

## Lawn Caterpillars<sup>1</sup>

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Are lawn caterpillars doing your mowing for you? Young caterpillars, or larvae, injure turfgrass by chewing notches along the edge of the leaves. This creates a ragged appearance (Figure 1) that may be hard to notice at first. Mature caterpillars eat a lot before they pupate and consume patches of turfgrass down to the crown. Because the turf looks scalped so quickly, people think that the damage occurs “overnight.” Several caterpillar species can be turfgrass pests, including the tropical sod webworm, the fall armyworm, and the striped grass looper.



**Figure 1.** Caterpillar damage to bahiagrass. Credits: C. Stuhl, USDA-CMAVE.

### Identification

Tropical sod webworm larvae (Figure 2) are gray-green, have brown spots on each segment, and are the smallest of the three species. Mature larvae can be 3/4 to 1 inch in length, and they pupate in the thatch or on the soil surface. Fall armyworm larvae (Figure 3) can be green or brown, and mature larvae are 1 1/2 inches long with four pairs of prolegs (fleshy legs on abdomen). As larvae grow, light stripes appear along the length of the body and dark spots appear on the top of each segment. Fall armyworm larvae have an inverted light-colored Y on the front of their heads. They pupate in the soil. Striped grass looper larvae (Figure 4) have longer and thinner bodies and “loop” like inchworms when crawling. They only have two pairs of prolegs. Their color ranges from cream to black, there is a light-colored narrow stripe down their backs, and many stripes on their heads. Striped grass loopers pupate on tall pieces of grass or small shrubs,

### Biology and Monitoring

Tropical sod webworm is most active from April through November in north Florida, but may occur year-round in south Florida. Three to four generations occur in Florida each year. Tropical sod

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webworm larvae feed on St. Augustinegrass, bermudagrass and zoysiagrass. Fall armyworm occurs year-round in south Florida and migrates northward each spring. This means that populations can be damaging in the spring in south Florida, but don't build up until fall in north Florida. Fall armyworm will feed on all turfgrasses, but prefers bermudagrass. Striped grass looper also occurs year-round in south Florida, and isn't a problem until fall in north Florida. Striped grass looper is primarily a pest on bahiagrass in pastures, but will readily infest other turfgrasses. Larvae of these species are active at night and will hide in a curled position near the soil surface during the day. Fall armyworm larvae may also feed during the early and later parts of the day. Green or brown pellets of frass may be visible on the soil surface, indicating that larger larvae are present. One generation of tropical sod webworm is about 6 weeks; fall armyworm and striped grass looper can develop in about 4 weeks under warm weather conditions.

To find larvae, part the grass in suspect areas and look for chewed leaves, silken webs, green or brown frass, and larvae. Use soap flushes (2 TBSP liquid dishwashing soap mixed in 2 gallons of water) to drench larvae or other potential pests out of the ground. Pour the mixture on 1 square yard of damaged grass, and observe after 5 minutes. If nothing emerges, examine several other areas.

The adults (moths) of all three species are active from dusk till just after dawn. A commercially available sex pheromone lure can be used to monitor fall armyworm. The sex pheromone for striped grass looper is known but not available. Researchers are currently determining the sex pheromone for tropical sod webworm.

## Management

### Damage Thresholds

The number of larvae that can cause significant damage depends on the turfgrass variety, how stressed it might be, and how tolerant the turfgrass managers or their clients are to damage. In general, most turfgrasses can tolerate the notching damage that young larvae cause, but three 1/2 inch, mature fall armyworm or striped grass looper larvae per

square foot may justify a treatment. About 10 to 20 tropical sod webworm could warrant treatment. Keep in mind that large larvae may pupate quickly, which may make an insecticide application unnecessary or ineffective.

### Cultural Control

Cultural practices can influence turfgrass susceptibility to these caterpillar species. Turf can recover from damage if properly irrigated and kept healthy. Drought or low mowing heights may reduce or prevent grass recovery. Because many eggs are laid on grass blades, removing and destroying cuttings after mowing might reduce infestations.

Application of water-soluble, inorganic nitrogen fertilizers causes rapid leaf growth, and increases the chance of caterpillar problems. Female moths that are ready to lay eggs are attracted to the succulent leaves. Responsible use of slow-release fertilizers may reduce turfgrass susceptibility.

Many insects, including lawn caterpillars, live in thatch, which is a layer of accumulated dead plant roots, stems, rhizomes, and stolons between the live plant and soil. Over-watering or over-fertilization can cause turf to develop a thick thatch layer. Excessive thatch should be mechanically removed (vertical mowing, power raking, etc.) to minimize insect habitat and minimize binding of pesticides to organic matter.

### Biological Control

Ants, ground beetles, rove beetles and spiders are predators of caterpillars in lawns. One parasitic wasp, *Horogenes* sp., attacks tropical sod webworm larvae, and other wasp species attack fall armyworm (*Aleiodes laphygmae* and *Cotesia marginiventris*). Parasitic flies attack striped grass looper larvae (*Sarcodexia sternodontis* and *Chetogena* sp.). Preventive pesticide use in lawns can reduce natural enemy populations and reduce their ability to naturally minimize pest populations.

The bacterium *Bacillus thuringiensis* (Bt) is registered for use against all three species and is most effective in controlling young larvae. Some commercial products include Dipel, Green Light Bt

Worm Killer, Safer Caterpillar Killer, and Thuricide. By the time damage is apparent, however, the larvae may be too large to control with Bt. So, monitoring is important. There are also species of fungi and viruses that affect these caterpillar species which might be commercially available.

### Chemical Control

Control should only be directed against the feeding larvae, not the non-feeding, flying adults. Time applications to control young larvae, if possible. Spot treatments may be applied when infestations are first detected and the damaged area is small. A treatment might be most effective if applied in the early evening when larvae begin feeding. Examples of products that can be used by commercial applicators are in Table 1.

and precautions. Those products mentioned are only examples; other effective products could be used.

### References

Brandenburg, R. L. and M. G. Villani. 1995. Handbook of Turfgrass Insect Pests. Entomological Society of America, Lanham, MD.

Niemczyk, H. D. and D. J. Shetlar. 2000. Destructive Turf Insects, 2nd ed. H.D.N. Books, Wooster, OH.

Potter, D. A. 1998. Destructive Turfgrass Insects: Biology, Diagnosis, and Control. Ann Arbor Press, Chelsea, MI.

**Table 1.** Insecticides labeled for professional use against caterpillars in Florida turfgrass.

Active Ingredient	Florida Registered Products	Chemical Class	Signal Word
Acephate	Acephate Pro 75*	Organophosphate	Caution
	Orthene Turf, Tree & Ornamental Spray*		
<i>Bacillus thuringiensis</i> K	Dipel	Microbial	Caution
	Thuricide		
Bifenthrin	Talstar EZ, F, G, PL Granular, TalstarOne	Pyrethroid	Caution
	Onyx		Warning
	Bifenthrin Pro		Caution
Carbaryl	Sevin SL	Carbamate	Caution
	Sevin 80 WSP		Warning
Cyfluthrin	Tempo 20 WP, SC Ultra, Ultra WP/WSP	Pyrethroid	Caution
Cypermethrin	Demand CS	Pyrethroid	Caution
Deltamethrin	DeltaGard 5SC, Granular	Pyrethroid	Caution
Halofenozide	Mach 2 1.5G, 2SC	Microbial	Caution
Lambda-cyhalothrin	Scimitar CS, GC* (Restricted Use Pesticide)	Pyrethroid	Caution
Permethrin	Astro	Pyrethroid	Caution
Spinosad	Conserve SC	Microbial	Caution
Trichlorfon	Dylox 6.2 G, 80 T&O	Organophosphate	Caution
* Not for use on residential lawns.			

All directions and insecticide labels should be read and understood before a product is used, particularly the dosage rates, application procedures,

**Table 2.** Insecticides labeled for non-commercial (homeowner) use against lawn caterpillars in Florida.

Active Ingredient	Trade Name	Chemical Class	IRAC Class
<i>Bacillus thuringiensis</i> K	Green Light Bt Worm Killer	Microbial	n/a
	Green Light Dipel Dust		
Bifenthrin	Ortho Bug-B-Gon Max Lawn & Garden Insect Killer	Pyrethroid	3
	Scotts Max Gard		
Carbaryl	Sevin	Carbamate	1A
Cyfluthrin	Bayer Advanced Lawn Power Force Ant Killer	Pyrethroid	3
	Bayer Advanced Power Force Multi-insect Killer		
	Schultz Lawn & Garden Insect Killer		
Deltamethrin	Southern Ag Mole Cricket & Chinch Bug Lawn Insect Control	Pyrethroid	3
Halofenozide	Hi-Yield Kill-A-Grub	IGR	
	Southern Ag Mach 2 Grub Control		
	Spectracide Grub Stop ONce & Done		
Lambda-cyhalothrin	Spectracide Triazicide Once & Done Insect Killer	Pyrethroid	3
Permethrin	Bonide Eight Liquid	Pyrethroid	3
	Hi-Yield Indoor/Outdoor Broad Use Insecticide		
	Ortho Bug-B-Gon Max Garden Insect Dust		
Spinosad	Bulls-Eye Bioinsecticide	Microbial	5
Trichlorfon	Bayer Advanced Lawn 24-hour Grub Control	Organophosphate	