

To control insects:

Entomopathogenic nematodes

Different nematode species are needed for different insect pests. It is important to purchase the correct species at the correct time to obtain good control of the target insect. Storage and application instructions are similar for all nematode species.

Target pests

Caterpillars

(cutworm, sod webworm), chinch bugs and leatherjackets

USE: *Steinernema carpocapsae* (S.c.).

Work best at soil temperatures ranging from 20-28°C

White grubs

(European chafer, Japanese beetle)

USE: *Heterorhabditis bacteriophora* (H.b.).

Work best when soil temperatures are above 15°C

OR

Steinernema glaseri (S.g.)

Continue to work at low soil temperatures (<15°C)

Fly larvae and leatherjackets

USE: *Steinernema feltiae* (S.f.)*

Continue to work when soil temperatures are as low as 10°C

*May not be readily available to homeowners

Instructions and tips

- Purchase the right nematode species for the target pest
- Keep nematodes cool after purchase - store in a refrigerator (around 5°C)
- Use within 4 weeks of purchase
- Sensitive to sunlight, drying out and extremes in temperature
- Apply when soil temperature is greater than 12°C and less than 30°C
- Water the lawn until moist but not wet and then apply nematodes
- Pre-mix nematodes with water approx 20 minutes prior to application (to re-hydrate nematodes)
- Keep the nematode mixture stirred prior to and during application
- Water immediately after treatment to get nematodes into the soil to provide contact with insects and to prevent drying out

Research findings

Research in Ontario using S.c. applied in the summer as a heavy spray provided ~50% control of chinch bugs in lawn turf.

Research in Ontario using S.c. and H.b. applied in the spring against leatherjackets gave ~30% control.

Research in Ontario using a mixture of 50% S.c. and 50% S.f. applied in the fall against leatherjackets gave between 50-70% control.

Research conducted in British Columbia with H.b. gave >80% control and field research trials in Ontario with H.b. gave ~50% control of European chafers.

Tips for a healthy lawn:

Maintain ideal mowing height

- Mow between 6 and 9 cm (2.5 to 3.5").
- Mowing too low will result in shallow roots and a less drought-resistant lawn. Longer grass keeps soil cool and prevents weed seeds from germinating. Cutting too high (> 9-10 cm) will lead to competition and shading within the lawn.
- Mow frequently. Do not remove more than one third (1/3) of the leaf blade in a single mowing.
- Keep mower blades sharp.
- Leave clippings on lawn after mowing or use a mulching mower.

Water to prevent drought stress

- Recommended amount is 2.5 cm (1") per week (including rainfall).
- Use a rain gauge to determine total water applied.
- Water in the early morning to prevent long periods of leaf wetness or loss from evaporation.
- Allow lawn to go dormant in times of extreme drought to conserve water.

Maintain adequate fertility

- Recommended yearly rate of nitrogen is 2 kg/100 m² (4lbs/1000 ft²) in four separate applications of 0.5 kg nitrogen/100 m² in late spring, mid-summer, late summer/early fall and late fall (late October - early November).

Overseed

- Overseed in the spring and fall if possible to thicken the stand and prevent weed seeds from germinating. Perennial ryegrass seed works best.
- If large areas are bare or heavily infested with weeds, try cultivating and either re-seeding or laying sod.

Control thatch

- Thatch is spongy material between the grass and soil layer and should be kept below 2.5 cm (1").
- Core aerate to remove soil cores. This gives the roots air and breaks up thatch.
- If thatch thickness is more than 2.5 cm, consider power raking to remove large amounts of material quickly.

Weed

- For larger, well-established weeds, remove them by hand.
- Ensure that you are taking the roots with the plant or the weed will grow back.
- Fill the holes created by removing the weeds with compost and grass seed.

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Which products can I use on lawn pests in Ontario?

plus Tips for a healthy lawn



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HORTICULTURAL TRADES ASSOCIATION
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Vineland
Research and Innovation Centre

To control weeds: Use the table below to choose which scientifically proven products to use on lawn pests and how to apply effectively.

Weed control product to use?	Instructions and tips	Published research studies*
<p>Corn gluten meal</p> <p>FOR USE ON: Crabgrass and broadleaf weeds (Dandelion and white clover)</p>	<ul style="list-style-type: none"> • Must be applied before weeds emerge in early spring and again in late summer/early fall on established lawns only. • Water the lawn until the soil is moist but not wet and then apply. • Do not apply in wind and water within 2 days. • Do not overseed with grass seed for 6 weeks after an application. 	<p>Effective on germinating seedlings of broadleaf weeds, but not on established weeds. For crabgrass, must be used before weeds emerge (early spring when forsythia are in full bloom). Field studies have not shown immediate effect at labeled rate but should reduce weeds if used for several years.</p>
<p>Iron chelate (4.43% FeHEDTA)</p> <p>FOR USE ON: Broadleaf weeds (dandelion, English daisy, false dandelion, white clover, black medick, bull thistle, Canada thistle, common chickweed, creeping buttercup, slender speedwell, narrow-leaved plantain, dovefoot geranium, lawn burweed, moss and algae and the suppression of broad-leaved plantain)</p>	<ul style="list-style-type: none"> • Apply in spring or fall when weeds are actively growing and lawn is well watered. May require a second treatment after 4 or more weeks, but can only be applied twice per year. Thorough and uniform coverage of weeds is required. • Works best when temperatures range from 10 - 30°C. • Do not apply if rain is forecast within 3 hours of application and do not water within 3 hours of application. • Do not apply to newly seeded lawns or lawns that are less than 1 year old. 	<p>Works very quickly on susceptible weeds (within 1-3 days) turning weeds brown or black and the weeds eventually die. Works well in spring and fall in research trials in Ontario. Ontario research has been conducted on dandelions, narrow-leaved plantain, chickweed, clover and broad-leaved plantain. May need to be applied for more than one season for good results. This product produces a greening effect on lawns that have not been fertilized regularly.</p>
<p>Sclerotinia minor</p> <p>Widely available through lawn care companies and retailers.</p> <p>FOR USE ON: Dandelions</p>	<ul style="list-style-type: none"> • Must be followed by rainfall or irrigation for 20 minutes a day for a minimum of 2 days. • Works best when temperature is moderate (18-24°C) and skies are cloudy with high relative humidity. • Do not apply on lawn areas that border flower or vegetable gardens. 	<p>Works best as a spot treatment rather than a broadcast treatment with a fertilizer spreader. Moisture and humidity are necessary for this product to work. Lawn care companies who have been using this product on lawns for the past two years have noted that the results are better in the fall.</p>
<p>Acetic acid</p> <p>FOR USE ON: Broadleaf and grassy weeds</p>	<ul style="list-style-type: none"> • Apply in warm, sunny weather to weeds less than 10 cm in height. • This product will kill all plants that are sprayed (grasses and weeds) 	<p>For complete control of weeds, the product may need to be applied several times.</p>
<p>Ammonium soaps of fatty acids</p> <p>FOR USE ON: Moss, algae, broadleaf weeds within vegetable and flower gardens, landscaped areas, lawns (spot treatment only), in the vicinity of small fruits and fruit trees, around and on buildings, sidewalks, fences, bark mulch, driveways, patios and gravel</p>	<ul style="list-style-type: none"> • Apply in warm, dry weather to weeds less than 12 cm in height. • May need to repeat treatment every 2-3 weeks to control new weeds or weeds that have re-grown. • This product will kill all plants that are sprayed (grasses and weeds) 	<p>To date no information on this product's effectiveness for these weeds has been published in the scientific literature.</p>
<p>Fatty acid</p> <p>FOR USE ON: Moss, algae, broadleaf weeds on driveways, patios, sidewalks.</p>	<ul style="list-style-type: none"> • Will kill all plants that are sprayed. Spray weeds until completely wet. 	<p>To date no information on this product's effectiveness for these weeds has been published in the scientific literature.</p>
<p>Citric acid / Lactic acid</p> <p>FOR USE ON: white clover, red clover, bird's-foot trefoil, black medick and wood sorrel in established lawns for partial suppression</p>	<ul style="list-style-type: none"> • Apply as a broadcast or spot treatment • Start applications in May or later • Repeat every 14 days for at least 5 applications • Turf may turn yellow after application but will recover in 3 weeks • Do not apply to newly seeded lawns 	<p>Research conducted using citric acid/lactic acid and the surfactant LI700 on clover and black medick showed > 65% reduction of clover and > 85% reduction in black medick. There was significant yellowing of the turf that recovered in 7-10 days. Results with this product and the surfactant Assist have been much less effective.</p>
<p>Ferrous sulfate</p> <p>FOR USE ON: Moss in lawns</p>	<ul style="list-style-type: none"> • Water lawn thoroughly before application • Do not mow for 48 hours • Repeat in 3-4 weeks if moss persists 	<p>Not available</p>

*Information is based on scientific research. This brochure was compiled by the University of Guelph, Vineland Research and Innovation Centre and OMAFRA. For updates on this information, refer to OTRF website WWW.OTRF.CA