



Result Demonstration Report

LONG-TERM MESQUITE MANAGEMENT USING LEAF-SPRAY INDIVIDUAL PLANT TREATMENTS

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SUMMARY

In 3 counties in 1997 and one county in 1999, mesquite individual plant treatment leaf-sprays were applied to plots and follow-up treatment were applied at various year intervals. In all 4 counties, follow-up treatment costs were lower than initial treatments on a per plant and/or per acre basis. Variation in follow-up treatment costs among counties was due mostly to plant size. Plots were monitored each year. Average long-term treatment costs were less than \$7 per acre. These costs can be even lower if treatments are applied while plant density is low and/or while plant size is small.

PROBLEM

Mesquite aggressively invades rangelands and competes for water and nutrients if densities are too high.

OBJECTIVES

Individual plant treatments offer ranchers a viable tool for brush maintenance. These demonstrations were established to determine the cost effectiveness of treating when plant density is low and/or plant size is small.

MATERIALS AND METHODS

In the summer of 1997 and 1999 leaf-spray treatment plots were established in Bastrop, Guadalupe, Real, and Medina counties. Treatments were applied using Brush Buster methods by 2 to 3-person crews using an ATV equipped with spray tanks and 3 sprayguns equipped with 5500-X8 Adjustable Conjet Nozzles. Plants were treated with a mixture of 0.5% Reclaim + 0.5% Remedy + 0.25% surfactant + 0.25% HiLite Blue Dye in water. Plant kill was evaluated each year following initial

treatment. Because of new seedling emergence and/or survival of initially treated plants, follow-up treatments were planned beginning in the second year following initial treatment. Plots in Guadalupe and Real counties were retreated in 2002.

RESULTS AND DISCUSSION

Leaf-sprays

Apparent 1-year plant-kill was above 75% for initial, second, and third treatments (Table 1). In each county a follow-up treatment was applied 2 years after the initial treatment, resulting in plant densities and plant sizes that were reduced to manageable levels with the two treatments (Table 2). Also, per plant treatment costs and/or per acre treatment costs were reduced (Table 3). In Bastrop County, per plant follow-up treatment costs were higher than the initial cost because plants in this treatment were relatively large survivors of the initial treatment. Few seedling plants were encountered in the Bastrop follow-up treatment. In contrast, in Guadalupe County, per plant and per acre follow-up costs were 33 and 36%, respectively, of initial treatment costs. In this county, plants treated in the follow-up were mostly seedlings. Real County follow-up treatment costs were also lower than those in Bastrop County, with per plant and per acre follow-up costs at 39 and 26%, respectively, of initial costs. Lowest treatment costs were in Medina County where initial plant density was low and plants were relatively small.

Plots in each county were evaluated each year following initial treatment to decide when to apply follow-up treatments. To date, long-term costs average \$6.28 per acre and as low as \$1.09 per acre (Table 3). Highest long-term treatment costs were in Bastrop and Real counties where initial plant densities and plant sizes were greatest.

Table 1. Apparent plant-kill with followup treatments.

County	Plant kill, %		
	Initial	2 nd Trt	3 rd Trt
Bastrop	76	83	-
Guadalupe	90	83	80
Medina	92	95	-
Real	79	62	75
Average	82	76	78

Table 2. Plant densities per acre for each year.

Year	County			
	Bastrop	Guadalupe	Medina	Real
1997	458 (treated)	167 (treated)	-	260 (treated)
1998	179	81	-	69
1999	179 (treated)	112 (treated)	35 (treated)	176 (treated)
2000	12	45	3	-
2001	35	103	- (treat)	131
2002	35	351 (treated)	3	237 (treated)
2003	45	42	3	88

Table 3. Comparison of initial, 2nd and 3rd treatments.

County	\$/plant			\$/acre			Long-term \$/ac (yrs)
	Initial	2 nd Trt	3 rd Trt	Initial	2 nd Trt	3 rd Trt	
Bastrop	0.07	0.12	-	33	21	-	7.70 (7)
Guadalupe	0.12	0.04	0.09	25	9	9.31	6.19 (7)
Medina	0.10		-	3.45	2	-	1.09 (5)
Real	0.18	0.07	0.10	46	12	12.81	10.12 (7)
Average	0.09	0.06	0.095	21	8.80	11	6.28

CONCLUSIONS

Results of these demonstrations show that mesquite plant densities and sizes can be reduced to manageable levels with follow-up treatments. These demonstrations also emphasize that treatment of mesquite while plant density is low and/or while plant size is small results in a substantial reduction in treatment costs. While long-term treatment costs are approaching reasonable levels, these costs can be even lower if treatments are applied while plant density is low and/or while plant size is small. Highest long-term treatments costs were in counties where initial plant densities and sizes were greatest.

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