V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	6%	0%	0%	0%
111	Conservation and Efficient Use of Water	24%	0%	23%	0%
112	Watershed Protection and Management	30%	0%	23%	0%
124	Urban Forestry	0%	0%	3%	0%
133	Pollution Prevention and Mitigation	23%	0%	18%	0%
136	Conservation of Biological Diversity	0%	0%	3%	0%
141	Air Resource Protection and Management	3%	0%	3%	0%
202	Plant Genetic Resources	0%	0%	12%	0%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%	0%	3%	0%
204	Plant Product Quality and Utility (Preharvest)	3%	0%	3%	0%
212	Pathogens and Nematodes Affecting Plants	0%	0%	1%	0%
215	Biological Control of Pests Affecting Plants	0%	0%	1%	0%
403	Waste Disposal, Recycling, and Reuse	7%	0%	4%	0%
511	New and Improved Non-Food Products and Processes	0%	0%	1%	0%
902	Administration of Projects and Programs	2%	0%	1%	0%
903	Communication, Education, and Information Delivery	2%	0%	1%	0%
	Total	100%	0%	100%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	16.7	0.0	7.6	0.0

Actual Paid Professional	13.0	0.0	6.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
2304442	0	1761157	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	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

A large part of this program funded specialists and their direct efforts primarily to county agents. Agents then disseminated this latest research and best practices techniques to target audiences at the local level.

Environmental Sciences:

Research, work, and education continued in the following areas in order to have a better understanding of how to improve the environment: biomicrometeorology, waste management, molecular environmental science, nutrient management, abiotic remediation and phytoremediation, soil biology and biochemistry, water pollution and stream restoration.

Water Conservation:

Georgia continued to provide leadership in the Water Banner Program for the Southeast region. All Georgia agents were provided training on water conservation and many implemented it in their local programs. Through the **40 Gallon Challenge program**, over 1,400 Georgia citizens have pledged to conserve more than 273,522 gallons of water per day.

In 2012, UGA Extension provided 14 educational seminars/classes involving **greenhouse water conservation** statewide. Three out-of-state presentations and two student research presentations at a national conference involved our water conservation research. Four trade magazine articles, six scientific abstracts, and one proceeding on water conservation research was published.

We've met numerous times with the local grower groups in Georgia to discuss water conservation. Our **USDA SCRI Grant** work will continue through 2014, as will our related field demonstrations and our graduate student research projects in water conservation. We also continued to provide mandated

certification workshops for operators and planners. Faculty worked with a wide variety of audiences including policy makers, youth, farmers, and concerned citizens.

Environmental Issues for Poultry Producers:

We have also worked with a many of agents and farmers on an individual basis to help them **address environmental concerns** on their farms. A comprehensive validation of ammonia emissions from broiler houses was completed this year. A recent bulletin from UGA Extension identified a number of straightforward measures that growers can implement to reduce electrical usage. Rising fuel prices have further encouraged producers to weatherproof and tighten broiler houses to conserve energy. In addition to publishing 12 newsletters per year on poultry housing and energy conservation, poultry ventilation workshops are conducted twice a year.

2. Brief description of the target audience

The target audiences included county Extension agents, growers, producers, farmers, industry representatives, manufacturers, consultants, contractors, greenhouse owners, media, scientific peers and environmental professionals.

The focus also includes public sector decision-makers (federal and state), regulatory and policy representatives, community leaders, environmental concern/interest groups, and the general public

3. How was eXtension used?

The number of individuals with **eXtension** IDs has continued to grow. Current membership for UGA is 524; State of Georgia membership is 605.

There are 32 active Experts from Georgia on Ask an Expert, with 13 widgets on Georgia sites. There were 558 questions answered by UGA.

There are 150 members of Community of Practice in 46 of the 69 approved communities. (Up from 125 members in 59 communities in 2011)

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	4339	22130	672	650

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	3	9	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational contact hours generated from formal educational programs presented to county extension agents by state faculty directly associated with this planned program.

Year	Actual
2012	180

Output #2

Output Measure

- Number of educational contact hours generated from formal educational programs presented directly to clientele by state faculty directly associated with this planned program.

Year	Actual
2012	919

Output #3

Output Measure

- Number of significant publications including articles, bulletins and extension publications. (excluding peer reviewed articles)

Year	Actual
2012	73

Output #4

Output Measure

- Number of invited presentations by faculty directly resulting from the success of this planned program.

Year	Actual
2012	90

Output #5

Output Measure

- Number of plant species propagated
  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	Number of additional direct extension contacts made by volunteers, staff, or county agents not receiving federal funds as a direct outcome of the work of federally funded faculty associated with this planned program.
2	Percentage of Georgia poultry producers trained in Phosphorous(P) reduction/management methods.
3	Estimates of savings ($ millions) resulting from reduced phosphorous (P) supplementation in poultry diets
4	Number of plantings by clientele
5	Implementation of water savings practices in commercial greenhouses

Outcome #1

1. Outcome Measures

Number of additional direct extension contacts made by volunteers, staff, or county agents not receiving federal funds as a direct outcome of the work of federally funded faculty associated with this planned program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	43338

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Georgians are in need of sound, unbiased, research-based information. The specialists and county faculty who conduct research and study in their unique fields of expertise have the knowledge and information that is needed by local clientele. The ratio of state specialists and researchers to the local populations is prohibitive to wide spread knowledge dissemination.

What has been done
Georgia state specialists and provide research based knowledge and training that is then passed along to clientele by county agents.

Results
The county delivery system provides a local expert to deliver the research based information from the specialists to a multitude of clientele, reaching far beyond the scope of the state level specialists. The county level professional is able to localize and interpret the data and information to meet the needs of the specific community member, farmer, parent, homeowner, consumer, etc. The dissemination of information and education based on the terms of the local clientele provides a consumable product that can be put into practice by the layperson. The local delivery system exponentially expands the delivery of the expertise, knowledge, and research of the University to local constituents.

4. Associated Knowledge Areas

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

111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
124	Urban Forestry
133	Pollution Prevention and Mitigation
136	Conservation of Biological Diversity
141	Air Resource Protection and Management
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
212	Pathogens and Nematodes Affecting Plants
215	Biological Control of Pests Affecting Plants
403	Waste Disposal, Recycling, and Reuse
511	New and Improved Non-Food Products and Processes
902	Administration of Projects and Programs
903	Communication, Education, and Information Delivery

Outcome #2

1. Outcome Measures

Percentage of Georgia poultry producers trained in Phosphorous(P) reduction/management methods.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	55

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Phosphorous (P) in poultry manure can be an environmental concern when applied in excess to crop land or pasture. Research and extension efforts are needed to develop methods of reducing P in poultry manure and to encourage poultry companies and farmers to adopt effective methods to minimize the chance excess P may negatively impact the environment.

What has been done
Educational programs were conducted on nutrient management planning (NMP) which included phosphorous management strategies to reduce environmental impact.

Results
Training poultry producers in P reduction/management methods helps assure P is being applied using best management practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
403	Waste Disposal, Recycling, and Reuse

Outcome #3

1. Outcome Measures

Estimates of savings ($ millions) resulting from reduced phosphorous (P) supplementation in poultry diets

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
403	Waste Disposal, Recycling, and Reuse

Outcome #4

1. Outcome Measures

Number of plantings by clientele

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Implementation of water savings practices in commercial greenhouses

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Water availability for irrigation is an increasing problem for agriculture, due to increased water demands from urban areas. This makes it necessary to use irrigation water as efficiently as possible.

Irrigation in greenhouses and nurseries can be difficult to manage, because many of the plants are grown in fairly small pots that may need to be watered several times per day. And most greenhouse and nurseries grow a wide variety of crops; adjusting irrigation of all these crops based on the actual watering needs is too time consuming for growers.

What has been done
To address this challenge, we have conducted research to quantify water needs of various greenhouse and nursery crops and developed mathematical models of how needs vary based on weather conditions. Presentations were made at scientific and industry meetings about more efficient ways to irrigate greenhouse and nursery crops. Practices were adopted by two commercial greenhouses in this reporting period

Results
Efficient irrigation practices were adopted by two commercial greenhouses in this reporting period.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
204	Plant Product Quality and Utility (Preharvest)

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

Policy changes have been developed which affected research and funding.

Drought conditions in Georgia during the last year and watering restrictions put some limits on our outdoor plant propagation activities.

The economic downturn has reduced production on top of previous reductions due to drought. Hispanic laborers have left the area, and sales of plant materials are minimal. Water conservation is occurring but may be greatly influenced by reduced demand for plants.

Regulations and the interpretation and enforcement of the rules is constantly evolving and impacting our programs. The increases in fertilizer prices is positively influencing the value of animal manures and increasing off-farm demand. In addition, the national push for biofuels is influencing nutrient management as animal diets are changing due to the high costs of corn. Finally, drought has impacted many producers as some have cut herd sizes due to a lack of feed. The economy is also causing hardships for producers resulting in less funding available for on-farm environmental improvements. In addition, the slow economy has resulted in budget cuts for our college which has made it more challenging to deliver our programs.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Water Conservation in Greenhouses: Evaluations were performed following presentations at grower meetings

Native Plant Propagation: Weekly meetings of the Plant Conservation Program staff of the State Botanical Garden have provided the venue for evaluating the program and making changes as required.

Energy conservation in poultry production: Evaluations of workshops were completed. Program participants ranked the value of workshops very highly. In addition, government and industry funding agencies have provided evidence of the impact of this work by volunteering to supply resources for energy conservation projects. Poultry farmers have adopted new energy efficiency strategies that have been recommended.

Managing ammonia emissions from Georgia poultry houses: A major validation of ammonia emissions from broiler houses was completed. A significant equipment grant was received by the UGA ammonia emission team.

Key Items of Evaluation

Government and industry funding agencies have provided evidence of the impact of this work by volunteering to supply resources for energy conservation projects.

Educational program have shown an increase in knowledge and change in behaviors.