



Agronomic Spotlight

Managing Insects and Diseases in Canola

- Once an insect or disease is introduced into an area it may be impossible to eradicate it, making practices like planting only certified, disease-free seed critical for prevention.
- Proactive approaches for managing pests and diseases, such as proper field selection and rotation strategy, are often more effective and economical than in-season, reactive methods.

Insect Management

Flea beetles. Adult flea beetles are small, about 1/8-inch long, and have shiny, greenish-black bodies (Figure 1). The adults have a tendency to jump when disturbed. The larvae are small, white worms with brownish heads. Flea beetles become active in the spring around the time of spring canola emergence. Adult beetles feed on cotyledons which can result in plant death and significant stand loss. Feeding damage is less of a concern once the plants are beyond the seedling stage and the true leaves are fully opened.



Figure 1. Flea beetles.

Seed treatments are very important in flea beetle control. In the absence of seed treatments, apply insecticides when there is 25 percent defoliation and flea beetles are present. Double planting around the perimeter of the field may help to reduce damage to canola seedlings because flea beetle infestations tend to be most severe around field edges.

Cabbage seedpod weevil. The cabbage seedpod weevil is a small, ash-gray colored weevil about 1/4-inch long. The larvae are white, legless grubs with a brownish head capsule (Figure 2). Overwintered adult females lay a single egg inside the canola pods. Economic damage is caused by the larvae which feed on and destroy seeds as they develop inside the pod.

Management options include seed treatments, insecticide applications and trap cropping. A general insecticide treatment threshold is when an average of two or more adult weevils are observed on each plant and the crop is at 50 to 75 percent bloom.

Planting the perimeter of the field to a trap crop that flowers prior to the canola crop and spraying with insecticides may help to prevent the spread of weevils throughout the field.



Figure 2. Cabbage seedpod weevil adult (left) and larva (right).

Aphids. Aphids are small, about 1/8 inch or less, with gray-green bodies and can be winged or wingless depending on the season and population dynamics. Aphid feeding on seedlings causes stunting and reduced vigor, which affects yield potential. Aphid feeding on seedlings of winter canola can also lead to decreased winter survival. During flowering, aphids will concentrate on the flower heads causing deformed, stunted or completely sterile pods.

Management options include seed treatments and insecticide applications. Insecticides can be very effective at controlling aphid populations but care should be taken to protect natural enemies, which are also very effective at controlling aphid populations. Thresholds for insecticide applications for aphid control vary by region. Consult local sources for management recommendations.

Diamondback moths. Diamondback moth adults are about 1/3-inch long with brown and light gray coloration. They get their name from the three diamond shaped yellow spots on their back. The larvae are about 1/3-inch long, green caterpillars with erect hairs scattered on their bodies. Diamondback moths overwinter in the United States and migrate north beginning in the spring, depositing eggs on Brassica hosts along the migration path. Damage is done by larvae feeding on leaves, buds, flowers, young pods and even seeds. Older larvae cause the most damage and can significantly reduce seed yield. Multiple generations occur per year.

Insecticides should be applied for control during the pod stage when larval counts reach two to three per plant. Thresholds for the flowering stage have not yet been established but insecticides may need to be applied when larval counts reach one to two per plant.

Disease Management

Sclerotinia stem rot (white mold). Sclerotinia is a soil-borne fungus that can survive in the soil and crop residue for several years. Spore production and infection occurs after prolonged periods of moisture, usually after canopy closure. Infected plant parts will have a white, bleached appearance (Figure 3) and a white, moldy growth with small, black sclerotia may be seen at the base of the stem. Infected plants may produce fewer pods per plant, fewer seeds per pod and small, shriveled seeds. Fungal growth on stems interferes with moisture and nutrient movement through the plant and weakens stems resulting in lodging, premature ripening and pod shatter.

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To reduce the severity of this disease, allow three to four years between planting canola or any other host crop. Grass crops are a good crop to use in the rotation because the disease does not affect grasses. Because initial infection begins with infested soil or seeds, use of clean seed and a fungicidal seed treatment is recommended. Fungicides may be effective at minimizing yield loss but may not always be economical. Consult local forecasting models for the likelihood of disease development and consider the economics of spraying costs and profit potential.



Figure 3. Sclerotinia stem rot.

Blackleg. This disease is caused by a seed-borne fungus that can survive for several years on infected canola seeds and residue. Spores are first produced in the spring, primarily from infected residue, but infection can continue throughout the season. Leaves, stems, pods and seeds can become infected. Infections on leaves cause white to light tan spots that can become large and irregularly shaped, and appear papery as they mature. Infections on stems will appear as white or gray lesions which can lead to cankers and girdle the stem (Figure 4). This disrupts moisture and nutrient flow causing lodging, premature ripening and pod shatter. Small, black spots called pycnidia are commonly seen on leaf and stem lesions.



Figure 4. Blackleg.

The most important way to avoid the spread of this disease is to plant certified disease-free seeds and, as an extra precaution, use fungicide seed treatments. Resistant cultivars are available and should be considered in regions where the disease is problematic. Rotations away from canola for a few years can reduce the severity of disease when canola is planted again.

Alternaria black spot. This disease can infect all growth stages of canola but becomes most severe during flowering and ripening. Initial inoculum can come from infected seeds, crop residue or other infected crops. Symptoms first appear on seedling leaves as brownish spots which grow larger and darken with a yellow halo around them as the lesions mature (Figure 5). Stem and pod infections begin as dark spots. Pod infections may progress to dark, sunken lesions. As pods mature, they will take on a gray sooty appearance. In most cases, yield loss is due to infection of the pods and seeds, which can result in shrunken seeds with reduced oil content and pod shatter.



Figure 5. Alternaria black spot.

To minimize seedling infections, plant certified disease-free seeds and control volunteer canola and cruciferous weeds that could serve as hosts. Crop rotation away from host plants for three years may help reduce spore production, but neighboring fields can still provide inoculum as spores can travel long distances on wind. Foliar fungicide applications at 95% flowering can help protect yield potential.

Clubroot. This disease is caused by a fungus that can survive in the soil for many years. Clubroot causes galls on the roots of infected plants. The galls may be small or very large and interfere with the functioning of the root system causing wilting and stunting.

Because this disease is primarily transferred from field to field on infected soil or equipment harboring infected soil particles, ensure equipment is properly cleaned between each field operation. Long rotations between susceptible crops are required to reduce inoculum in the soil.

General disease prevention guidelines:

- Use high quality seeds that have been treated with a fungicide seed treatment. Use certified disease-free seed, if possible, to avoid the introduction of a pathogen into a field.
- Plant in fields with adequate drainage.
- Utilize lower seeding rates to reduce humidity in the canopy when planting in fields with a history of disease.
- Plant resistant cultivars when available.
- Avoid tight rotations with susceptible crops.
- Tillage can help to speed up decomposition of fungal survival structures; however, deep tillage performed again the following season can bring dormant fungal structures back to the surface and lead to further infections. The amount of disease control is usually proportional to the amount of residue buried. Sometimes even a small percentage of canola residue remaining on the surface is enough to cause disease outbreaks the following season.

All images are courtesy of the Canola Council of Canada.

Sources

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For additional agronomic information, please contact your local seed representative. **Individual results may vary**, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. **ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS.** ©2016 Monsanto Company. 151124145035 012216CAM.