V(A). Planned Program (Summary)

Program # 11

1. Name of the Planned Program

climate Change--research

☑ 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
132	Weather and Climate	0%	0%	95%	
205	Plant Management Systems	0%	0%	5%	
	Total	0%	0%	100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	20.0	0.0
Actual Paid Professional	0.0	0.0	33.3	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**
0	0	407708	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	407708	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

Florida has many projects planned in the area of climate change. Some projects will relate to the

development of climate information and decision support systems for the Southeastern USA. Other projects will look at the development of cultivars that do well in changing climate conditions.

2. Brief description of the target audience

Agricultural Producers/growers
Florida residents/ Stakholders
government
industry
regulatory agencies

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2012
Actual: {No Data Entered}

Patents listed
{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	3	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Develop new climate information that will contribute to an improved agricultural ecosystem in the SE USA.
2	Develop Climate decision support systems that improve quality of life, increase profitability and decrease economic risk.

Outcome #1

1. Outcome Measures

Develop new climate information that will contribute to an improved agricultural ecosystem in the SE USA.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The southern Coastal Plain region of the southeastern United States delineates the geographic area comprised of southern Georgia, southern Alabama and northern Florida. The southern Coastal Plain experiences a mild temperate climate and can support a number of tropical and semi-tropical forage plant species. This region is located at the extreme limits for both tropical and temperate forage species. Plant breeding has produced varieties that are able to tolerate the heat and drought stress which typifies the variable southern environment. New cool season varieties have been developed with improved disease and insect resistances, allowing them to survive the pest pressures. Tropical perennial forages, like bahiagrass (Paspalum notatum), bermudagrass (Cynodon dactylon), rhizoma (perennial, Arachis glabrata) peanut and limpograss (Hemarthria altissima) also are well adapted to the southern Coastal Plain and Peninsular Florida, since severe winters are rare and these plants persist through the occasional hard freezes. Plant breeding for cold tolerance and winter survival has improved their adaptation. The southern Coastal Plain region and parts of Peninsular Florida have an environment that is conducive to year-round grazing utilizing both tropical and temperate forage plant species. New or improved forages that grow successfully in these regions should benefit forage systems throughout Florida and have significant impact on the Florida livestock industry. Further breeding improvement of perennial temperate forage species, such as tall fescue or red clover, would greatly benefit the livestock industry in the southern Coastal Plain region and Peninsular Florida. Selecting for fall-season production in perennial warm season grasses, like bahiagrass, and bermudagrass, would help fill the void in fall season forage production for this region. Developing forage varieties that provide long season or perennial production would have significant impact on all livestock systems throughout the southern Coastal Plain region and Peninsular Florida.

What has been done
The purpose of this project is to integrate several Florida breeding programs with other southern based programs into a cohesive effort to develop varieties that fill the void in fall season forage

production. Recurrent selection and pedigree breeding will be used to develop new southern forage cultivars in the UF North Florida Forage Breeding Program. An emphasis will be placed on breeding for desirable physiological traits, such as photoperiod response and cold tolerance. Southern forages emphasized in this program will include bahiagrass, small grains/ryegrass, and perennial peanut. The proposed research also contains a coordinated effort with other forage programs in the region to develop and evaluate several other important forage species adapted to the southern Coastal Plain and Peninsular Florida.

Results

Impact: Select winter forages of oat, ryegrass and triticale cultivars/experimental lines for differences in yield, seasonal yield distribution, forage quality, soluble sugars, and N and P content among cultivars and among forage types. In 2011-12, field grown winter forages were harvested at 4 wk intervals and rye, ryegrass, oat and triticale cultivars/experimental lines were analyzed for differences in yield, seasonal yield distribution, forage quality, soluble sugars, and N and P content among cultivars and among forage types. Included in this study were oat cultivars/experimental lines-LA99016, Horizon 201, FL02011, and FL05006; rye cultivars/experimental lines-AGS 104, FL401, FL2X 405, FL4X 404, SYN-T, ryegrass cultivars/experimental lines-Marshall, Jumbo and Earlyploid and FL-ONA 4X, and FL-MAR 4X; and triticale cultivars-Trical 2700, Monarch, Trical 342, FL01143 awnless and FL01008. Cool-season forages provided excellent means to provide high quality greenchop and silage during the winter period. Seasonal distribution of forages is distinctly different among cultivars and among forage types. Oat forage generally produces earlier forage than ryegrass and triticale. Ryegrass tends to be higher in TDN, then oat and triticale. Soluble sugars, in general, are higher for oat cultivars, although more stable over the growing season for ryegrass. Knowledge of the best cultivars and combinations of cool-season forage types and cultivars should be useful for livestock. Cultivar selection influences the distribution of forage yield over the season influenced the amount of N and P removal, an important environmental concern for many of our southeastern dairies. Winter forages, like oat, rye, ryegrass and triticale vary in their time of maximum forage production and distribution of yield over the winter months. In 2011-2012 four new oat cultivars: LA99017, LA05006, FL02011, and Cantara(LSU co-developers), a dual-purpose perennial peanut, Cowboy (UGA as lead institution) and a new native grass cultivar, Purple Haze (co-developed with USDA-NRCS) were released from the Forage Breeding Program at UF.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
205	Plant Management Systems

Outcome #2

1. Outcome Measures

Develop Climate decision support systems that improve quality of life, increase profitability and decrease economic risk.

Not Reporting on this Outcome Measure

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

Florida is still being heavily impacted by the economic situation. Public higher education in Florida has lost more than 50% of state funding and research has been impacted by other losses caused indirectly by the economic down turn including a reduction of funding opportunities available at the national level. In some cases faculty who leave or retire are not being replaced because of economic issues. Changes in state, county and federal appropriations can also affect the outcomes related to the Florida research land-grant mission. Because of limited resources in Florida and continuing devolution research projects can always be affected by changing public and governmental priorities policies, regulations and laws.

Natural and national disasters can also affect research field studies and multistate research. Natural disasters such as tropical storms and hurricanes are common annual occurrences in this state and often cause severe damage to plants and the environment in which active research is taking place.. Severe weather conditions such as droughts frequently led to large-scale fires which can also impact studies. In 2012 we were heavily impacted by severe storms and fires. We also had other weather extremes such as floods leading to large scale damage especially along the coastal regions and the panhandle of the state. All of these can have a direct and indirect impact on research.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Florida is involved in a great deal of research related to climate because of our tropical conditions.

Key Items of Evaluation

Climate research

The economic and social development of the southeast United States over the past several decades has been fueled by its climate and abundant water resources. Increased population, rapid urban development, and large agricultural water demands have led to conflicts between water users and the need to protect natural systems. Management

strategies and cultural practices have a major impact on the demand on, and the availability and quality of, water resources. Improved management of water supplies, reduction in non-essential/discretional outdoor water use, reduction of the use of potable water for non-potable applications, and the adoption of practices that minimize the effect of urban development on water quality can minimize or ameliorate the human impact on natural resources in the region.

Outputs for this project during the 2011-2012 period include education workshops (1), in-service training workshops (2), presentation of recent research at professional conferences (3), and the production of multi-state educational materials (4)

Impact: This project produced primarily changes in knowledge. Knowledge of Florida extension personnel was improved on the topics of climate variability and change and numeric nutrient criteria. Knowledge was improved by municipal employees that work in storm water and wastewater issues on the topic of numeric nutrient criteria. Knowledge was improved by stakeholders in the Apalachicola-Chattahoochee-Flint River basin in Alabama, Georgia, and Florida on the impact of seasonal climate on regional drought.