

Co-op Grow Team Quick Hitter: Flea Beetles

In western Canada, flea beetles are the most economically damaging insect pest of canola, causing up to 10% yield loss. Flea beetles are leaf-feeding insects that consume plants in the *Brassicaceae* (mustard) family. They cause notches on leaf edges and small circular pits on the leaf surface. Each pit rarely punctures the leaf but the tissue around each site can die, causing a shot-hole appearance. In some circumstances, flea beetles feed on the stem, causing direct plant damage.

There are three species of flea beetles found on the Prairies; hop, crucifer and striped. Of the three, the Crucifer and Striped are the most common in western Canada.



Crucifer flea beetles are black with a metallic green, blue or purple lustre. They have randomly arranged indentations present on their wings.



Striped flea beetles are black with two cream-colored wavy stripes running down the length of their back.

Life Cycle

Flea beetles live one generation per year in western Canada. They overwinter as adults near the surface in the litter layer and become active during April and May. Adults emerge in spring, lay eggs in late May, and then die off. In fall, the offspring feed on canola leaves, stems, and seed pods and then overwinter as adults.

Crucifer flea beetles emerge after the ground temperature reaches 15°C; striped flea beetles generally emerge one to four weeks before crucifer. Although they prefer calm and warm days, they'll continue to feed on cool and windy days. Flea beetles have enlarged hind femurs allowing them to jump when disturbed. On days when the temperature is above 15°C, they can fly or jump from plant to plant. On cool or windy days, they take cover close to the soil and can feed on plant stems.

Economic Threshold

Seed applied insecticides dilute over time once the seed is in the ground. As this happens, flea beetle damage can advance quickly. While the economic threshold for a foliar insecticide application is 50% leaf defoliation, **the action threshold is 25%** for both leaf defoliation and stem feeding (based on a plant stand of 7-14 plants/ft²). It's possible for plant damage to advance from 25% to 50% in under a day, especially in warm, calm weather; therefore a quick decision for insecticide application is required. On windy days, stem feeding can be more damaging than leaf feeding. If the flea beetles feed through the entire stem,

Insecticide active ingredient and Group:

Fortenza	Cyantraniliprole	28
Helix Vibrance	Thiamethoxam	4A
Lumiderm	Cyantraniliprole	28
Prosper Evergol	Clothianidin	4
Visivio	Sulfoxaflur	4A, 4C

damage and loss can be up towards 100%. Canola may be able to withstand more feeding if growing conditions are favourable. When flea beetle feeding is combined with poor plant growth during hot, dry weather, canola is less resilient.

Scouting for Flea Beetles

Scouting is most important during the first two weeks after seedling emergence. At the three to four leaf stage, plants are usually able to outgrow and compensate for damage, if large portions of the crop have not been destroyed.

Frequent scouting - sometimes done daily - is required for damage assessment, especially if the crop is growing slower than the flea beetles are feeding. Seedling damage and death can be rapid when conditions are warm and dry. When the weather is cool and windy, remember to look for and monitor stem feeding.

An important note: Before an insecticide application, ensure that the damage observed on the stem is from flea beetles. Damage from wind or frost can cause similar symptoms on plant stems.

Because damage can vary across a field and change quickly, it's important to monitor the same area within the field each time to determine how damage is progressing. Pay particular attention to new growth as it's the only way to identify new or recent feeding. It's also wise to monitor the growing points of the plant because feeding here can cause irreparable damage.

Insecticide Applications

Insecticides will be effective if the flea beetles are active and label recommendations for temperature guidelines are followed. Because most insecticides require contact or ingestion, adequate water volumes are needed. Always consult the product label.

Making the Insecticide Application Decision:

- ✓ **Assess the damage** to determine the percentage of leaf defoliation or stem damage. Remember, while 50% leaf damage is the economic threshold, 25% is the action threshold.
- ✓ **Look under leaves and on the stems.** Wind and cool temperatures promote stem feeding because flea beetles will take cover close to the soil surface.
- ✓ **Assess flea beetle numbers.** If the population is declining, an application of insecticide might not be necessary.
- ✓ **Scout the newest leaves.** If new leaves have 25% defoliation and flea beetles continue to feed, then an application of insecticide is probably warranted. If the cotyledons have extensive damage yet the newest leaves are growing fast and have no damage, then spraying is probably not necessary.
- ✓ **Consider the plant stand.** A thinner plant stand may require the added protection of an insecticide.
- ✓ **Check multiple areas within the field.** It's recommended to stop and check 10 random sites in a field. Scouting should encompass field edges, within-field locations, tree lines and hedgerows. At the beginning of the season, flea beetles are more abundant at field edges but can quickly move inward.
- ✓ **Check the crop stage.** After the four-leaf stage, flea beetle threat lessens because the plant is usually large enough to outgrow damage. If the crop is unevenly staged, keep scouting until most of the crop has surpassed the four leaf stage.

Flea Beetle Scouting Guide

Estimating flea beetle feeding damage can be challenging and using a visual guide to estimate damage can be helpful. Canola Watch [circulated this article](#) to help with making the Spray Decision but you can also use the two images (copied below for reference) which were produced by Dr. J. Soroka (AAFC-Saskatoon). Take it scouting!

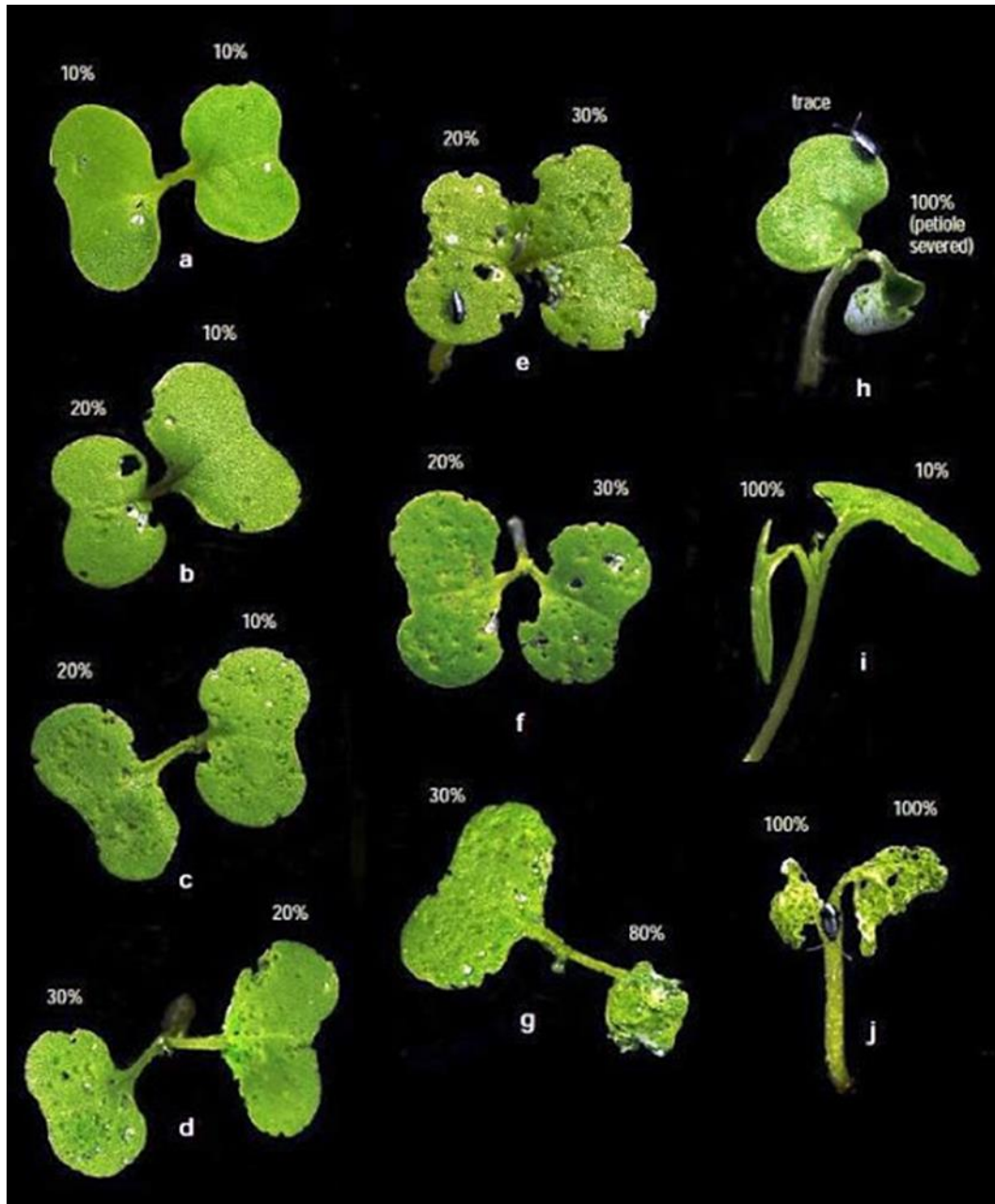


Figure 1: Canola cotyledons with various percentages of leaf area consumed owing to flea beetle feeding damage (Photo: Soroka & Underwood, AAFC-Saskatoon)

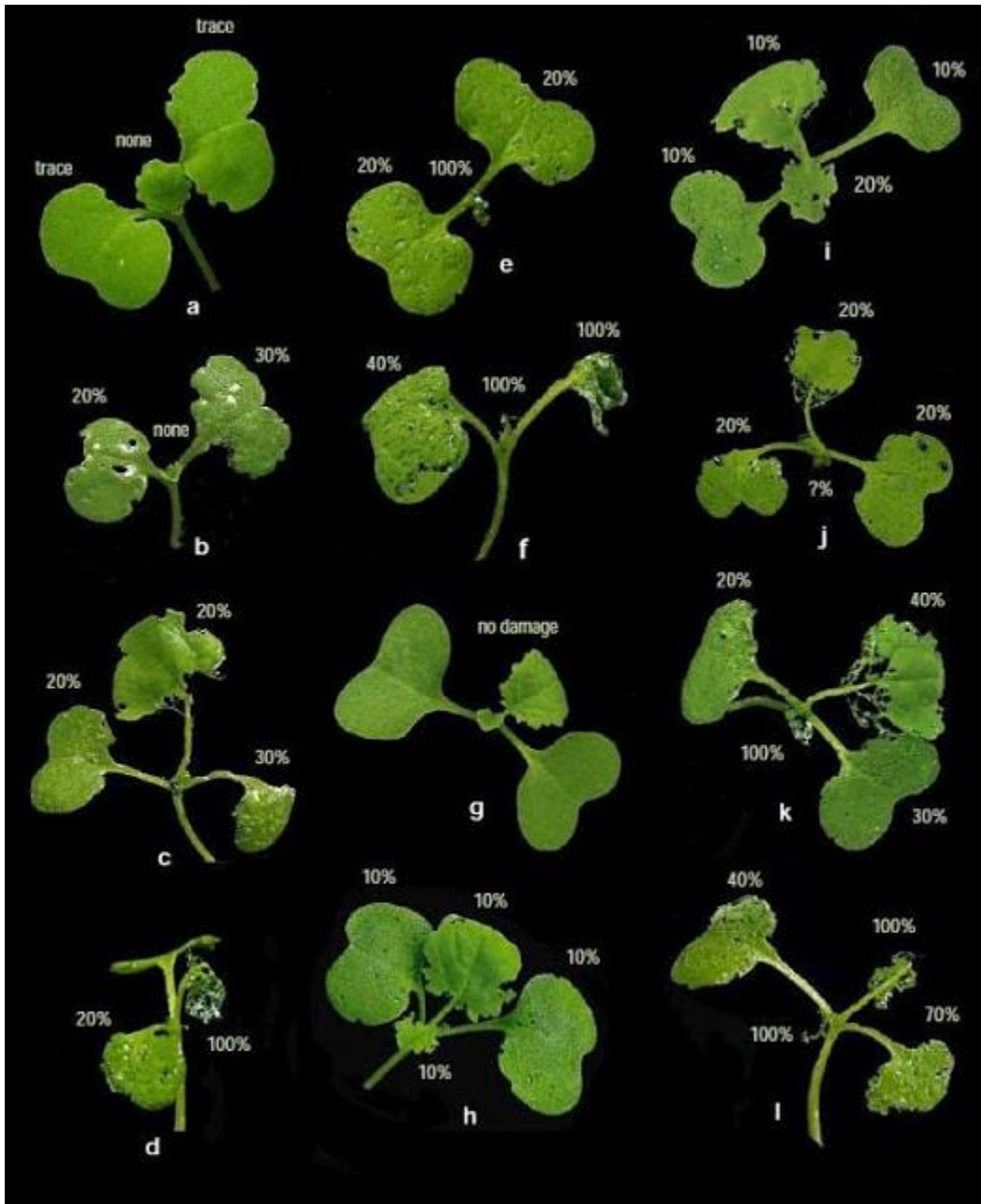


Figure 2: Percent leaf area consumed by flea beetles feeding on canola seedlings (Photo: Soroka & Underwood, AAFC-Saskatoon)