental Stewards program which consisted of internal and external stakeholders. Regional instruction locations were established. As of 2013 regional classes have been conducted for nine years providing 1,260 hours of training to 352 students. To support promotion and management of the program a web site was created, <http://envirostewards.Rutgers.edu>. The site functions as both a promotional tool to attract students and serve them as an educational resource.

Results

The Rutgers Environmental Stewards is a long term program that entered its sixth year in 2013. Summary data presented included: 90.54% completed training, 49.87% engaged in an intern project, 31.27% completed an intern project, and 6.98% on environmental commissions. Impact summaries of work conducted by the 121 Rutgers Environmental Stewards who have attained certification in the program are available on-line at <http://envirostewards.rutgers.edu/CertifiedRutgersEnvironmentalStewardsImpactsandProjects.ht>

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
131	Alternative Uses of Land
205	Plant Management Systems
721	Insects and Other Pests Affecting Humans

Outcome #4

1. Outcome Measures

Medium Term - Animal Waste Management Program for New Jersey Livestock Producers - Educated youth and adult clientele, both professional and residential, utilize their newly gained knowledge and skills to implement and make changes such as: Efficient and effective pest control techniques. Proper utilization of fertilizers and other soil amendments as needed based on soil testing. Proper selection of plant materials to reduce need for chemical inputs. Reduction in the damage caused by structural pests. Reduction in health related incidents and costs association with human health vectors (ticks, mosquitoes). Protect health and safety of school children. Enhance or maintain environmental quality.

2. Associated Institution Types

- 1862 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)

Animal Waste Management Program for New Jersey Livestock Producers

In New Jersey, in addition to playing an important role in the state's economy, livestock animals help to maintain open, green spaces that add to the scenic beauty of the state. The land on which these animals are kept is often very valuable. To be good stewards of the land, farmers should manage their farms to minimize the potential for negative environmental impacts due to animal waste/manure.

What has been done

Rutgers Cooperative Extension faculty and staff participated in the development of the Animal Waste Management Rule developed by the New Jersey Department of Agriculture. This rule requires all New Jersey livestock farmers to comply with several requirements intended to improve manure and environmental management in order to protect water and environmental quality. The Animal Waste Management Program involved outreach to stakeholders, state and federal agents and producers, delivered via county extension offices including workshops, newsletter, mass media, posters and audio visual presentations. A nutrient management computer-program was developed for use by livestock producers in New Jersey. Rutgers Cooperative Extension staff, in a cooperative agreement with the USDA-NRCS, continues to write Comprehensive Nutrient Management Plans (CNMP's). A CNMP ensures the beneficial

utilization of manure and associated nutrients and includes the following components: nutrient management for the cropland, control of manure runoff from cropland fields, control of soil erosion, and pest management (weeds, insects, disease) related to crop production. A survey of 2,000 New Jersey horse farms in Burlington, Hunterdon, Monmouth, Salem, Somerset, and Sussex Counties has been completed. This survey of the horse industry was undertaken to determine how equine farmers handle, manage, and dispose of horse manure. A Near Infrared Reflectance (NIR) spectroscopy procedure for analyzing horse manure has been developed. This procedure should decrease cost and increase ease of completing horse manure analysis and enable New Jersey horse producers to conveniently and economically sample horse manure. Nine Animal Waste Management factsheets have been published.

Results

Gold Medal Horse Farm impacts: Gold Medal winners represent the best in environmental stewardship on New Jersey Horse farms. These two farms not only serve as demonstration farms, but also show the importance of maintaining open space in New Jersey and how the equine industry plays a role. One has demonstrated superb environmental best management practices such as minimizing storm water run-off, establishing controls to reduce soil erosion, maintaining a low stocking density, and meticulous pasture care.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
131	Alternative Uses of Land
205	Plant Management Systems
721	Insects and Other Pests Affecting Humans

Outcome #5

1. Outcome Measures

Long Term - The North Jersey Ornamental Horticulture Conference - New Jersey's residents will reside, work and play in a healthy, safe, and sound environment-in their homes, gardens, schools, parks and workplaces.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
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2013

0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The North Jersey Ornamental Horticulture Conference

The landscape of NJ is comprised of 890,425 acres of turf, according to a 2001 Rutgers University study of the turf industry. Turf makes up 19% of the state's total acreage. Golf Courses, commercial properties and residential neighborhoods create a demand for professional turf management services. Professional turf managers care for 39% of the turf acreage. The 2,442 service providers who maintain commercial and residential properties contribute \$400 million dollars in payroll and benefits to the state's economy. They also contribute \$691 million in cash expenditures. This competitive industry needs to be apprised of university research on best turf management practices to distinguish themselves from competitors and minimize the use of pesticides and fertilizers thus protecting our natural resources.

What has been done

The North Jersey Ornamental Horticulture Conference (NJOHC) is organized by a team of RCE faculty and program coordinators to promote the adoption of integrated pest management (IPM) practices by industry professionals. Adoption of IPM practices will reduce the amount of fertilizers and pesticides used on residential, commercial and public properties. The three day conference consists of Turf Day, Tree Day and Landscape Day.

Results

On the program evaluation (N=77), 45 professionals indicated that they attended Turf Day, 32 attended Tree Day and 77 attended Landscape Day. Ninety-six percent (96%) of the professionals will make more informed pest management decisions as a result of attending the conference.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
131	Alternative Uses of Land
205	Plant Management Systems
721	Insects and Other Pests Affecting Humans

Outcome #6

1. Outcome Measures

Long Term - Safe Practices for Urban Gardening Program - New Jersey's residents will reside, work and play in a healthy, safe, and sound environment-in their homes, gardens, schools, parks and workplaces.

2. Associated Institution Types

- 1862 Extension
- 1862 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)

Safe Practices for Urban Gardening Program

Health problems associated with lead exposure are well known and lead levels in New Brunswick children have decreased, many immigrants continue to garden directly in the soil and have little knowledge of the testing and soil abatement measures necessary to create safe gardening conditions. The availability of clean soil or methods for composting and creating safe soil is limited and more effort is necessary to provide culturally appropriate education to the largely Mexican community.

What has been done

Rutgers Cooperative Extension (RCE) of Middlesex County has partnered with a number of New Brunswick based community organizations including Unity Square Partnership and Elijah's Promise to develop a Lead-Safe Backyard Gardening Program in the City of New Brunswick, which targets underserved, Spanish speaking residents of New Brunswick. "Safe Practices for Urban Gardening" has been developed. The following teaching tools are included: development and implementation of "Lead-Safe Backyard Gardening/ Jardinería Libre de Plomo en tu Patio" bilingual workshops. A bilingual manual for residents titled "Safe Soil: A Healthier Way to Garden" <http://njaes.rutgers.edu/pubs/publication.asp?pid=E342>. A 2 page bilingual letter has been developed explaining laboratory testing results, and best practices for avoiding lead exposure.

Results

Follow up surveys were conducted via phone to 58 Latino gardeners one year after workshops and demonstrations. 88% of respondents (n= 17) were able to correctly name or identify the sources of lead in urban soil (i.e. chipped paint, leaded gasoline); 60% had adopted at least one best practice to reduce their exposure to lead in the soil including adding clean compost to their yard, building raised beds, and/or wearing gloves when gardening; and 77% had shared the information with others.

4. Associated Knowledge Areas

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

111	Conservation and Efficient Use of Water
131	Alternative Uses of Land
205	Plant Management Systems
721	Insects and Other Pests Affecting Humans

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

None to report.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

NJAES research and extension outcomes related to this planned program were evaluated utilizing a variety of evaluation methods appropriate for each initiative to determine effectiveness on both a qualitative and quantitative level. For KASA and practice change we included the measurement of knowledge gained as measured by pre/post Likert-scale assessments. Surveys were used to measure increase in skills acquired, behavior change and practice adoption. For process evaluation we focused on program delivery, participation, relevance and timeliness. Data was collected at appropriate times for each initiative that supports this planned program. IRB approved evaluation instruments were used to collect research and extension data. Data analyses and comparisons relevant to basic and applied research and demonstration were collected and analyzed and reported utilizing a variety of data collection methods appropriate to each research question.

The major goal of evaluating is the demonstration of social, economic, behavior and environmental changes in conditions that contribute to improved quality of life as a result of participation in programs and benefits of research solutions. See state defined outcomes for detailed results of each initiative.

Key Items of Evaluation

None to report.