

*Reprinted with permission from: Proceedings of the X International Symposium on Biological Control of Weeds. p. 143. July 4-14, 1999. Bozeman, MT, USA.*

*Published and copyrighted by: USDA, ARS, Montana State University-Bozeman.*

<http://www.symposium.ars.usda.gov/noframes.html>

---

## **Controlling leafy spurge using *Aphthona* flea beetles: One year after mass release**

DAVID C. THOMPSON and KEVIN T. GARDNER

*New Mexico State University, Dept. of Entomology, Plant Pathology and Weed Science, Box 30003, Dept. 3BE, Gerald Thomas Hall #221, Las Cruces, New Mexico 88003-8003, USA*

(\*Article begins on following page.)

---

## Controlling Leafy Spurge Using *Aphthona* Flea Beetles: One Year After Mass Release

DAVID C. THOMPSON and KEVIN T. GARDNER

New Mexico State University, Dept. of Entomology,  
Plant Pathology and Weed Science, Box 30003, Dept. 3BE, Gerald Thomas Hall #221,  
Las Cruces, New Mexico 88003-8003, USA

Leafy spurge (*Euphorbia esula* L.) is one of the most important exotic weeds in the Western United States and it continues to expand its range. Many states, such as New Mexico, are at the edge of the leafy spurge expansion. Scattered populations of leafy spurge now occur in the state. Although it is commonly accepted that biological control agents acting alone cannot eradicate a host population, they can reduce a host population to very low levels, especially in the case of inundative strategies. The objective of this study was to determine the potential of using *Aphthona nigriscutis*, and *A. czwalinae/lacertosa* flea beetles to control isolated patches of leafy spurge. Two study sites (Barker and Tusas) were established in northern New Mexico in May 1997. At each site, twenty-four 5m x 5m patches of leafy spurge were delineated. Five, 0.25m<sup>2</sup> subplots were permanently marked for estimating leafy spurge stem density and biomass in each patch. One of four treatments was assigned to each plot in a completely randomized block design. Treatments were 1) control (no beetles), 2) low density (1,000 beetles per plot), 3) medium density (2,000 beetles per plot), and 4) high density augmentations (4,000 beetles per plot). Leafy spurge stem density and biomass were estimated three times during each of the 1997 and 1998 growing seasons. Flea beetles established at both sites and resulted in visible, although variable, reductions in leafy spurge. At Tusas all three beetle densities resulted in significant decreases (30 to 51%) in the number of stems per plot and a reduction in biomass (53 to 61%) at the medium and high density treatments. At Barker only the high density treatment resulted in decreases in stem number (37%) and biomass (61%) after one year.

---