



Alfalfa weevils in southern Alberta

CATEGORY [insects](#) | August 6, 2025

In alfalfa seed fields sweep-net sampling was the most effective sampling tool tested for adult alfalfa weevils. Early season scouting for alfalfa weevil adults can be a predictor of larval development to allow earlier management decisions, especially on intermediate- and old-aged alfalfa stands that had greater numbers of overwintering adults than younger stands.

Alfalfa weevil (*Hypera postica*) was first observed in southeastern Alberta and southwestern Saskatchewan in 1954, but now occurs across Canada. They are an important insect pest of alfalfa, with larval and adult alfalfa weevils feeding on foliage throughout the growing season.

Adult alfalfa weevils overwinter in plant litter or debris in or near alfalfa fields. In the spring, the adults emerge and feed on alfalfa plants before laying eggs in alfalfa stems. Larvae develop through four instars with the first and second instar larvae feeding on terminal buds and newly emerged shoots. The third and fourth instar larvae skeletonize leaves and reduce plant vigour. Mature larvae drop to the ground, pupate, and emerge as new generation, overwintering adults.

Alfalfa weevil can be controlled culturally in alfalfa forage crops when the crop is cut early, but alfalfa grown for seed is more vulnerable because it cannot be cut before seed harvest. Synthetic insecticides can be used to control alfalfa weevil in seed production, but alfalfa weevil resistance to pyrethroid insecticides has been identified in southern Alberta.

Broad nosed weevils (*Sitona* spp.) also occur on alfalfa in western Canada. Larvae feed on root nodules that contain *Rhizobium* nitrogen-fixing bacteria.

A study was conducted to assess the presence and abundance of adult alfalfa weevils in the overwintered (May-June) and new (July-September) generations in alfalfa fields grown for seed in southern Alberta.

The first objective was to determine where adult alfalfa weevils are located in alfalfa seed field with various monitoring tools. Soil sampling was also conducted to determine if alfalfa weevils overwinter in the soil.

The second objective was to test for a relationship between captured overwintered adult weevils in sweep samples and subsequent larval densities to determine if adult capture predicts the more damaging larval populations.

A third objective was to determine if adult alfalfa weevil activity varied between differently aged alfalfa stands.

The fourth objective was to assess the abundance and diversity of other weevils (*Sitona* spp.) captured as by-catch in sweep net samples.

Adult alfalfa weevils were monitored in irrigated fields of seed alfalfa near Rosemary, AB in 2021, 2022, and 2023. Alfalfa fields varied from first to fourth year stands. In 2023, two first year stands, three second year stands and three third year stands were sampled to incorporate stand age into the study design.

Emergence cages, pitfall traps, yellow sticky traps, malaise traps, sweep-netting, and soil sampling were compared for their effectiveness in capturing adult alfalfa weevils. Samples were collected weekly in 2021 and 2022 and biweekly in 2023.

Emergence cage sampling for overwintering adults was conducted early in the season with open-bottom black emergence cages. Cages were set up in alfalfa fields as well as outside the field over no-crop vegetation to see if weevils overwintered on non-alfalfa vegetation.

Emergence cage monitoring found that overwintering adult alfalfa weevil capture was significantly higher in cages placed outside an alfalfa stand than within the field. This suggests that while adult alfalfa weevils overwinter in both alfalfa fields and outside these fields, they may prefer to overwinter away from alfalfa fields.

Yellow sticky cards and malaise traps that target flying weevils did not capture any weevils in 2021 and were dropped from the trial.

Pitfall traps targeting alfalfa weevil adults on the ground captured less than an average of one adult weevil per site. As a result, the researchers do not recommend them for adult weevil monitoring.

Soil samples were collected weekly from July 22 to September 15 to monitor new generation weevils in 2021. In 2022 and 2023, early spring samples were collected to target overwintered adult weevils, and late summer to again target new generation weevils. As a monitoring tool, the research found that soil sampling was ineffective as too few overwintering adult weevils were found to conduct statistical analysis.

Sweep net monitoring was the most effective tool

Sweep net monitoring was conducted from May through September in all study years. Sweep net sampling captured a total of 6255 adult alfalfa weevils over the three years. Significantly more adult alfalfa weevils were captured in June, July and August compared to May and September with peak capture in mid-July. In 2022, most were captured in May, June, July and August with peak capture in early June.

In 2023 when stand age was added as a study treatment, the number of overwintered adults differed with stand age with a significant increase in capture with older stands.

There was also a significant correlation between the number of overwintering adult alfalfa weevils captured in sweep-nets in the early season with the subsequent larval populations at the same sites. This finding suggests that early season scouting for alfalfa weevil adults can be a predictor of larval development to allow earlier management decisions, especially on intermediate- and old-aged alfalfa stands that had greater numbers of overwintering adults than younger stands.

Over the three years, 6200 non-target weevils were also captured during sweep net monitoring. Of these, 5916 weevils were alfalfa curculio (*Sitona lineellus*), 94 weevils were pea leaf weevil (*Sitona lineatus* L.) and the remaining were unidentified non-*Sitona* weevils (other weevils). The researchers

indicated that sweep-net sampling is an effective tool to sample both species in alfalfa grown for seed in Alberta.

An analysis of weekly temperature and relative humidity found variable effects on the capture of alfalfa weevil adults in sweep-net samples.

The researchers found that sweep-net sampling was the most effective sampling tool tested for adult weevils, as it captured both adult and larval alfalfa weevils and sampled more target insects than any other sample technique studied. The economic threshold for alfalfa weevil is 20 to 25 third or fourth larval instars in one 90 degree or straight sweep or 35 - 50% of damaged foliage tips.

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