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Leafy spurge control with tebuthiuron

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A study that tests the effects of tebuthiuron (Graslan) on leafy spurge in rangeland was started in 1983 at the Dickinson Experiment Station. Two similar sets of test plots were located on private property in Golden Valley County, North Dakota. One set of plots was established in 1983 and another set in 1984. The plots were arranged in a randomized block design with two replications. The vegetation on the sites were predominantly leafy spurge with an understory of Kentucky bluegrass (*Poa pratensis*).

Tebuthiuron is an herbicide that is primarily intended for use on shrubs in rangeland. The chemical is absorbed by the roots and translocated to the leaves. Photosynthesis is restricted. The leaves senesce prematurely and fall off and a new set of leaves develop. This process continues until the plant depletes its stored carbohydrates. The process may take one to four years before the plant dies completely depending on the species and the environmental conditions. In theory, this appears to be a desirable method to control leafy spurge.

The herbicide was broadcast applied with a hand held whirlybird spreader at three rates, 1, 2 and 3 lbs ai/acre, of 20% pellets on 12 July 1983 and 4 June 1984 for sites 1 and 2, respectively. A control of no chemical treatment was included in each replication. No retreatment has been made to these plots. The data that were collected from these plots were; above ground herbage production, leafy spurge stem densities, and mean weight per stem collected monthly through the growing season. The only data included in this report will be the pretreatment stem densities and the percent change in stem densities per foot squared compared to the control plots taken in early June of years following treatments (Tables 1 and 2).

Tebuthiuron does have a detrimental effect on leafy spurge one, two and three years after treatment for the three rates included in this trial. The desired level of control has not been reached after three years. A retreatment may be necessary to control leafy spurge with tebuthiuron. These plots will continue to be monitored.

Table 1. Percent change in stem density compared to control one to three years after treatment, site 1.

Treatment	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
	#/Ft ²	% of control		
Control	13.1	---	---	---
1 lb /acre	11.0	+ 1.6	-27.8	- 6.8
2 lb /acre	18.7	-18.6	-55.7	-70.0
3 lb /acre	22.4	-37.1	-66.3	-71.1

Table 2. Percent change in stem density compared to control one and two years after treatment, site 2.

Treatment	<u>1984</u>	<u>1985</u>	<u>1986</u>
	#/Ft ²	% of control	
Control	54.5	---	---
1 lb /acre	56.5	+ 0.9	-60.2
2 lbs /acre	49.2	- 9.0	-61.2
3 lbs /acre	62.3	-70.8	-82.7