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Effects of leafy spurge thinning on establishment and population increase of *Aphthona* flea beetles

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Abstract:

Two congeneric flea beetles, *Aphthona lacertosa* and *A. nigriscutis,* are proving to be effective biological control agents of leafy spurge (*Euphorbia esula* sensu lato). However, at the onset of this study, it was thought that the beetles were ineffective on extremely high-density infestations of leafy spurge, such as those found in riparian areas. We hypothesized that cutting of leafy spurge prior to release would increase flea beetle impacts on leafy spurge by increasing soil temperatures or reducing resistance to flea beetle attack through increased plant stress levels. A 2 X 2 factorial experiment (spurge cut/not cut, beetles released/not released) was conducted at each of three sites (eastern Montana, northeastern Wyoming, southeastern Wyoming) using a randomized complete block design at each site. The combined impacts of *A. lacertosa* and *A. nigriscutis* on leafy spurge were not significantly affected by cutting of leafy spurge. However, the beetles increased in numbers and had significant impacts on leafy spurge at only two of the three sites.