

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Plants & Plant Products (Non-Food Related)

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	10%		0%	
102	Soil, Plant, Water, Nutrient Relationships	10%		0%	
111	Conservation and Efficient Use of Water	10%		0%	
112	Watershed Protection and Management	10%		0%	
201	Plant Genome, Genetics, and Genetic Mechanisms	10%		0%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%		0%	
204	Plant Product Quality and Utility (Preharvest)	10%		0%	
205	Plant Management Systems	10%		0%	
206	Basic Plant Biology	10%		0%	
213	Weeds Affecting Plants	10%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	69.6	0.0	35.5	0.0
Actual	41.4	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
517750	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
687079	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
4686941	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Develop and conduct workshops, educational meetings, demonstrations, and field days
- Direct clientele contact: on- site visits, phone calls, mail and emails
- Develop and produce educational products and materials
- Conduct tours and demonstrations
- Publish educational materials
- Media work through print, radio, TV and internet
- Partnering with commodity associations, groups, Master Gardeners, and traditional and nontraditional groups
- Coordination of Master Gardener programs
- Develop improved crop production systems that maximize profitability and sustainability

2. Brief description of the target audience

Growers/producers
 Consultants
 Agri Business/Allied Industries
 Horticulture production and Service Businesses
 Master Gardeners
 General Public
 Other researchers
 Students
 Extension Specialists
 Teaching faculty
 Public

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	206500	436000	0	0
Actual	102873	109482	5048	201

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

Patent Applications Submitted

Year: 2010

Plan: 10

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	10	100	
Actual	10	0	10

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of agronomic production education meetings (multi-topic)

Year	Target	Actual
2010	250	249

Output #2

Output Measure

- # of demonstrations/on-farm research

Year	Target	Actual
2010	192	237

Output #3

Output Measure

- # of farm visits

Year	Target	Actual
2010	364	5114

Output #4

Output Measure

- # of row crop field days
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- # of educational meetings, demonstrations, field days, site visits, and other group events held to educate commercial and consumer clientele in horticulture

Year	Target	Actual
2010	650	17741

Output #6

Output Measure

- # of educational meetings, demonstrations, farm visits and/or field days held to educate clientele on forage production and grazing management

Year	Target	Actual
2010	2600	8240

Output #7

Output Measure

- # of Arkansas Commodity Board Grants received

Year	Target	Actual
2010	50	1

Output #8

Output Measure

- # of federal grants and contracts

Year	Target	Actual
2010	25	1

Output #9

Output Measure

- # of Plants & Plant Products clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

Year	Target	Actual
2010	201000	6737

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of commercial forage producers who gained knowledge related to management technology
2	# of commercial forage producers who gained knowledge related to production practices
3	# of new Master Gardeners trained and certified
4	# of commercial forage producers who changed or adopted a new forage management practice
5	# of non commercial participants who changed or adopted a new forage and/or grazing management practice
6	# of clientele using soil testing
7	# of clientele using plant testing
8	# of clientele using water testing
9	# of clientele (non-duplicated) who use the DD50 program for improved rice production efficiency
10	# of impacted acres using the DD50 program for improved rice production efficiency
11	# of clientele using RICESEED program
12	# of acres planted based on output from RICESEED program
13	# of Master Gardeners who recertified
14	# of new horticultural businesses and new farmers markets
15	Acres of harvested wheat (all)
16	Yield (bushels per acre) of harvested wheat (all)
17	Acres of harvested soybeans (all)

18	Yield (bushels per acre) of harvested soybeans
19	Acres of harvested rice (all)
20	Yield (pounds per acre) of harvested rice (all)
21	Acres of harvested cotton (all)
22	Total yield (lbs) of harvested cotton
23	Acres harvested of hay (all)
24	Yield (tons)of harvested hay (all)

Outcome #1

1. Outcome Measures

of commercial forage producers who gained knowledge related to management technology

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	200	4039

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Winter feeding is the single largest cost of maintaining a livestock herd. The average hay feeding period in Arkansas begins in early November and lasts until early April for a typical length of 135 days. By using improved forage and grazing management practices, producers can reduce the length of the hay feeding period and extend their grazing season to 300 days or more. The 300 Day Grazing Program was designed to help producers achieve that goal.

What has been done

The 300 Day Grazing Program was developed in 2008 by the Animal Science advisory committee, which is made up of county agents and animal science faculty. It includes 8 different forage management practices that can be demonstrated on producer farms to help extend the grazing season. It is a statewide demonstration program designed so a county agent could work with a producer to implement one of the management practices based on the producer's operation. In addition, three farms were selected to implement as many practices as needed to achieve a 300 Day grazing season. A control demonstration was conducted on the Livestock and Forestry Branch Station where Animal Science faculty implemented the same practices on a demonstration herd with the goal of a 300 Day grazing season.

The demonstration practices include: adding legumes to pastures, rotational grazing, stockpiling warm- and cool-season grasses, grazing winter and summer annual forages, and reducing hay losses during storage and feeding. A step-by-step protocol for each demonstration was written for agents and producers to ensure consistency among demonstrations.

Results

Livestock and Forestry Branch Station - Batesville: A herd of 38 fall calving cows was managed under the 300 day grazing demonstration protocols. Hay was only fed for 18 days the first winter of the project and 54 days the second winter. Fertilizer cost was reduced compared to previous management of the pastures. Forage quality of properly managed and fertilized stockpiled fescue was adequate to meet the nutritional needs of the herd. In contrast, forage quality of stockpiled fescue managed as a typical producer would did not meet the herd's nutritional needs. This result has direct application for Arkansas farms. Grazing management timing and planting of clover was coordinated to establish excellent red clover stands to use for weaned calves. In 2009 excess hay harvested from the fescue/clover field after grazing contained 14% CP and 59% TDN which is well above normal for that maturity of forage. The red clover forage provided quality forage that allowed the calves to be grazed an additional 60 after weaning resulting in an added value of \$92 per calf in 2010.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
206	Basic Plant Biology
213	Weeds Affecting Plants

Outcome #2

1. Outcome Measures

of commercial forage producers who gained knowledge related to production practices

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	200	899

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
206	Basic Plant Biology
213	Weeds Affecting Plants

Outcome #3

1. Outcome Measures

of new Master Gardeners trained and certified

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	700	412

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Building stronger leaders and stronger MG programs

The Master Gardener program continues to be a strong and vital program in Arkansas with continued interest in becoming a MG volunteer. Many counties are beginning to struggle to get volunteers to step up into a leadership role. Another concern is that as the program continues to grow--(62 county based programs and 3000 volunteers) management issues arise.

What has been done

The state MG advisory board has a committee whose mission is to plan and implement a leadership training. To encourage better participation statewide, funds were raised at the state MG convention earmarked for leadership. We were able to pay the registration fee for two Master Gardeners per county. We had over 100 in attendance at the two day event which was held at the Winthrop Rockefeller Institute. Topics ranged from conflict management to project selection and maintenance to how social media can benefit your program. Master Gardeners were encouraged to take this information back to their counties and implement it.

Results

Evaluations were outstanding regarding the usefulness of the material presented. Several counties have implemented changes in their programs and have developed tools to use in recruiting new Master Gardeners as well as leaders. Due to the successful program we have also seen a rise in membership in our state advisory board. A statewide Facebook account was begun to help share information. A garden blog has also had a strong following. Not only did this event build the MG program in each county, but the Master Gardener volunteers who organized the event built strong tools for their own leadership abilities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
206	Basic Plant Biology
213	Weeds Affecting Plants

Outcome #4

1. Outcome Measures

of commercial forage producers who changed or adopted a new forage management practice

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	65	95

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water

112	Watershed Protection and Management
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
206	Basic Plant Biology
213	Weeds Affecting Plants

Outcome #5

1. Outcome Measures

of non commercial participants who changed or adopted a new forage and/or grazing management practice

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

of clientele using soil testing

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

of clientele using plant testing

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

of clientele using water testing

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

of clientele (non-duplicated) who use the DD50 program for improved rice production efficiency

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

of impacted acres using the DD50 program for improved rice production efficiency

Not Reporting on this Outcome Measure

Outcome #11

1. Outcome Measures

of clientele using RICESEED program

Not Reporting on this Outcome Measure

Outcome #12

1. Outcome Measures

of acres planted based on output from RICESEED program

Not Reporting on this Outcome Measure

Outcome #13

1. Outcome Measures

of Master Gardeners who recertified

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	500	412

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Home Gardening is a growing commodity in Arkansas and generates volumes of calls in county offices statewide. Arkansas has had a strong volunteer program in the Master Gardener program and it continues to grow and strengthen. In addition, statewide public gardening events are on the increase. While we feel that extension programs are well known throughout the state there is always room for improvement. It is also important that university based information is readily available to all Arkansans in a quality package.

What has been done

Making sure materials used by county agents and Master Gardeners are of the highest quality, we have conducted numerous classes on PowerPoint, graphic design and digital photography across the state. These materials are then posted on the ftp site for all counties to use. In addition, a garden calendar was designed and printed by the Master Gardener program. These for sale publications are being used not only as a fund raiser, but also as a marketing tool. A photo contest was held statewide to choose the pictures for the calendar. Ten gardening tips per month are posted in the calendar and there is a listing of all county offices. The logo is on each page of the calendar. We provided five free copies to each county office to use with their local leadership and made the calendars available to people statewide. The home and garden section of the extension website is the most popular site. In addition we started an Arkansas Master Gardener Facebook account and a garden blog. New display boards were designed and are available for use at fairs and trade shows statewide. An interactive gardening display was conducted at the 2010 Arkansas Flower & Garden Show.

Results

County Agents and Master Gardeners statewide have had easy access to quality PowerPoint programs that they have used in county programming. Over 1500 gardening calendars have gone out statewide. The display at the Arkansas Flower & Garden Show was one of the most popular sites at the show generating hundreds of questions on raised bed vegetable gardening, rain barrels and gardening in general. The "In the Garden" blog had over 22,000 readers just since May alone. With good communication we have seen events fill up quickly. Our state conference was full with 420 attendees and a waiting list to get in. The MG Study trip to Costa Rica filled up in less than two weeks of being announced.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships

- 111 Conservation and Efficient Use of Water
- 112 Watershed Protection and Management
- 204 Plant Product Quality and Utility (Preharvest)
- 205 Plant Management Systems
- 206 Basic Plant Biology
- 213 Weeds Affecting Plants

Outcome #14

1. Outcome Measures

of new horticultural businesses and new farmers markets

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	2	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The interest in buying locally grown agricultural products has grown tremendously in the US and is reflected in the increasing number of farmers market across the US. Consumers are more concerned with the quality of the produce and environmental impact of shipping goods from producers thousands of miles away. When cut flowers are shipped a long distance before reaching consumers, freshness and quality are often sacrificed during long-distance shipping. Buying produce directly from local farmers and growers reduces 'produce mileage' (the distance that produce travels)/ carbon footprint, which in turn decreases global environmental pollution.

What has been done

Because of the increasing acceptance and demand for locally grown specialty cut flower products in the regional and national markets, there has been an increasing demand for workshops and educational materials to support this expanding market. To be efficient with limited resources, a group of University collaborators and an industry group, have joined forces to respond to this increasing demand for information and support.

Results

Collaborative efforts are focused on production and marketing risks emphasizing the transition to new production systems. The team targeted potential and existing specialty cut flower growers in

the Mid-South. The project impacted grower knowledge through a regional two-day grower workshop, an indexed resource manual, an extension fact sheet, and electronic resources in specialty cut flower production and marketing.

The workshop was attended by 95 people from 23 states. The overall project goal increased knowledge and skills of current/potential specialty cut flower growers, university faculty, and other agricultural professionals and industry influencers in the topic of specialty cut flower production and marketing. As a result of participating in this project growers are in a better position to manage overall production and price risks. Feedback from a post-workshop survey indicated that:

- 32% changed or used a new marketing strategy
- 24% joined a professional or trade organization
- 92% networked with other growers
- 44% consulted with outside experts (e.g. lawyer, accountant, grower consultant)
- 52% changed my crop schedule or operation practices
- 16% started a cut flower business
- 56% diversified my products or services
- 48% enhanced my business pricing and/or record keeping processes
- 36% adopted a new production technique
- 52% adopted new cut flower crops

4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems

Outcome #15

1. Outcome Measures

Acres of harvested wheat (all)

Not Reporting on this Outcome Measure

Outcome #16

1. Outcome Measures

Yield (bushels per acre) of harvested wheat (all)

Not Reporting on this Outcome Measure

Outcome #17

1. Outcome Measures

Acres of harvested soybeans (all)

Not Reporting on this Outcome Measure

Outcome #18

1. Outcome Measures

Yield (bushels per acre) of harvested soybeans

Not Reporting on this Outcome Measure

Outcome #19

1. Outcome Measures

Acres of harvested rice (all)

Not Reporting on this Outcome Measure

Outcome #20

1. Outcome Measures

Yield (pounds per acre) of harvested rice (all)

Not Reporting on this Outcome Measure

Outcome #21

1. Outcome Measures

Acres of harvested cotton (all)

Not Reporting on this Outcome Measure

Outcome #22

1. Outcome Measures

Total yield (lbs) of harvested cotton

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	916	1200000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Input costs involved with cotton production continue to increase exponentially from year to year. More specifically seed costs have increased to record highs. One bag of cotton seed fifteen years ago would cost approximately \$80.00 per bag. With introductions of new technologies and seed treatments a bag of cotton seed in 2010 cost approximately \$550.00 per bag. The result is approximately \$100 to \$120.00 per acre for seed. This ranks planting as the most expensive application during a cotton season.

What has been done

In 2008-2010 a proposal was submitted and funded by the Cotton Incorporated Grower Support Committee to determine if optimal seeding rates could be identified for individual soil types or points of interest across a cotton field. The research was conducted on three farms in Southeast, Central and Northeast Arkansas. Soil variability was determined and separated by soil type through electrical conductivity measurements. Soil electrical conductivity (SEC) zones were generated using a Veris 3100 mobile electrical conductivity cart. Seeding rates ranging from 25,000 to 68,000 were evaluated spatially for each soil type across the field. Fields were harvest with yield monitors and data was analyzed spatially for each seeding rate.

Results

Preliminary results of the study indicate that higher seeding rates were required in heavier soil types to acquire an even stand, while sandy soil textures required less seed. Based on these results, five fields consisting of 430 acres were planted with variable rate planters in 2010. Seeding rates in these fields ranged from 27,000 seeds/A on sandy areas to 50,000 seeds/A on heavy clay areas of the field. Even stands were achieved on all fields and the average seeding costs were reduced approximately 25% or \$20.00 per acre. If we consider that there is at least 200,000 acres of fields that contain enough variability for this technology to apply, the savings in seed cost could reach a minimum of \$4.0 million dollars.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

Outcome #23

1. Outcome Measures

Acres harvested of hay (all)

Not Reporting on this Outcome Measure

Outcome #24

1. Outcome Measures

Yield (tons)of harvested hay (all)

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Response to NIFA Focus Areas)

Brief Explanation

Effort and expenditures previously reported to Plant and Plant Products were shifted to Global Food Security and Hunger in response to NIFA's Focus Areas.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)

- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Comparisons between program participants (individuals, group, organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention
- Other ()

Evaluation Results

Key Items of Evaluation