

Wagon Wheel Ranch Demonstration Area

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Project Summary and Objectives

The Trans-Pecos Region of Texas has experienced a severe drought over the last several years. Rangeland conditions have deteriorated to the point where land management techniques are required to expedite the recovery process. This demonstration area was established to demonstrate, on a large scale, land management techniques and their effects on vegetation recovery. The demonstration area is supported and coordinated by personnel with Texas Cooperative Extension, USDA Natural Resources Conservation Service, and the Texas Parks and Wildlife Department.

The purpose of this demonstration is to educate land owners about land management techniques available for restoration of degraded rangeland. Severe drought and/or mismanagement can cause substantial reduction in vegetative cover and increase in bare ground. This demonstration area will use large 10-20 acre plots to test and evaluate several land management tools. The first set of treatments include selective brush control with both chemical and mechanical means and treatment with rangeland ripping/furrow techniques.

Project Implementation

The demonstration area is located on the Wagon Wheel Ranch in the north portion of Upton County, near the Midland County line. The area is characterized by flat, desert shrubland. Primary species include mesquite, creosote, tarbush, littleleaf sumac, allthorn, yucca, and spanish dagger. Herbaceous vegetation include burrograss, tobosagrass, doveweed, threeawns, black grama, bristlegrass, and various other species.

To date, several treatments have been installed. Additionally, half the area, including half of each plot have been fenced to exclude grazing. This will allow us to evaluate the effects of each treatment with and without grazing pressure. Each of the following methods will be described:

1. Individual plant treatment of mesquite with Remedy™ and Reclaim™ herbicides
2. Individual plant grubbing of mesquite with a backhoe grubber and re-seeding
3. Land reclamation with a rangeland ripping/furrow technique and re-seeding
4. Control area to remain untreated

Mesquite IPT Treatment.

The first treatment established was the individual plant treatment of mesquite. A mixture of ½% Reclaim + ½% Remedy + ¼% Blue Dye + ¼% surfactant was applied on August 3 and August 20, 2001 with an ATV mounted sprayer. An area 10 acres in size was treated using a total of 113 gallons of spray mixture. Mesquite averaged 254 plants/acre and were treated at an average cost

of \$0.07/plant. An average of 22 plants were treated with a gallon of spray mixture. The total cost for the project (no labor included) was \$169.22 averaging \$16.92/acre. This treatment technique generally kills >80% of plants treated.

Mesquite Grubbing Treatment.

Mesquite plants were mechanically removed from the ground with a backhoe grubber. This grubber was designed and operated by Oral Turner of Circle T welding in Big Lake. The technique efficiently removes the plant from the soil extracting the crown of the plant and a significant amount of root. The practice was implemented on a 10 acre plot in March 2002. Ten acres were treated in 5 hours with an average mesquite density of 254 plants/acre. Cost of this treatment was \$45/acre. On portions of the plot, seeds were scattered in areas where plants were removed.

Contour Ripping/Furrow Treatment.

Rangeland recovery processes are extremely slow in low rainfall areas. One method of expediting the process is through water harvesting techniques. To demonstrate the implementation and effects of water harvesting techniques, a rangeland ripping/furrow demonstration was implemented on the demonstration area. The process involves pulling a single shank ripper through the soil along contour lines. These rips were established 30 feet apart. Wings were mounted on the ripper to clean the rip and create a furrow effect. The plot was established in cooperation with Dr. Darrell Ueckert with the Texas Agricultural Experiment Station in March 2002. Mr Paul Yeager provided a small D3 dozer to implement the procedure. Twenty acres were treated in 3 hours at an equipment cost of \$400. This price included transportation of the equipment to the site. Actual cost of dozer for larger scale work would be \$40/hour. Projected cost per acre for this treatment would be \$6.00/acre.

Following ripping treatment, the up-slope side of the rip was seeded with a mixture of 39% plains bristlegrass, 45% Haskell sideoats grama, and 16% green sprangletop. A small drum seeder was mounted on the back of an ATV for the seeding process. Seed was delivered at total rate of 9.81 pls/acre. Total seeding cost for the plot was \$42.88 resulting in a cost per furrowed acre of \$2.14.

Contacts and Future Plans.

More treatments will be added to the demonstration area. A Spike 20P™ plot for brush control will be installed this Fall. Plans are also underway for installation of a plot using the Lawson Aerator for land reclamation.

A total of 125 contacts have been made by this project. The project has mostly focused to this date on implementation of field techniques. A field day has been scheduled for November 5, 2002 on the site. Participants will view the plots and be given information on implementation and costs associated with each treatment. Plans are to have a field day each year during the Fall.



Individual plant mesquite spraying with ATV mounted sprayer.



Brush grubbing with backhoe grubber.



Mesquite plant following grubbing with backhoe grubber



Rangeland ripping/furrowing with D3 Dozer for water conservation



Rangeland contour furrowed for water conservation



Seeding contour furrows along upper slope



Drum seeder mounted on ATV for seeding along contour rips and furrows