

INSECT MANAGEMENT

Pests normally include: weeds, insects, nematodes, fungi, rodents, bacteria, viruses, and any other organisms that attack plants and cause economic loss.

No-till crops are susceptible to the same number of pests – insects, slugs and nematodes – as conventional crops. However, with the slightly different “habitat” found in no-till, some types do better and others do not fare as well. General control methods are similar to any other cropping system. The difference is that with no-till, the pests may differ from those you’re used to dealing with.



Living and dead vegetative cover creates sheltered, cooler and slightly wetter environments above and below ground for pests. Delayed emergence under these conditions may increase the risk of pest attack.

For example, cutworms and armyworms have life cycles that depend on pre-crop vegetation.

The same habitat conditions that attract pests also attract beneficial insects (e.g., wheat residue attracts beneficial spiders).

The increased diversity of animal life attracted to no-till fields also helps to keep populations of any one species in control.



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Some farmers have found that 28% nitrogen and water sprayed on slugs in the evening is an effective control measure.

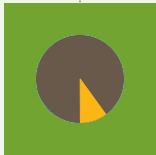


For many pests, the best control method is to keep your fields as weed-free as possible.

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BEST MANAGEMENT PRACTICES

	DESCRIPTION	DAMAGE CAUSED	CONDITIONS PREFERRED	BEST MANAGEMENT PRACTICES & TIPS
 <p>Black cutworm.</p>	<p>Several species attack corn. The most common is black cutworm. In the larval stage, they are smooth, ranging from grey to dark brown to almost black. Moths are dull-coloured millers attracted to light.</p>	<p>Usually cut small plants at ground level or tunnel into the stalk of young corn plants. Before 5-leaf stage is most susceptible.</p>	<p>Favour late planting, preplant weed infestations, particularly winter annuals, volunteer wheat and grassy weeds and reduced tillage. Moths fly in from the south on warm days in early spring. The females are attracted to green vegetation to lay eggs.</p>	<p>Kill green vegetation in the fall or early spring completely to deprive insect of host. Chemical control recommended if more than 5% of plants show damage and worms are still under 2.5 cm. Granular insecticides are not recommended for cutworm control alone.</p>
 <p>Wireworm.</p>	<p>Larvae are thin, copper-coloured segmented worms that may reach 4 cm long.</p>	<p>Most often attack germinating seeds, destroying seedlings before emergence. Can also feed on roots and lower stems of emerged plants. Problem in corn and wheat.</p>	<p>Prefer sandy soils, particularly on eroded knolls. Most likely found in fields with history of grasses such as pastures or fields with frequent cereal crops. Worm needs 2-5 years to complete life cycle. Damage most severe in second crop year following grassy sod.</p>	<p>Kill all vegetation to deprive adults of homes for eggs and larvae of food. Seed treatments will protect crop as it germinates and emerges. No protection for plants after emergence. Crop rotation is a good preventative measure.</p>
 <p>European corn borer.</p>	<p>Larvae are whitish in colour with dark brown or black heads and black or brown spots in rows down their backs. Moths are cream-coloured and active at night.</p>	<p>Newly hatched larvae feed on developing leaves in the whorls before tunnelling into the plant to feed on the tassel, stalk or ear shank. Plant becomes susceptible to stalk rots and lodging.</p>	<p>Full-grown larvae overwinter inside the base of corn stalks. In the spring, they form cocoons and emerge as adult moths in early June.</p>	<p>Chemical control measures are rarely justified in field corn. Select hybrids with good standability. New hybrids with built-in Bt resistance to corn borer are now available in Canada. Bt is <i>Bacillus thuringiensis</i>, a bacterial control effective against corn borer. Area-wide stalk chopping may help to reduce corn borer populations, but will only be successful if most growers participate.</p>




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BEST MANAGEMENT PRACTICES, cont'd.

	DESCRIPTION	DAMAGE CAUSED	CONDITIONS PREFERRED	BEST MANAGEMENT PRACTICES & TIPS
 <p>Spider mites.</p>	<p>Tiny round 8-legged arthropods that are white, green or red in colour with dark spots on either sides of their bodies.</p>	<p>In soybeans, mites suck plant juices from the undersides of leaves, giving plants a sand-blasted look. Fine silky threads are spun on leaf undersides. In heavy infestations, leaves turn yellow, then brown and die.</p>	<p>Most numerous during hot, dry periods. Drought conditions will drive them from fencerows, too. Mites can thrive in green vegetative crops or cover crops and move onto young bean plants after spring burndown. High winds will spread them across fields.</p>	<p>Four or 5 mites per leaf or one severely damaged leaf per plant prior to pod fill can cause yield depression. Can spot apply insecticide to prevent spreading to rest of field.</p>
 <p>Seedcorn beetle and seed corn maggot (not shown).</p>	<p>Whitish spindle-shaped larvae that lack both a definite head and legs. Adults are shiny black or black with brown stripes (5-7 mm long).</p>	<p>Maggots tunnel into the seed and stems of seedlings. Damage appears as areas of poor stand or as weak, wilted bean seedlings. Beetles tunnel into the seeds.</p>	<p>Adult flies are attracted to lay eggs in soils with a decaying smell. Beetles tunnel into seeds. Muck soils, weedy fields, stubble or manure increase risk. Heavy crop residue reduces soil temperature, delaying emergence and increasing the risk. The maggots that hatch from these eggs do the damage.</p>	<p>If the stand is seriously damaged, replanting is the only recourse. Diazinon and Lindan applied as a seed treatment protect against seed corn maggots and beetles.</p>
 <p>Potato stem borer.</p>	<p>Pinkish worm. When mature, measures about 40 mm long.</p>	<p>Feeds on seedlings by boring into base of plant. Leaves of plant turn brown from tip downwards. Plant wilts and dies.</p>	<p>Overwinters as eggs on grassy weeds. Found primarily on edge of fields associated with grassy weed patches.</p>	<p>Control grassy weeds in fields and fencerows.</p>

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OTHER NON-INSECT PESTS

DESCRIPTION	DAMAGE CAUSED	CONDITIONS PREFERRED	BEST MANAGEMENT PRACTICES & TIPS	
 <p data-bbox="150 928 209 955">Slugs.</p>	<p>Slugs are mollusks, related to snails and clams.</p>	<p>They feed on tender areas of leaves between veins, leaving shredded tissue. They feed only at night and leave shiny slime trails. They also feed on germinating seeds below ground. Damage is more serious in beans because of exposed growing points.</p>	<p>Need cool damp conditions, so are more of a problem in cool wet springs. Especially like clay soils. Only feed at night. Found under stones, or crop residue, or go dormant in soil during the day. If they dry out, they die.</p>	<p>Remove residue from crop row to dry the soil. Bale and remove wheat straw. For high risk fields, kill all vegetation in the fall. Avoid no-till soybeans in red clover residues. As macropores develop, damp slug-prone soils are less likely. No chemical control registered.</p>
 <p data-bbox="150 1369 384 1396">Soybean cyst nematode.</p>	<p>Microscopic wormlike organisms – less of a problem in no-till.</p>	<p>Damage root system and prevent uptake of water and nutrients. Causes stunted and yellow plants in circular patterns up to 50 m in diameter. Damaged roots will be dark with few nodules. May see 1 mm white to brown cysts.</p>	<p>Particularly damaging on lighter soils under dry conditions.</p>	<p>Use pedigreed seed. Wash soil off equipment and do everything possible to reduce soil movement between fields. Rotate to non-host crops such as corn or small grains. Avoid beans or peas for 4 or 5 years.</p>



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