



Alfalfa seed pests and their natural enemies

CATEGORY [insects](#) | September 4, 2025

A field survey of alfalfa seed insect pests and their predators found inconsistent patterns in seasonal abundance, predator diversity, and correlation between pests and predators. These inconsistent patterns were most likely due to differences in environmental conditions between years.

Alfalfa seed production on the Prairies cover 7.4 million acres (3 million ha). Insect pests, though, have caused economic damage to seed production. These include the most economically damaging alfalfa weevil (*Hypera postica*), along with alfalfa plant bug, (*Adelphocoris lineolatus*), lygus bugs (*Lygus* spp.), pea aphid, (*Acyrtosiphon pisum*), spotted alfalfa aphid (*Therioaphis maculate*), alfalfa seed chalcid (*Bruchophagus roddi*), and alfalfa blotch leafminer, (*Agromyza frontella*).

Biologically important predators of these alfalfa pests have been confirmed in Prairie alfalfa fields and include lady beetles, ground beetles, minute pirate bugs, lacewings, damsel bugs, harvestmen, hoverfly larvae, big-eyed bugs, and numerous spider families.

A research study led by the University of Alberta looked at the seasonal abundance of alfalfa weevil, alfalfa plant bug, and lygus bug in irrigated alfalfa seed fields in their second and third year of production in southern Alberta. Additionally, the study looked at the seasonality of

Bathyplectes curculionis and *Oomyzus incertus*, both parasitoid wasps, and also the seasonal abundance, richness, and diversity of generalist predators. The study also looked at whether populations of alfalfa weevil and generalist predator species were correlated.

The insect survey was conducted in eight quarter section fields in 2020 and 10 quarter section fields in 2021. These fields were separated by at least 1.5 km. Fields were sampled at temperatures above 15C with sweep nets every week at the bud, start of flowering and full seed stages.

Inconsistent trend between years

Lygus bug abundance was inconsistent between years, with no differences between crop stages in 2020, but there were differences in 2021. In 2021, lygus bug abundance was significantly lowest at the bud and flowering stages, and significantly highest at the seed stage when 351 individuals per 100 sweeps were identified. The inconsistency may have been due to differences in environment and biotic factors between the years. 2021 had high summer temperatures that may have encouraged Lygus bug to migrate from drought stricken fields to more favourable irrigated fields.

Alfalfa plant bug abundance was also inconsistent between crop stage and year. In 2020, abundance was statistically highest at the bud (92/100 sweeps) and seed stage (43/100 sweeps), and significantly lowest at the flowering stage 5.25/100 sweeps). In 2021, abundance was reversed with the highest populations at the seed stage (147/100 sweeps), intermediate at the bud (102/100 sweeps) and lowest at the flowering stage (25.7/100 sweeps). The trend, though, was for peak alfalfa plant bug populations in the bud and seed stages in both years.

The abundance of alfalfa weevil was also inconsistent between years and crop stages. In 2020, alfalfa weevil populations were significantly higher at the flower stage (1702/100 sweeps), 433/100 sweeps at the bud stage and 26 individuals per 100 sweeps at the seed stage. In 2021, populations at the bud stage were statistically highest at the bud stage at 493/100 sweeps, followed by 82 at the flower stage and 10 at the seed stage.

Seasonal abundance, richness and diversity of predators also varied by year and crop stage. These results are similar to previous research that found predator populations and abundance vary from year to year. In this study, the researchers said that “inconsistent abundance trends we observed for predators across the two years of the present study can be attributed to multiple environmental and biotic factors, as well as to management practices such as insecticide applications.”

The abundance of the two parasitic wasps, *B. curculionis* and *O. incertus*, was low and varied between year and crop as well. For *B. curculionis*, in 2020 the highest abundance was at the bud

stage at 9/100 sweeps, decreasing with crop stage to less than 1/100 sweeps at the seed stage. There were no statistical differences between crop stages in 2021.

For *O. incertus*, there were no statistical differences in abundance in 2020, and no individuals were found at the flower stage. In 2021, the flowering stage was statistically highest at 19/100 sweeps, with few individuals found at the bud (1.5) or seed stage (0.5).

The researchers did not find any correlation between alfalfa seed weevil and either *B. curculionis* and *O. incertus*. However, two correlations between alfalfa pests and predators were identified. In 2020, common green lacewing (*Chrysoperla carnea*) and ladybug (Coccinellidae.) predators were correlated to *Lygus* spp. In 2021, *Lygus* spp. was also correlated to damsel bugs (*Nabis* spp.). The researchers indicated that higher populations of alfalfa weevil meant higher populations of some predatory insects, which is common in many generalist predators and ,in many cases, is a behavioural adaptation to gather where there's more food.

The researchers summarized that, “given the differences in abundance and population trends across years and locations, more research investigating the life cycles and seasonal abundance of *B. curculionis* and *O. incertus* over a longer time span is needed to assess the species' potentials as biocontrol agents for alfalfa seed weevil in southern Alberta.”

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