

Restoration of Native Rangelands -Riparian Restoration

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Region: WEST **Circle which primary base program it addresses -** ANR

Section 1. Relevance

Where did this issue surface?

Texas Community Futures Forum

County Committees

Commodity / Industry / Special Interest Groups

Specialist(s)

What is the issue/problem?

Invasion riparian brush species such as salt cedar have significantly degraded rangeland watershed and diminished water resources

Problem size and scope? (How many people does it affect? How wide spread?)

Western half of state from I-35 West.

Problem severity? (How serious is this issue?) HIGH

Description:

West Texas communities and municipalities are in water crisis and one of the primary causes is invasive plants within watersheds.

Target Audience? (Who does the problem impact and how many?)

Rangeland owners/managers, water control entities, urban residents

What are some general characteristics of the audience this program targets? How will you market this program to others?

- lack of understanding of impact of invasive plants on water supply

- lack of technical and financial resources to handle the problems.

Section 2. Response

State the goal of the program. This is a statement, usually general and abstract, of a desired state or outcome. It is usually one sentence. Example: To increase profits for beef cattle producers.

To optimize water quality and quantity from rangeland watersheds.

State the outcome objectives

Client Change	At the end of this program, will....
<i>Knowledge</i>	increase knowledge on.... <ul style="list-style-type: none">- impacts of salt cedar and other invasive plants on water quality and quantity- watershed management- technologies and funding sources for watershed improvement
<i>Skills</i>	develop skills.... <ul style="list-style-type: none">- identify salt cedar and other invasive plants- to apply recommended control measures
<i>Attitude</i>	change their attitudes pertaining to... Realistic goals in obtaining water
<i>Behavior Change</i>	adopt... <ul style="list-style-type: none">- water conservation practices in urban and rural settings- support funding and legislation for salt cedar control and other invasive riparian plants.
<i>New Technology</i>	adopt.... use of biological control of salt cedar and other invasive plants if proven effective.
<i>Best Practice</i>	adopt <ul style="list-style-type: none">- best management practices by all entities for control of salt cedar and other invasive riparian species.

Program Design.

Topic (Subject Matter)	Strategy to Deliver Content (Method)	Existing Resource(s)	Contact Person(s) (Includes CEA's Specialists, Commodity Reps)
Plant identification	Posters Tours / Ed programs Media Internet Web site, etc.	Posters Publications Videos Web sites	Allan McGinty, Bob Lyons, Charles Hart -RLEM Specialst NRCS CRMWC LCRA TCEQ
Individual Plant Treatment	Ed Programs / Tours Result Demonstrations Newsletters	TCE Publications Brush Busters TexNat Website	Allan McGinty, Bob Lyons, Charles Hart- RLEM Specialst NRCS CRMWD LCRA Water Districts
Broadcast Control	Individual Contact Task Forces	TCE Publications Pecos River EcoSystem Project	Allan McGinty, Bob Lyons, Charles Hart- RLEM Specialist NRCS Industry Reps - BASF
Landscape Water Conservation (see detailed action plan)	Ed Programs Result Demonstrations Media	TCE Publications, Videos WWW TWRI TDA, TWDB	John Begnaud CEA-Hort Billy Kniffen CEA-Ag/NR Bruce Lesikar- Biological and Ag Engineering, ADH Mick Mecke- TWRI Roger Havlak and Monty Dozier- Soil and Crop Science Specialist
Salt Cedar Water Use	Ed Programs Result Demonstrations Media, Newsletters Tours	TCE Publications Pecos River EcoSystem Project District 6 Website	Allan McGinty, Bob Lyons, Charles Hart- RLEM Specialist Mike Mecke- TWRI NMSU

General Watershed Management	Ed Programs Media Result Demonstrations	TCE Publications TWDB Range Mgmt Handbook	Allan McGinty, Bob Lyons, Charles Hart- RLEM Specialist NRCS TDA Mike Mecke- TWRI
Funding Water Projects	Ed Programs Newsletters Individual contacts	Web sites EQIP -FSA Upper Colorado BASF Brush Control Program TSSWCB	Jason Johnson, Bill Thompson, Joe Pena- Ag Eco Dept. NRCS FSA Texas State Soil & Water Cons. LCRA CRMWD UCRA

Section 3. Results

Client Change Level	Sample Questions (Review the objectives section to help place questions or statements in the space below)
<i>Knowledge</i>	<p>Refer to Questionnaire on “Water from Rangeland Watersheds”</p> <ul style="list-style-type: none"> - relative water use of salt cedar vs. Native upland and ripavian species. - know that salt cedar is introduced plant and regulations governing sell and possession of it. - knowledge of funding sources of salt cedar control. - knowledge of salt cedar control (how to) why its important. <ul style="list-style-type: none"> - What is best herbicide to use for broadcasts salt cedar control? - What time of year should salt cedar be sprayed? - Will herbicide arsenal hurt fish or other animals when applies near water? - Will herbicide arsenal kill plants other than salt cedar? - Will one treatment kill all salt cedar indefinitely? - What is recommended herbicide for individual plant treatment?
<i>Skills</i>	<ul style="list-style-type: none"> - identifying salt cedar - properly apply recommended control measures for individual plant treatment.

<i>Attitude</i>	<ul style="list-style-type: none"> - What are methods of conserving water and developing water resources? - Salt cedar is an <u>evil</u> invasive plant. - What is your definition of a weed? - Does salt cedar impact urban water supplies?
<i>Behavior Change</i>	<ul style="list-style-type: none"> - Do you use water saving plants in landscape? - When do you water? - How often do you water? - All water conservation topics. - Would you purchase and plant salt cedar around your house? - Would you support funding for salt cedar control to increase water availability? - Do urban dwellers receive benefits from salt cedar control? - How much do you water?
<i>New Technology</i>	<ul style="list-style-type: none"> - What are biological control measures for salt cedar? - Will leaf beetle used on salt cedar harm other plants? - Will you allow the use of leaf beetle on your property for salt cedar control? - Have you used leaf beetle for salt cedar control?
<i>Best Practice</i>	<ul style="list-style-type: none"> - Have you controlled salt cedar on your property? - Have you surveyed your property for salt cedar? - Have you used these practices for salt cedar control - IPT, aerial, broadcast, mechanical

Economic Indicators. Are there economic indicators that can be measured concerning this issue?

YES

Please list them below.

- Water delivered to downstream points
- Measure of water savings from acreage treated
- Water use reduction by cities and towns
- Change in water quality
- Water available for ag irrigation

Interpretation. *The last step in the process is interpreting the results to our stakeholders. List internal and external stakeholders that would be interested in the results of this educational program. Do not forget to think about other state agencies and groups that would be interested in these outcomes.*

Internal to Extension Stakeholders	External Stakeholders	
<ul style="list-style-type: none"> - TCE Administration - Rangeland Ecology and Management - Department of Entomology 	<ul style="list-style-type: none"> - LCRA - CRMWD - Legislators - Commissioner's Courts - TCEQ - NRCS - Cities, towns, municipalities 	<ul style="list-style-type: none"> - UCRA - TWRI - City Councils - FSA - Fish & Wildlife - TPWD - TDA

Additional Resources. *What additional resources are needed to address this issue? In other words, what is needed to design innovative programs that will impact our audiences? Use the space below or the back if needed.*

Funding - for treatment of salt cedar and other invasive riparian plants from Federal and State sources, and local communities.
 Web site dedicated to this issue.

Sample Evaluation Questions 1 -

Knowledge

- What is best herbicide to use for broadcasts salt cedar control?
- What time of year should salt cedar be sprayed?
- Will herbicide arsenal hurt fish or other animals when applies near water?
- Will herbicide arsenal kill plants other than salt cedar?
- Will one treatment kill all salt cedar indefinitely?
- What is recommended herbicide for individual plant treatment?

Attitude

- What are methods of conserving water and developing water resources?
- Is salt cedar is an evil invasive plant.
- What is your definition of a weed?
- Does salt cedar impact urban water supplies?

Behavior Change

- Do you use water saving plants in landscape?

- When do you water?
- How often do you water?
- All water conservation topics.
- Would you purchase and plant salt cedar around your house?
- Would you support funding for salt cedar control to increase water availability?
- Do urban dwellers receive benefits from salt cedar control?
- How much do you water?

New Technology

- What are biological control measures for salt cedar?
- Will leaf beetle used on salt cedar harm other plants?
- Will you allow the use of leaf beetle on your property for salt cedar control?
- Have you used leaf beetle for salt cedar control?

Best Practice

- Have you controlled salt cedar on your property?
- Have you surveyed your property for salt cedar?
- Have you used these practices for salt cedar control - IPT, aerial, broadcast, mechanical

Example Evaluation 2 - Quality and Quantity of Water from Rangeland Watersheds

Thanks for participating in the “*Quality and Quantity of Water from Rangeland Watersheds*” Program. In order for us to put together the most effective educational program for you, please take a few minutes to answer the questions below.

Please rate your level of understanding about with the following statements. Simply place an ‘x’ in the box that best matches your thoughts.

LEVEL OF UNDERSTANDING

Very Poor
1

Poor
2

Average
3

Good
4

Excellent
5

STATEMENTS	LEVEL OF UNDERSTANDING				
Loss of plant cover, resulting in bare ground leads decreases water infiltration.	1	2	3	4	5
Loss of plant cover, resulting in bare ground leads increases runoff.	1	2	3	4	5
Loss of plant cover, resulting in bare ground leads to higher soil erosion.	1	2	3	4	5
Maintaining adequate vegetation and litter cover to intercepts and reduces raindrop impact.	1	2	3	4	5
Maintaining adequate vegetation and litter cover to intercept and reduce improves infiltration.	1	2	3	4	5
Maintaining adequate vegetation and litter cover shade and stabilize soil temperatures.	1	2	3	4	5
Maintaining adequate vegetation and litter cover increases soil organism activity.	1	2	3	4	5
Maintaining adequate vegetation and litter cover lessens wind effects and reduces runoff.	1	2	3	4	5
The loss of topsoil can result in drought like conditions which reduce the soil water holding capacity.	1	2	3	4	5
The loss of topsoil can result in lower fertility and organic matter.	1	2	3	4	5
The loss of topsoil can result in the production of sedimentation flowing into my streams, ponds or other water bodies.	1	2	3	4	5
Soil characteristics that influence water infiltration into the soil include: antecedent moisture, bulk density, depth, slope, organic matter, soil texture, aggregate stability and soil parent material.	1	2	3	4	5
The water cycle process.	1	2	3	4	5
The three major components of the rangeland water cycle that man can affect are soil, vegetation, and soil surface.	1	2	3	4	5

Example Evaluation 3 - Post then Pre Quality and Quantity of Water

For each of the topics listed below, in the LEFT column, circle the ONE number that best reflects your LEVEL OF UNDERSTANDING before the *Quality and Quantity of Water from Rangeland Watersheds*. Then, in the RIGHT column, circle the ONE number that best reflects your LEVEL OF UNDERSTANDING after the *Quality and Quantity of Water from Rangeland Watersheds*.

LEVEL OF UNDERSTANDING

Very Poor
1

Poor
2

Average
3

Good
4

Excellent
5

TOPICS	<u>BEFORE</u> the Program					<u>AFTER</u> the Program				
Loss of plant cover, resulting in bare ground leads decreases water infiltration.	1	2	3	4	5	1	2	3	4	5
Loss of plant cover, resulting in bare ground leads increases runoff.	1	2	3	4	5	1	2	3	4	5
Loss of plant cover, resulting in bare ground leads to higher soil erosion.	1	2	3	4	5	1	2	3	4	5
Maintaining adequate vegetation and litter cover to intercepts and reduces raindrop impact.	1	2	3	4	5	1	2	3	4	5
Maintaining adequate vegetation and litter cover shade and stabilize soil temperatures.	1	2	3	4	5	1	2	3	4	5
Maintaining adequate vegetation and litter cover increases soil organism activity.	1	2	3	4	5	1	2	3	4	5
Maintaining adequate vegetation and litter cover lessens wind effects and reduces runoff.	1	2	3	4	5	1	2	3	4	5
The loss of topsoil can result in drought like conditions which reduce the soil water holding capacity.	1	2	3	4	5	1	2	3	4	5
The loss of topsoil can result in lower fertility and organic matter.	1	2	3	4	5	1	2	3	4	5

The loss of topsoil can result in the production of sedimentation flowing into my streams, ponds or other water bodies.

1 2 3 4 5

1 2 3 4 5

Soil characteristics that influence water infiltration into the soil include: antecedent moisture, bulk density, depth, slope, organic matter, soil texture, aggregate stability and soil parent material.

1 2 3 4 5

1 2 3 4 5

The three major components of the rangeland water cycle that man can affect are soil, vegetation, and soil surface.

1 2 3 4 5

1 2 3 4 5

What is the most significant thing you learned during the Quality and Quantity of Water from Rangeland Watersheds (feel free to list more than one)?

Do you feel like what you learned today provides you the ability to analyze your land situation and make better land management decisions? (Circle the best answer)

YES

NO

- Please explain your answer or provide an example.

Please provide any additional information in the space below.