

INTERACTION OF IMAZAPIC, *APHTHONA* SPP. BIOLOGICAL CONTROL
AGENTS AND NATIVE GRASSES FOR LEAFY SPURGE
(*EUPHORBIA ESULA* L.) CONTROL

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By

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ABSTRACT

Richardson, Laurie Arlene; M. S.; Program of Natural Resources Management; Department of Plant Sciences; College of Agriculture, Food Systems, and Natural Resources; North Dakota State University; February 2004. Interaction of Imazapic, *Aphthona* spp. Biological Control Agents and Native Grasses for Leafy Spurge (*Euphorbia esula* L.) Control. Major Professor: Dr. Rodney G. Lym.

Leafy spurge is an invasive perennial weed generally found in untilled areas across the Great Plains. Chemical, biological, and cultural methods exist for leafy spurge control; however, a combination of control methods can provide increased long-term control. The effects of biological control agents, herbicides, and native grass species alone or in combination for leafy spurge control were evaluated at two locations. Leafy spurge density at the Sheyenne National Grassland (SNG) site was unchanged by the *Aphthona* spp. flea beetles 24 mo after release and interseeded native grass seedlings 3 mo after seeding. However, imazapic did reduce leafy spurge density from an average of 92 to 8 stems/m² 1 yr after application at 105 g/ha. The Walcott experiment site was established 1 yr after the SNG site, and the leafy spurge density was unchanged by the *Aphthona* spp. flea beetles, which was the only treatment established long enough for evaluation. *Poa* spp. and leafy spurge were the most common species that germinated in a soil seedbank study. Over 2,100 leafy spurge seedlings (23%) germinated in the greenhouse study, which indicated the abundance of viable leafy spurge seed in the soil seedbank and the need for long-term weed management. Cool-season grass yield in a greenhouse study was reduced by imazapic, while warm-season grass yield was generally unchanged, except sideoats grama [*Bouteloua curtipendula* (Michx.) Torr., var. *curtipendula*, cv. Pierre] and switchgrass were reduced (*Panicum virgatum* L., cv. Dacotah).