

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Water Management

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
111	Conservation and Efficient Use of Water	50%		50%	
112	Watershed Protection and Management	50%		50%	
	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	20.0	0.0	10.0	0.0
Actual Paid Professional	19.9	0.0	15.2	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
256116	0	437293	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
256116	0	1182949	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
2191462	0	2624046	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

We published research findings generated through evaluation of best management practices to efficiently manage available water resources, to limit off-site contaminant transport from production, processing, and landscaping systems, to utilize alternative water sources and to remove contaminants from impaired/alternative water sources were utilized in this effort.

Specialists, researchers and agents developed and conducted research and educational programs utilizing direct and indirect educational methods to support efficient utilization and conservation of water resources, to develop alternative water supplies, to implement best management practices on agricultural production and landscapes to protect water resources from contaminants, to promote proper management of surface and ground water resources, to enhance rainwater harvesting and to remove contaminants from impaired water supplies.

The work of the AgriLife Research and AgriLife Extension is conducted jointly where research-based information is generated and then transferred to clientele.

2. Brief description of the target audience

Programs focusing on the issue of water address target audiences including but not limited to producers, municipalities, homeowners, landscape managers, industry practitioners, water resource managers, and others who identify themselves with this issue.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	46358	437860	30908	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	0	235	235

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of group educational sessions conducted.

Year	Actual
2012	875

Output #2

Output Measure

- # research-related projects.

Year	Actual
2012	63

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	% of participants who report an increased knowledge of best management practices related to water management.
2	% of participants who report the plan to or have adopted best management practices related to water management.

Outcome #1

1. Outcome Measures

% of participants who report an increased knowledge of best management practices related to water management.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	92

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Agricultural irrigation is the single largest user of water in the Texas High Plains, accounting for over 90% of withdrawals from the declining Ogallala Aquifer. At the same time, municipal water demands state-wide are increasing. Severe drought conditions throughout the 2011 and 2012 crop seasons; limited and declining well capacities; newly adopted regulatory limitations on pumping; and high demand for corn and other irrigated crops are creating increased concerns for water supply and greater need for efficient irrigation technologies and adoption of best management practices.

What has been done

Thirty-one agricultural irrigation management educational events reached an estimated combined face-to-face audience of 1,274 generating approximately 1375 contact hours. New or expanded audiences included dairy producers, small acreage landowners, crop insurers, and other agribusiness professionals. Approximately 2,402 individual contacts were made through telephone, e-mail, site contacts, and office visits. In the urban sector, a total of 20 School of Irrigation short courses were delivered state-wide in six cities reaching 390 irrigators, irrigation technicians, irrigation inspectors, and municipal water conservation staff.

Results

Participants at agricultural irrigation management education events reported increased knowledge in crop water requirements (85-89%); soil moisture characteristics/ management (69-86%); irrigation technologies, BMPs and/or water use efficiency (65-100%); applicability of irrigation technologies and BMPs to their farm operations (58-90%); water quality issues (58-81%); and information resources available (76-93%). Agricultural producers indicated an intent to adopt irrigation scheduling (65-75%), center pivot irrigation or micro-irrigation (25-60%), BMPs to improve efficiency (58-75%), and BMPs to prevent contamination of water resources (65-83%).

The urban-focused School of Irrigation short course received a 91% overall satisfaction rate, students averaged an 85% increase in knowledge per course, and 80% expect to benefit economically as a result of the training.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management

Outcome #2

1. Outcome Measures

% of participants who report the plan to or have adopted best management practices related to water management.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	80

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Urban water use and stormwater management are critical issues in Texas. Urban streams are deteriorating due to increased imperviousness from development and channel modifications. Urbanization increases stormwater volume, flow rates, and contaminant loadings. Instability of river banks has resulted in erosion and land loss, flooding, and water quality problems in receiving water bodies. Stormwater management and stream restoration technologies must be implemented to protect local and downstream water resources.

What has been done

Twenty-six training events focused on stormwater management and stream restoration were delivered to engineers, city officials, master naturalists, master gardeners, youth, and the general public. A total of 806 individuals were educated receiving 1507 contact hours. An additional 214 educational events focused on urban water conservation reached over 23,000 individuals directly, as well as achieving over 7,080,000 media contacts through weekly television segments. Individuals trained included 1,200 city staff and over 4,000 youth.

Results

Survey results from stormwater management events showed that 97% of attendees had increased knowledge, 84% planned to take action, and 57% indicated they would benefit economically. Survey results for stream restoration workshops showed 100% of attendees had increased knowledge, and 57% would benefit economically. Survey results from urban water conservation programs indicated that 89% plan to use rainwater harvesting for landscape irrigation and 73% plan to increase water conservation efforts.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Other (Other Program Areas)

Brief Explanation

Texas continued to experience the effects of severe drought during the 2012 year which impacted program content, but did not limit achievement of overall project goals and outcomes. Economic stresses also continued to impact program delivery efforts; however, effective planning and the use of web-based resources and distance education tools enabled successful implementation of all key programs.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Survey results for agricultural irrigation training workshops indicated increased knowledge in crop water requirements (85-89%); soil moisture characteristics/ management (69-86%); irrigation technologies, BMPs and/or water use efficiency (65-100%); applicability of irrigation technologies and BMPs to their farm operations (58-90%); water quality issues (58-81%); and information resources available (76-93%). Over 90% of attendees plan to implement at least one technology or practice, including irrigation scheduling (65-75%), center pivot irrigation or micro-irrigation (25-60%), BMPs to improve efficiency (58-75%), and BMPs to prevent contamination of water resources (65-83%). Survey results from 20 urban irrigation management short courses indicated an 85% increase in knowledge, with 80% of attendees expecting to benefit economically. Survey results for stormwater management workshops indicated 93-100% of attendees increased knowledge, 40-73% expected to benefit economically, and 80% planned to adopt recommended practices.

Key Items of Evaluation

Water quality and water conservation programs conducted by Texas AgriLife had significant impacts on citizen knowledge, understanding, and intentions to implement recommended management practices. Changes in knowledge and understanding as measured by post and pre/post surveys ranged from 58 to 100% at various events, depending on pre-existing competency levels of the audience, and averaged over 87% for all non-technical audiences. Most importantly, participant intentions to adopt practices were highly significant, ranging from 71 to 90% across all audiences. These results clearly demonstrate the high degree of program effectiveness for both technical and non-technical audiences across a wide range of water resource management and protection subject matter areas.