

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Sustainable Agriculture Production for (non-food) Horticultural Crops

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
201	Plant Genome, Genetics, and Genetic Mechanisms	0%	0%	15%	0%
202	Plant Genetic Resources	0%	0%	10%	0%
204	Plant Product Quality and Utility (Preharvest)	20%	0%	5%	0%
205	Plant Management Systems	20%	0%	10%	0%
211	Insects, Mites, and Other Arthropods Affecting Plants	15%	0%	20%	0%
212	Pathogens and Nematodes Affecting Plants	10%	0%	10%	0%
215	Biological Control of Pests Affecting Plants	15%	0%	5%	0%
216	Integrated Pest Management Systems	20%	0%	15%	0%
601	Economics of Agricultural Production and Farm Management	0%	0%	10%	0%
	Total	100%	0%	100%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	20.0	0.0	5.0	0.0
Actual Paid Professional	17.0	0.0	4.8	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
572948	0	942934	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
572948	0	1698556	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Some 184 new Master Gardeners were trained by Extension agents. These Master Gardeners provided 34,998 hours of volunteer horticulture services to communities, which represents a \$601,965 value of program support. Agents taught Environmental Horticulture Education for Horticulture Professionals and Consumer Education in Environmental Horticulture. Field trials were conducted and demonstrated.

Evaluation reports were provided to growers with comprehensive and updated information on performance so that they can make informed decisions. Activities that foster sustainable agriculture practices and policies were promoted and encouraged.

Research experiments were conducted in the use of sensor technology to manage pests and fertilize and water a variety of non-food field crops.

There was extensive research on turf grass related issues, to include work on the ecology and integrated management of arthropod pests, some of which was applicable to ornamental crops. Work continued to identify novel microRNAs and their target genes involved in plant response to abiotic stress in turfgrass.

Since the putting green is such a critical element of profitable golf courses, research into improved disease management specifically for greens was useful for course operators in the Southeast.

Production practices of producers of all sizes benefited from research results passed along by the Cooperative Extension Service.

Clemson's arthropod collection was expanded and continues to serve as a public reference source for South Carolina and world wide scientific research.

South Carolina's nursery industry benefited by new processes which optimize water use during propagation of unrooted cuttings. And work continued on the remediation of phytopathogens from irrigatio water.

Research continued in the etiology and managemen of phytophthera diseases on ornamental plants and trees in the Southeast.

Cotton farmers in the state benefited from research into agronomic practices and management

systems for optimum productivity and profitability.

The research support for non food agricultural crops was provided by 4.8 faculty FTE's.

2. Brief description of the target audience

The audience will include producers, small farmers and Extension personnel, horticulture professionals, residents in counties with Master Gardener programs, Master Gardeners, and consumers.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	24078	1161122	0	0

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

Patent Applications Submitted

Year: 2013
 Actual: 1

Patents listed

An integrated dual site specific recombination system for use in developing environmentally safe and clean transgenic turfgrass

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	2	35	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Disclosures

Year	Actual
2013	1

Output #2

Output Measure

- Licenses

Year	Actual
2013	0

Output #3

Output Measure

- Number of people completing horticultural educational workshops

Year	Actual
2013	10384

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of Master Gardeners reporting activities and programs
2	Number of participants gaining knowledge
3	Number of people gaining knowledge in environmental horticulture education.

Outcome #1

1. Outcome Measures

Number of Master Gardeners reporting activities and programs

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	184

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Horticultural Program at Clemson University seeks to inform horticulture professionals, master gardeners, and consumers on environmentally sound horticultural practices that will improve communities.

What has been done

Master Gardeners (MG) received certification and contributed service in their communities. MGs sponsored a Listen and Learn series at a local farmers market, conducted a weekly plant clinic, implemented a gardening series at a local library, conducted growing tomatoes classes, and conducted a plant and animal survey of a Beaufort County property and identified over 80 genera of plants and animals. We continue the Rent-A-Master Gardener program. Master gardeners serve on public, civic, and non-profit boards and committees for community beautification for tree protection and historical preservation.

Results

Master Gardeners reported adopting sound horticultural practices and they are improving their communities through beautification projects and community service. Some 34,998 hours of volunteer service was contributed, which represents a value of \$601,965 in program support.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Number of participants gaining knowledge

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Number of people gaining knowledge in environmental horticulture education.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	9755

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Horticultural Program at Clemson University seeks to inform horticulture professionals, master gardeners, and consumers on environmentally sound horticultural practices that will improve communities.

What has been done

Extension conducted 423 workshops reaching 10,384 persons. In addition to the Master Gardener programs delivered, agents taught Environmental Horticulture Education for Horticulture Professionals and Consumer Education in Environmental Horticulture. Agents taught Carolina Yards and Neighborhoods classes on composting, recycling, protecting the waterfront, and attracting wildlife and pest management. Other programs covered topics such as native plants for the landscape, weed control in the landscape, seed germination, seedling growth and care, building soils, nutrient recycling and immobilization, rain garden plants for the Hallogreening, planting spring bulbs, insects, and wildlife concerns. They presented programs for joint meetings of various representatives from county churches on trees and their importance in human life and the environment. Agents delivered programs on vegetable gardening for emergency preparedness fair, conducted the ornamental plant school and the Professional Turf School. Presentations pertaining to the IPM book and smartphone apps for the green industry were

conducted.

Agents taught students and faculty at technology centers on gardening for wildlife and after-school programs on soil, how it is formed, what it is comprised of and how to take soil samples. Third grade students were taught how to take a soil sample. Then all helped take soil samples for each of the raised beds in their school garden.

They assisted landscapers, commercial and municipal landscapers with recommendations for citrus leaf miner, tree borers, turf and horticultural problems, carbaryl toxicity on St. Augustine, soil pH, and water sample results.

A Website (<http://wiki.bugwood.org/SNIPM>) was updated to incorporate PDF copies of 13 chapters in the book IPM for Select Deciduous Trees in Southeastern US Nursery Production. Some 496 media activities were conducted.

Results

Some 94% of the people participating in programs reported that they gained knowledge. Over 38% reported using practices learned. Registration fees were charged for the Turf School to cover costs and three SC pesticide recertification credits were offered.

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Participants in Extension (non-food) Horticultural Crop programs are applying knowledge gained to protect waterfronts, attract wildlife and for pest management to improve their communities. Master gardeners are applying knowledge gained from Extension programs to help beautify the communities of South Carolina.

Key Items of Evaluation