



Direct Seeding

Controlling Canola Insect Pests in Direct Seeding Systems

Insect pest management in canola requires field scouting and accurate, frequent monitoring regardless of whether conventional or direct seeding systems are used.

Canola Insect Pests

Infestations of many insect pest species of canola are not affected by seeding method (direct or conventional). Important canola insect pests that are unaffected by seeding system include: bertha armyworm, diamondback moth, red turnip beetle, and lygus bugs.

However, infestations by two pests, root maggots and flea beetles, are influenced by the amount of soil disturbance and crop residue cover. Root maggots do greater crop damage in zero and reduced tillage systems. Flea beetle infestations are highest in conventional, high disturbance systems.

Root maggots prefer cool, moist soil with high organic matter. These conditions occur with low soil disturbance seeders. Here, the crop residue cover reflects sunlight and hampers evaporation causing cool, moist conditions.

Flea beetles, on the other hand, prefer warm, dry soil conditions. These conditions commonly occur with cultivation and high soil disturbance seeders. When crop residue is buried, the soil can readily absorb sunlight, which enhances evaporation and produces warmer, drier soil.

Insect Control in Direct Seeding

Cultural control strategies

Crop rotation: Crop rotation is important for reducing the proximity of overwintering stages of insect pests to the crop seeded in the following year. A three- or four-year rotation is recommended for insect control as well as optimal control of weeds, volunteer canola and diseases.

Canola species selection: Although both canola species are about equally susceptible to attack by flea beetles, Polish canola is more susceptible than Argentine canola to root maggot infestations. Therefore, where root maggot infestations are significant, growers should plant Argentine rather than Polish canola if the growing season is sufficiently long or when it is possible to seed quite early in the season.

Planting date: Regardless of the canola species grown, producers should seed canola early in spring to limit damage from root maggots. Early seeding may predispose plants to greater root maggot attack, but early-seeded plants can better compensate for root maggot damage.

Other cultural control strategies: To reduce root maggot damage, growers should increase seeding rates to about 9 pounds per acre and should plant canola at row spacings of at least 20 cm (8 inches). Flea beetle damage can be reduced by planting large seeds and by increasing seeding rates. Larger seeds give rise to more vigorous plants that tolerate flea beetle injury better than smaller plants. Increasing seeding



rates to about 8 pounds per acre can reduce per plant damage by flea beetles.

Chemical control strategies

If numbers of adult flea beetles in canola crops in the previous fall were higher than normal, growers should apply an insecticide at planting time. Granular application of terbufos at planting time gives better flea beetle control than seed coated with lindane. However, because flea beetle infestations are greatly reduced under direct seeding, a lindane treatment alone is usually adequate for direct seeded fields. In many areas where flea beetles have not been a problem, an insecticide at seeding is not required in direct seeded systems. Lindane will not be available as a canola treatment after the 1999 crop season.

The crop should be monitored carefully for flea beetle damage when plants are in the cotyledon stage (development of the first pair of leaves from the seed). This should be done at least three times per week during the warmest part of the day. Apply a foliar insecticide when 25 per cent of the cotyledon area has been injured by flea beetle feeding.

Applications of terbufos granules at planting can reduce the initial damage caused by larval root maggots. However, as the insecticide degrades in the soil its effectiveness declines, and canola roots can become infested with root maggots.

Weed control

Cruciferous weeds, like wild mustard, shepherd's purse, flixweed, ball mustard and wild radish, as well as volunteer canola, can be alternative host plants for insects like root maggots, flea beetles, diamondback moths and red turnip beetles. Therefore, controlling these weeds and volunteer canola is important for reducing the economic impact of insect pests in canola.

More Information

For more information on insect control in canola, refer to the following publications:

- *Crop Protection with Chemicals* (Agdex 606-1, the "blue book")
- *Practical Crop Protection* (Agdex 606-3, the "green book")
- *Cabbage Maggot* (Sustainable Agriculture Facts publication MG-4431)
- *Diamondback Moth* (Sustainable Agriculture Facts publication MG-4432)
- *Bertha Armyworm* (Sustainable Agriculture Facts publication MG-4043)
- *Red Turnip Beetle* (Sustainable Agriculture Facts publication MG-4431)
- *Flea Beetle Management for Canola, Rapeseed and Mustard in the Northern Great Plains* (Sustainable Agriculture Facts publication)

These are available from your local Alberta Agriculture, Food and Rural Development office.

Insect Pests of the Prairies by H. Philip and E. Mengersen, 1989, University of Alberta Press, Edmonton, provides excellent information on the biology and control of all major species of insect pests that attack canola and other field crops.

Prepared by Lloyd Dosdall and Michael Dolinski, Alberta Agriculture, Food and Rural Development

Factsheets in the Direct Seeding Series are also available through Alberta Agriculture's Internet site at <http://www.agric.gov.ab.ca/agdex/500/index.html>.