

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Agricultural and Environmental Quality

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
101	Appraisal of Soil Resources	0%	0%	16%	0%
102	Soil, Plant, Water, Nutrient Relationships	0%	0%	15%	30%
104	Protect Soil from Harmful Effects of Natural Elements	0%	0%	2%	0%
112	Watershed Protection and Management	2%	0%	16%	0%
123	Management and Sustainability of Forest Resources	21%	75%	0%	10%
131	Alternative Uses of Land	0%	25%	2%	10%
133	Pollution Prevention and Mitigation	0%	0%	16%	20%
135	Aquatic and Terrestrial Wildlife	0%	0%	0%	10%
136	Conservation of Biological Diversity	0%	0%	3%	0%
205	Plant Management Systems	21%	0%	3%	0%
213	Weeds Affecting Plants	0%	0%	6%	0%
215	Biological Control of Pests Affecting Plants	0%	0%	0%	20%
302	Nutrient Utilization in Animals	0%	0%	10%	0%
403	Waste Disposal, Recycling, and Reuse	6%	0%	6%	0%
605	Natural Resource and Environmental Economics	50%	0%	5%	0%
	Total	100%	100%	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	35.0	1.0	10.0	8.5
Actual Paid Professional	32.0	0.1	11.3	11.7
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
514183	6311	480690	475720
1862 Matching	1890 Matching	1862 Matching	1890 Matching
547376	5308	3806796	104077
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

The University of Kentucky and Kentucky State University are engaged in a wide range of programs geared towards achieving greater harmony between agriculture, people, and the environment. All components of the research and extension focus on the broader goal of practicing agricultural and related disciplines in a manner consistent with improving sustainability of resources and protecting ecosystem integrity. Program examples include:

- Master Gardener Program consisting of 12-15 three-hour sessions related to gardening, resource management, botany, soils, pesticides and pesticide safety
- Master Logger program consisting of three one-day sessions focusing on best management practices, safety, laws and regulations
- Integrated Pest Management programs including programs aimed at homeowner application of pesticides and fertilizers
- Woodlot owner education program focusing on best management practices, harvesting, contracts, wood products and alternative forest products
- Water quality, Water Pioneer, daycamps, and forestry camp programs aimed at developing a better understanding of stewardship between youth and the environment.

Agricultural and environmental research included:

- the influence of forest harvesting on hydrology and water quality
- challenges of large mammal conservation and restoration
- prescribed fire as a management tool in forests
- water research as it relates to karst landscapes, groundwater, and streamside management.
- creation of alternative riparian zone treatments for surface water management
- mine research related to disposal and management of waste water
- preventing adverse compaction of soil on mine reclamation sites
- methods for dealing with insect pests of urban landscapes
- environmental impact and hazard of chemical pesticides in landscapes and turf

KSU Extension Programs continued to support efforts related to policies to improve environmental quality

- Gardendata.org
- Organic Agricultural Programs

KSU research projects focusing on improving environmental quality include: soil conditioners and constructed wetlands for water quality improvement, the ecological impact of organic, conventional and biotechnology enhanced cropping methods are being evaluated using sweet corn as a model, weed control options in organic sweet corn and potato production is under study, and leaf beetle biodiversity is being used as an indicator of habitat biodiversity and environmental health in many Kentucky production and natural systems.

2. Brief description of the target audience

- General public
- Community volunteers advanced in horticulture instruction and willing to give back to the community
- Individual commercial loggers in Kentucky and those out of state wishing to do business in Kentucky
- Woodlot owners
- Farm owners and operators
- Homeowners

3. How was eXtension used?

Resource materials were accessed and considered for program use

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	214601	931063	139984	595270

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	20	34	54

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Graduate student research assistants
- Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Published research journal articles

Year	Actual
2012	30

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of individuals adopting practices that protect water quality.
2	Number of people utilizing forest management practices.
3	Number of acres upon which new or additional conservation practices are used.
4	Number of individuals adopting one or more practices related to conserving, sustaining and/or protecting soil resources.

Outcome #1

1. Outcome Measures

Number of individuals adopting practices that protect water quality.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	23917

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Several rural and urban Kentucky communities are facing issues related to water quantity, conservation, and quality. Across the state, there are existing challenges of protecting valuable natural resources from growth and pollution. Now more than ever, there is a great need for public education involving water education, adequate food production systems, and community resources.

What has been done

Eight counties piloted a Natural Resource Environmental Science Academy. The goal was to offer an on-going developmental learning experience in Natural Resource and Environmental Sciences for youth with high academic ability in a challenging educational setting. Also, Carter County 4-H Teen Council members have been trained over the past 3 years to help teach water education to elementary and middle school students. In Jefferson County, more than 2500 elementary and middle school students expanded their knowledge about water and how they as consumers play an important role in preserving it for future existence. Students engaged in in-class school enrichment programs and took part in an out of classroom experiential learning programs by participating in the Louisville Water Company (LWC) Adventure in Water Festival.

Results

Counties used curricula that included lessons on watersheds and water quality. When given the option to participate in the youth 20-gallon challenge, ninety-five students pledged to save over 9,200 gallons of water, or approximately 99 gallons per student. Due to projects in Jefferson county, students demonstrated an increase in knowledge of how erosion causes turbidity in the waterways, that salt water creates greater or more osmotic pressure that forces objects to the

surface of water, and how to identify water qualities based on mixture types and their properties.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
133	Pollution Prevention and Mitigation

Outcome #2

1. Outcome Measures

Number of people utilizing forest management practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	4451

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The public visibility of the forestry and forest products industries is low in Kentucky, even though one out of every nine manufacturing workers is employed by a forest products company. There continues to be a need to educate the public on the value of forestry in the state and proper methods to sustain these resources.

What has been done

Specific youth programs have been conducted, including the Wood Magic Science Fair program (designed to raise the awareness of wood products' importance for elementary school-age children), Junior 4-H Forestry, Senior 4-H Forestry, and Win With Wood. These programs work to complement the basic environmental education that children receive in grades 1-12.

Results

Programs raise the awareness of the importance of the wood and wood products industries and the importance of their products in everyday life. These programs have not only benefited students. Some Kentucky Division of Forestry personnel have been trained in Wood Magic, for

example, and are independently using portions of the Extension program materials in their line of work.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources

Outcome #3

1. Outcome Measures

Number of acres upon which new or additional conservation practices are used.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	10480

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Environmental stewardship and natural resource conservation are important to the overall well-being of individuals, families and communities. However, education in this area is a challenge due to the complexity of the issues and the lack of awareness about how even small individual behaviors impact the environment.

What has been done

KSU collaborated with the Nature Conservancy to provide GIS training and support in land management to develop a prioritization plan based on assessing known biological resources in need of protection. Another resource in Kentucky is the Woodland Owners Short Course (WOSC), which targets private woodland owners and is designed to assist them in the management of their woodlands. The WOSC is the largest woodland owner educational program offered in the state and is a collaboration between Extension and more than 10 forestry and natural resource agencies and organizations.

Results

KSU, in conjunction with the Nature Conservancy, developed data and analyses in order to document gaps in the currently protected land base (easements, etc). In addition, more than 124 people attended the 2011 WOSC representing 20,712 woodland acres. One hundred percent of the WOSC participants indicated they would use some of the information in the management of their woodlands and that attending the program better prepared them to manage their woodlands. The long-term impacts from this program will result in increased revenue earned from timber sales for those using a professional forester, improved wildlife habitat, increased woodland productivity, and improved woodland health.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land

Outcome #4

1. Outcome Measures

Number of individuals adopting one or more practices related to conserving, sustaining and/or protecting soil resources.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	13050

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Environmental stewardship has come to the forefront, as farmers push grain production on more sloping and environmentally sensitive land. Fortunately, most of the soils (usually Memphis Silt Loam) in Union County are very productive and without natural fragipans. However, soil erosion can be a very difficult issue if not properly addressed. Extension, along with NRCS and FSA, have been successful in getting farmers to be aware of and quickly correct potential problems.

What has been done

Educational opportunities have been made available through farmer meetings and news media for farmers to gain knowledge and put into use Best Management Practices. A major thrust has been to advise and assist farmers using the very latest, unbiased, researched-base information.

Results

As a result of these efforts, no-till cover crops and gully plugs are being used on a record number of acres, even with limited financial assistance. Wildlife and farmers thrive as drainage waters run clear as a result of truly dedicated professional agricultural workers in Union County.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Government Regulations
- Competing Programmatic Challenges

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

See outcomes 1-4 for results

Key Items of Evaluation

Follow up calls, pre-post surveys