

# TECHNICAL NOTES

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## CHEMICAL CONTROL OF FRINGED SAGEWORT AND BROOM SNAKEWEED

Reports on chemical control of undesirable woody plants are given in the summary of the 1967 Western Weed Control Conference. Two of these reports deal with plants common to Wyoming.

The following is reproduced in its entirety so each of you might understand the scope of the research. The report on fringed sagewort (*Artemisia Frigida*) is particularly good as it shows the increased grass production resulting from the control of fringed sagewort.

These data will be of value when working with ranchers who have these plants increasing on their range.

"Chemical control of fringed sagewort (*Artemisia frigida*). Ryerson, D. E. and L. W. Sonder. Fringed sagewort is half-shrub commonly found in varying degrees of abundance on deteriorated grasslands in the foothill and plains type of Montana. This half-shrub has increased in number rapidly following mechanical treatments for range renovation and improvement, and curtails the rapidity of range forage production increases on the treated areas. Because of a lack of information concerning the specific herbicide, rate, dates of susceptibility, carriers, etc., and range recovery that could be expected following control measures, a study was established in the 10-14 inch rainfall belt in south central Montana. This study is in cooperation with the Yellowstone County Extension Service staff, Soil Conservation Service, Bureau of Land Management and Dover Sindelar, a rancher.

"Three herbicides, picloram at 1/2, 1, and 1 1/2 lb/A ai; 2,4-D and 2,4,5,-T low volatile ester at 1,2, and 3 lb/A ai were applied with a ground sprayer on May 12 and June 11, 1965.

"Completely randomized field plots, 30' x 30' were replicated three times. Materials were applied at the rate of 10 gallons total volume per acre with 8001 Tee jet nozzles. Materials were applied in diesel oil or a 1:4 diesel oil-water ratio. The surfactant, X-77, was used in all treatments at 0.1 percent by total volume.

"The study was fenced and grazing excluded from May, 1965, through October, 1966. Rainfall for March through June, 1965, period was 0.52 inches below normal and 1.29 inches below normal for the same period in 1966. Herbicidal effects on fringed sagewort were evaluated in May, 1966, using fifteen 2 square foot circular frames (randomly located) per treatment plot counting the number of live sagewort plants per frame. Forage production estimates (four 2 square foot random samples per plot) were made in July, 1966.

"Results are shown in the table. The effect of herbicides, etc., on fringed sagewort is expressed as the percent difference of live sagewort plants per treatment plot versus live plants per check plot. Based upon 24 check plots (non-treated) randomly located through the study area, fringed sagewort population estimates with fiducial limits were  $6.70 \pm 5.11$  plants per sample frame, and would represent the sagewort population for the study area prior to treatment. (Cooperative Extension Service, Montana State University, Bozeman, Montana)

"Reduction of fringed sagewort by herbicidal treatment and resultant effects on grass production at two treatment periods:

Herbicide	Rate lb/A	Average Grass Production lb/A		Sagewort Reduction Percent	
		Diesel	Diesel + H <sub>2</sub> O	Diesel	Diesel + H <sub>2</sub> O
Carrier					
First Date of Treatment					
2,4-D	1	800	751	69	47
	2	814	789	76	91
	3	1103	857	99	78
2,4,5-T	1	794	624	81	63
	2	736	789	44	92
	3	882	857	97	97
Picloram	$\frac{1}{2}$	889	986	100	100
	1	823	1020	100	100
	$1\frac{1}{2}$	870	844	100	100
Check		354			
Second Date of Treatment					
2,4-D	1	631	687	95	90
	2	778	544	95	86
	3	734	737	100	99
2,4,5-T	1	551	395	81	48
	2	536	447	88	63
	3	551	654	98	81
Picloram	$\frac{1}{2}$	679	627	100	100
	1	563	582	100	100
	$1\frac{1}{2}$	452	609	100	100
Check		417			

"Evaluation of several chemicals for the control of snakeweed (Gutierrezia sarothrae (Pursh) Britt, and Rusby. Alley, H. P. and G. A. Lee. Explatory plots were established in 1964 to determine the chemical or chemicals and date and stage of growth that would give satisfactory control of snakeweed. The outstanding treatments resulting from the 1964 tests were included in a replicated series of plots in 1965. The treatments were applied in 40gpa water when the snakeweed plants were in the pre-bud stage of growth, July 9, 1965.

"The 2,4-D amine and low valitile ester (PGBE)<sup>4</sup> at 2 lb/A gave 98 percent control. The butyl ester and dacamine (N-Oleyl 1, 3-propylene diamine salt of 2,4-D) treatments did not result in as outstanding control. The addition of a wetting agent, X-77, (alkylaryl polyoxyethelene glycol, free fatty acids, of isoproponol) did not enhance the activity of any of the 2,4-D formulations. Picloram at 1/4 lb/A and above was the only treatment resulting in complete control; however, picloram + 2,4-D (Tordon-101) gave 99 percent control at 1 and 2 pt/A. This would be equivalent to 1/16 lb/A of picloram and 1/4 lb/A of 2,4-D. (Wyoming Agricultural Experiment Station, Univ. of Wyoming, Laramie.)

"Average percent control of snakeweed:

<u>Chemical</u>	<u>Rate/A</u>	<u>Percent Control</u>
Dacamine	2	88
Dicamba	2	85
2,4-D amine	1	70
2,4-D amine	2	98
2,4-D amine + X-77	2	90
2,4-D amine + X-77	2	96
2,4-D butyl ester	2	85
2,4-D butyl ester + X-77	2	80
2,4-D LVE (PGBE)	1	90
2,4-D LVE (PGBE)	2	98
2,4-D LVE (PGBE) + X-77	1	80
2,4-D LVE (PGBE) + X-77	2	92
Picloram (Tordon)	$\frac{1}{4}$	100
Picloram (Tordon)	$\frac{1}{2}$	100
Picloram + 2,4-D (Tordon-101)	1 pt/A	99+
Picloram + 2,4-d (Tordon-101)	2 pt/A	99

X-77 added at the rate of 1/2 pt/100 gallons of spray solution"