TURF

G. Byrtus
Last updated: January 2012

Recommendations for lawns and recreational areas not grazed by livestock.

Recommendations include both domestic and commercial registered products. Commercial products are available only to agricultural operations (sod farms) or certified applicators.
Important: Mow the lawn before treatment. Keep off treated lawns until dry.

ANTS

Ants (Formicidae)

Chemical Control -

Active Ingredient	Rate (g AI/100 m^2)
borax	R.T.U liquid or solid bait
carbaryl	85-135
chlorpyrifos	11.2
deltamethrin	0.6
lambda-cyhalothrin	0.37
permethrin	0.25-0.5% solution
potassium salts of fatty acids & pyrethrins	fatty acids – 48-142 pyrethrins – 0.48-1.42
propoxur	0.5% formulation
pyrethrins, piperonyl butoxide, permethrin	pyrethrins 0.1-0.2% piperonyl butoxide 0.25-0.48% permethrin 0.2%
pyrethrins, piperonyl butoxide	pyrethrins 0.25-0.5% piperonyl butoxide 1.25-4%
silicon dioxide	80% powder

Check product label carefully to ensure product can be used on ant hills/nests, lawns or turf. Not all ant control products are approved for use on turf.

Restrictions -

carbaryl: Domestic and commercial products. Do not water for 2 days after treatment and repeat in 2-3 weeks if necessary. Some products can only be applied to individual ant hills.

chlorpyrifos: Commercial products - only approved for use on sod farms, golf courses, industrial

sites and highway medians. Not for use around residential areas, parks, school grounds or playing areas

deltamethrin: Commercial products. Delay irrigation or mowing for 24 hours following application. Do not apply more than 2 times per year. Observe buffer zones listed on product label.

lambda-cyhalothrin: Commercial products. Maximum of 4 applications per year - spring and late summer. Do not apply when turf is water logged. Delay irrigation or mowing for 2 days after application. Observe buffer zone distance (up to 120 m) between sensitive freshwater/marine habitats and sprayed areas. Highly toxic to bees.

permethrin: Domestic and commercial products. For use only on home or residential lawns. Apply as spot treatment. Ant mounds: apply 4-7.5 L of solution to each mound and treat a 1 m diameter circle around mound. Apply in cool conditions (early morning or late evening) for best results.

potassium salts of fatty acids/pyrethrins: Domestic products. Spray to wet. Repeat 10-14 days later if necessary

propoxur: Commercial product. Apply directly to ant hills

pyrethrins, piperonyl butoxide, permethrin: Domestic product. Apply directly to ant hills/nests.

silicon dioxide: Domestic products. Apply to ant hills

Control Timing - Most damage to turf occurs from the adult ants building mounds on lawns. Treat in mid to late summer.

Cultural Control - Flood ant nests repeatedly to discourage colonization. Maintain adequate irrigation on turf to avoid dry spots that encourage ant nest development.

APHODIUS BEETLES

Aphodius (dung beetles) (*Aphodius sp.*)

Chemical Control - No registered compounds

Control Timing - Aphodius beetle adults emerge in mid-June, laying eggs which hatch shortly afterwards to grubs. Grubs feed through the summer, pupate in August, and overwinter as adults.

Cultural Control - Regular aeration in conjunction with limited topdressing using manure composts will reduce habitat (thatch) and food for the beetles

BLACK TURFGRASS ATAENIUS

Black Turfgrass Ataenius (*Ataenius spretulus*)

Chemical Control -

Active Ingredient	Rate (g AI/100 m^2)
imidacloprid	2.8
thiamethoxam	2.3-3.0

Control Timing - Black Turfgrass Ataenius has the same life cycle as Aphodius beetles, with adults depositing eggs in May to June. Control efforts should be targeted prior to egg hatch. (from peak flight to peak egg hatch).

Restrictions -

imidacloprid: Commercial. Applications should be made prior to egg hatch of the target pests, followed by sufficient irrigation or rainfall (5 -10 mm) to move the active ingredient through the thatch. Avoid over watering (more than 20 mm). Avoid mowing until after irrigation or rainfall has occurred. Do not apply more than once per year. Do not apply within 30m of sensitive aquatic systems.

thiamethoxam: Commercial. Avoid mowing turf until treated area has been irrigated. Do not apply more than 3 g ai/100 m^2 per year.

CHINCH BUGS

Chinch Bugs (*Blissus leucopterus*)

Chemical Control -

Active Ingredient	Rate (g AI/100 m^2)
carbaryl	100-135
chlorpyrifos	10.8
clothianidin	1.75-2.5
deltamethrin	0.6
potassium salts of fatty acids & pyrethrins	fatty acids – 48-142 pyrethrins – 0.48-1.42

Restrictions -

carbaryl: Domestic products. Mow lawn before application. Do not water for 2 days after treatment.

chlorpyrifos: Commercial products - only registered for use on sod farms, golf courses, industrial sites and highway medians. Not for use around residential areas, parks or playing areas.

clothianidin: Commercial products. Observe buffer zones on label for sensitive terrestrial, freshwater and marine habitats. Do not make more than one application per season. Apply when insect populations reach damaging thresholds.

deltamethrin: Commercial products. Delay irrigation or mowing for 24 hours following application. Do not apply more than 2 times per year. Observe buffer zones listed on product label.

potassium salts of fatty acids/pyrethrins: Domestic products. Spray to wet. Repeat 10-14 days if necessary

Control Timing - Adults overwinter and lay eggs in the spring. Nymphs and adults suck on sap from grass blades throughout the summer, when control efforts should be undertaken.

Cultural Control - Minimize drought stressed areas - chinch bugs like dry lawns. Reduce thatch, and do not over fertilize lawns with high nitrogen fertilizers. Remove plant debris in fall to reduce overwintering sites.

Biological Control - Chinch bugs are susceptible to predatory bugs, spiders and parasitic wasps.

CRANE FLY LARVAE (LEATHERJACKETS)

Crane Fly Larvae (Leatherjackets) (*Tipula paludosa*)

Chemical Control -

Active Ingredient	Rate (g AI/100 m^2)
carbaryl	98-139
chlorpyrifos	9.6 – 12
diazinon (BC only)	35
imidacloprid	2.8

Restrictions -

carbaryl: Commercial products. For use only on golf course turf. Apply after mowing, do not water for 2 days after treatment. Do not allow public use of treated areas during applications or until sprays have dried.

chlorpyrifos: Commercial products. Approved for use only on sod farms, golf courses,

industrial sites and highway medians. Not for use around residential areas, parks or playing areas. Apply as drenching spray in water in late fall after the flight of adult crane flies has ceased for the year.

diazinon: BC Only. Commercial product. For use on pasture and sod. Do not treat within 14 days of grazing or harvest. Do not retreat for 5 days.

imidacloprid: Commercial products. Suppression only. Application timing should commence when adults take flight and begin laying eggs in August and September. Apply only once per year.

Control Timing - Adults emerge during the summer and lay eggs. Larvae hatch from the eggs in late summer and overwinter as larvae. Most turf damage occurs in late fall and early spring. Control is most effective in late fall.

Cultural Control - Reduce thatch layer, reduce irrigation in early fall when larvae are more susceptible to drought. Avoid overwatering and ensure irrigation systems are not leaking and creating continually moist soil conditions favourable for crane flies

GLASSY CUTWORM

Glassy Cutworm (*Apamea devastator*)

Chemical Control -

Active Ingredient	Rate (g AI/100 m^2)
chlorpyrifos	10.8
deltamethrin	0.6

Restrictions -

chlorpyrifos: Commercial products - only registered for use on sod farms, golf courses, industrial sites and highway medians. Not for use around residential areas, parks or playing areas. Do not water or mow for 12-24 hours after treatment. Maximum of two applications per season.

deltamethrin: Commercial products. Delay irrigation or mowing for 24 hours following application. Do not apply more than 2 times per year. Observe buffer zones listed on product label.

Control Timing - Adults lay eggs in August, hatching shortly after, with the larvae feeding on host plants throughout the fall, overwintering and resuming feeding in the spring. Pupation occurs in mid-summer. Control efforts should be focused during the fall and early spring.

Biological Control - Numerous predators (ground beetles) and parasites (wasps and flies) can affect populations of glassy cutworm, but the level of control can vary from year to year and location to location.

SLUGS, SNAILS

Slugs and snails

Chemical Control -

Active Ingredient	Rate (g AI/100 m^2)
ferric sodium EDTA	12
ferric phosphate	1.9-3.8

Control Timing - Slugs and snails have various life cycles depending on the species, and overwinter in all life stages. Control efforts should be focused when most plant damage occurs - when plant growth is tender and there is adequate moisture in the surrounding soil and vegetation for the slugs and snails to successfully propagate and survive. Apply in evening when slugs are active.

Restrictions -

ferric sodium EDTA: Commercial product. Do not contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

ferric phosphate: Commercial product. This product may be toxic to fish and other aquatic organisms. Avoid contamination of fish-bearing waters.

Cultural Control - Hand picking is effective on small populations. Placing a wooden board adjacent to the lawn will provide a shelter for slugs on the underside of the board to protect themselves from the sun. Check boards daily.

Biological Control - Slugs and snails have numerous natural enemies such as toads, snakes, ground beetles, wild birds and ducks.

Note: While there are several domestic products approved for use against slugs and snails for flower and vegetable gardens, none are registered for use directly on turf. Some labels specifically state: “Application is permitted only to non-turf areas”.

SOD WEBWORM

Sod webworm (*Parapediasia sp & Pediasia sp.*)

Chemical Control -

Active Ingredient	Rate (g AI/100 m^2)
carbaryl (domestic)	84-117
carbaryl (commercial)	84-135
chlorpyrifos	10.8
deltamethrin	0.6
spinosad (commercial)	0.12 - 0.48
spinosad (domestic)	0.24-0.48

Control Timing - Sod webworms have four life stages, with the pupal stage being the overwintering stage. Adults emerge in early spring, laying eggs which hatch about a week later. Control efforts should focus on the early larval stages (about 2-3 weeks after peak adult flight), which is the stage most vulnerable to insecticides.

Restrictions –

carbaryl: Domestic and commercial products. Mow lawn before treatment. Do not water for 2 days after application.

chlorpyrifos: Commercial product. Only registered for use on sod farms, golf courses, industrial sites and highway medians. Not for use around residential areas, parks or playing areas. Do not water or mow for 12-24 hours after treatment.

deltamethrin: Commercial products. Delay irrigation or mowing for 24 hours following application. Do not apply more than 2 times per year. Observe buffer zones listed on product label.

spinosad: Domestic and commercial products. Do not water or mow for 12-24 hours after application. Do not reapply within less than 7 days. Do not apply more than 4 times/year. Do not apply immediately after a rainfall or if rain is forecast within 48 hours. Highly toxic to bees and aquatic invertebrates. Do not contaminate aquatic habitats.

Cultural Control - Fertilize and water. Damage can be outgrown by a healthy, vigorous stand of turf. Considerable damage may occur if irrigation is not applied during periods of drought, or close mowing is used.

Biological Control - No commercial products are available for biological control of sod webworm, but predaceous birds, ground beetles and rove beetles can have an influence on sod webworm populations. Parasites such as parasitic wasps, microsporidia and fungal diseases can also impact populations.

WHITE GRUB

White grub (including Japanese Beetle and European Chafer) (*Popillia japonica & Rhizotrogus majalis*)

Chemical Control -

Active Ingredient	Rate (g AI/100 m^2)
carbaryl	95-139
chlorantraniliprole	1.12 - 1.76
imidacloprid	2.8
thiamethoxam	2.3-3.0

Restrictions -

carbaryl: Domestic and commercial products. Irrigate following application. Apply at early instar stage (late July and early October) or when grub larvae are actively feeding on roots.

chlorantraniliprole: Commercial products. Do not make more than 1 application per season. Buffer zones of 1 m must be maintained for the protection of all freshwater and shallow (<1m) marine habitats. Chlorantraniliprole is persistent, may carryover, and may result in contamination of groundwater.

imidacloprid: Domestic and commercial products. Applications should be made prior to egg hatch of the target pests, followed by sufficient irrigation or rainfall (5 -10 mm) to move the active ingredient through the thatch. Avoid over watering (more than 20 mm). Do not apply through any irrigation system. Avoid mowing until after irrigation or rainfall has occurred. Do not apply more than once per year.

thiamethoxam: Commercial products. Avoid mowing turf until treated area has been irrigated. Do not apply more than 3 g AI/100 m^2 per year.

Control Timing - European Chafer has a one year life cycle, with eggs being laid in August. Larvae (grubs) hatch and feed through the fall and spring. Pupation occurs in late spring, with adults emerging in late May. Control efforts should be focused during active feeding periods in late fall and early spring. Apply thiamethoxam from peak flight to peak egg hatch for optimal control.

June beetles have a 3 year life cycle, with the larval stage bridging all 3 years. Control efforts should be focused towards the earlier instars in late summer and early fall.

Cultural Control - Maintaining a healthy lawn by proper cutting, fertilization, and irrigation makes the lawn less attractive to egg-laying females, who are attracted to bare spots and thin areas of the lawn. It also makes the lawn less susceptible to the damage caused by grub feeding activities.

Biological Control - White grubs are susceptible to numerous agents, including viruses, bacteria, fungi, parasitic nematodes, mites, wasps and flies, and vertebrate predators such as birds and skunks. Vertebrate predators can cause extensive damage to turf while rooting for the grubs.