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Leafy spurge control near trees and water

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Abstract:

Leafy spurge (*Euphorbia esula* L.) is difficult to control with herbicides near trees or open water such as ponds, ditches and rivers because of potential damage to desirable vegetation or water contamination. However, these areas are a constant source of seed for infestation of nearby and downstream areas if no control measures are initiated. The purpose of these experiments was to evaluate several herbicides for both leafy spurge control and injury to desirable vegetation.

Three experiments for leafy spurge control under trees were established in a shelter belt located in a waterfowl rest area near Valley City, ND. The plots were located in a dense stand of leafy spurge growing under mature ash (*Fraxinus* spp.) and elm (*Ulmus* spp.) trees that had been planed 5 feet apart in 12-foot rows. The herbicides were applied either with a hand-held single nozzle sprayer delivering 40 gpa or with the controlled droplet applicator (CDA) which applied approximately 4 gpa. The treatments were applied when leafy spurge was in the yellow bract to flowering growth stage, seed-set or post-seed set growth stages.

Initial leafy spurge control was poor (<40%) when glyphosate (*N*(phosphonomethyl)glycine) was applied alone, regardless of rate or treatment date. Control improved to over 90% 12 months after treatment (MAT) following a June but not September application. Grass injury was nearly 100% with all glyphosate treatments.

Sulfometuron (2-[[[(4,6-dimethyl-2-pyrimidinyl)amino]carbonyl]amino]-sulfonyl]benzoic acid) at 2 oz/A or less alone did not control leafy spurge satisfactorily (<10%). However, control 12 MAT increased by an average of 10 and 35% when applied with glyphosate in the spring and fall, respectively, compared to glyphosate alone. Leafy spurge control 12 MAT averaged 97% with sulfometuron + 2,4-D {(2,4-dichlorophenoxy)acetic acid} at 1 or 2 + 17 oz/A but grass injury was over 50%. Picloram {4-amino-3,5,6-trichloro-2-pyridine-carboxylic acid} applied with the CDA at a picloram (Tordon 22K):water concentration of 1:7 (v,v), provided nearly 100% leafy spurge con-

trol with no grass injury. Several ash trees had some leaf curling but no visible permanent damage from this treatment.

An experiment to evaluate leafy spurge control with herbicides that can be used near water was established along a ditchbank in Fargo, ND. Amitrole (1*H*-1,2,4-triazol-3-amine) at 4 lb/A provided 91 and 95% leafy spurge control 12 and 15 MAT, respectively, but there was 64% grass injury. Increasing the application rate of 8 lb/A increased grass injury but not leafy spurge control. Unfortunately, amitrole is no longer labeled for use near water. Fosamine {ethyl hydrogen(aminocarbonyl)phosphonate} at 8 lb/A provided 90% leafy spurge control 12 MAT but also 57% grass injury. Fosamine applied at lower rates provided unsatisfactory control (<50%) and evaluations varied considerably from plot to plot indicating this herbicide may provide inconsistent control.

An experiment to determine the surface movement of sulfometuron applied to a sloped area was established near Valley City and Dickinson, ND. Sulfometuron was applied at 2 oz/A (125 ppbw) to natural slopes of 0 to 2%, 6 to 8% and 14 to 16%. Movement of sulfometuron was minimal (≤ 0.1 ppbw) on the 0 to 2% and 6 to 8% slopes 12 MAT. Movement of sulfometuron was greatest on the 14 to 16% slope at Dickinson, but the highest concentration detected still was less than 1 ppbw.