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The control of leafy spurge with initial and retreatments of picloram

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This research was conducted near Devil's Tower, Wyoming to compare the efficacy of various rates of picloram for leafy spurge control. Plots were retreated to maintain or attain 80% control with light rates of picloram or picloram/2,4-D tankmixes. Initial treatments were 0.25 lb picloram to 2.0 lb picloram in 0.25 lb increments and 0.25 lb. picloram + 1.0 lb 2,4-D. Retreatments were 0.25 or 0.5 lb picloram or 0.25 lb picloram + 1.0 lb 2,4-D. The initial treatment of 0.25 lb picloram was retreated only with 0.25 lb picloram and the initial treatment of 0.25 lb picloram + 1.0 lb 2,4-D was retreated only with 0.25 lb picloram + 1.0 lb 2,4-D. Plots were 10 by 27 ft. with four replications arranged in a randomized complete block. The initial herbicide treatments were applied broadcast with a CO₂ pressurized six-nozzle knapsack sprayer delivering 30 gpa at 40 psi May 24, 1989 (air temp. 56°F, soil temp. 0 inch 87°F, 1 inch 77°F, 2 inch 76°F, 4 inch 75°F, relative humidity 45%, wind west at 3-5 mph, sky partly cloudy). Retreatments were applied broadcast with CO₂ pressurized six-nozzle knapsack sprayer delivering 20 gpa at 40 psi June 6, 1990 (air temp. 72°F, soil temp. 0 inch 87°F, 1 inch 85°F, 2 inch 83°F, 4 inch 75°F, relative humidity 51%, wind south at 10 mph, sky partly cloudy); June 13, 1991 (air temp. 72°F, soil temp. 0 inch 82°F, 1 inch 80°F, 2 inch 79°F, 4 inch 77°F, relative humidity 60%, wind northwest 5 mph, clear); June 10, 1992 (air temp. 86°F, soil temp. 0 inch 100°F, 1 inch 95°F, 2 inch 90°F, 4 inch 80°F, relative humidity 30%, wind north at 5 mph, sky 20% cloudy); and September 22, 1993 (air temp. 56°F, soil temp. 0 inch 65°F, 1 inch 63°F, 2 inch 60°F, 4 inch 58°F, relative humidity 35%, wind north at 3 mph, sky 50% cloudy). The soil was a silt loam (22% sand, 58% silt, and 20% clay) with a 1.8% organic matter and a 6.3 pH. Leafy spurge was in full bloom and 12 to 14 inches in height, for the initial treatments and in full bloom, 12 to 20 inches in height for spring retreatments and 16 to 24 inches in height for fall retreatments. Infestations were heavy throughout the experimental area. Visual weed control evaluations were made June 6, 1990; June 13, 1991; June 10, 1992; June 21, 1993; and June 15, 1994.

Plots with initial treatments of 1.25 lb/A picloram or greater gave 80% or better leafy spurge control and did not require retreatment in 1990. All other plots required retreatment. Initial treatments maintaining 80% control or better in 1991 were two 1.5 lb picloram treatments, one 1.75 lb picloram treatment and all 2.0 lb picloram treatments. The

only 1990 retreatment attaining 80% control or better in 1991 was 0.5 lb picloram over an initial 1.0 lb picloram. Plots with less than 80% control in 1991 were retreated. None of the treatments applied in 1991 or 1992 attained 80% control in 1992 or 1993. Two of the three initial 2.0 lb picloram treatments applied in 1989 continued to maintain 80% leafy spurge control through 1992. The control in these treatments dropped below 80% in 1993. In 1994, eight months after fall treatment, all retreatments of 0.5 lb picloram attained 80% control or better. The only other retreatment to attain 80% control was 0.25 lb picloram + 1.0 lb 2,4-D, applied in the fall, over an initial treatment of 1.5 lb picloram.