2015 Fort Valley State University and University of Georgia Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

This executive summary will provide background information regarding the state of Georgia and the development of the Georgia Federal Report of Accomplishments. This summary will provide background data for the state and universities, program highlights, examples of specific collaborative efforts between the University of Georgia (UGA) and Fort Valley State University (FVSU), and brief summaries for each of the eight planned programs.

***BACKGROUND**
Fort Valley State University and the University of Georgia address major agricultural issues, as well as many other problems facing rural and urban areas, the environment, families and youth. This Accomplishment Report represents the coordinated effort between the state's 1890 and 1862 institutions: FVSU and UGA. It includes joint planning between Experiment Stations and Cooperative Extension units at both universities.

Georgia, one of the original 13 colonies, has a land area of 57,919 square miles, which makes it the largest state east of the Mississippi River (24th overall). Georgia falls within five major physiographic regions: the Blue Ridge Mountains in the northeast; the Ridge and Valley Province and the Cumberland Plateau in the northwest; the Piedmont across central Georgia; and the Coastal Plain in the south. Elevations range from sea level to 4,784 feet at Brasstown Bald in the Blue Ridge Mountains.

Georgia's 2015 estimated population was 10,097,343. The U.S. Census reported 24.7 percent of Georgians were under age 18 and 12.4 percent of the state's population was 65 or older. According to the census, 62.1 percent of Georgians identified themselves as white, 31.5 percent identified as African American and 9.9 percent identified as Hispanic or Latino.

The state's Cooperative Extension has 167 offices in 157 of Georgia's 159 counties. FVSU and UGA county personnel are housed jointly in county offices. Extension programming in the areas of Agricultural and Natural Resources, Family and Consumer Sciences and 4-H is delivered as both individual county effort and as multicounty programming. State faculty members deliver training to county agents and programming directly to clientele, when appropriate.

The research programs of FVSU and UGA are conducted through the Agricultural Experiment Stations system. Georgia has several campuses throughout the state. Its four largest campuses are located in Athens, Fort Valley, Tifton and Griffin. In addition, Georgia research and education centers are located strategically throughout the state.

This joint report was developed around core programs and targeted issues. The programming directions of core programs and the identification of targeted issues are decided under a structured program development system. The Georgia program development model is a multistep process that is operational every year. The model includes a process for assessing needs and identifying problems. It also includes program evaluation to determine impact. The Georgia program development model works in unison with

multiple advisory systems at both county and state levels.

The Georgia Federal Report of Accomplishments does not attempt to capture all of the work of the colleges' faculty members. It is intended to document the accomplishments of the faculty members receiving specific formula funds. The majority of these dollars are used to fund core programs at the state level. These core programs range from the traditional animal and plant production, family and consumer skills, to the emerging issue of biofuels. The goals of these programs are to demonstrate short- and long-term impact. However, the greatest impacts of these core programs are the foundations created to support and leverage additional resources beyond state matching funds.

Animal Production and **Plant Production** programs worked on a variety of projects to address global food security and hunger. These programs, along with **Urban Agriculture** programs worked to respond to the growing issues of climate change and conservation of natural resources.

Faculty working in the **Health & Nutrition** and **Youth & Family Development** programs provided much needed research and education to encourage healthy eating habits and physical activity in children to reverse the national trend of childhood obesity.

Sustainability, Conservation & the Environment programs encompassed a variety of interdisciplinary research projects in the development of new knowledge and new technologies to address the effects of climate variability and change. Research projects also focused on the development and enhancement of sustainable biofuels to provide domestic sources of sustainable energy.

Faculty in **Food Safety** programs worked to increase and improve the number of viable technologies and educational opportunities for the detection, characterization and prevention of foodborne threats.

The **Home & Life Skill** programs included work on increasing home health and homeownership. This area also covered financial planning, consumer awareness and general well-being.

***EXAMPLES OF COLLABORATIVE EFFORTS**

Bringing the resources of both universities to the table during joint participation in monthly Agricultural & Natural Resources (ANR) Extension coordination meetings, planning and information exchange provides opportunities to build a strong program for Georgians.

Animal Production

Each year FVSU hosts four to six aquaculture workshops at the FVSU Georgia Center for Aquaculture Development (GCAD) with the participation of UGA. FVSU also collaborates with UGA and Auburn University at the Tri-State Aquaculture booth at the annual Sunbelt Agricultural Expo.

In 2015, workshops were held to educate fish producers, Georgia Department of Natural Resources workers, aquatic weed control applicators and agents about fish diseases, sportfish pond management and aquatic weed control.

There is on-going collaboration between UGA Extension county agents and FVSU small ruminant specialists. County meetings, in-service and district agent training, and contacts via phone and email on technical issues and problem solving are all examples of collaborative efforts where faculty work together to meet the needs of the state clientele.

Extension county agents hosted the 2015 Master Cattleman Program with the support of specialist from the UGA College of Agricultural and Environmental Sciences and College of Veterinary Medicine. The program lasted eight weeks. It covered cattle reproduction, foreign animal diseases, forages, herd health,

external parasites, sire selection, beef quality assurance, herd nutrition, facilities, and economics and marketing.

Groups that have sought training regarding pests include 4-H, Scouts, the EPA, the U.S. military and pest management associations in four different states.

UGA scientists are working on a joint mission with MIT, Georgia Tech and the University of Illinois to create a new scientific discipline for building living, multicellular machines that solve real world problems in health, security and the environment.

FVSU researchers are working on collaborative projects on small ruminant management methods, year-round reproduction, economically viable nutrition strategies, internal parasite control, development of value added products using goat meat and milk, and food safety. Other ongoing collaborative projects relate to sustainable bioenergy feedstock, medicinal plant biotechnology, and demographic factors affecting consumption of small ruminant products, locally grown food products, organic fruits and vegetables.

Health & Nutrition

Georgia 4-H, in collaboration with the Centers for Disease Control and Prevention, developed a lesson plan for elementary-aged youths on zoonotic diseases. The lesson teaches youths about the potential risks of spreading germs between animals and people.

Youths and adults were trained on key messages to raise awareness of the correlation of hunger to obesity. Information from the Georgia Food Bank Association, Children's Healthcare of Atlanta and University of Georgia Extension has been combined with best practices for youth and adult partnerships to yield a program that has the potential for significant impact in our state and the ability for replication in other states' 4-H and youth programs.

Home & Life Skills

The partnership of FVSU and GeorgiaCares resulted in 1,392 Extra Help/Low-Income Subsidy applications completed and submitted, resulting in a potential savings of $5,568,000 for participants.

Sustainability, Conservation & the Environment

UGA specialists worked with FVSU on their GREEN (Georgia Residential Energy Efficiency Network) Project. This program, which aims to help Georgians make informed energy efficiency and conservation decisions for their homes, has had a significant impact on the counties they serve.

Urban Agriculture

In the area of turfgrass disease management, science-based knowledge on disease identification and control has been shared with academic colleagues and industry professionals in Spain and Mexico. UGA developed partnerships and research collaborations with several commercial companies and educational institutions.

UGA added two new positions in the area of urban agriculture. A School and Community Gardens Coordinator works with metro area urban schools, communities and Master Gardeners. An Urban Ag Training Coordinator works to train agents on urban agricultural topics and issues.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	410.6	9.5	412.5	45.3
Actual	583.3	7.2	499.8	22.6

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

- Internal University Panel
- External University Panel
- Combined External and Internal University External Non-University Panel
- Expert Peer Review

2. Brief Explanation

Both universities incorporated the items above in their respective merit review processes. All research projects conducted during this year were peer reviewed by both internal and external reviewers. In addition, greater than twenty percent of approved research projects are also associated with multi-state/integrated projects which undergo an extensive review by the Southern Association of Agricultural Experimental Station Directors. Extension reviews the quality and relevance of the state program goals at the State, District, and County levels. Departmental Extension Coordinator Contacts provide insight at the state level. The Program Development Team is the district level input. This team consists of the district program development coordinators, evaluation specialist, and Extension administrators. County agents provide input directly to the Program Development Team and the State Extension Coordinators. The constituents provide input through the County Council as part of the Extension Leadership System.

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey specifically with non-traditional groups

Brief explanation.

After visiting with local advisory committees, county agents provide data directly to state specialists through listening group meetings which are conducted annually and by individual

department for a total of a dozen or more meetings. The data from these agent/specialist sessions is then analyzed by the state program development team and recommendations are made for next year's programming. County agents also use input from advisory committees to plan, execute, evaluate and communicate programming at the local level.

2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief explanation.

Statewide stakeholders and potential collaborators were identified by faculty and recommendations were made to the Dean for statewide advisory committees. The counties used a structured identification process to select a diverse advisory committee at the local level, to include representatives of both traditional and non-traditional stakeholder groups. The majority of counties reassessed and rotated their advisory committee membership this year.

External review teams have also provided suggestions as to new classifications of stakeholders, especially in regard to "departmental" advisory committees. The most dramatic changes in the research programs of the College occur when new faculty are hired. Departmental advisory committees help prioritize the needs of the stakeholders. Stakeholder input is also sought by members of search and screen committees prior to selecting candidates to interview and prior to the final recommendation.

2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Meeting with invited selected individuals from the general public

Brief explanation.

Individual county level advisory committees met at least four times during the year. One youth development statewide survey was conducted to collect county input. The statewide CAES advisory committee met two times during the year. With the Archway Partnership, we invite individuals from the general public to participate in needs assessment and use for both Cooperative Extension and VP Public Service & Outreach (VPPSO) programming.

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

Brief explanation.

All input is channeled to college administration so they have the knowledge to make budgetary decisions. All vacant positions in all departments are brought to college level administration for evaluation based on these criteria before a decision is made to refill. Or positions may be redirected as needed. The Dean solicits input from all faculty, staff and stakeholders prior to making hiring decisions on major administration positions.

Brief Explanation of what you learned from your Stakeholders

-Research efforts of the College must be balanced to both meet the needs of stakeholders, communities and the economic and environmental sustainability of the state.

-National reputation is important provided the local needs are being addressed.

-Stakeholders are seeking a greater partnership with the College and are willing to contribute their time, talent and resources to build the overall College. Most are placing the long term survival and enhancement of the College above the needs of their particular operation, organization or community. They want to be part of the solution knowing that.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
8117753	2586213	6124209	3067445

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	9894677	2586214	6770805	3067445
Actual Matching	9894677	2586214	6770805	3067445
Actual All Other	0	0	0	0
Total Actual Expended	19789354	5172428	13541610	6134890

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	1776924	0	2332953	0

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Animal Production

☑ 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
112	Watershed Protection and Management	0%	0%	5%	0%
131	Alternative Uses of Land	0%	0%	5%	0%
133	Pollution Prevention and Mitigation	0%	0%	10%	0%
216	Integrated Pest Management Systems	20%	0%	10%	0%
301	Reproductive Performance of Animals	20%	35%	25%	20%
303	Genetic Improvement of Animals	0%	0%	15%	20%
304	Animal Genome	0%	0%	5%	0%
307	Animal Management Systems	20%	0%	10%	20%
311	Animal Diseases	20%	35%	10%	20%
601	Economics of Agricultural Production and Farm Management	20%	30%	5%	20%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	13.0	2.5	14.5	10.8
Actual Paid	15.4	2.0	11.5	9.8
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**
1710366	718393	1568682	924995
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1710366	718393	1568682	924995
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

Animal production research was conducted. County, regional, state and multistate meetings, trainings and workshops were held. Field days, on-site visits, tours and hands-on sessions took place. Diagnostic services were provided.

Research findings were shared via bulletins, newsletters, eXtension, layperson articles, industry publications, peer-reviewed journals, scientific proceedings, state and national conferences, broadcast media, websites and exhibits.

Aquaculture
Workshops reached more than 700 pond owners in more than 70 counties in Georgia. These activities resulted in improvements of pond, property or fish population valued at an estimated $3 million. Scientists working in aquatics provided recommendations and visits to around 500 cases.

Cattle
Scientists tested bulls and developed heifers. Producers were able to retain ownership through harvest with the Georgia Beef Challenge. Approximately 270 bulls and 300 heifers were consigned. From those animals, 200 bulls and 220 heifers were sold through auction. Approximately 500 steers and heifers were consigned through the program.

Agents hosted the 2015 Master Cattleman Program with the support of specialists from the College of Veterinary Medicine. The 8-week program covered cattle reproduction, foreign animal diseases, forages, herd health, external parasites, sire selection, beef quality assurance, herd nutrition, facilities, and economics and marketing.

A total of 1,394 hours of instruction in beef-cattle operation and management were delivered. Nearly 90 cattle producers participated, representing the management of 5,420 brood cows and 26,070 acres of pasture and hay fields.

Poultry
Meetings were held on proper biosecurity techniques to prevent Avian Influenza (AI). Work with the Georgia Poultry Lab resulted in an AI hotline.

The Poultry School en Español had 48 attendees from the poultry industry in Central and South America.

Equine
Master Equine Specialist and Equine Management programs were developed to increase environmental awareness and cost-share participation among horse enthusiasts.

Pests
Twenty-three workshops were held on topics like mosquito control, mites on backyard chickens and bed bug tactics. Hot topics picked up by the media included flies, ticks, head lice and kissing bugs.

Small Ruminants
FVSU conducted multiple research projects with small ruminant, including projects on ovulation during non-breeding season, dewormers, replacing meal with dried distillers grains with solubles, ensiled and sun-dried sericea lespedeza, polyunsaturated fats and reduced-fat dairy goat products.

Research demonstrated that a small percentage of adult stem cells in mammalian tissues remain alive for much longer time (after the death of animals) than was previously thought.

These cells can be cultured and expanded in vitro and exhibit normal growth and genetic profiles suggesting that these cells can be beneficially utilized. For example, in human cellular therapies, and in long term preservation of superior germplasm (for future cloning of animals) to meet the climatic and/or other environmental challenges, to ensure future food safety for expanding world.

2. Brief description of the target audience

The target audience was

- Sheep, poultry, goat, beef and pork producers
- Dairymen
- Aquaculture producers
- County agents
- Veterinarians
- Environmental professionals
- Pet owners
- Scientific peers
- Industry professionals
- Government officials and policy makers
- Landowners
- Limited resource farmers
- Those living around animal agricultural environments.

3. How was eXtension used?

In this area, there were 52 members and six leaders from Georgia in 14 Communities of Practice. Overall, Georgia Extension faculty and volunteers answered 637 questions and touched 924 in eXtension.

V(E). Planned Program (Outputs)

1. Standard output measures

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	823968	2039713	156466	387328

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

Patent Applications Submitted

Year: 2015

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	Extension	Research	Total
Actual	18	50	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2015	190

Output #2

Output Measure

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

Year	Actual
2015	47

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of Master Cattlemen certifications granted through this planned program.
2	Increase in the farm gate value of livestock production in Georgia. Reported in millions of dollars.
3	Farm gate value of poultry production in Georgia. Value reported annually in millions of dollars.

Outcome #1

1. Outcome Measures

Number of Master Cattlemen certifications granted through this planned program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	140

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
To be competitive in the beef market, producers must understand existing beef management practices as well as become informed of new technologies as they are developed.

What has been done
The University of Georgia's "Beef Team" is currently offering the Master Cattlemen's Program. This program involves detailed, in-depth educational seminars related to beef cattle.

Results
There were 140 participants in the Master Cattlemen program in 2015. This is up 40% from last year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
303	Genetic Improvement of Animals
307	Animal Management Systems
311	Animal Diseases
601	Economics of Agricultural Production and Farm Management

Outcome #2

1. Outcome Measures

Increase in the farm gate value of livestock production in Georgia. Reported in millions of dollars.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	600

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Livestock production counts for the largest portion of agriculture in Georgia.

What has been done
Specialist and agents delivered crucial research based information to farmers and producers.

Results
Livestock and Aquaculture value increased by $600,848,905 (+35.77%).

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
303	Genetic Improvement of Animals
304	Animal Genome
307	Animal Management Systems
311	Animal Diseases
601	Economics of Agricultural Production and Farm Management

Outcome #3

1. Outcome Measures

Farm gate value of poultry production in Georgia. Value reported annually in millions of dollars.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Poultry production is one of Georgia's largest agricultural industry, and agriculture is Georgia's largest industry.

What has been done
A survey of Georgia Cooperative Extension county agents and commodity specialists was conducted for the purpose of providing annual county-level information for the value poultry production.

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
303	Genetic Improvement of Animals
307	Animal 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
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

Factors included the environment, temperature and farm management.

Media hype about kissing bugs transmitting Chagas disease garnered a lot of attention this year, requiring repeated media interviews, press releases, and contributions to newsletters and other in-house publications. Many individuals called county Extension offices and were referred to the Extension specialist for reassurance. Agents and specialists identified dozens of insects mistaken for kissing bugs and attempted to comfort an overwrought public.

Public concern about insects and their multilegged relatives like spiders and ticks increased due to media reports of impacts on human health. This year mosquito-transmitted viruses like dengue, chikungunya and Zika have grabbed attention and raised public alarm.

Extension agents receive many calls about water-related problems in private and public ponds and water treatment systems using ponds.

Dry period heat stress impairs the cow's lactational performance.

Market changes occurred, new producers entered the industry and cattle prices increased.

Outside forces have been at work in the global poultry industry with Avian Influenza (AI) affecting the ability of the genetics companies to export genetic stock to countries that do not have AI. No AI was detected in Georgia in 2015.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Post-program evaluations gave good input for subjects to be included in the next agenda for that program. Most are complimentary of the knowledge of the speakers, the program organization and the resources given in the participant's notebook. Validating Food Safety in Meat Processing in October 2015 had 23 attendees and was rated at 4.47 out of 5.0.

Research showed that cows fed betaine tended to produce more milk and have a higher milk percentage of fat compared to the control group.

No cases of Avian Influenza were reported in Georgia in 2015. The fall and winter of 2015 had one case of Vaccinal Laryngotracheitis (VLT) reported; this one case is significant.

Even during times that the industry is not too concerned about fertility and hatchability because of the AI threat, poultry operations continue to incorporate young staff that need educational opportunities. We have hosted several great workshops where attendance grew and made more site visits that were specifically to train young people, who are the future of a very important protein source for the U.S. consumer and potentially the global market.

Key Items of Evaluation

Post-program evaluations were informative, and programs were given excellent ratings. Industry continues to send staff to our trainings.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Food Safety

☑ 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
311	Animal Diseases	0%	0%	5%	0%
401	Structures, Facilities, and General Purpose Farm Supplies	0%	0%	5%	0%
501	New and Improved Food Processing Technologies	0%	0%	10%	0%
502	New and Improved Food Products	0%	0%	5%	50%
503	Quality Maintenance in Storing and Marketing Food Products	35%	35%	50%	0%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	30%	30%	15%	50%
723	Hazards to Human Health and Safety	35%	35%	10%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	2.5	0.2	2.0	11.8
Actual Paid	3.2	0.2	2.0	9.8
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**
353381	89799	268151	1326279
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
353381	89799	268151	1326279
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

Food safety research was conducted. County, regional, state and multistate meetings, trainings and workshops were held. Hands-on sessions took place. Research findings were shared via bulletins, newsletters, eXtension, layperson articles, industry publications, peer-reviewed journals, scientific proceedings, state and national conferences, broadcast media, websites and exhibits.

Specialists conducted ServSafe® certification training for food service personnel and general food safety classes for child care and personal care providers, adult consumers, children and youths. They also taught food preservation presentations and hands-on workshops for adults, youths and teachers, and conducted produce safety training for farmers and farmers market managers.

The five Hazard Analysis Critical Control Point (HACCP) certification courses offered in 2015 were attended by 64 people from Georgia, 55 from other U.S. states and five internationals. A new workshop, sponsored by SEMA (Southeastern Meat Association), on validating food safety in the meat industry was held in September.

A number of studies were conducted and successfully completed on long-term frozen storage of goat milk cheeses, which enabled dairy goat farmers to do year-round marketing of dairy goat products. Many other studies followed to develop and evaluate nutritional, chemical and food qualities of dairy goat products, such as cheeses, yogurts and ice-cream products.

Research was conducted on low-fat goat ice cream. Results were excellent.

Several hands-on canning workshops were conducted. The online self-study, Preserving Food at Home, from the National Center for Home Food Preservation (NCFHP) remains popular.

A new curriculum "PUT IT UP! Food Preservation for Youth" began national distribution on the NCFHP website.

Food safety trainings were also provided for farmers (focusing on produce safety).

A survey of small and very small goat meat processors in Georgia was conducted in an effort to gather information on existing slaughter interventions used for pathogen reduction as part of existing HACCP plans. The survey responses from 19 small and very small goat meat processors were assembled. The majority of the respondents (68%) reported that they were willing to adopt a new pre-slaughter spray washing method if it was less costly and effective.

Conducted a study to investigate the effects of copper and organic acids on E. coli inoculated goat meat. Copper and organic acids significantly reduced E. coli and had no undesirable effect on the color and texture of goat meat.

2. Brief description of the target audience

Food safety specialists targeted primarily county Extension agents. Extension agents targeted adult and youth consumers, food service employees, care providers, volunteers and media with food safety education.

Research scientists also targeted food industry professionals, regulatory agencies, farmers, producers and scientific peers.

3. How was eXtension used?

In this area, there were 10 members in the Food Safety Community of Practice. Overall, Georgia Extension faculty and volunteers answered 637 questions and touched 924 in eXtension.

V(E). Planned Program (Outputs)

1. Standard output measures

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	66135	638219	30699	296250

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

Patent Applications Submitted

Year:	2015
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	Extension	Research	Total
Actual	4	4	8

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of significant publications including articles, bulletins and extension publications.

Year	Actual
2015	29

Output #2

Output Measure

- Number of persons taking and passing the HACCP certification exam.

Year	Actual
2015	131

Output #3

Output Measure

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

Year	Actual
2015	22

Output #4

Output Measure

- Number of food handlers receiving ServSafe certification from Extension Agent programs.

Year	Actual
2015	851

Output #5

Output Measure

- Food Preservation website number of files viewed

Year	Actual
2015	4856000

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Average percentage of increase food safety test scores as a result of programs conducted statewide.
2	Multiple or repeat attendance by food processing company personnel (ie, company sends more than one person to our course(s) from one year to the next)
3	Number of agents increasing knowledge as a result of food safety training by specialist.

Outcome #1

1. Outcome Measures

Average percentage of increase food safety test scores as a result of programs conducted statewide.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	16

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
CDC estimates that each year roughly 1 out of 6 Americans (or 48 million people) gets sick, 128,000 are hospitalized, and 3,000 die from foodborne diseases.

What has been done
Extension Specialists trained agents to teach consumer food safety and food service education programs.

Results
Sixteen percent of participants showed an increase in knowledge of food safety.

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

Outcome #2

1. Outcome Measures

Multiple or repeat attendance by food processing company personnel (ie, company sends more than one person to our course(s) from one year to the next)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	21

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Food handlers require ongoing training to stay abreast of the latest in food safety science.

What has been done
ServSafe trainings were offered across the state. Food industry companies sent more than one person to our course(s) from one year to the next.

Results
Twenty-one percent of participants were repeats.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
503	Quality Maintenance in Storing and Marketing Food Products
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

Outcome #3

1. Outcome Measures

Number of agents increasing knowledge as a result of food safety training by specialist.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	171

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Economic Research Service (ERS) estimates the cost of foodborne illness from five foodborne illnesses alone at $6.9 billion per year. In recent years, Georgia had the highest incidence of salmonellosis of all 10 sites monitored by CDC's FoodNet system.

What has been done
Extension Specialists trained agents to teach consumer food safety and foodservice education programs. Specialists also developed curricula, print and on-line consumer resources, and program evaluations.

Results
Of agents attending training, 171 demonstrated on increase in knowledge about teaching food safety to clientele. Those agents then provided training to food service industry professionals.

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

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

Brief Explanation

Delays in the issuance of the Produce Safety Rule and the Preventive Control Rule under the FDA Food Safety Modernization Act (FSMA) made it difficult for the industry to know what the FDA expects of them.

The produce safety rule and the preventive control rule, along with a number of other new rules, were finally issued by the FDA in October and November 2015. Researchers are incorporating the requirements from each of the new rules into their training programs and giving the participants an opportunity to explore how they might affect his/her personal facility.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Evaluations from 70 participants in nine, local, hands-on workshops on canning revealed that participants rated their knowledge of proper canning methods, risks of improper canning and finding trusted resources greatly improved. All workshops received an average rating of five out of five for overall quality on these evaluations.

The online self-study, Preserving Food at Home, from the NCFHP remains popular also, with 1,330 users accessing the course in this report year. Average pre- and post-test scores are 70 and 90 percent; therefore, participants are improving their knowledge in some of the basic principles and content.

A new curriculum "PUT IT UP! Food Preservation for Youth" began national distribution on the NCFHP website. To date, 1,767 copies of the curriculum have been requested from educators in all 50 U.S. states and Washington, D.C. Based on their intended use, potentially over 51,000 youths could have been reached this year. Educators included those from Extension, Boys and Girls Clubs, Girl Scouts and home schools.

Evaluation from 60 farmers indicated that 63 to 77 percent of respondents increased knowledge for seven specific factors that affect produce safety. Almost 60 percent plan to inspect their facilities to determine where food safety improvements should be implemented.

Out of 56 care providers completing evaluations, 94 percent had a better understanding of how to protect children with food allergies; 85 percent improved knowledge of safe food

handling.

Out of 100 youths completing evaluations, 77 percent improved knowledge of proper hand-washing techniques, and 80 percent gained knowledge of safe food handling practices.

The outcomes of the project on low-fat goat ice cream achieved the certain NIFA priority areas such as (a) food safety, (b) sustainable agriculture of rural communities and (c) global food security and hunger through the development of small ruminant dairy products and their quality evaluation. The study showed that consumer acceptability was not affected by fat reduction in goat ice cream.

Our studies showed that the long-term frozen storage of goat milk cheeses is feasible, which enabled dairy goat farmers to do year-round marketing of dairy goat products. This is a remarkable contribution to the survivability and profitability of limited-resource farmers.

The HACCP program received good comments on the evaluation, scoring 4.63 out of 5.0 points. Some comments were:
• Quick way to learn the info to implement in industry
• Very clear and concise for anyone who has to write a HACCP plan or continue their education
• Good information delivered in a competent manner

The new Validating Food Safety workshop received a rating of 4.47 of 5.0 points from participants. Comments included:
• Very informative and organized presentation
• Good presentation and information; very useful to meat processing
• Very thorough and informative, and could benefit more members of our team
• Wide range of topics and in depth discussion
• Detailed, and representatives from every plant should hear

Key Items of Evaluation

Food safety training evaluations revealed an increase in knowledge across the board.

A new online self-study program has been used by educators in all 50 states.

Almost 60 percent of farmers plan to inspect their facilities for food safety improvements.

Caregivers showed a 94 percent increase in understanding of children with food allergies.

HACCP program was well received, rating an average of 4.63 out of 5.0 points.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Health & Nutrition

☑ 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
305	Animal Physiological Processes	0%	0%	40%	0%
724	Healthy Lifestyle	60%	0%	10%	0%
802	Human Development and Family Well-Being	25%	0%	50%	0%
806	Youth Development	15%	0%	0%	0%
	Total	100%	0%	100%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	2.0	3.5	0.0
Actual Paid	3.2	0.0	3.5	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**
424058	0	469264	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
424058	0	469264	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

Health and nutrition research and studies were conducted. County, regional, state and multistate meetings, trainings and workshops were held.

Research findings and information was shared via bulletins, newsletters, eXtension, layperson articles, industry publications, peer-reviewed journals, scientific proceedings, state and national conferences, broadcast media, websites and expos.

Faculty conducted in-school classes in a majority of Georgia's counties; Food Product Development contest and local practice sessions; and Statewide Fall Forum and State 4-H Council meetings that were focused on healthy lifestyles. Healthy Lifestyles Ambassadors were trained on research and relevant information. Healthy Lifestyle classes were conducted at 4-H Summer Camps.

Georgia 4-H, in collaboration with the Centers for Disease Control and Prevention, developed a lesson plan for elementary-aged youth on the topic of zoonotic diseases. The lesson teaches youth about the potential risks of spreading germs between animals and people.

Fort Valley State University continued to provide programs on health awareness to the community for self and family enhancement. The programs provided clients with basic health and nutrition information by utilizing hands-on practicums, introducing various behavior techniques, and providing pamphlets and brochures in needed topic areas.

2. Brief description of the target audience

Youth programs target school-aged children (grades four to 12) and 4-H youth leaders.

Extension identifies and develops educational programs for a diverse clientele, which includes the rural disadvantaged, working homemakers, small-scale and part-time farmers, community leaders, small-business operators, the scientific community, producers, industry professionals and other members of the general public in Georgia.

3. How was eXtension used?

In this area, there were 20 members and one leader from Georgia in six Communities of Practice. Overall, Georgia Extension faculty and volunteers answered 637 questions and touched 924 in eXtension.

V(E). Planned Program (Outputs)

1. Standard output measures

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	446649	987330	859564	1900092

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

Patent Applications Submitted

Year:	2015
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	Extension	Research	Total
Actual	5	0	5

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2015	15

Output #2

Output Measure

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

Year	Actual
2015	16

Output #3

Output Measure

- Website hits for diabetes, weight control, and cardiovascular disease.
  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	Percent of people at risk for cancer who chose a lower fat or lower sodium food item.
2	Percentage of participants that lose weight or improve fitness.

Outcome #1

1. Outcome Measures

Percent of people at risk for cancer who chose a lower fat or lower sodium food item.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	81

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The development of an estimated 20-40% of cancers are affected by dietary choices. Eating more fruits and vegetables, drinking more fluids, eating more whole grains, consuming more non-fat and low fat dairy foods and being more physically active may help reduce risk for numerous cancers.

What has been done
Extension Specialists trained agents to provide training to adults and youth on nutrition and lifestyle choices that will reduce or control chronic disease. Specialists also developed curricula,print and on-line consumer resources, and program evaluations.

Results
81% of participants indicated an intention to choose lower fat foods or season with herbs and spices instead of salt

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle

Outcome #2

1. Outcome Measures

Percentage of participants that lose weight or improve fitness.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Two-thirds of adults are overweight or obese. Obesity contributes to the development of many chronic diseases including diabetes, hypertension, cardiovascular disease and cancer. Three-quarters of Georgians are inactive which also contributes to these chronic diseases.

What has been done
Extension Specialists trained agents to provide training to adults and youth on nutrition and lifestyle choices that will reduce or control chronic disease. Specialists also developed curricula, print and on-line consumer resources, and program evaluations.

Results
100% of participants lost weight or improved fitness.

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle
802	Human Development and Family Well-Being

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

External factors that affected the outcome of participants were clientele who were unable to participate in classes because of the economy or personal obligations.

Also impacting the program were new federal policy changes in reference to health and nutrition eligibility programs.

Funding sources limit how many new materials, trainings, and programs specialists and agents can provide, particularly, how many face-to-face trainings can occur. Medicare, Medicaid and private health insurance benefits have been fluctuating, so access to care may prevent some individuals from implementing self-care and lifestyle recommendations. More funds and efforts may need to be directed toward the Hispanic/Latino population.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

In Health & Nutrition programs, changed behavior was monitored. Thirty percent of clients increased fruit consumption.

Classes and lesson plans were well received. Students demonstrated an increase in knowledge and understanding of health, nutrition and safety.

Overall, participants rate our programs high (e.g., 4.8 out of 5.0 for Cancer Cooking School) in helpfulness in thinking about and implementing health behavior changes that are associated with seven of the 10 leading causes of death in the United States.

Following completion of our programs, the majority of participants (more than 50 percent) indicated that they are "moderately likely" to "extremely likely" to engage in healthy behaviors like "Do physical activity for 30 minutes daily," "Read nutrition labels to choose foods," and "Season with herbs, spices and lemon juice instead of salt," which can help reduce the risk for several costly chronic diseases, including diabetes, heart disease, kidney disease, some cancers and obesity.

This year, as a result of one of our Cancer Prevention Cooking Schools, which is a grant-funded program delivered in collaboration with the American Cancer Society, a woman with five children, who had never had a pap smear, obtained the necessary screening, had cysts discovered and is scheduled for surgery.

Lastly, using pilot data collected in the fall of 2014, the new Walk Georgia website was launched in February 2015 and served 7,500 users, which logged more than 80,000 miles

by September 2015. During this time period, county Extension offices and the state Walk Georgia team hosted or helped sponsor 45 events promoting physical activity, reaching an estimated 44,768 people.

Key Items of Evaluation

Classes and lesson plans were well received. Students demonstrated an increase in knowledge and understanding of health, nutrition and safety.

The majority of participants (more than 50 percent) indicated that they are "moderately likely" to "extremely likely" to engage in healthy behaviors.

The new Walk Georgia website was launched in February 2015 and served 7,500 users, which logged more than 80,000 miles by September 2015.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Home & Life Skills

☑ 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
607	Consumer Economics	40%	40%	0%	0%
801	Individual and Family Resource Management	30%	30%	0%	0%
802	Human Development and Family Well-Being	30%	30%	0%	0%
	Total	100%	100%	0%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	4.8	1.0	1.0	0.0
Actual Paid	6.0	1.8	0.0	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**
678492	628593	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
678492	628593	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

Workforce" publications were developed and distributed to educate the clientele seeking employment. Programs in financial management and family resource management were implemented to strengthen limited-resource families and communities to enhance their quality of life.

One UGA program offered homebuyer education workshops to 163 consumers throughout the year. The workshops raised consumer awareness of programs available to assist with homeownership needs. Fourteen participants purchased homes valued at approximately $1.4 million. Extension offices that provide housing counseling and education continue to be listed on the HUD approved housing counseling agency listing.

FVSU's homebuyer education program conducted workshops for 109 consumers throughout the year. The workshops raised consumer awareness of programs available to assist with homeownership needs. Consumer education programs were conducted in several counties. We celebrated "America Saves Week" in February 2015 to increase awareness among institutions and individuals about the need to save money, reduce debt and build wealth. We also conducted programs to help low-income individuals and families set financial goals.

Extension provided 300 financial management educational programs ranging from 30 minutes to three hours in 106 Georgia counties. The programs focused on basic budgeting skills, managing credit and protecting against identity theft.

Radon continues to be an issue of concern in Georgia. In 2015, we worked with the Gwinnett County codes division to offer training for a new requirement to build radon-resistant new construction in unincorporated parts of the county. We also disseminated information through print, broadcast and social media. We reached 182,865 people through these tools.

The "Improving the Quality of Life of all Georgians through Computer Literacy" program offed low-intensity training classes, which introduced users to using computers, the Internet, email and Microsoft Word. The ultimate goal of this program is to improve the quality of life and economic vitality of the senior citizens and retirees of middle Georgia.

Through the "GREEN" (Georgia Residential Energy Efficiency Network) Project, 14 homes saved approximately $24,807.68 in energy efficient equipment upgrades and energy audits. Additionally, Georgia residents received 484 CFL bulbs for their homes for a $32,525.00 energy efficient equipment cost savings.

The partnership of FVSU and GeorgiaCares resulted in 1,392 Extra Help/Low-Income Subsidy applications completed and submitted, resulting in a potential savings of $5,568,000 for participants. Additionally 1,644 Qualified Medicare Beneficiary (QMB), Specified Low-Income Medicare Beneficiary (SLMB) and Qualified Individuals (QI-1) applications were completed--a potential savings of $2,069,467. Furthermore, 558 Medicare Part C enrollments and 3,356 Medicare Part D enrollments were completed during 16 statewide events.

Participants of the family resource management program increased their knowledge by 25%. Family resource management programs impacted over 200 limited resource individuals by increasing their knowledge motivating them to make positive behavioral changes to save money and reduce debt. The estimated saving was over $50,000.

2. Brief description of the target audience

Programs served the needs of minorities and rural areas that are classified as limited-resource clientele.

Specialists directed efforts to county agents. As a result, agents targeted youth, parents, senior citizens/retirees and the general public.

3. How was eXtension used?

In this area, there were 29 members and two leaders from Georgia in five Communities of Practice. Overall, Georgia Extension faculty and volunteers answered 637 questions and touched 924 in eXtension.

V(E). Planned Program (Outputs)

1. Standard output measures

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	169056	364182	302825	652352

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

Patent Applications Submitted

Year:	2015
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	Extension	Research	Total
Actual	5	0	5

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2015	6

Output #2

Output Measure

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

Year	Actual
2015	20

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Total number of consumers transitioning from rental to homeownership after participating in this program.
2	The percentage of participants who indicated a change in behavior, such as conserving water, purchasing Energy Star products or testing their well.
3	The number of participants who tested their homes for indoor air quality contaminants as a result of the educational programs conducted by county agents.
4	The percentage of participants who increased their knowledge of Indoor Air Quality issues as a result of the educational programs conducted by county agents.

Outcome #1

1. Outcome Measures

Total number of consumers transitioning from rental to homeownership after participating in this program.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The goal of homeownership for many consumers is unattainable. Housing is an essential need for all persons. Not only is it a place for shelter, but it also has deep psychological and emotional influences on people providing them with a feeling of safety and security. Many consumers are overwhelmed by the home buying process.

What has been done
The homebuyer education program helped consumers gain the knowledge they need to become successful homeowners. This includes ensuring that participants have an understanding of the buying process, mortgages, financial management, and how to prevent foreclosure and default. (Note: the measure may be under-reported this year due to a change in faculty.)

Results
Of the training participants, two used the information gained to transition from rental property to homeownership.

4. Associated Knowledge Areas

KA Code	Knowledge Area
607	Consumer Economics

Outcome #2

1. Outcome Measures

The percentage of participants who indicated a change in behavior, such as conserving water, purchasing Energy Star products or testing their well.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

The number of participants who tested their homes for indoor air quality contaminants as a result of the educational programs conducted by county agents.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	522

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Indoor air quality problems are caused by indoor contaminants including but not limited to radon, environmental tobacco smoke, biological contaminants, combustion by products, household products, volatile organic compounds, pesticides, asbestos, and lead. Health effects of these contaminants range from allergic reactions in sensitive populations to death. Additionally, health effects of some IAQ.

What has been done
Extension specialists trained agents to provide indoor air quality (IAQ) programming to target populations, teaching consumers how to reduce exposure to IAQ contaminants in home, work,and school environments. Specialists also developed curricula, print and online consumer resources, and program evaluations.

Results
A total of 522 training participants went on to test the homes for indoor air quality contaminants as a result of the educational programs conducted by county agents.

4. Associated Knowledge Areas

KA Code	Knowledge Area
607	Consumer Economics

Outcome #4

1. Outcome Measures

The percentage of participants who increased their knowledge of Indoor Air Quality issues as a result of the educational programs conducted by county agents.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	85

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Indoor air quality problems are caused by indoor contaminants including but not limited to radon, environmental tobacco smoke, biological contaminants, combustion by products, household products, volatile organic compounds, pesticides, asbestos, and lead. Health effects of these contaminants range from allergic reactions in sensitive populations to death. Additionally, health effects of some IAQ.

What has been done
Extension specialists trained agents to provide indoor air quality (IAQ) programming to target populations, teaching consumers how to reduce exposure to IAQ contaminants in home, work, and school environments. Specialists also developed curricula, print and online consumer resources, and program evaluations.

Results
Eighty-five percent of participants reported an increase in knowledge of Indoor Air Quality issues as a result of the educational programs conducted by county agents.

4. Associated Knowledge Areas

KA Code	Knowledge Area
607	Consumer Economics

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The housing market in Georgia continues to improve, but varies from county to county. Housing costs in some areas still exceed average earnings, making home ownership and renting challenging for some consumers.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Homebuyer education helped raise educational awareness on the programs available in the state to assist with homeownership.

Participants of the homebuyer education workshops became homeowners through group classes, one-on-one counseling and financial incentives offered by federal and state partners. Participants of the "GREEN" (Georgia Residential Energy Efficiency Network) Project, on average, increased their knowledge by 19 percent. FVSU homebuyer education classes impacted the overall state economy by transitioning 11 families to homeownership--an estimated value of over $1million.

522 people tested their homes for radon, identifying any potential Indoor Air Quality (IAQ) contamination.

Participants in the financial security program were significantly more likely to say they planned to use a written spending plan, contact creditors about late payments, pay bills on time and put money in savings before paying for other expenses. Better than 98 percent of participants reported that the topics covered in the workshop were useful, learning materials and handouts were helpful, the content of the course was easy to understand and that they learned something they could use.

Eleven estate planning presentations ranging from one hour to an hour and a half were provided as part of the Teacher's Retirement System of Georgia (TRSGA) pre-retirement seminars, through Annie's Project and as individual sessions given by county Extension agents to individuals and families from approximately 25 Georgia counties. Based on the data obtained at some of the presentations, the majority of participants' knowledge of property transfers, wills, power-of-attorney documents and living wills increased. In

addition, the majority of participants planned to create and/or revise their wills, power-of-attorney documents and living wills.

Key Items of Evaluation

Eleven families transitioned from renters to home owners.
The number of people testing their homes for IAQ was 522.
The majority of estate planning workshop participants planned to create and/or revise wills, powers-of-attorney and living wills.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Plant Production

☑ 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	10%	0%	5%	5%
123	Management and Sustainability of Forest Resources	0%	100%	0%	5%
201	Plant Genome, Genetics, and Genetic Mechanisms	0%	0%	10%	40%
204	Plant Product Quality and Utility (Preharvest)	20%	0%	10%	5%
205	Plant Management Systems	10%	0%	10%	5%
206	Basic Plant Biology	20%	0%	20%	20%
211	Insects, Mites, and Other Arthropods Affecting Plants	5%	0%	10%	5%
212	Diseases and Nematodes Affecting Plants	5%	0%	10%	5%
213	Weeds Affecting Plants	10%	0%	10%	5%
216	Integrated Pest Management Systems	20%	0%	15%	5%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	24.7	0.0	21.1	0.0
Actual Paid	28.5	0.0	22.0	2.0
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**
3180432	0	2922842	272057
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
3180432	0	2922842	272057
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

Research and studies were conducted. County, regional, state and multistate meetings, trainings and workshops were held. Field days, on-site visits, tours and hands-on sessions took place. Diagnostic services were provided.

Research findings and information were shared via bulletins, newsletters, eXtension, layperson articles, industry publications, handbooks, peer-reviewed journals, scientific proceedings, state and national conferences, broadcast media, websites, expos and trade magazines.

Native plant propagation
The Native Plant Materials Development Program continued to grow and exceed project goals. We continued to propagate local ecotypes of early successional habitats from wild-collected seed and added new species to our nursery.

Vegetables
Studies on biology and diversity of the pathogens worked toward determining fungicide resistance development in pathogen populations, improving detection of fungicide resistance and analyzing soil microbial communities under different cultural practices in order to facilitate development of more effective disease management strategies.

A series of studies were conducted to evaluate the efficacy of registered and new fungicides to reduce vegetable diseases.

Fruits and berries
Due to testing conducted at the blueberry research farm, BASF has now approved application of fungicides.

Multiple plant growth regulators were evaluated. We performed RNA-sequencing and other gene expression studies and identified genes associated with fruit detachment.

We evaluated a novel strategy aimed at depositing biocontrol bacteria into watermelon seeds by flower inoculation, resulting seeds would be protected against infection by the plant pathogen.

The research was done to mitigate peach tree short life syndrome that can increase peach tree longevity.

Pecans

The Ponder Variety Test continued with data being taken on replicate trees of about 25 cultivars and selections from sources outside of our breeding program.
Samples of the pecan scab pathogen were collected from Georgia orchards and tested for sensitivity to five different fungicides.

Row crops
Field trials were conducted, in which chelated forms of copper, iron, manganese and zinc were applied. Effects on disease were measured.
We cloned a gene for parthenogenesis from a naturally apomictic grass species, and it showed to function in a closely related sexual plant (a minor grain crop). The gene also was also shown to function in two major grain crops, rice and maize.

Faculty continued to release new cultivars to industry that significantly improve crop performance.

In order to estimate the genetic diversity and population structure of RGHs across a wide range of switchgrass germplasms, four NBS-LRR RGHs were selected to analyze the haplotypic diversity of these genes in 480 genotypes.

Work was done to analyze growing stevia as well as its use in intercropping with peach in middle Georgia.

Biofuel
We grew different species of useful plants and animals in an ecologically sound biological village system using environmentally sound management practices to develop the area into a self-sustaining system on limited-resources for improving quality of life for Americans.

2. Brief description of the target audience

Target audience includes

- Agents
- Scientific peers
- Conservation agencies
- Policy makers
- Utility companies
- Landowners
- Retail establishments
- Consumers
- Students
- Producers
- Consultants
- Industry personnel
- K-12 teachers
- Regulatory agencies
- Agribusinessmen
- Small, minority, and limited resource landowners and farmers

3. How was eXtension used?

In this area, there were 62 members and 13 leaders from Georgia in nine Communities of Practice. Overall, Georgia Extension faculty and volunteers answered 637 questions and touched 924 in eXtension.

V(E). Planned Program (Outputs)

1. Standard output measures

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	574477	18431389	88039	2824610

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

Patent Applications Submitted

Year: 2015

Actual: 10

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	Extension	Research	Total
Actual	75	225	300

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2015	472

Output #2

Output Measure

- Number of significant publications including articles, bulletins and extension publications.

Year	Actual
2015	266

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of disease samples processed by diagnostic laboratory.

Outcome #1

1. Outcome Measures

Number of disease samples processed by diagnostic laboratory.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	7198

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
When problems requiring diagnostics present in the field, time is always a critical factor. From identifying a threat to recommending a treatment plan, timely transfer of information from field to lab is crucial. Rapid diagnosis can make all the difference in successfully preserving a crop or efficiently eliminating a harmful pathogen.

What has been done
There were 7737 disease management recommendations based on 7198 disease samples processed in either the two Plant Disease Diagnostic Clinics, the Nematology Lab or independently by Extension Specialists in the Plant Pathology Department for 2015. There are more disease management recommendations than disease samples processed because at times more than one disease many be present that may require more than one disease management recommendation.

Results
Diagnostic services were provided for 7,198 disease samples.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The industry has been slow to adopt new cultivars, showing a preference to grow known varieties, even if they have to spray more chemicals.

Recent higher market prices for pecans have caused a boom in pecan tree planting in the last couple of years. As additional orchards are being planted, it is natural that interest in new pecan cultivars is high.

'Desirable' continues to be scab susceptible. As a result of this susceptibility and wet weather, the UGA pecan team no longer recommends planting the cultivar 'Desirable' in southern Georgia. Growers continue to fund the breeding program and invite the investigator to give talks on replacement cultivars to plant.

The economic importance of blueberries for the state has increased even more since this project was first submitted, with Georgia ranking first in the nation in production in 2014. Hence, priorities focused on understanding and managing blueberry diseases.

Concerns with potential loss of insecticide registrations associated with pollinator protection and court ordered changes in registrations impact some projects.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Results from 2015 field trials and laboratory experiments supported our hypotheses for each cropping system.

One study revealed that the variability of the RGHs for the four loci was significantly higher (80 percent) within switchgrass populations. The results further revealed that the analyzed RGHs were under positive selection in the switchgrass accessions. Recombination at variable frequencies was detected at switchgrass RGHs, which may have the potential to generate new resistance genes with new specificities in response to pathogen variability in the pathogen population.

Pecan studies revealed that fertilizer placement within the herbicide strip only reduced fertilizer cost and maintained production for increased profit to growers and reduced impact on the environment.

Studies in one project identified effective cultural practices, fungicides and resistant plant genotypes that significantly reduce losses caused by the diseases. Additionally, studies in the project determined molecular mechanisms of fungicide resistance and diversity of the

pathogens, which facilitate development of more effective disease management programs.

Blueberry plant growth regulators were found to greatly enhance the extent of fruit loosening and detachment. Multiple genes associated with fruit detachment were identified.

Mechanical harvesting is of high priority for blueberry growers. Our research enabled the identification of fruit detachment points, growth regulators that accelerate the process and genes that regulate detachment. Such information is critical in developing tools for improving harvesting efficiency and genotypes with better harvesting characteristics.

More growers are becoming aware of the devastating effects of blueberry replant disease and are using recommended practices for management.

Integrated Pest Management (IPM) is a proven program for efficient management of insect pests in cotton and soybean production systems. The use of insecticides remains a critical component of IPM programs, but they are used only when absolutely necessary. Conservation of natural controls also allows growers to minimize risk of pest in cotton and soybean systems. Efforts to minimize risk of all insect pests are the primary goal of our IPM program.

By elucidating the epidemiology of bacterial fruit blotch of cucurbits, we determined that we can introduce beneficial, biocontrol bacteria into watermelon seeds by flower inoculation. This approach has tremendous potential for improving bacterial fruit blotch management, as it can be easily adopted by vegetable seed companies, and it is compatible with other disease management strategies.

The overall purpose of the Landowner Initiative for Forestry Education (LIFE) program is to increase outreach, awareness and technical assistance to minority and limited-resource forest landowners about land management and its value. To date, more than 600 landowners have increased their knowledge. Over 125 landowners have been educated and trained through direct contact. And, 40 under-served clients and landowners have completed estate plans, securing approximately $1.2 million in assets throughout various regions in Georgia.

Key Items of Evaluation

Our research in blueberries has enabled the identification of fruit detachment points. More growers are becoming aware of the devastating effects of blueberry replant disease, and are using recommended practices for management.

We determined that we can introduce beneficial, biocontrol bacteria into watermelon seeds by flower inoculation.

The LIFE program, to date, has educated over 600 landowners.

Different species of useful plants for biofuel were grown in an ecologically sound biological village. A gene for parthenogenesis was cloned.

New cultivars, patients,and germplasm were successfully developed and released to industry.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Sustainability, Conservation & the 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
133	Pollution Prevention and Mitigation	40%	40%	40%	40%
403	Waste Disposal, Recycling, and Reuse	30%	30%	30%	30%
605	Natural Resource and Environmental Economics	30%	30%	30%	30%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	14.2	0.0	6.5	0.0
Actual Paid	21.1	1.2	7.5	4.0
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**
2360587	431036	1005565	544114
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
2360587	431036	1005565	544114
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

Research was conducted on sustainability, conservation and environmental topics. County, regional, state and multistate meetings, trainings and workshops were held. Field days, on-site visits, tours and hands-on sessions took place. Diagnostic services were provided.

Research findings were shared via bulletins, newsletters, eXtension, layperson articles, industry publications, peer-reviewed journals, scientific proceedings, state and national conferences, broadcast media, websites and exhibits.

Our faculty continued to meet the increasingly complex issues in water, soil and air. They focused research and educational program on climatology, soil health and fertility, water management and policy, water management, and air quality.

Researchers evaluated the emissions from poultry production farms across the state. We developed some strategies that will abate/mitigate emissions. We developed a calculation tool that estimates the Greenhouse Gas emissions from poultry production farms and incorporated the strategies that can help to reduce these emissions.

Research showed that Camellia oleifera can be grown in south Georgia for production of camellia oil. Yields are similar to high-yielding Chinese cultivars. Biodiesel was successfully made from camellia oil. Commercial propagation was started with rooted cuttings delivered to a commercial operation.

We established one new greenhouse demonstration project in 2015. To-be-sold crops were grown using the system, and growers were trained. We delivered three in-state presentations regarding the system. We carried out several in-state, hands-on trainings.

Researchers purchased a liquid scintillation instrument to evaluate radon levels in water. A training on radon and uranium in water and well-water testing was conducted for Extension agents and home inspection and radon mitigation professionals.

Workshops were held with state, national and international audience on principles of ventilation, heating and environmental control for broiler houses. Individual energy audits were done on poultry farms.

Our study confirmed that the sweet sorghum has the potential for bioethanol production. Hydrothermal carbonization (HTC) of sweet sorghum bagasse produced similar energy density as lignite coal. Coupling HTC with ethanol production can generate additional biofuel outlet and can potentially improve the overall cost economics.

Biochar was produced by pyrolysis using Paulownia wood. Creeping bentgrass plant growth was evaluated to mimic a US Golf Association root zone. Based on the results, it appears the addition of biochar would improve water retention and increase overall plant growth in sand-based root zones. A putative cellulose synthase gene from Paulownia was also identified using molecular methods that will help understand wood formation for bioenergy purpose.

Field experiment were conducted on energycane production on marginal lands. Energycane is a perennial plant and full biomass yield is obtained only from the second year onwards. Two graduate students were trained in nanotechnology techniques and are enrolled in graduate thesis research involving nanotechnology specialization.

2. Brief description of the target audience

Audience includes poultry farmers, poultry industry environmental personnel, poultry industry flock supervisors and county agents.

Also targeted are public sector (federal and state) decision-makers, agents, environmental interest groups, natural resource users, local entrepreneurs, commercial greenhouse and nursery growers, food product companies, industry representatives, consultants, contractors, media and the general public.

3. How was eXtension used?

In this area, there were 54 members and one leader from Georgia in 15 Communities of Practice. Overall, Georgia Extension faculty and volunteers answered 637 questions and touched 924 in eXtension.

V(E). Planned Program (Outputs)

1. Standard output measures

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	266199	2270402	275482	2349570

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

Patent Applications Submitted

Year:	2015
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	Extension	Research	Total
Actual	62	100	162

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2015	105

Output #2

Output Measure

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

Year	Actual
2015	175

Output #3

Output Measure

- Total number of site visits made to small, minority, and limited resource landowners and farmers
  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	Total number of site visits made to small, minority, and limited resource landowners and farmers

Outcome #1

1. Outcome Measures

Total number of site visits made to small, minority, and limited resource landowners and farmers

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	325

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Of Georgia's 24.7 million acres in forestland, 17.96 million acres are owned by private nonindustrial landowners. Georgia's forest resource creates a 12.7 billion dollar direct economic impact in the state. Several research studies have documented that small, minority and limited resource landowners and farmers are often not aware of and/or been denied access to opportunities that will aide in sustaining and/or increasing their land productivity in the area of forest management.

What has been done
The LIFE program specialist provided one-on-one education for small, minority, and limited resource landowners and farmers.

Results
A total of 325 site visits were made to small, minority, and limited resource landowners and farmers. This is an increase of 8% from last year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

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
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

Recent drops in energy prices have had a "cooling effect" on the demand for energy efficiency improvements, but we continue to provide energy efficiency educational programs and continue to see some improvements made.

Policy changes affecting conservation and management of soil and water resources could increase or decrease the need, demand, and effectiveness of research and Extension activities. Similarly, changes in government regulations and funding may either increase or decrease the need for research and Extension programs in the environmental sciences.

Drought events may increase the need for more efficient irrigation, and thus, make funding more readily available. Funding opportunities always depend on the health of the economy. Government regulations concerning water use may also increase funding opportunities, while competing public priorities may decrease it. Competing programmatic challenges always need to be weighed, and if other programmatic areas become more or less important, then that will affect progress of this program.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The recycling rate in some counties in Georgia has increased, resulting in reduction of waste going to the landfills.

The findings from studies indicate that greenhouse gases emitted from poultry production farms are mainly from the use of fossil fuel. The study informed the poultry producer of the source of the emissions and privded recommendations to help reduce emissions and save the producers in fuel cost.

Camellia can be successfully grown in the lower South. New cultivars will be released in the next few years. More research is needed on production, harvesting, crushing and economics. Biodiesel was successfully made from camellia oil.

Faculty program outcomes and impact were outstanding.

All growers who adopted the automated irrigation technology, or participated in the demonstration projects have decided to continue to use the technology. The growers were very pleased with crop quality, disease reduction, faster production schedules, higher

quality and an increase in management time due to less attention paid by managers to the automated watering system. In one location, we were able to increase revenue by just over $1.00 per square foot. For any nursery, this is a significant amount.

The number of requests for energy audits has dropped off considerably as a result of reduced energy prices, but the demand for information is still strong as indicated by attendance at our workshops. These continue to have a waiting list with more than 100 attendees and approximately 100 additional online participants for each workshop. Of those who attended a training that was evaluated, 90 percent reported an increase in knowledge.

Key Items of Evaluation

Recycling rates increased.

Producers reduced emissions based on scientists' recommendations.

Camellia oil was successfully made into biofuel.

Growers continued to use water-saving technologies after the trial period.

Participants reported a 90 percent increase in knowledge.

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Urban Agriculture

☑ 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	10%	0%	10%	0%
111	Conservation and Efficient Use of Water	10%	0%	10%	0%
124	Urban Forestry	10%	0%	10%	0%
206	Basic Plant Biology	10%	0%	10%	0%
211	Insects, Mites, and Other Arthropods Affecting Plants	5%	0%	5%	0%
213	Weeds Affecting Plants	10%	0%	10%	0%
216	Integrated Pest Management Systems	10%	0%	10%	0%
404	Instrumentation and Control Systems	5%	0%	5%	0%
405	Drainage and Irrigation Systems and Facilities	5%	0%	5%	0%
602	Business Management, Finance, and Taxation	10%	0%	10%	0%
605	Natural Resource and Environmental Economics	5%	0%	5%	0%
806	Youth Development	10%	0%	10%	0%
	Total	100%	0%	100%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	3.5	0.0
Actual Paid	2.5	0.0	4.0	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**
282705	0	536301	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
282705	0	536301	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

Urban agriculture research was conducted. County, regional, state and multistate meetings, trainings and workshops were held. Field days, on-site visits, tours and hands-on sessions took place. Diagnostic services were provided.

Research findings were shared via bulletins, newsletters, eXtension, layperson articles, industry publications, peer-reviewed journals, scientific proceedings, state and national conferences, broadcast media, websites and exhibits.

Specialists held 20 trainings in tree-care worker safety and hosted the National Urban Extension Conference in Atlanta. Urban trees affect water resource management, storm water management, soil erosion and green space preservation. Tree-care work is very dangerous. We worked closely with OSHA and UGA Extension to reach these workers.

Within the program, an active applied research project was implemented to address new or recurring turfgrass disease problems or knowledge voids. In 2015, applied and basic research projects resulted in one peer-reviewed scientific article published, as well as 11 research reports published or submitted.

Furthermore, one abstract and proceeding was published. In 2015, 17 field and greenhouse trials evaluating 108 treatments were implemented. Results from these investigations have been applied to Extension activities and delivery of information to both ends of the turfgrass market--producer-chemical industry and the consumer-turfgrass professionals.

Implementation of statewide and local trainings has been the core of this program. Under this plan, three international professional educational conferences; 13 states and regional industry, professional and educational conferences/workshops/seminars, as well as seven county programs, were conducted. Additionally, 519 turfgrass diagnosis and disease management for physical and distant diagnosis diseases samples, as well as 476 turfgrass nematode samples submitted through the nematode assay system, have been analyzed and processed. Recommendations were given to clientele.

Ten site visits as requested by county agents and Georgia stakeholders were performed. It is not uncommon to answer four to five calls a day on diagnosis and/or control of turfgrass diseases. Other efforts included attending and delivering information to underrepresented clientele and in a bilingual format. Several innovative programs were implemented. Examples include computer-based trainings for industry personnel, full-day workshops at the Golf Course Superintendent Association of America, bilingual publications and safety-training workshops. In 2015, nine meetings with a liaison and/or an advisory expert

were given to industry, commodity and government entities.

Six statewide trainings and 10 monthly webinars for commercial landscapers regarding landscaping in urban areas were offered.

Two trees were nominated in 2015 for the "Historically Significant Trees" project.

We conducted fungicide trials in the greenhouse. We produced web-based and email alerts to inform growers of disease management recommendations. Numerous presentations were made to growers and green industry professionals at local (county-sponsored) and statewide programs. We completed fungicide resistance screenings.

2. Brief description of the target audience

- Homeowners
- Urban ag industries personnel
- County agents
- Scientific peers
- Public policy makers and regulators
- Golf course superintendents
- Turfgrass professional managers
- Landscape companies
- Sod producers
- Grounds maintenance personnel
- Sports fields managers
- General green industry personnel
- Master Gardeners
- Arborists
- City foresters
- Ornamental plant breeders
- The general public

3. How was eXtension used?

In this area, there were 25 members and six leaders from Georgia in four Communities of Practice. Overall, Georgia Extension faculty and volunteers answered 637 questions and touched 924 in eXtension.

V(E). Planned Program (Outputs)

1. Standard output measures

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	133048	10007354	9832	739562

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

Year:	2015
Actual:	1

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	Extension	Research	Total
Actual	3	1	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2015	18

Output #2

Output Measure

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

Year	Actual
2015	35

Output #3

Output Measure

- Number of research trials conducted
  Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Number of disease management recommendations based on disease samples processed

Year	Actual
2015	7737

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Pre and post tests, email follow-up evaluation
2	Number of website hits, page views, or downloads from the Center for Urban Ag site.

Outcome #1

1. Outcome Measures

Pre and post tests, email follow-up evaluation

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Number of website hits, page views, or downloads from the Center for Urban Ag site.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	337772

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Center provides an organization structure designed to facilitate scientific cross-fertilization among investigators, agents, industry and homeowners.

What has been done
The center maintained a website with information and resources for agents, industry professionals, producers, and homeowners.

Results
The site received 337,772 website hits, page views, or downloads.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
124	Urban Forestry

206	Basic Plant Biology
211	Insects, Mites, and Other Arthropods Affecting Plants
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
404	Instrumentation and Control Systems
405	Drainage and Irrigation Systems and Facilities

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

Drought regulations impacted some programs.

Prices of exported grass vary greatly depending on the type and variety. Each country develops its own pest risk criteria and requirements for allowing entry of plant material. The export is dependent upon the country accepting a shipment of turfgrass from Georgia.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Interstate and international exports are an essential part of Georgia agriculture. In Georgia, the turfgrass industry is large and impactful. This and related industries contribute a total of $7.8 billion annually to the economy. There are a myriad of turfgrasses that have been developed and grown in Georgia.

Exports are key for the sod production sector of the turfgrass industry. In 2014, the international exports of turfgrass were 336,265 square feet of sod, 375,081 pounds of stolon/rhizomes and 42,725 pounds of certified seed. Often the ability of the Georgia Department of Agriculture to issue the proper phytosanitary certificate and ultimately the ability of the producer to export the grass is determined by the presence or absence of turfgrass-specific diseases. Therefore, with a specialty crop like turfgrass, exports are frequently dependent on cooperation between the Georgia Department of Agriculture, the grower, competent and certified disease diagnostic labs, and UGA Extension specialists to gather all needed information and fulfill the proper shipment entry requirements.

Ornamental plant production in Georgia has a farm gate value of more than $500 million annually. Value-added impact in landscape development and maintenance adds more than $500 million to the total value of Georgia ornamental production. Providing disease

identification and management recommendations is estimated to save Georgia growers and landscape managers more than $50 million each year.

Alerting growers and developing protocols to limit the spread and introduction of boxwood blight kept boxwood blight out of production nurseries.

Fungicide resistance was identified. With the labeling of new fungicides effective against oomycete pathogens, the pathogens will likely still be managed by growers. New diseases, such as boxwood blight, have also become established within the state and are spreading.

Effective controls are not yet available.

Key Items of Evaluation

Turfgrass and related industries contributed a total of $7.8 billion annually to the economy.

In 2014, the international exports of turfgrass were 336,265 square feet of sod, 375,081 pounds of stolon/rhizomes and 42,725 pounds of certified seed.

Providing disease identification and management recommendations is estimated to save Georgia growers and landscape managers more than $50 million each year.

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Youth & Family Development

☑ 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
134	Outdoor Recreation	5%	0%	0%	0%
135	Aquatic and Terrestrial Wildlife	5%	0%	0%	0%
136	Conservation of Biological Diversity	5%	0%	0%	0%
206	Basic Plant Biology	5%	0%	0%	0%
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	5%	0%	0%	0%
307	Animal Management Systems	5%	0%	0%	0%
315	Animal Welfare/Well-Being and Protection	5%	0%	0%	0%
608	Community Resource Planning and Development	5%	0%	0%	0%
802	Human Development and Family Well-Being	10%	20%	0%	0%
806	Youth Development	50%	80%	0%	0%
	Total	100%	100%	0%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	7.4	1.0	0.0	0.0
Actual Paid	8.1	2.0	0.0	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**
904656	718393	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
904656	718393	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

Specialist disseminated parenting fact sheets and bulletins on a variety of topics, including relationship education, parenting and brain development. They also provided parenting and child care education classes to improve the knowledge and skills of adults caring for children.

Georgia 4-H provided opportunities for youth to make meaningful decisions regarding 4-H programs at the county, district and state levels. We offered living history, ropes, team building, ecology, outdoor studies, animal studies and environmental education programming to our users. Additionally, the 4-H Ambassador Program offered a Science Engineering and Technology (SET) track; "Water Friends" curriculum was offered to fifth-grade clubs; and National 4-H Science Day took place in October.

During the reporting period, the Fort Valley State University 4-H Program facilitated 12 4-H Science Meeting sessions, 12 4-H Leadership/Citizenship Meeting sessions, 12 Healthy Living Meeting sessions and 12 4-H Entrepreneurship Meeting sessions. The 4-H program facilitated a 4-H STEM Healthy Living two-week, summer day camp on campus.

The University of Georgia Department of Animal and Dairy Science and 4-H staff, in cooperation with the Georgia Department of Education's agricultural education program, offered livestock show projects to 4-H and FFA members in the state. In these programs, young people raised and cared for cattle, sheep or swine. After the animals are trained, youths competed in showmanship competitions and use these experiences as the basis for other competitions, including record keeping, public speaking and Quiz Bowl events.

In the 2014-2015 school year, there were 4,565 animals entered as state projects. These included 203 steers, 508 beef heifers, 387 dairy heifers, 1,977 market hogs, 312 market lambs, 128 breeding ewes and 1,050 market goats. There were 2,302 youths participating in these projects.

At the State Livestock Show, 4-H'ers competed in horse events as well as other events such as public speaking, art, and drawing. Prior to competition, riders were given a test on horse management, health, etc., and the scores were added to the points they earn in the riding classes. The riders with the top scores and 4-H'ers competing in communication events qualify for the Southern Regional 4-H Horse Championships.

The family life project offered programs on decision-making, time management, and parenting skills for individuals and families. These programs were offered to caregivers, seniors and youths.

2. Brief description of the target audience

Specialists directed efforts to educating and preparing county agents. As a result, agents reached parents, guardians, grandparents, child care providers, and other caregivers of children and youth.

Georgia Youth Summit is targeted for high school youth and adult teams from counties in Georgia. Civic engagement in-service training is targeted for county faculty. Civic engagement web-based materials are targeted for adults working with youth, including county faculty and 4-H volunteers, as well as youth. National 4-H Conference targets high school-aged youth. 4-H Ambassadors target high school aged youth and adult partners.

Operation Military Kids is targeted to families, with a priority on youth, who have members serving in the armed forces or reserves.

Classes (day and residential) were offered to public, private and home school groups. Programs were offered to Girl Scouts, Boy Scouts, 4-H and many other youth groups. Ropes courses were offered to all types of users--college students, police officers, ROTC, cheerleaders and more. Outreach was provided to schools. We reached all ages. We offered training for teachers and 4-H agents. Additionally, programs geared for in-school 4-H club meetings and sessions at statewide meetings were offered. Eight-12th graders were eligible to serve as SET Ambassadors.

3. How was eXtension used?

In this area, there were 60 members and two leaders from Georgia in eight Communities of Practice. Overall, Georgia Extension faculty and volunteers answered 637 questions and touched 924 in eXtension.

V(E). Planned Program (Outputs)

1. Standard output measures

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	145128	99105	8381501	5723533

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

Patent Applications Submitted

Year:	2015
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2015	Extension	Research	Total
Actual	12	0	12

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2015	18

Output #2

Output Measure

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

Year	Actual
2015	35

Output #3

Output Measure

- Number of Leadership, Entrepreneurship, and Science Meeting sessions coordinated

Year	Actual
2015	5312

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Total number of youth participants that will enhance decision making skills and develop positive leadership skills, increase their knowledge of entrepreneurship education, and increase their knowledge of science education.
2	4-H total enrollment

Outcome #1

1. Outcome Measures

Total number of youth participants that will enhance decision making skills and develop positive leadership skills, increase their knowledge of entrepreneurship education, and increase their knowledge of science education.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	16744

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
It is critical to create and implement youth programs that meet the needs and challenge the strengths of all youth that live in Georgia and throughout America.

What has been done
FVSU 4-H youth programs were offered across the state.

Results
Of youth participants, 16,744 enhanced decision making skills and developed positive leadership skills, increased their knowledge of entrepreneurship education, and increased their knowledge of science education.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
802	Human Development and Family Well-Being
806	Youth Development

Outcome #2

1. Outcome Measures

4-H total enrollment

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2015	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
206	Basic Plant Biology
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection
608	Community Resource Planning and Development
802	Human Development and Family Well-Being
806	Youth Development

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

Family resources, school relationships, and child care regulations impact this planned program.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

In order to keep children in child care safe and healthy, child care professionals need to understand and implement practices to prevent abuse and neglect, report suspected abuse and neglect, when needed, reduce the spread of infectious diseases and decrease the risk of unintentional injuries. The Basic Core Skills for Child Care training program helped more than 500 child care professionals learn these skills. As a result of the program, child care professionals reported that their knowledge of specific topics related to child abuse and neglect issues, infectious diseases, and injury prevention and control improved. These child care professionals also intended to adopt or continue recommended health and safety practices in their child care program.

During the 2014-2015 school year, the 4-H Environmental Education Program reached 39,584 participants, and since its inception in 1979, the total program has served more than 1,074,600 participants. Evaluation data collected throughout the year demonstrates a statistically significant increase in participants' (1) positive relationships with their classmates, (2) positive relationships with their teacher, (3) knowledge about the ecosystems of Georgia, (4) knowledge that their behaviors affect the environment and (5) connection to nature.

One areas of focus of the FVSU 4-H Healthy Living program is tobacco awareness as it relates to the substance abuse prevention. One of our 4-H'ers was able to get his mother and father to stop smoking cigars as a direct result of what he had learned in his 4-H Healthy Living club activity.

Based on national 4-H common measures pre- and post-test results and post-program evaluations of each respected area, there were increases in youth participants acquiring knowledge in the following areas: Science education--83 percent of youth participants increased their knowledge of science technology; leadership--81 percent of youth participants acquired strategies to enhance their ability to make good decisions; and entrepreneurship--85 percent of youth participants learned information that taught them

how to start their own business.

Key Items of Evaluation

The Basic Core Skills for Child Care training program helped more than 500 child care professionals learn these skills. These child care professionals also intended to adopt or continue recommended health and safety practices in their child care program.

The 4-H Environmental Education Program reached 39,584 participants.

One 4-H'er was able to get his mother and father to stop smoking.

Based on national 4-H common measures pre- and post-testing results and post-program evaluations, greater than 80 percent of youth participants acquired knowledge across the board.

VI. National Outcomes and Indicators

1. NIFA Selected Outcomes and Indicators

Childhood Obesity (Outcome 1, Indicator 1.c)	
0	Number of children and youth who reported eating more of healthy foods.
Climate Change (Outcome 1, Indicator 4)	
0	Number of new crop varieties, animal breeds, and genotypes whit climate adaptive traits.
Global Food Security and Hunger (Outcome 1, Indicator 4.a)	
0	Number of participants adopting best practices and technologies resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources.
Global Food Security and Hunger (Outcome 2, Indicator 1)	
0	Number of new or improved innovations developed for food enterprises.
Food Safety (Outcome 1, Indicator 1)	
0	Number of viable technologies developed or modified for the detection and
Sustainable Energy (Outcome 3, Indicator 2)	
0	Number of farmers who adopted a dedicated bioenergy crop
Sustainable Energy (Outcome 3, Indicator 4)	
0	Tons of feedstocks delivered.