

WORM COMPLEX

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NOTE: THE FOLLOWING INFORMATION IS OFFERED AS A GUIDE FOR PROSPECTIVE CHALLENGES TO MANAGING SEASHORE PASPALUM. ALL TURFGRASSES ARE SUBJECTED TO INSECT, DISEASE, AND WEED PRESSURES. PROPER MANAGEMENT IS THE KEY TO SUCCESS. YOU MUST CHECK ALL LABELS OF THE PESTICIDES TO BE USED ON THIS GRASS FOR LEGAL AND PROPER USE. MENTION OF A PARTICULAR PRODUCT IS NOT AN ENDORSEMENT OF THAT PRODUCT BUT REFLECTS WHAT IS KNOWN AT THE PRESENT TIME. ENVIRONMENTAL INTERACTIONS, INCLUDING SALINITY THAT IMPACT SPECIFIC SITES, MAY GIVE VARIABLE RESULTS IN THE USE OF SOME PRODUCTS.

WORM COMPLEX

Fall armyworm

Cutworm

Tropical sod webworm

FALL ARMYWORM: *Spodoptera frugiperda* (J.E. Smith), yellow-striped armyworm *Spodoptera ornithogalli* (Guemee)

Life cycle: Females lay egg clusters on grass blades, other green plants, twigs, fences, sides of buildings, or any light-colored object near turf. Eggs hatch in 7-10 days during cool weather and in 2-3 days during hot weather. Larvae mature in about 12 days during summer and in 4 weeks during cool weather. Older larvae will pupate in the soil, and new moths will emerge in 9-20 days, depending on temperature. Only 23-28 days are required to complete a generation during mid-summer.

Predominately located in the southern transition zone but migrating northward, the fall armyworm is a tropical and semitropical species that migrates from Central America and the Gulf States northward each summer

Feeding symptoms: scrap underside of leaf blades, leaving a clear upper skeletal epidermal layer; chew leaf margins, leaving a tattered look. Large larvae will eat all leaf material down to crown region.

CUTWORMS:

Northern transition zone: Black cutworm *Agrostis ipsilon* (Hufnagel), Bronzed cutworm *Nephelodes minians* (Guemee), Variegated cutworm *Peridroma saucia* (Hubner).

Southern transition zone: Granulate cutworm *Felta subterranea* (Fabricius)

Life cycle: Overwinter as larvae or pupae in the northern states. The nonmigrating caterpillars may have 2-4 generations per year, while in the southern states, 3-7 generations per year depending on the length of the season. The bronzed cutworm has one generation per year. A single female may lay 300-2000 eggs over several days on leaf blades. Eggs hatch in 3-10 days, and the larvae begin to feed on the leaves. The cutworms evacuate a hole or use aeration holes to hide during the day.

TROPICAL SOD WEBWORM: *Herpetogramma phaeopteralis* (Guenee)

Life cycle: eggs hatch in about one week at 78°F (26°C). Larvae complete development in about 25 days.

Complete life cycle takes 5-6 weeks (78°F or 26°C) to 11 weeks (73°F or 23°C). Predominate damage is mid-to-late summer.

Feeding symptoms: feed along midrib, between veins. Will chew notches in the leaf blades, giving a ragged appearance. Infested turf appears to be severely scalped, with large yellowish or brown patches.

POTENTIAL WORM COMPLEX CHEMICAL MANAGEMENT

Potential Caterpillar Insecticide Management: halofenozide (MACH 2)—an insect growth regulator/molt accelerator—and spinosad (CONSERVE) are effective chemical controls. Bt (*Bacillus thuringiensis*=DIPLO PRO DF) and NEEM (azadirachtin) may provide some control of small larvae (do not irrigate). Avoid mowing for at least 1-3 days after application of insecticides. Apply in the afternoon and avoid irrigating overnight. Liquid sprays are more effective than granular applications.

Contact/SYSTEMIC insecticides: (ROTATE MOA CHEMISTRIES) (acephate (ORTHENE T, AVATAR®, LESCO FATE, T&O, PRECISE), azadirachtin (AZATROL, NEEM, TURPLEX), chlorpyrifos (DURBAN, INSECTICIDE III™), cyfluthrin (TEMPO2, TEMPO ULTRA), fluvalinate (MAVRIK, YARDEX), isazofos (TRIUMPH), isofenphos (OFTANOL), trichlorfon (DYLOX, PROXOL), tebufenozide (CONFIRM), clothianidin (ARENA, GUILLOTINE), bifenthrin (TALSTAR, MENACE, CROSSCHECK, FIREBIRD®, Up-Star SC, PROSECT™), deltamethrin (DELTAGARD), abamectin (LUCID, MINX, AVENSIS), acetamiprid (TRISTAR; QUASAR), imidacloprid + bifenthrin (ALLECTUS, ATERA), clothianidin + bifenthrin (ALOFT), bifenthrin + carbaryl (DUOCIDE), imidachloprid (IMIDA PRO, HAWK-I® N/O, MERIT, MALLET, GARANT, WARRANT, ENFORCE, BENEFIT, TURFTHOR, BENEFIT, POINTER, BOUNTY™, GRUBOUT™), chlorotraniprole (ACELEPRYN, FERENCE), indoxacarb (ADVION, PROVAUNT), carbaryl (SEVIN), clothianidin + bifenthrin (ALOFT), halofenozide (MACH 2), lambda-cyhalothrin (BATTLE, SCIMITAR), methomyl (LANNATE), permethrin (ASTRO), spinosad A and D (CONSERVE, ENTRUST™), dinotefuran (SAFARI®), fenpropathrin (TAME), azadirachtin (AZAGUARD EC), K salts of fatty acids (M-PEDE), dinotefuran (ZYLAM/SAFARI), bifenthrin + zeta-cypermethrin (TALSTAR XTRA), permethrin (ASTRO), cyfluthrin (TEMPO2, TEMPO ULTRA), thiamethoxam + lambda-cyhalothrin (TANDEM), imidacloprid + beta-cyfluthrin (TEMPRID), bifenthrin + zeta-cypermethrin + imidacloprid (TRIPLE CROWN T&O). XXPIRE WG: spinetoram + sulfoximine (IsoClast®). Acephate + imidacloprid (Avatar PLX). MatchPoint™ (spinosad + lignin). Achromocil (GRANDEVO PTO). Suprado (Novaluron). Alucion 35WG (alpha-cypermethrin + dinotefuran). Tetrino (tetraniliprole).

Biorational products: entomopathogenic nematodes (*Steinernem carpocapsae*) -
-apply in early morning or late afternoon to avoid heat or direct sunlight.
Irrigate to moisten soil and thatch/sandy matt, then again immediately after
application, and before spray droplets dry. HETEROMASK, SCANMASK;
ENTRUST™ (actinomycete bacterium *Saccharopolyspora spinosa*: fermentation
by-product=spinosyns; active=spinosad); (GRANDEVO® PTO bioinsecticide-
achromocil: *Chronobacterium substagae*). BotaniGard ES (*Beauveria bassiana*
strain GHA) + bifenthrin or other pyrethroids.