

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Commercial and Consumer Horticulture

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
124	Urban Forestry	6%		10%	
202	Plant Genetic Resources	9%		10%	
204	Plant Product Quality and Utility (Preharvest)	10%		15%	
205	Plant Management Systems	50%		40%	
502	New and Improved Food Products	7%		20%	
901	Program and Project Design, and Statistics	3%		5%	
903	Communication, Education, and Information Delivery	15%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	13.0	0.0	2.0	0.0
Actual Paid Professional	20.0	0.0	3.0	0.0
Actual Volunteer	22.4	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
480000	0	118654	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
480000	0	118654	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1986628	0	656340	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conduct research to evaluate cultivars of traditional and nontraditional horticultural crops and ornamental plants.
- Conduct research into crop cultural systems, particularly the feasibility of horticultural crops in rotation with agronomic crops.
- Conduct research to develop "seed to market" production systems for high-value alternative horticultural crops like cilantro and herbs.
- Conduct research to develop sustainable and/or organic production systems for commercial horticultural crops.
- Provide demonstrations and education and disseminate information to support Oklahoma's commercial horticulture industry, with emphasis on electronic resources.
- Survey Oklahoma Consumers (Gardeners) to assess the needs and wants of the gardening public
- Upgrade the web-based delivery
- Review and revise annually or as needed Fact sheets and other publications.
- Educational programs are conducted based on public interest and County Educator requests.
- Participate and support eXtension both Consumer Horticulture/Master Gardener Community of Practice and the Grape Community of Practice sites
- Conduct Master Gardener/Junior Master Gardener Training
- Conduct pesticide training and education
- Assist in Youth at Risk and Obesity/School Gardens.

2. Brief description of the target audience

Horticultural crop producers, commodity groups, food processors, landscape professionals, input suppliers such as seed and chemical companies, peer scientists, extension specialists and county professionals, horticultural dealers and merchants, greenhouses, Master Gardeners, home owners, communities, and youth.

3. How was eXtension used?

In 2012 approximately 10 responses were provided by state specialists to users of eXtension through the Ask an Expert feature of the Gardens, Lawns & Landscape Community of Practice eXtension web site. In 2012 the Grape Community of Practice eXtension website was managed by an extension fruit specialist from another land grant institution and by an extension employee at Oklahoma State University. The top article for the grape site was the Spanish version of "Parts of the Grape Vine: Shoots" with 7,825 views. That makes it the 48th most viewed page on eXtension out of 88,513 pages. Overall the Grape Community of Practice had 232,679 page reviews and 174,198 unique page reviews.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	189005	0	11940	0

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	11	9	20

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- New Master Gardeners trained

Year	Actual
2012	232

Output #2

Output Measure

- Manuscripts submitted for consideration of publication in peer-reviewed journals

Year	Actual
2012	20

Output #3

Output Measure

- Number of Extension publications completed - fact sheets, newsletters, trial reports, web-based materials

Year	Actual
2012	107

Output #4

Output Measure

- Number of statewide "Oklahoma Gardening" shows produced

Year	Actual
2012	34

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of horticultural crop producers newly certified as organic
2	Number of volunteer hours provided to community horticulture programs statewide
3	Number of home gardeners experiencing increased awareness and knowledge about environmental issues and IPM principles
4	Extension outreach to underserved new and beginning producers of horticultural food crops.
5	Research and outreach to fresh market horticultural food crop producers to extend their growing season to include cool season greens crops produced in high tunnels.

Outcome #1

1. Outcome Measures

Number of horticultural crop producers newly certified as organic

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	11

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
502	New and Improved Food Products

Outcome #2

1. Outcome Measures

Number of volunteer hours provided to community horticulture programs statewide

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	47263

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Rapid urban growth in many areas of the United States coupled with increased interest in the environment and home gardening have prompted an ever-increasing number of garden and landscape inquiries. Along with this interest, comes a multitude of gardening questions needing individual explanation and too few Extension staff members to answer each question. Many of these questions are seasonal in nature and are relatively easy to answer assuming that one has horticulture training.

What has been done

Oklahoma Master Gardeners are trained, supervised and recruited to: 1) improve overall efficiency in providing one-on-one service to the non-commercial horticulture clientele in the county, 2) provide group learning and teaching activities for non-commercial clientele, 3) allow agents to develop proactive Extension programs, and 4) form a group of Extension volunteers to support additional consumer horticulture efforts.

Trainees participate in a 10 - 13 week course receiving between 40 - 56 hours of course work on subjects including: basic plant science, vegetables, fruits, nuts, ornamentals, lawns, diagnosing pest problems, soils, and other related topics. Upon completion of the training period, satisfactorily passing an exam on materials and topics covered, and donating between 40 - 56 hours of volunteer time to the Horticulture program, the trainees are certified and awarded the title of Oklahoma Master Gardener.

Examples of Master Gardener Volunteer activities include: staffing plant clinics to answer phone and walk-in questions, manning educational exhibits, maintaining demonstration gardens, community beautification projects, serving as 4-H Horticulture leaders and judges, speaking at club/civic meetings, teaching horticulture activities at nursing homes, etc., assisting in horticulture mailings, newsletters, etc., and appearing on TV and radio.

Results

The service from the Master Gardener volunteer program has proven to be a highly popular means of extending the knowledge of the Oklahoma State University Cooperative Extension Service to the residents of Oklahoma. The Oklahoma Master Gardener Program now has 22 counties participating in the program as of January 2013. The following data was provided by 14 of the 22 counties. Approximately 232 new Master Gardeners were trained during the 2012 training season. Close to 1,000 active Master Gardeners volunteered their time, contributing

approximately 47,263 volunteer hours resulting in over 4,324,786 educational interventions with Oklahomans and as many as 1,234+ educational and community programs and activities being conducted in their communities in 2012. This translates to over \$826,630.00 in service that was donated by volunteers (wage rate of \$17.49/hour was used, which includes a 12% estimate of fringe benefits. This hourly rate is the assigned wage for nonagricultural workers in 2010 for the state of Oklahoma as published by The Independent Sector, an organization that "serves as a national forum to encourage giving, volunteering and not-for-profit initiative," http://www.independentsector.org/programs/research/volunteer_time.html). Reports are gathered yearly at the beginning of the following year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
124	Urban Forestry
205	Plant Management Systems
903	Communication, Education, and Information Delivery

Outcome #3

1. Outcome Measures

Number of home gardeners experiencing increased awareness and knowledge about environmental issues and IPM principles

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	4324786

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Public concern for the environment continues to increase. Traditional landscape management practices have involved extensive use of pesticides, fertilizers, and other materials that could harm the environment if not used properly. Integrated Pest Management (IPM) uses biological principles, cultural practices, and some chemicals to control pest populations with minimal environmental impact.

What has been done

Over 1,234 gardening programs and IPM workshops, educational programs/seminars and Oklahoma Gardening segments are used to educate the public of IPM practices and other related

gardening topics. Research in conjunction with the IPM TIP team has initiated work using perennial ornamental plants to attract pollinator and predatory insects to home gardens.

Results

Homeowners are better educated and can make choices in maintaining the landscape that are more environmentally friendly. The impact of the research is that additional pollinator insects and predatory insects should result in greater fruit yield from home vegetable gardens and consumers will use fewer insecticides in their gardens.

4. Associated Knowledge Areas

KA Code	Knowledge Area
124	Urban Forestry
205	Plant Management Systems
903	Communication, Education, and Information Delivery

Outcome #4

1. Outcome Measures

Extension outreach to underserved new and beginning producers of horticultural food crops.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	45

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Underserved new and beginning producers of horticultural food crops have traditionally been difficult to contact due to the diverse locations and types of crops that they are growing. Because of this, the flow of information to these farmers has been limited. Basic information related to field preparation, soil fertility, pest management, and crop management is needed to increase these farms chances of being successful.

What has been done

A project was funded by a grant from the USDA Risk Management Agency (RMA) developed two workshop/field days. The workshop/field days were used to increase new and beginning horticulture food crop farmer's knowledge and skills of production risk management techniques

including business and insurance considerations, field preparation, soil fertility, plasticulture, cover crops, pest management, and food safety considerations.

Results

Approximately 90% of participants agreed they were more informed about soil management for sustained production, including soil sampling and testing. 55% of conference participants strongly agreed they are more aware of continuing risk management education opportunities for specialty crop producers. Farmers estimated the economic benefit to their operation from participating in the workshop/field days ranged from \$250-\$2500 with the average benefit being \$889 per farm.

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems

Outcome #5

1. Outcome Measures

Research and outreach to fresh market horticultural food crop producers to extend their growing season to include cool season greens crops produced in high tunnels.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1077

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Developing season extension techniques for fresh vegetable production is a key aspect of helping farmers increase the number of months that they are able to produce and sell fresh produce in the state. Leafy greens include both brassica greens and spinach which can be eaten fresh and cooked. Both types have high levels of nutrients and are considered very healthy foods for adults and school children. Our project determined not only what varieties perform best in high tunnels, but also which crops would have the highest potential for profitability for fresh producers within the state.

What has been done

A research and outreach project was partially funded by a specialty crop grant from the Oklahoma Department of Agriculture, Food, and Forestry (ODAFF) to help support efforts to increase the production of edible horticulture crops. A final report of the project is available at: <http://www.hortla.okstate.edu/industry/vegetables/pdf/HighTunnelLeafyGreensReport2012.pdf>.

Accomplishments for 2010-2012 season:

Trials were initiated at four different sites around the state including: Ardmore, Oklahoma City, Lane, and Tulsa. Field days were held at Tulsa, OKC, and Lane during the first year in addition the Ardmore site had five different tour groups that visited their leafy greens trial site. These outreach efforts provided an excellent opportunity for local growers to see the crops being grown in high tunnels and to ask questions related to production and marketing. All site specific reports are included in the 2011 MP-164 Vegetable Trial Report available at: <http://www.hortla.okstate.edu/industry/vegetables/index.htm>

Accomplishments for 2010-2012 season:

Leaf lettuces for the second year consisted of the previous year's romaine and the addition of a red leaf lettuce to the trial replacing broccoli raab which was dropped from the trials. Another change included using transplants for the lettuce entries to speed up the establishment and improving the yield due to multiple crops being harvested vs. only one harvest for the first season. Field days were held at Tulsa, OKC, and Lane during the second year again the Ardmore site had five different tour groups that visited their leafy greens trial site. These outreach efforts provided an excellent opportunity for local growers to see the crops being grown in high tunnels and to ask questions related to production and marketing. All site specific reports are included in the 2012 MP-164 Vegetable Trial Report available at: <http://www.hortla.okstate.edu/industry/vegetables/index.htm>

Results

Farmers (larger-scale and smaller market gardeners), consumers, and school children have benefited from the information generated from these state-wide trials. As a result of the trials farmers now have information they need to increase their production of fresh vegetable crops to twelve months of the year. The result is that their cash flow should increase during the winter months which in the past was not as profitable compared to the frost free months. School children and consumers have benefited by having a supply of fresh leafy greens for salads and for cooked vegetables during the fall-winter-early spring.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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
- Appropriations changes
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Low levels of formula funding.)

Brief Explanation

Limited formula funding has reduced the ability to conduct research and outreach with farmers.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Developing season extension techniques for fresh vegetable production

Profit potential from these crops varied because of market demand. Spinach commanded the highest price per pound with an average of \$4.00/lb. Brassica greens crops averaged \$1.30 to 1.50/lb. while Swiss chard went for \$2.00/lb. and lettuce for \$3.00 per whole plant. Gross receipts from a typical 20' x 96' high tunnel could range from \$2,696 to \$7,373 for cool season greens grown during the winter months. When information from both years is considered the authors conclude that a crop mix of leafy vegetables has potential to produce salable crops throughout the coldest months of the year without supplemental heat in a high tunnel. These results will be used to help farmers provide highly nutritious fresh produce for school children and the general public while helping farmers generate income during a previously non-productive season.

Key Items of Evaluation