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# Mowing as a pretreatment for leafy spurge control with herbicides

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Previous research has shown that annual mowing of leafy spurge tends to increase forage production and delay leafy spurge maturity. Leafy spurge mowed in mid-summer begins vigorous regrowth and may start to flower and set seed in the fall, whereas unmowed plants generally have leafless mature stems with 4 to 6 inch branches of new growth near the tip. Two experiments were established to evaluate mowing as a pretreatment to fall herbicide application for leafy spurge control in a pasture near Sheldon, ND. Leafy spurge was mowed on 2 August 1983 and picloram at 1.0 lb/A or 2,4-D at 2.0 lb/A was applied on 11 August, 18 August or 6 September 1983 in the first experiment. The leafy spurge was dormant prior to mowing, but regrowth ranged from 2 to 3 inches tall on 11 August to flowering and 20 to 26 inches tall on 6 September. Leafy spurge was mowed on 2 August, 18 August or 6 September 1983 with all herbicide treatments applied on 22 September 1983 in the second experiment. Leafy spurge ranged from 24 inches tall, flowering and beginning seed set in plots mowed on 2 August to only 2 inches tall with few stems in plots mowed on 6 September. The plots were mowed with a rotary mower and herbicides were applied with a tractor-mounted sprayer delivering 8.5 gpa at 35 psi. All plots were 10 by 30 ft in a randomized complete block design with four replications. Air temperature was 84º, 82º, 71º and 46º F when herbicides were applied on 11 August, 18 August, 6 September and 22 September, respectively. Evaluations are based on visual estimate of percent stand reduction as compared to the control.

Leafy spurge control with picloram applied 16 and 35 days after mowing was similar to control of unmowed plants in Experiment 1 (Table). However, control 9 months after application was only 42% when picloram was applied 9 days after mowing, probably due to the limited leafy spurge regrowth for foliar absorption of picloram. Leafy spurge control with 2,4-D was 31 and 29% when applied to unmowed plants or 35 days after mowing, respectively. Control was only 3 and 6% when 2,4-D was applied 9 and 16 days after mowing, respectively. Mowing did not affect leafy spurge control one year after treatment.

Leafy spurge control with picloram in the second experiment was similar regardless of mowing date or no mowing at 9 months following application. However, 15 months after treatment control was 60 and 55% when picloram at 1.0 lb/A was applied 51 days after mowing or on unmowed plants, respectively, but only 13 and 25% when application was made 35 and 16 days after mowing, respectively. Leafy spurge control with 2,4-D increased to 33 and 14% when applied 51 days after mowing compared to 10 and 6% with no mowing when evaluated 9 and 12 months after application, respectively. No

other mowing date affected leafy spurge control with 2,4-D. Mowing alone tended to decrease leafy spurge density slightly with all mowing dates during the first year of the experiment. In general, leafy spurge control was not improved by a mowing pretreatment regardless of the mowing or herbicide application date and tended to decline if herbicides were applied earlier than 35 days after mowing. (Cooperative investigation Dep. of Agron. and ARS, U.S. Dep. of Agric. Published with the approval of the Agric. Exp. Stn., North Dakota State Univ., Fargo, ND.)

**Table. Leafy spurge control with picloram and 2,4-D applied on several dates in 1983 following mowing as a pretreatment.**

| Treatment | Rate | Days after mowing | Control 1984 June | Control 1984 August | Control 1985 June |
|---|---|---|---|---|---|
| | (lb/A) | | (%) | | |
| **Experiment 1 (mowed 2 Aug 83)** | | | | | |
| Mow + picloram (11 Aug) | 1.0 | 9 | 42 | 6 | 8 |
| Mow + 2,4-D (11 Aug) | 2.0 | 9 | 3 | 5 | 2 |
| Mow + picloram (18 Aug) | 1.0 | 16 | 94 | 27 | 28 |
| Mow + 2,4-D (18 Aug) | 2.0 | 16 | 6 | 8 | 1 |
| Mow + picloram (6 Sept) | 1.0 | 35 | 88 | 25 | 20 |
| Mow + 2,4-D (6 Sept) | 2.0 | 35 | 29 | 6 | 2 |
| Picloram (6 Sept) | 1.0 | – | 97 | 30 | 13 |
| 2,4-D (6 Sept) | 2.0 | – | 31 | 3 | 0 |
| Mow only | – | – | 7 | 0 | 0 |
| LSD (0.05) | | | 23 | 12 | 11 |
| **Experiment 2 (treated 22 Sept 83)** | | | | | |
| Mow (2 Aug) + picloram | 1.0 | 51 | 96 | 22 | 60 |
| Mow (2 Aug) + 2,4-D | 2.0 | 51 | 33 | 14 | 10 |
| Mow (18 Aug) + picloram | 1.0 | 35 | 91 | 30 | 13 |
| Mow (18 Aug) + 2,4-D | 2.0 | 35 | 18 | 2 | 0 |
| Mow (6 Sept) + picloram | 1.0 | 16 | 94 | 17 | 25 |
| Mow (6 Sept) + 2,4-D | 2.0 | 16 | 1 | 0 | 0 |
| Mow (2 Aug 83) | – | – | 5 | 2 | 3 |
| Mow (18 Aug 83) | – | – | 5 | 5 | 0 |
| Mow (6 Sept 83) | – | – | 3 | 4 | 3 |
| Picloram | 1.0 | – | 99 | 21 | 55 |
| 2,4-D | 2.0 | – | 10 | 6 | 0 |
| LSD (0.05) | | | 16 | 8 | 18 |