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Herbicides and grass competition for leafy spurge control in North Dakota – 1995

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Picloram is one of the most effective herbicides for leafy spurge control. Previous research at North Dakota State University has shown that picloram plus 2,4-D at 0.25 plus 1 lb/A will provide approximately 85% control or better after 3 to 5 years of annual treatment. Glyphosate plus 2,4-D at 0.4 plus 0.6 lb/A will provide 70 to 90% leafy spurge control after one treatment but can cause severe grass injury with repeated applications. A series of experiments was established to compare cost and efficacy of glyphosate plus 2,4-D as part of a long-term management program for leafy spurge control.

The initial treatments of glyphosate plus 2,4-D or picloram plus 2,4-D were applied in late June of 1993 and were retreated with the same or an alternate treatment in 1994. Visual evaluations were taken in 1993, 1994, and 1995. Glyphosate plus 2,4-D provided 75% leafy spurge control 12 months after treatment (MAT) compared to 30% for picloram plus 2,4-D. Glyphosate plus 2,4-D after two consecutive treatments provided 60% control at a cost of $16. Glyphosate plus 2,4-D followed by an auxin herbicide averaged 68% control at cost of $21 while two consecutive applications of picloram plus 2,4-D provided only 48% control at a cost of $26. There was no significant grass injury for any treatment. Application costs were not included in the treatment cost, because one application occurred each year.

A regional research experiment was established by scientists in Colorado, Minnesota, Montana, Nebraska, Wyoming, and North Dakota to evaluate leafy spurge control with quinclorac. Leafy spurge control was 99% regardless of the quinclorac rate at all locations except Wyoming where control was 75%. Quinclorac plus picloram at 12 plus 8 oz/A was >90% at all locations. Picloram plus 2,4-D at 0.5 plus 1 lb/A and picloram at 0.5 lb/A averaged >95% control for all states, except Wyoming where the control was 45% and 63%, respectively.

Grass competition is one means of controlling the rate of spread of leafy spurge based on data from an experiment established in 1990 at Fargo. A second experiment was established near Jamestown to evaluate competitive grass species on a soil type more typical of North Dakota than found at Fargo. Glyphosate plus 2,4-D at 0.4 plus 0.6 lb/A was applied to all plots except the untreated control when leafy spurge was in the flowering growth stage in June and again in July. The seedbed was prepared and grass species were planted August 24, 1993 in all plots except the untreated control and

planted August 24, 1993 in all plots except the untreated control and glyphosate plus 2,4-D plots.

All the grass species selected were competitive and reduced leafy spurge production compared to the control. The four grass species that provided > 70% control were ‘Rebound’ smooth brome, ‘Arthur’ Dahurian wildrye, ‘Reliant’ intermediate wheatgrass, and ‘Pryor’ slender wheatgrass. These grass species also had greater than 1,440 lb/A total forage production in 1994.