# Cabbage Seedpod Weevil Management in Winter Canola

**Purpose:** To determine effective monitoring tools, thresholds and insecticide application timings for the control of cabbage seedpod weevil in winter canola. Properly timed spray applications will ensure insecticides are used at the most effective time, reducing the risk of unnecessary applications to the environment and non-targets.

## Methods:

This past season, we conducted on-farm trials with growers who have a history of seedpod weevil damage in their winter canola fields to determine the number and timing of applications of Matador™ required to reduce damage from this weevil. Three trials were located in Thamesville, Grand Valley and Holstein, Ontario. A fourth location in Thamesville was used but did not have sufficient weevil populations to observe any treatment effects.

Each field site had 5 treatments (spray timings), with 4 replications per treatment. Each treatment plot was ½ spray boom wide (12-18m) and approximately 20m in length, Using farm or custom applicator equipment Matador™ was applied to large replicated plots at various timings relative to flowering:

1) at first (10%) flower,
2) at mid-flowering,
3) at first and mid-flowering,
4) at first, mid-, and end of flowering, and
5) no insecticide applied.

These flowering events are typically 7 to 10 days apart in a typical season.

Weevil populations were monitored by sweep net, taking 10 sweeps per plot each week and sticky traps were placed in each plot and were monitored weekly. 10 racemes were removed from each plot prior to harvest. On the main raceme 10 pods were examined for exit holes (% pods attacked) and seeds were examined under the microscope for damage (% seed damaged). A swath through each plot was harvested with a plot combine and yields were adjusted to Kg/ha at 8.5% moisture.

## Results:

Though weevil infestations were different at each field, the trend was the same for the treatments applied to each field. In Fig. 1a, overall damage to the seed itself (percent lost to weevils) was nearly 14%. One application of Matador™ at first bloom was not effective, but a single application at mid-flowering was more effective and had about the same effect as two applications at first and mid-flowering timings. Three applications provided the greatest protection to the seed. These same trends were also apparent in the overall percent pods damaged (Fig. 1b).

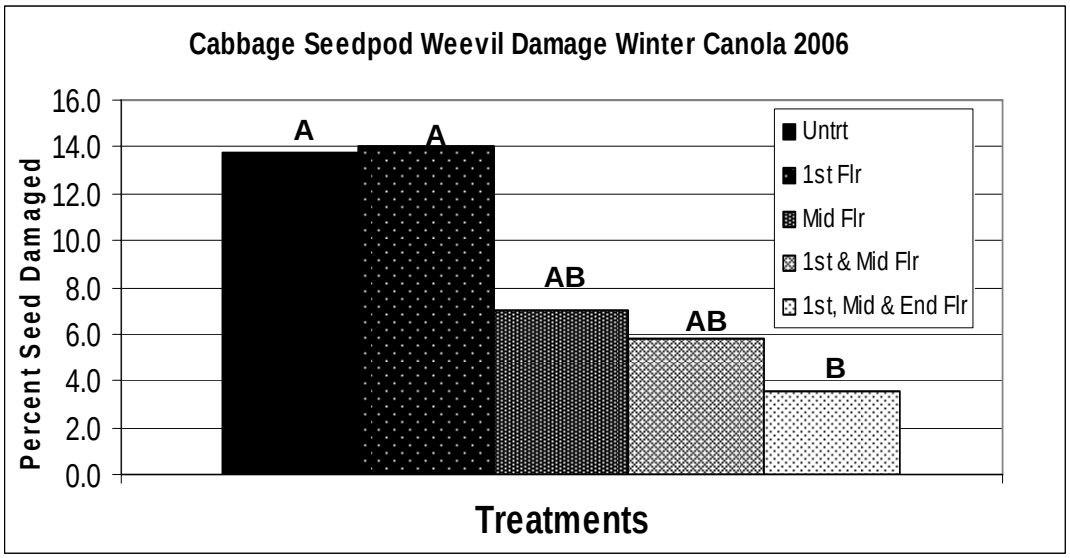


**Figure 1a. Percent seed damaged by seedpod weevil feeding after Matador™ was applied at different intervals during flowering of winter canola in Ontario, 2006. Columns with the same letter are not different.**

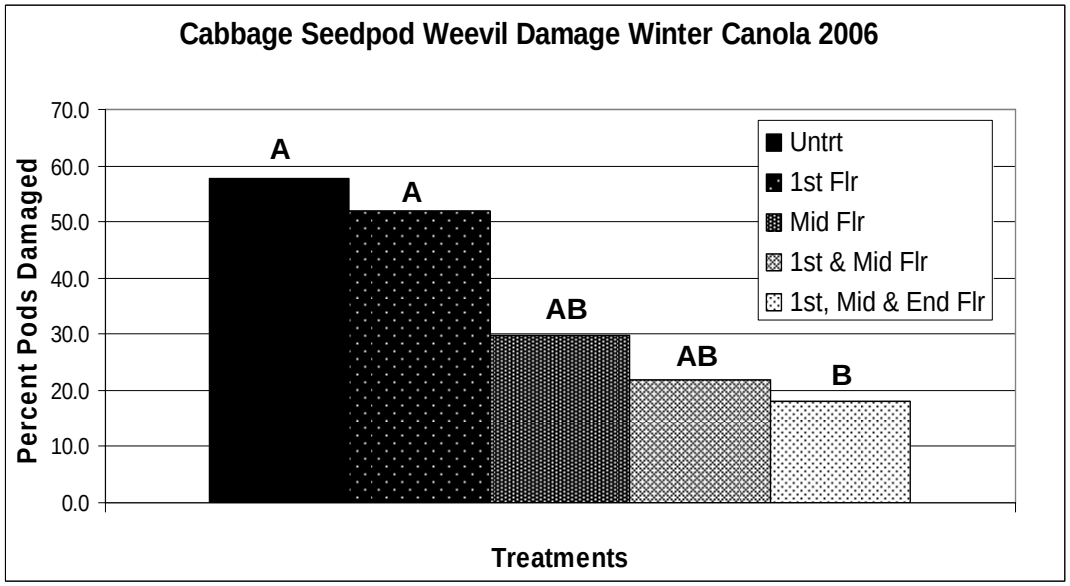


**Figure 1b. Percent canola pods damaged by seedpod weevil feeding after Matador™ was applied at different intervals during flowering of winter canola in Ontario, 2006. Columns with the same letter are not different.**

Yields also appeared to follow the same treatment effect as did seed and pod damage (Table 1). Yields tended to be greater when two applications of Matador™ were used, one at first flower and again at mid flower. When applying insecticide only once to the crop, a single application at mid-flowering produced a greater yield than a single application at first flower. Three applications resulted in greater yield in general, but may not be cost-effective.

**Table 1. Yield (Kg/ha @ 8.5% moisture) from winter canola field plots at three locations in Ontario sprayed with Matador™ at various timings during bloom, 2006.**

| Treatment | Thamesville | Grand Valley | Holstein |
|---|---|---|---|
| Untreated | 2168 a | 1034 a | 1448 a |
| First flower | 2380 ab | 1114 a | 1464 a |
| Mid-flower | 2288 ab | 1279 ab | 1821 b |
| First and mid-flower | 2469 b | 1434 b | 1867 b |
| First, mid- and end-flower | 2454 ab | 1270 ab | n/a |

Values followed by the same letter are not significantly different, P<0.05, Tukey's mean separation test.

## Summary:

Unfortunately, cabbage seedpod weevil is a significant pest of winter canola. In our trials, cabbage seedpod weevil damage was much higher on winter canola than spring canola crops, and damage by crucifer flea beetles and cabbage seedpod weevil was highest in the earlier plantings of spring canola. To reduce your risk of insect damage, time your planting dates to help avoid the key pests in your area. In spring canola, if cabbage seedpod weevil is the main pest concern, then later plantings will help to minimize losses to this pest.

For seedpod weevil control, applications must be made during flowering. One application during the middle of flowering has an effect, but two applications, one at first flower and the second 7 to 10 days after that are better than one application. Unfortunately, this is also the period in which pollinators are present in the crop so if you do decide to spray, contact local beekeepers before you spray and spray in the evening when bees are least active in the field.

## Next Steps:

Future work will continue to determine if sticky traps can be used as a monitoring tool for adult populations. Other foliar insecticide chemistries will also be tested for potential future registrations. We will also examine the potential of trap cropping by manipulating planting dates and using winter canola varieties and other crucifers so that a small area of the field flowers earlier than the rest, attracting the majority of the overwintering adults which can then be controlled in the trap crop, hopefully reducing the need for an insecticide application on the entire field.

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## Location of Project Final Report: