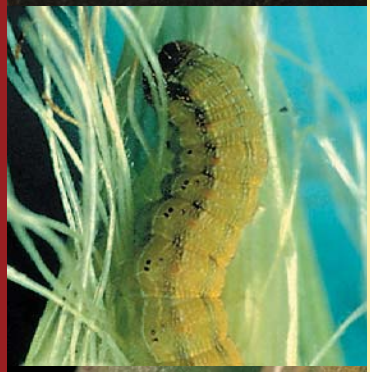
Corn insect guide



PONCHO® 250

Sources
Entomological Society of Canada, Entomological Society of Ontario, Iowa State University: Marlin Rice (Entomologist), Kentucky State University: Entomology Department, Ontario Ministry of Agriculture and Food

Always read and follow label instructions.

Bayer CropScience

1 888-283-6847 www.bayercropscience.ca
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Where insects are controlled by Poncho seed-applied insecticide the Poncho logo appears at the bottom of that page.

Black cutworm

Description

- Larvae are greyish-black with a paler underside and no distinctive markings
- Mature larvae are about 3.5 cm long and hide just under the soil surface during the day
- Adult moths are grey with a small black dagger marking on each forewing
- Often confused with other cutworms

Damage

- Pinholes in leaves and hollowed out stems – affected plants suddenly wilt
- Larvae cut off plants above ground. (Sandhill cut worms cut off plants below ground – see page 20.)

Scouting and Thresholds

- Scout for cutworm every five days once corn emerges. Look first for pinhole damage in leaves, wilting plants and seedlings cut off at the ground
- Cutworms that are over 2.5 cm long are difficult to control and will stop feeding in a few days once they reach full maturity and pupate

Management and Control

- Poncho 250 controls black cutworm early in the season up to the 5-leaf stage. Smaller cutworms (less than 2.5 cm) are easier to control than larger ones
- In weedy fields, cutworms will feed on weeds prior to seedling emergence and can outgrow control. Once the corn crop emerges, they will feed on newly emerged seedlings. In fields with a history of cutworm pressure, weed control early in the spring is essential
- A hybrid with genetic resistance to cutworm combined with Poncho 250 is the best method of control.
- Foliar insecticide treatments are most effective when applied in the evenings when cutworms are actively feeding
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations

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Corn earworm

Description

- Vary in colour – from light green to yellow
- Full-grown larvae grow 4 cm long and have prominent stripes running the length of their bodies
- Size and stripes differentiate earworms from European corn borer, and tan head colour differentiates earworms from fall armyworm
- Adult moths are buff or tan coloured. Forewings have central brown dots visible from the underside of the wing and hind wings are pale in colour with a darker brown border

Damage

- Larvae feed mainly on silks and developing kernels
- Damaged tassels and silks result in poor pollination that affects ear development
- Feeding is done mostly at the top third of the ear tip

Scouting and Thresholds

- Locate five sets of 10 plants per field and open the ear to inspect for feeding damage or larval presence, including the presence of ear moulds carried in by the pest

Management and Control

- Insecticides on seed corn are recommended to maintain kernel quality but are generally not considered economic in field corn
- Natural enemies include trichogramma wasps, ladybird beetles, lacewings and parasitic flies
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations

Corn fleabeetle

Description

- Very tiny – only 1.8 mm in length
- Black, shiny beetles with elongated hind legs used for jumping

Damage

- Corn flea beetles are vectors for Stewart's bacterial wilt
- Long feeding scratches or window-paning are found on the leaves, usually running parallel with the leaf veins

Scouting and Thresholds

- Inspect five sets of 20 seedling plants in each field
- An average of five or more beetles/plant prior to the 4th-leaf stage presents a high enough risk to warrant treatment

Management and Control

- Poncho 250 controls corn flea beetle
- Mild winters favour the survival of both corn flea beetle and the bacteria. Avoid early planting of varieties susceptible to Stewart's wilt
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations

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Corn leaf aphid

Description

- Small (2 mm or less), bluish green, soft-bodied insects with black legs and short black cornicles or “tailpipes” near the rear of the abdomen
- Piercing and sucking mouthparts
- Secretes a sticky substance referred to as “honeydew” which often becomes coated with a blotchy, sooty mould

Damage

- Nymphs and adults feed primarily on the whorls of the plant. Symptoms include yellowing, wilting and curling of leaves
- As densities increase, leaf surfaces and tassels often become black and sooty with mould
- Corn leaf aphids are vectors for maize dwarf mosaic virus and barley yellow dwarf virus

Scouting and Thresholds

- Examine five sets of 20 plants per field. If 50 per cent of all plants during late-whorl to early tassel have 400 aphids/plant and plants are under drought stress, control is recommended

Management and Control

- Biological control agents – ladybird beetle, lacewing, parasitic wasps
- Chemical control is economic only when natural enemies and parasites of corn leaf aphid are not present and aphid densities are above economic thresholds
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations

Western corn rootworm

Northern corn rootworm

Corn rootworm

Description

- Western corn rootworm (WCR) – yellow to green beetles with three, wavy black stripes on wings
- Northern corn rootworm (NCR) – beetles are uniformly green to yellowish
- Larvae – 1 cm long, white with a brown head and a distinct dark tail plate

Damage

- Where pressure is high, feeding will prune the root system causing lodging or goosenecking. Lodging is particularly severe in areas with high winds
- Adults feed on pollen and clip the silks, interfering with pollination. If tassels have not emerged they will feed on the leaves, leaving “window panes”

Scouting and Thresholds

- Monitor 20 plants in five different locations weekly from when adults emerge at the end of July to the end of August
- If <1 beetle per plant – no insecticide is necessary in the following year’s corn crop (Note: 1 WCR = 2 NCR when counting adults)
- Field corn can withstand heavy populations (>10 per ear) at pollination without economic loss

Management and Control

- Poncho 1250 controls corn rootworm larvae
- Crop rotation is the primary management strategy
- Genetically resistant hybrids are available
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations

Marlin Rice, Extension Entomologist, Iowa State University

White Grubs

(European Chafer, Japanese Beetle, June Beetle)

Description

- Larvae of these three insects, all commonly referred to as white grubs, are the most damaging stage to corn. They are almost indistinguishable without a microscope or strong magnifying glass. All are white, C-shaped, with orange-brown head and dark posterior
- Adult European Chafers are light-brown, fawn-coloured, oval scarab beetles
- Adult Japanese Beetles are shiny, metallic green with bronze-coloured outer wings
- Adult June Beetles can vary in color from pale yellow to black but most are brown to dark brown
- June Beetles have a three-year life cycle. Japanese Beetles and European Chafers have annual life cycles

Damage

- Feed on fibrous roots 3-5 cm below the soil surface – resulting in poor emergence and stunted plants
- High risk areas include corn following soybeans on sandy soils, especially when near turf such as lawns, golf courses and pasture

Scouting and Thresholds

- Scout in the fall prior to corn, concentrating efforts on sandy knolls and near tree lines at least 1.5 times the height of trees away. Dig five 30 cm squares of soil about 10 cm deep in high risk areas. Four to five grubs per square foot is considered high intensity

Management and Control

- Poncho 250 controls European Chafer, June Beetle and Japanese Beetle
- Use Poncho 1250 when scouting indicates high pressure (4 to 5 grubs per 30 square cm)
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations

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European corn borer

Description

- Eggs appear in masses. Individual eggs are flat, white and layered in a fish scale pattern
- Larvae are white to grey with two spots on each abdominal segment, a black head and are about 2.5 cm at maturity
- Adult moths are light-brown, about 2 cm long with dark wavy lines running across each forewing

Damage

- Early-season larvae feed on leaves, creating pinholes and migrate into the whorl of the plant to attack the enclosed tassel
- Later-season larvae feed on the leaves, bore into leaf midribs and then migrate into stalks and ear husks
- Stalk lodging and ear drop occur

Scouting and Thresholds

- Scout a minimum of five sets of 20 plants per field or 100 plants per field
- For first generation scouting – look for leaf-feeding damage, unroll whorls and look for small larvae, split stalks to locate older larvae
- For second generation scouting – check for eggs on leaf undersides, concentrate scouting efforts on the three leaves above and below ears

Management and Control

- If European corn borer (ECB) is a moderate to high risk in your area, select Bt corn hybrids
- Shredding residue after harvest destroys overwintering ECB in stalks and stubble
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations

Millipede

Description

- Wormlike with rounded body segments that bear two pairs of legs on each segment. Head is rounded with short antennae
- Light brown to black in color
- Vary in length from < 1 inch to > 2 inches
- Often confused with wireworm (see page 30)
- Millipedes are not insects, but are more closely related to lobster

Damage

- Feed primarily on decaying organic matter, the seed, or the underground shoot/roots of emerging seedlings
- Damage can be confused with wireworm feeding

Scouting and Thresholds

- Look during the day in damp areas, under leaf litter, soil clumps or stones
- No thresholds are available for this pest
- Millipedes are often confused with wireworm

Management and Control

- Dry weather helps minimize millipede populations
- Insecticide applications are not usually recommended for control of millipede
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations

Potato stem borer

Description

- Larvae are pink to light purple and about 4 cm in length at maturity
- Adults are nondescript brown moths

Damage

- Larvae feed on seedlings and small plants in late May or early June
- Damage is most severe at field edges or near grassy, weedy areas
- Larvae burrow into the base of young plants below the soil line. Plants may be cut at the base, resembling cutworm injury
- By the 3- to 4-leaf stage, they feed inside the whorl, causing the upper one or two leaves to wilt

Scouting and Thresholds

- Scout along fencerows or in grassy areas and look for them within the stem or in soil near the base of the plant
- No action thresholds are available

Management and Control

- Good weed control, especially grassy weeds, will reduce the risk of damage in the following year
- Fall plowing or burndown treatments will reduce the number of eggs that survive winter
- No insecticides are registered for control of potato stem borer in corn
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations

Sandhill cutworm

Description

- Larvae are white to pale grey with chalky-white stripes along the back and sides. Full-grown larvae reach about 1 1/3 inches in length
- Heads are a dull reddish brown. A blood vessel extends along the back and pulsations can be seen through the thin cuticle
- Often confused with black cutworm (see page 2)

Damage

- Larvae move below the soil surface and feed only on underground plant parts, sometimes severing stems completely

Scouting and Thresholds

- Dig around the base of corn plants, especially those showing signs of injury
- Prevalent on sandy soils throughout eastern Canada
- There are no established thresholds for control

Management and Control

- No crop protection products are registered for control
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations

Seedcorn beetle

Description

- Small, brown ground beetles, <1 cm long
- Beneficial ground beetles look similar to seedcorn beetles but are usually larger

Damage

- Adults damage the seed endosperm – they hollow out the seed and prevent germination
- Severity is worse in cool, wet springs when germination is delayed

Scouting and Thresholds

- Adult beetles are already present at germination time
- To scout – dig up unhealthy plants or skips in emergence and examine 10 seeds in five areas of the field to determine population and damage intensity
- Replanting may be necessary if skips are extensive

Management and Control

- Warmer soil temperatures reduce the risk of heavy seed corn beetle damage
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations

Seedcorn maggot

Description

- Small, yellowish-white, headless, legless larvae – bodies taper to the front with two small mouth hooks

Damage

- Ideal conditions – cool, wet springs when germination is delayed
- Feed on swollen, ungerminated seed and can be found in the cotyledon, embryo and hypocotyls
- Prevents germination, slows emergence and reduces plant stand – seedlings often die or lag behind

Scouting and Thresholds

- Damage is usually found over large generalized areas
- Rescue treatments are not available
- High-risk factors – heavy crop residue,manure application, deep planting or cool weather

Management and Control

- Poncho 250 controls seedcorn maggot
- Use good quality vigorous seed for fast emergence
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations

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Slugs

Description

- Juveniles and adults: soft-bodied, legless, grey, with a slimy gelatinous covering, two pairs of tentacles protrude from the head
- Range from 1 to 3 cm in length but can reach up to 10 cm

Damage

- In early season, slugs feed on germinating seeds and seedlings above or below ground
- On larger plants, they only feed on lower leaves, leaving ragged holes, causing a skeletonized appearance. Symptoms can resemble hail damage with severe defoliation

Scouting and Thresholds

- Slugs are nocturnal, so it is important to scout for them at night or early morning
- Check under debris and clumps of soil
  Slugs leave a slimy, silver-coloured trail
- Check 1.5 m sections of rows in five locations
- Once the 8- to 10-leaf stage has been reached, risk of economic damage has passed

Management and Control

- Tillage is effective against slugs – it eliminates residue cover and exposes the slugs to dehydration and predation. No economically effective chemical controls are available
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations

True armyworm

Description

- Dull-green to brown larvae 4 cm in length
- White-bordered stripes run laterally along the body and dark diagonal bands at the top of each abdominal proleg
- Heads are yellow-brown with dark brown lines
- Adults – sand-coloured moths have distinctive white spots on the centre of each forewing
- Often confused with other caterpillars, including variegated cutworm and fall armyworm

Damage

- Feeding is done at night and begins on leaf margins, eventually leaving only stalks and leaf midribs
- Corn plants can recover under moderate feeding pressures, providing growing points are unharmed

Scouting and Thresholds

- Scout in early evening just prior to sunset. Examine 20 plants from five locations totaling 100 plants per field
- Economic thresholds are set at two or more larvae per seedling or feeding damage that exceeds 10% of the plant

Management and Control

- Insecticides are only effective on smaller larvae. Parasites may prevent armyworms from reaching economic thresholds. When scouting, check the backs of armyworms for small, oval, yellowish eggs just behind the head of the larvae. When hatched these maggots will kill the armyworm. Avoid insecticide treatments when parasitized larvae are present
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations

Wireworm

Description

- Larvae are 7 to 35 mm long, cylindrical, copper-brown with a hardened shell
- Adult wireworms are beetles. They have the ability to flip upright when placed on their backs, clicking as they do, giving them the name “click beetles”
- Often confused with millipede (see page 16)

Damage

- Look for inconsistent growth, stand gaps and injured seedlings that appear stunted with leaves turning purple at the tips
- Wireworms prefer sandier soils or recently tilled grassy fields
- Larvae feed on the seed, or the underground shoot/roots of emerging seedlings. If soil is cool and wet, larvae can cause damage later in the season

Scouting and Thresholds

- Scout in mid-April prior to planting. Establish two bait stations in high risk areas such as sandy knolls. Bury a nylon mesh bag with half a cup each of untreated,soaked corn and wheat or freshly cut potatoes in a hole 15 cm wide and 5 to 8 cm deep. Mound the soil over the bait. Check bags a few days before planting – one wireworm/station is the economic threshold

Management and Control

- Poncho 250 controls wireworm up to the fifth leaf stage of corn
- Use Poncho 1250 for fields with very high pressure or later season infestation
- No rescue treatments are available
- Refer to OMAFRA Publication 812, Field Crop Protection Guide, for insecticide recommendations