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Effect of fall applied picloram and 2,4-D on *Aphthona nigriscutis* population

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Aphthona nigriscutis has reduced the density of leafy spurge at many locations. However, there are locations where *A. nigriscutis* has not established or is found at densities too low to be effective. Therefore, it may be necessary to integrate biological and chemical control to reduce leafy spurge to satisfactory levels. The objective of this experiment was to determine the effect of picloram and 2,4-D fall-applied in the field on *A. nigriscutis* population.

Experiments were conducted at two locations, Chaffee and Fort Ransom, North Dakota which average 90 to 63 leafy spurge stems/m², respectively. Approximately 350 *A. nigriscutis* adults were released into 1.8-by 1.8-by 1.8-m cages on June 22, 1995. An additional 100 *A. nigriscutis* adults were released on July 14, 1995. The herbicides picloram plus 2,4-D at 0.56 plus 1.1 kg/ha were applied on four dates, August 15, September 1 and 15 and October 1.

The effect of picloram and 2,4-D on *A. nigriscutis* population was estimated by counting the number of adults emerging from soil cores harvest October 30, 1995 and May 28, 1996 and adults collected in the field in June and July 1996. A golf cup cutter was used to harvest soil cores which were 10.8 cm diameter to a depth of 15 cm, and sample harvested in October were held at 3° C for 75 days. Each sample was then placed into a 2L paper container and covered by a trap chamber, which was a clear plastic cylinder with a mesh top. Trap chambers with soil cores were maintained in the laboratory at 21° C for with a 16-hour photoperiod until *A. nigriscutis* adults emerged. Soil cores harvested in May were placed directly in trap chambers and treated identically to soil cores harvested in October. An insect sweep net was used to collect *A. nigriscutis* from the cage area and portions of the border which totalled 4.5 m².

Leafy spurge density averaged less than 1 stem/0.25 m² on June 5, 1996 regardless of herbicide application date or location. The number of *A. nigriscutis* adults emerging from soil cores obtained in fall and spring was similar regardless of herbicide application date or location. An average of 2 *A. nigriscutis* adults were recovered from each soil core harvested in the fall compared to only 1 per core from spring harvested samples, which indicates overwintering mortality. Peak field emergence of *A. nigriscutis* adults averaged 33/4.5 m² on July 10 at Chaffee and 7/4.5 m² on July 18 at Ft. Ransom. The number of *A. nigriscutis* collected in the field was similar regardless of herbicide application date at each location.