

## Flea Beetle Monitoring Protocol 2010

**Purpose:** To determine the numbers and species of flea beetles present in canola fields in order to see if the proportion of striped flea beetles is increasing over historical levels, indicating a possible decrease in pesticide efficacy towards this species.

### Host plants:

Plants belong to the family Brassicaceae and include canola, mustard, broccoli, cauliflower and weeds such as wild mustard, flixweed and stinkweed.

### Identification, Life cycle and Damage:

Adult flea beetles are small, oblong-ovate or oval-shaped leaf-feeding beetles 2-3 mm long and brown, black or metallic blue or purple in colour with or without yellow stripes on each wing (Figure 1), with enlarged hind femora (thighs), and a tendency to jump when disturbed. Adults overwinter in leaf litter or occasionally in soil in protected places such as field margins, fence rows, hedges, tree rows, or, less frequently, within cultivated fields, and emerge from these sites in spring when soil temperatures warm to approximately 15°C. Early in the spring flea beetles feed on volunteer or winter annual crucifers. They move into canola fields as the seedlings emerge and feed on cotyledons and young leaves. Heavy feeding can give the tissues a "shot hole" appearance, and can cause stand reduction or delayed crop development. Beetles mate in spring and lay eggs near the soil surface-plant stem interface. Larvae are root feeders and do not appreciably damage plant growth. The next generation of adults emerge from late July until September, whereupon beetles feed on available crucifers until the weather cools and they seek overwintering sites.

### Monitoring:

**Materials:** Yellow sticky cards & card holders (wires or stakes) (Figure 2)  
Plastic bags  
10X hand lens  
Data sheets  
GPS or map (Section; Township; Range)  
Fields to sample

### Methods:

As soon as is practical in spring, select canola fields to sample. Bear in mind that *P. striolata* (=striped) prefers to overwinter in woody areas, while *P. cruciferae* (black) prefers hedgerows. The number of fields to sample depends on sampler enthusiasm and time available. A good number would be five canola fields typical of the geographic habitats in a sampler's region. Even one or two fields in an area will help.

Get a **history of the field** - GPS or sec-twp-range location, field description, previous crop, vicinity of previous canola crops, historical average yields in area, canola variety used, seeding practices, pesticides used, other agronomic features of interest.

**Trap setup, orientation, and placement** - Place five traps in each field after seeding

just prior to seedling emergence. Place them running parallel to a convenient field edge, about 10 m into the field and 25 m apart. Along a hedgerow would be great, but along a road or any convenient access point is acceptable. Place them on stakes or wire holders and orient them so that one flat side of the trap faces into the field and the other side of the card faces the field edge. Set the bottom edge of the trap 1-2 cm above soil level or the level of the seedlings as these grow. Write the location, trap number and date set out on the bottom of one side of the trap with a Sharpie or other permanent marker. Mark the side of the trap bordering the field center with a C, and the side bordering the field edge with an E. Save the trap wax wrappers and use them to cover the traps when you change them the next week, making sure to put the **shiny side** next to the sticky card.

Traps should be changed weekly or as numbers warrant. Four weeks of sampling is ideal. Write the date retrieved on the back of the card, count and record the number flea beetles of each species found on each face of the card. If you do not have the time or inclination to identify the species, save your sticky traps in plastic bags (make sure that there are papers between each card; place cards in one bag per sampling period and location), Soroka's lab will do so. Please send all traps to Saskatoon when it is convenient, preferably just after the last sampling.

**Followup** - Once crop has outgrown possible economic injury (four to five leaf stage), discontinue sticky sampling. Note if any controls other than seed treatment such as foliar pesticides were used for flea beetle management, and comment if you feel they were warranted. Check seed yields in fall.

**Caution** – Be aware of clubroot! Please be careful when sampling fields so that no soil is transmitted from field to field. In Alberta, do not drive into fields; use rubber boots and sanitize them between fields with a bleach solution or use disposable booties, and use bleach to sterilize any trowels or other equipment used to disturb the soil.

Figure 1. Yellow sticky cards used for sampling flea beetles (courtesy of J. Otani and J. Knodel)



Figure 2. Three most common flea beetle species in prairie canola crops (courtesy of A. Nemezc)

