

Comparison of Tordon 22K, Grazon P+D, Surmount and PastureGard for Control of Pricklypear

2003

Allan McGinty
Extension Range Specialist
San Angelo, Texas

SUMMARY

Tordon 22K is the recommended herbicide for pricklypear control on Texas rangelands. This herbicide provides a very high level of control, although it often takes 2 to 3 years for pricklypear to die following treatment. To evaluate other control options, herbicide trials were established during the summer of 2001 in Coleman, Irion, Lampasas, McCulloch, Mills, Runnels, Schleicher, Shackelford, Concho and Burnet counties. These trials included individual plant treatment rates of Tordon 22K (picloram), Grazon P+D (picloram + 2,4-D), PastureGard (triclopyr plus fluroxypyr), and Surmount (picloram plus fluroxypyr).

Two years following treatment apparent mortalities for pricklypear treated with Grazon P+D at 1%, 2% and 3% concentrations or PastureGard at ½ % and 1 % concentrations were significantly less as compared to Tordon 22K (1%). Surmount at a 1% concentration provided equitable control to Tordon 22K (1%).

These herbicide trails will be re-evaluated in 2004.

PROBLEM/INTRODUCTION

Pricklypear is a major noxious plant on Texas rangelands. This plant can reach high densities and interfere with the movement and handling of livestock, limit forage utilization, cause serious livestock health problems, and compete with more desirable vegetation for water and soil nutrients. Pricklypear does have value as a livestock feed during drought and serves as food and cover for wildlife such as quail, deer, and javelina.

Currently the herbicide Tordon 22K is the most effective and cost efficient treatment option to control pricklypear in most situations. This herbicide costs approximately \$85/gallon and often requires 2 to 3 years before pricklypear dies following treatment.

In the past few years there have been several ranchers that have been using Grazon P+D to control pricklypear and reporting satisfactory results. Most are using a 2% concentration of Grazon P+D, mixed with water, for individual plant treatments. Cost to mix a 100 gallon batch would be approximately \$52 for the herbicide as compared to \$85 if Tordon 22K was used at the recommended 1% concentration.

This represents a considerable cost saving if Grazon P+D will consistently produce comparable rootkills. Three concentrations of Grazon P+D (1%, 2% and 3%) will be evaluated and compared to Tordon 22K in these herbicide trials.

Fluroxypyr is the common chemical name of a herbicide marketed by Dow AgroSciences that has considerable activity on pricklypear and may have the potential of providing acceptable control in a shorter period of time as compared to Tordon 22K alone. Two of the study sites (Coleman and Irion counties) included mixtures of fluroxypyr plus picloram (Surmount), one site included (Irion county) included a triclopyr plus fluroxypyr mixture (PastureGard).

OBJECTIVES

The objective of these herbicide trials are to:

- 1) Document control of pricklypear achieved with various concentrations of Grazon P+D and compare efficacy and cost of treatment to herbicide Tordon 22K, when applied as an individual plant treatment.
- 2) Evaluate the new herbicide fluroxypyr when mixed with picloram or triclopyr for control of pricklypear, when applied as an individual plant treatment.

MATERIALS/METHODS

Table 1 shows location and date of treatment for the ten treatment sites. Pricklypear at each site received the following treatments during the summer of 2001.

All sites included the following pad-stem sprays. One was a 1% concentration of Tordon 22K. The other three were 1%, 2% and 3% concentrations of Grazon P+D. The herbicides were mixed with water. Surfactant (0.25%) and spray marking dye (1/3 oz/gallon) were added to the spray mixture. Applications were made with a 4-wheel ATV equipped with a 12 volt pump, spray tank and spray wands. Spray wands were tipped with X-8 conjet nozzles. Individual pricklypear plants were sprayed to wet, making sure all pads were treated.

Coleman and Irion counties received additional treatments. The herbicide trials in both counties included 1/2% and 1% concentrations of the Surmount, which is a mixture of the herbicides picloram and fluroxypyr (80 grams acid equivalent each/liter). The Irion county site also included 1/2% and 1% concentrations of the herbicide PastureGard, which is a mixture of the herbicides triclopyr and fluroxypyr (180 grams acid equivalent/liter triclopyr and 60 grams acid equivalent/liter fluroxypyr). Applications were made using the same procedures and mixing as for Tordon 22K and Grazon P+D.

Table 1. County, ranch and application dates for the 10 treatment sites.

County	Ranch	Application Date
Burnet	Hohenberger Ranch	August 2, 2001
Coleman	Jack Horn Ranch	June 27, 2001
Concho	Jim Pfluger Ranch	July 24, 2001
Irion	Rocker B Ranch	June 1, 2001
Lampasas	Haner Ranch	July 27, 2001
McCulloch	Guy Phillips Ranch	July 23, 2001
Mills	Stanley Ranch	August 14, 2001
Runnels	Underwood Ranch	July 18, 2001
Schleicher	Ross Whitten Ranch	July 17, 2001
Shackelford	Winkler Ranch	August 8, 2001

RESULTS/DISCUSSION/ECONOMIC IMPACT

All locations and treatment plots were evaluated one year following treatment (summer 2002). As expected apparent mortality was low for most plots due to drought conditions during and after treatment (Table 2). Average apparent mortality ranged from 6% to 12% across the three Grazon P+D concentrations, 11% to 14% for the two Surmount and 14% for Tordon 22K at 1%. Surprisingly, the one location where PastureGard was included provided 50% control at a 1/2% concentration and 78% control at a 1% concentration.

Table 2. Percent apparent mortality of pricklypear one year following treatment with various concentrations of herbicides as an individual plant pad spray.

County	Grazon P+D			Tordon 22K	Surmount		PastureGard	
	1%	2%	3%	1%	1/2%	1%	1/2%	1%
Burnet	0	0	0	5				
Coleman	5	7	11	4	0	11		
Concho	0	6	6	16				
Irion	16	21	31	25	21	17	50	78
Lampasas	0	0	5	0				
McCulloch	8	7	18	13				
Mills	3	24	16	27				
Runnels	13	10	23	19				
Schleicher	10	11	5	17				
Shackelford	a	a	a	a				
Average	6	10	12	14	11	14	50	78

^a Heavy weed growth prevented accurate evaluation of these plots.

Control for many of the treatments improved significantly by two years after application. The standard treatment (Tordon 22K @ 1%) provided 63% apparent mortality (Table 3). The three Grazon P+D treatments resulted in significantly less control, averaging 16% to 33% apparent mortality. Surmount at 1% gave approximately the same level of control as Tordon 22K at 1% (57%). Pricklypear control following treatment with 1% PastureGard declined from 79% one year following treatment to 39%, two years post treatment.

It is not uncommon using these herbicides for control to continue to improve into the 3rd year following treatment. As such, these trials will be re-evaluated in 2004.

Table 3. Percent apparent mortality of pricklypear two years following treatment with various concentrations of herbicides as an individual plant pad spray.

County	Grazon P+D			Tordon 22K	Surmount		PastureGard	
	1%	2%	3%	1%	1/2%	1%	1/2%	1%
Burnet	0	3	3	12				
Coleman	16	20	17	76	39	47		
Concho	5	3	7	60				
Irion	12	24	45	74	29	68	42	39
Lampasas	23	52	62	62				
McCulloch	42	47	65	75				
Mills	4	24	43	48				
Runnels	17	21	31	68				
Schleicher	27	20	26	94				
Shackelford	a	a	a	a				
Average	16	24	33	63	11	57	42	39

^a Heavy weed growth prevented accurate evaluation of these plots.

ACKNOWLEDGMENTS

The author wishes to express appreciation to the various ranches that served as cooperators for the demonstration and to Jeff White and the County Extension Agents who helped establish and evaluate these trials. A special thanks is extended to Dow AgroSciences for furnishing the herbicide used in the demonstration and for providing financial support for travel.

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