

Reprinted with permission from: *Proceedings - Western Society of Weed Science*. 1998. 51:130.

Published and copyrighted by: *Western Society of Weed Science*.

<http://www.wsweedscience.org>

---

## Leafy spurge control with flea beetles (*Aphthona* spp.)

DONALD R. KIRBY<sup>1</sup> and ROBERT B. CARLSON<sup>2</sup>

<sup>1</sup>Department of Animal and Range Sciences and <sup>2</sup>Department of Entomology, North Dakota State University, Fargo, ND 58105.

### **Abstract:**

Leafy spurge is a persistent introduced plant from Eurasia that infests millions of acres of rangelands in the United States. It would appear to be a prime candidate for biological control efforts because it is a perennial plant providing a continuous source of food to controlling organisms and it has a propensity to invade a variety of habitats such as grasslands, woodlands, riparian areas and waterways where alternative control efforts may have limited usage. Eight insects for leafy spurge control have been released in North Dakota with the root-feeding flea beetles being the most successfully established.

A study was initiated in 1988 and evaluated in 1995 to determine the effects of flea beetle releases on above- and belowground characteristics of leafy spurge infested rangeland at two locations in southeastern North Dakota. Aboveground, leafy spurge cover and density were reduced approximately 7 and 5 fold, respectively, on both insect influenced study sites. Leafy spurge yields in insect released areas were reduced to approximately 10% of the controls while grass yields increased approximately 50% over the controls.

Belowground feeding of flea beetle larva reduced leafy spurge root density and dry weight in the top 6 inches of soil by nearly 75% over controls. Reproduction by root buds would also be severely reduced in flea beetle released areas as root bud density declined over three fold in the top 6 inches of soil.

---

**Table 1. Aboveground effects of flea beetle releases on leafy spurge-infested rangeland.**

	Leafy spurge <sup>1</sup>							
	Foliar cover		Density		Yield		Grass yield	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
	—— % ——		—— #/yd <sup>2</sup> ——		—— lb/a ——		—— lb/a ——	
Control	52.1a	39.4a	191a	196a	1101a	1123a	925a	854a
Insect releases	6.9b	6.7b	46b	32b	130b	67b	1384b	1336b

<sup>1</sup>Means in a column followed by a different letter differ (P>.05).