Managing Turfgrass Insects | Archives

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For 250 million years insects have flourished on land, and for the last several million years have successfully competed with man for food and shelter. Approximately 100,000 different species of insects are found in the United States, with several million kinds found throughout the world. In other terms, to help appreciate their numbers, they outnumber man 500,000 to 1.

Many insects are beneficial to the turf manager in that they aid in the decomposition of organic matter, improve soil structure and soil aeration and some are predators of harmful organisms. Nonetheless, many insects present problems for the turf manager.

In spite of man's efforts at control, insects have survived and increased in number. In competition with all other forms of life on land, insects stand supreme in numbers of species and individuals. Some of the weapons insects have to counter man's efforts to control them include:

- a prolific potential to reproduce (a single chinch bug in spring can multiply to a million by late summer)
- a hard, elastic, tough, exoskeleton to resist destruction
- protective colorations for camouflage
- defensive structures such as spines, scales, odors, and hairs to repel predators
- unique habitats in soil and plant tissues to escape detection
- complicated life cycles
- mobility
- high adaptability to new environments and hosts
- a high degree of organization in some species

In turn, man has a large arsenal of weapons which help keep insects in check. With the development of DDT and its widespread use in the 1940's and 50's we thought some of our insect problems had been solved. For example, a single application of DDT at 25 pounds per acre provided complete control of grubs and other soil insects for a number of years. Later, chlordane and other cyclodiene insecticides proved to be even more effective against these turf insects. However, after a number of years of use of DDT and chlordane, grubs developed resistance to these insecticides to the point that they were no longer effective.

In Florida, frequent use of the cyclodiene and organophosphate insecticides for chinch bug control resulted in resistance of the insect to both classes of insecticides. Other examples of insecticide-resistant insect populations have also been reported.

In addition to insecticides, man has a number of biological controls for insects. Perhaps one of the most successful examples of biological control of a turfgrass insect has been the introduction of a parasite, Neodusmetia sangwani, for the control of Rhodegrass scale (mealybug) in Texas. The scale attacked most turfgrasses and was a serious problem in south Texas lawns in the 1950's and 60's. Chemical control of the insect was not effective because of its habitat and complex life cycle. The adult scales which have a waxy coating are found in the crown of the plant lodged between the leaf sheath and the stem. Only during the crawler stage, the first larval instar of the insect, could the pest be effectively controlled with chemicals. Today, some ten years after widespread introduction of the parasite, Rhodegrass scale has been effectively controlled.

Other biological insect controls include the milky spore disease for control of Japanese beetle larvae and Bacillus thuringiensis for control of other larvae. The milky spore disease has the potential to increase under natural conditions to a high enough population for effective control of the larvae of the Japanese beetle for a number of years. Nematodes that attack white grub and mole cricket larvae are also available as biological

insect controls.

Another weapon man has in his arsenal is the use of turfgrass varieties with resistance to specific insects. Perhaps, Floratam St. Augustine grass represents the best illustration of the effectiveness of insect resistant varieties. The southern lawn chinch bug, Blissus insularis, has caused widespread damage to St. Augustine lawns for 25 years. In Texas, over 25 million dollars are spent annually for the control of the chinch bug. In 1974, the Florida and Texas Agricultural Experiment Stations released a St. Augustine grass variety, Floratam, that was resistant to the chinch bug. Instead of the insect killing the grass, chinch bugs restricted to Floratam soon died.

Unfortunately, biological controls are not available for most turf insects. With the removal of the persistent cyclodiene insecticides (DDT, chlordane, etc.) from the man's arsenal, and with insects developing resistance to others, insects are no longer a nuisance, but a serious problem to turf managers.

Soil-inhibiting pests such as grubs can be difficult to control with the insecticides labeled for use today. The organophosphate insecticides are effective for grub control but some are bound very strongly to the thatch layer in turf. Thus, the insecticides do no reach the target-a grub in the soil beneath the thatch-in concentrations required for control. Also, the residual of organophosphates is so short that timing of the application becomes critical.

Other insects also present serious problems. In some areas of the country, particularly south Florida, chinch bugs have developed resistance to a number of insecticides. Also, the list of replacement materials is short, and few new ones are being researched. Thus, control of chinch bugs is, and probably will continue to be, difficult and expensive to achieve.

Sod webworms and cutworms present another example of the increased difficulty of control. Materials available today require repeated applications for year-round control. Although the organophosphate and carbamate insecticides are effective against the sod webworm, monthly or biweekly applications may be required for control during late spring and summer.

Thus, where it was once only a nuisance to control turf insects, today it requires a serious effort based on knowledge and life histories of the problem pests as well as knowledge of insecticides. A brief discussion of several of the more troublesome insect pests of turfgrass and control measures follows.

Damage Symptoms of Common Turfgrass Pest Problems and Possible Causes

Symptoms Possible causal agent(s)

A. Disruption of soil:

1. Hills, piles or structures of loose dirt on turf ants

a. Mounds up to 18 inches tall with no visible entrance(s)
on mound with ants emerging in mass when disturbed red imported fire ant

b. Small mounds with rims around single central entrance holes
and presence of small (3/16 in.) grayish-black ants pyramid ants

c. Many hills of course soil with central exit holes and
presence of large (3/8 in.) red-brown ant with
spines on the thorax Texas leafcutting ant

d. Flat cleared areas up to 3 ft. in diameter made of course soil
particles with a single central exit hole and with the presence
of large (3/8 in.) reddish-brown ants with square heads
and no spines red harvester ant

2. Trails of raised, loose dirt through turf roughly ° inch wide in
an "S" shaped pattern mole cricket

3. Small piles of dirt "pellets" (1/8 in.) scattered through thatch earth worms

4. Earthen "chimneys" with central holes (about ° in. diameter) crawfish

5. Small piles of loose dirt which are associated with
exit holes green June beetle larvae

6. Round holes (up to ° in. diameter) in soil digger wasp nests or
cicada exit holes

B. Direct damage to grass causing yellowing or plant death:

1. Grass blades chewed or missing caterpillars

a. Presence of gray-brown caterpillars up to 1 in. long with an
inverted cream-colored "Y" on the fronts of the head
capsules armyworms

b. Presence of gray-brown caterpillars up to 1 in. long that curl
into a tight "C" position when disturbed cutworms

c. Presence of translucent greenish caterpillars up to
in. long with black raised spots on each body
segment tropical sod webworm

2. Yellow or dead grass:

a. Roots missing and presence of cream-colored "C" shaped grubs
with three legs on body segments behind brown head capsule white grubs

b. No tissue removed, with presence of pinkish-orange, white and
black nymph and adult stages of bugs up to 3/16 in. long chinch bugs

c. No tissue removed, but with "galls" or globular object (scales)
in the rootzone Rhodegrass scale
or ground pearls

d. No tissue removed, but with shortened internodes producing
a typical bermudagrass (stunt) mites
or
rosetting and tufted growth, " or "witch broom" effect;
grass may be very yellow or whitsh in appearance with no
insects visible to the naked eye buffalograss (stunt) mites