

Cabbage Seedpod Weevil : *Ceutorhynchus obstrictus*

Monitoring Protocol

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: Adults overwinter in soil beneath leaf litter in shelter belts and roadside ditches and emerge from these sites in spring when soil temperatures warm to approximately 15°C. Adult weevils are ash-grey and approximately 3 to 4 mm long (Figure 1). They have a prominent curved snout that is typical of most weevils. Adults can be found on early flowering hosts (wild mustard, flixweed, hoary cress, stinkweed, and volunteer canola). **Weevils move to canola fields when the crop is in the bud to early flower stage** and feed on pollen and buds, causing the flowers to die. Yield loss due to this feeding is more evident in dry years when the canola crop can't compensate for the loss. After a pollen meal, mating occurs on the plant. When small pods develop, the female will deposit an egg through the pod wall onto, or adjacent to a developing seed.

Eggs: Eggs are very small, oval, and opaque white (Figure 2). Most often, only a single egg is deposited per pod; however, two or more eggs can be laid per pod when cabbage seedpod weevil densities are high.



Figure: 1- Adult- 16 days



Figure 2: Eggs: 6-7 days

Larva: Larvae are white and grub-like and consist of four larval instars. They can reach 5 to 6 mm in length (figure 3). The first instar larva feeds on the cuticle on the outside of the pod. The second instar bores into the pod and feeds on the developing

seeds. A single larva consumes about five canola seeds. Larval feeding on the seeds is the most severe type of injury and infested pods are more prone to shattering that causes seeds to be un-harvestable. Infested pods are often misshapen as a result of the larval feeding. An indirect form of damage can occur when fungus enters the pod through the larval exit hole and infects the pod.

Pupa: Pupation takes place in the soil ((Figure 4). Mature larvae chew small, circular exit holes in the pod walls (Figure 5), drop to the soil surface, burrow in, and pupate within earthen cells. New generation adults emerge about 10 days later and feed on maturing canola pods causing further losses and crop quality. Late in the season, they migrate to overwintering sites.



Figure 3: Larva- 6 weeks



Figure 4: Pupa: 10 days



Figure 5: Exit holes on canola pods

Monitoring

Timing:

The risk of infestation can be predicted based on the size of the adult population. **Begin sampling when the crop first enters the bud stage and continue through the flowering.**

Sweep net sampling:

Sweep net samples should be taken at ten locations within the field with ten 180° sweeps per location. Count the number of weevils at each location. **Samples should be taken in the field perimeter as well as throughout the field. Adults will invade fields from the margins and if infestations are high in the borders,** application of an insecticide to the field margins may be effective in reducing the population to levels below which economic injury will occur. **An insecticide application is recommended when three to four weevils per sweep are collected.** Timing of the insecticide when the crop is in the 10 to 20% bloom stage (2-4 days after flowering starts) has been shown to be the most effective. Consider making insecticide applications late in the day to reduce the impact on pollinators,

A high number of adults in the fall may indicate the potential for economic infestations the following spring. A trap crop border of an early maturing *Brassica* (e.g. *B. rapa*) can be planted seven to ten days prior to the canola crop to attract and concentrate adult weevils in the field borders. The trap crop should be monitored for the presence of weevils and when weevil populations are high an insecticide can be applied to the trap crop prior to bud formation.

An additional benefit to monitoring for cabbage seedpod weevil is that *Lygus* bugs can be sampled, provided the sampling continues thorough the early pod stage.