

Insects

Weather patterns influence both the growth and health of turfgrasses and the types of arthropod pests that are likely to cause damage during a given year. Warm, moist spring and summer weather stimulates turfgrasses to grow rapidly, whereas cool, dry conditions slow growth. The damage to turfgrass caused by insect pests is affected in two ways by weather conditions. First, the species of pests found in damaging numbers are dictated to some extent by weather; hot, dry summer conditions favor outbreaks of chinch bugs or sod webworm, while these same conditions during July may significantly reduce white grub populations. Second, the number of pests necessary to cause visible damage depends on the growth rate and general health of the turfgrass; a lawn in good health can tolerate higher numbers of insect pests than one that is water-stressed. Local weather conditions also influence the type of management practices that will be effective against turfgrass pests. For many biological control agents, exposure to hot temperatures or direct sunlight is detrimental, so special considerations must be met when using these methods.

Identification and monitoring of pest populations in lawns is the best way to avoid unnecessary or ineffective pest management practices. Keeping detailed records of materials and the level of satisfaction with their results can aid a homeowner in year-to-year choices of pest management tactics. When damage to a lawn is noticeable and pest management is warranted, a homeowner should follow this series of steps:

1. Make sure that the damage is caused by an arthropod pest and not drought, disease, poor soil fertility or another cultural problem.
2. Identify the pest and learn its life cycle.
3. Determine optimum timing of management practices. Make sure that a management tactic will suppress the pest population to an acceptable level, and that suppression is necessary to limit further damage.
4. Consider several management strategies, including biological and cultural methods. Match the management strategy to the pest species. If the pest feeds on grass leaves (black cutworm, for example), any material should be applied to the above-ground portion of the turf and not followed by watering. For white grubs that reside beneath the surface, any material used must be applied by injection or the application should be followed by irrigation.
5. Implement the management tactic as required by label instructions. For formulated insecticides, this is the law. When using biological control products, the user must be aware of the conditions under which the product will work properly.
6. Record pertinent information for future management decisions, including: date of application, material applied, pre-treatment pest population levels, weather conditions during and following application, pest population levels following treatment, level of satisfaction with results.

By following these steps, homeowners will be able to make decisions about pest management that will decrease pest populations and be safe, cost-effective, environmentally sound, and repeatable.

Key to Pesticide Formulations:

D - Dust

EC - Emulsifiable Concentrate

ES - Emulsifiable Suspension

F - Flowable

G - Granules

SC - Soluble Concentrate

WP - Wettable Powder

WSP - Water Soluble Powder

5-6 Lawn: Insects

Insect Pest	Insecticide	Formulation	Remarks
Ants	Carbaryl (Sevin) • Lawn and Garden Insect Control	22.5% L	Use as localized treatments to nesting area according to label directions. A general area application may not be necessary. Use of some other lawn insect controls will also control ants. Apply during daylight
	Gamma-cyhalothrin (Triazide)	0.25 L	
	Permethrin (Ant-Be-Gone)	0.25% D	
Chinch Bugs	Beauvaria bassiana (insect pathogenic fungus) • Botani Gard • Mycotrol O	ES WP	Chinch bugs can cause significant damage to turf when found in densities of 15 - 20 immature bugs/sq ft. Damage usually occurs to turf in sunny areas with a thick thatch layer. The bugs may be sampled by floatation. A cylinder with open ends is driven into the turf, and about 1 inch of water is maintained in the cylinder for 5 - 10 minutes. Chinch bugs will float to the top of the water. Two generations per year occur in Virginia. Insecticide treatment is often effective, but since the bugs are highly mobile, the area can be quickly recolonized. Therefore, an application in April - May, followed by 1-2 more applications at 2- to 3- week intervals is recommended for the first generation. Early treatment may provide season-long control. To spray, mix the suggested amount of insecticide in 15 - 30 gal water/1000 sq ft. Do not mow or water turf for 2 - 3 days after treatment. If the insect- pathogenic fungus <i>Beauvaria bassiana</i> is used as a control measure, do not apply fungicides immediately before or after application (see label on product). Cultural methods of management: plant endophyte enhanced fescue and ryegrass, reduce the use of fine (red) fescue in sunny areas, reduce thatch, avoid spring fertilization with high nitrogen.
	Carbaryl (Sevin)	22.5% L	
	Bifenthrin (Bug-B-Gone Max) • Lawn and Garden Insect Killer	0.3%	
	Permethrin • Total Kill Lawn and Garden Insect Killer	2.5% L	
Cutworms	Entomopathogenic nematode products		Cutworm populations of 3 - 8 worms/ sq yd may warrant treatment. To sample cutworms, use the soap flushing technique. Mix 1 tbsp of dishwashing detergent into 1 gal of water and pour it on to the area to test. Cutworms (and other soil invertebrates) will move to the surface in a few minutes. Two generations can occur in Virginia. Apply materials in the early evening. Most insecticides used for cutworm control are stomach poisons, and the larvae feed at night. Do not water the treatment in unless specified on the label and do not mow for several days after treatment. Cutworms are highly mobile, so treated areas are likely to become reinfested from surrounding areas. Cultural methods of management: plant endophyte enhanced fescue and ryegrass, turf more than 2.5 inches in height seldom requires treatment for cutworms, when mowing remove clippings (adult cutworm moths lay eggs at the tip of grass blades).
	Carbaryl (Sevin)	22.5% L	
	Spinosad • Bull's Eye Bioinsecticide	EC	
	Bifenthrin (Bug-B-Gone Max) • Lawn and Garden Insect Killer	0.3% L	
Mites (Clover mite)	Diatomaceous Earth	D	Clover mites are more nuisances than pests, though they may build up populations near building foundations that can cause silvering of turf. As their name suggests, they are not primarily feeding on grasses. The nuisance they cause occurs when they invade houses. When crushed they cause a red stain on the area. Populations high enough to warrant treatment occur in late winter or early spring, and occasionally in the fall. Control is usually only needed around the perimeter of structures – often only on the south side. Bare ground within 5 feet of the structure can be effective.

Last updated by William J. Dimock, Extension Agent, Horticulture, Newport News, 2007

Table 5.2 - Recommended Use (cont.)

Insect Pest	Insecticide	Formulation	Remarks
Sod Webworms	Entomopathogenic nematode products		Sod webworm problems on turf are most noticeable in high-maintenance conditions where grass is kept short. Two generations per year occur in Va. Webworm densities of 15/sq yd warrant treatment. Young larvae, which are most susceptible to treatment, can be expected in turf about 2 weeks after adults are present; late June and again in early September. Unfortunately, by the time damage is noticeable, the larvae are not susceptible to <i>Bt</i> products because they are too old. Spring and early summer treatments may be effective against the larvae that have overwintered. Do not mow for 1-3 days after treatment. Cultural methods of management: plant endophyte enhanced fescue and ryegrass, damage is seldom noticeable in turf more than 2.5 inches in height.
	Carbaryl (Sevin)	22.5% L	
	• Lawn Insect Granules	0.02 G	
	Lambda-Cyhalothrin	0.15 G	
	• Complete Soil and Turf Insect Killer		
	Triazide	0.1 G	
• Above and Below Ground Insect Control			
White Grubs (Japanese beetle, masked chaffer, Asiatic garden beetle, etc.)	Spinosad	EC	White grubs are actually several species of scarab beetle larvae. When using any of the milky spore disease products, be aware that Japanese beetle larvae are most susceptible. Other species will not be controlled by this product. Follow label instructions for application. When using these products, be aware that control is not immediate. Milky spore is a slow-acting disease agent; grubs will take up to 30 days to die. However, when the disease is established, control can be effective for years without further application. After application, the disease perpetuates and spreads by infecting and being transported by grubs. If another insecticide is applied to an area treated with milky spore, this will slow the spread of the disease and is therefore not desirable. Be patient. White grubs can also be controlled by entomopathogenic nematodes. Not all species of nematodes available commercially will provide adequate control. The species of nematode is provided on the product label under the "Active Ingredients" section. Products with <i>Steinernema carpocapsae</i> in this section should not be used for grub control. These products should be applied only when the pest is present. Nematodes should be applied late in the day to avoid exposure to UV light damage, and soil temperature should be at least 60°. Early spring treatments are usually not effective because soil temperatures are too cold. Watering before and after application provides the best results. Several chemical insecticides are available for grub management. These products should be applied at the labeled rate and watered in with 1/2 inch of water. Timing is important, make sure the grubs are present. Most insecticides provide the best control when used against young grubs. Populations high enough to warrant treatment are 6 - 10 grubs/sq ft. Cultural management: reducing thatch to less than 1/2 inch will increase penetration of any treatment applied to the lawn.
	• Bull's Eye Bioinsecticide		
	Bacillus thuringiensis var. kurstaki (Bt)	20% WP	
	• Sod Webworm Attack	0.048 D	
• Dipel Dust	10% F		
• Bactospeine			
Bacillus popilliae	0.02% WP		
(Milky Spore disease) for Japanese beetle only; not effective on other grub species.			
• Milky Spore			
Beauveria bassiana ¹	ES WP		
(Pathogenic fungus)			
• Naturalis - T			
Entomopathogenic Nematodes			
Products with <i>Steinernema riobrave</i> or <i>Heterorhabditis</i> sp. as active ingredient			
Halofenozide	1.5 G		
• GrubStop			
Imidacloprid			
• GrubEx	0.2 G		

¹Do not apply within several days of fungicide.

