Fall Armyworm

[*Spodoptera frugiperda* J.E. Smith]

Description

The fall armyworm is a sporadic but serious pest of turfgrasses in North Carolina. The larva is the damaging stage of this pest and it is 1 inch to 1½ inches long when fully grown. It can vary in color from green to brown, to almost black. There are four black dots on the dorsal side of each abdominal segment. It has a distinct inverted "Y" on the head. The true armyworm is similar in appearance but lacks the inverted "Y." The moth has a wingspan of about 1 to 1½ inches. The hind wings are white; the front wings are dark gray, mottled with lighter and darker splotches. Each forewing has a noticeable whitish spot near the extreme tip. The eggs are very small and laid in clusters of 50-250. Egg clusters are fuzzy patches covered with scales from the female moth and resemble cotton. The mass is greenish white but turns darker prior to hatching. The pupa, approximately 1.2 inches long, is somewhat football shaped. It is reddish-brown at first, and darkens to black as it matures.

Adult fall armyworm

Fall armyworm damage

General Information

The fall armyworm has been a pest of turfgrass in North Carolina for many years. However, its occurrence and the resulting damage appear to have increased since 1995. As a result it has become a major concern for turfgrass managers throughout the Carolinas in both cool and warm season turfgrass.

The fall armyworm does not overwinter in North Carolina, but egg-laying armyworm moths migrate northward from Florida and the Gulf Coast areas throughout the spring and summer and begin to arrive in North Carolina in June. New moths may continue to appear into November. Each female lays about 1,000 eggs in masses of 50 or more. Two to 10 days later the small larvae emerge, feed on the remains of the egg mass, then scatter in search of food. After feeding for 2 to 3 weeks, the larvae dig about 0.8 inches into the ground to pupate. Within 2 weeks, a new population of moths emerges and usually flies several miles before laying eggs. It is possible that in some years we may have as many as 4 generations of fall armyworms in North Carolina.

Damage

The fall armyworm feeds on a wide range of plants, but prefers grasses. Damage to bermudagrass in the southern U.S. is most common, but fescue, ryegrass, bentgrass, and bluegrass are also attacked. Lush, green turfgrass is the most frequently attacked host.

Fall armyworm caterpillars feed only above the ground on the foliage of the turf. Larger larvae often consume most of the leaf tissue and in the case of bermudagrass, the turf often takes on the appearance that it has been subject to frost. The damage often begins along one edge of the turf area and moves across. Bermudagrass usually recovers from such damage, but feeding late in the fall may stress the turf going into the winter and result in some winterkill. Cool season turfgrass can be permanently damaged if the growing tips are destroyed.

When numerous, this insect will devour grasses down to the ground, causing circular bare areas. Some years the fall armyworm is a serious pest of turfgrasses in North Carolina, usually following cool, wet springs which seem to reduce the effectiveness of naturally occurring parasites. Fall armyworms feed any time of day or night, but they are most active early in the morning or late in the evening. When abundant, fall armyworms eat all available food and move in mass to adjoining areas. The larvae feed two to three weeks and a generation takes about five to six weeks. Several generations occur each year. The fall armyworm is a common pest of newly seeded stands of cool-season turf in the fall and often attacks overseeded areas of warm-season grass as the ryegrass establishes.

Scouting and Early Warnings

Discolored turfgrass is often the first sign of fall armyworms. The damage often begins along one edge of the turf area. Large numbers of birds in a turf area may well be a sign of fall armyworms and the presence of food for the birds. Green, fecal pellets can often be seen in areas of damage. The use of soapy water flush to bring fall armyworms to the surface can be a valuable time-saving tool to detect the caterpillars prior to severe damage to the turf. The soapy water flush consists of two tablespoons of liquid dishwashing detergent mixed in two gallons of water. Slowly pour from a bucket or sprinkling can the whole contents onto approximately a square yard (3 ft X 3 ft) area and then observe closely over the next few minutes for the fall armyworms (and any other caterpillars present) scrambling to the top of the turfgrass. It is not uncommon for the turf to be severely damaged and by the time someone begins looking for caterpillars, they have already entered the soil to for a pupa.

Treatment of established turf is not necessary on a frequent or widespread basis. However, there are three situations that are often the targets of armyworm infestations and suffer severe damage. Any turf setting that contains new, lush turf growth and is receiving a lot of water and fertilizer is a prime target for an infestation. Newly seeded areas are often attacked late in the summer or early fall. Sprigged areas also come under frequent attack from this pest and establishment can be seriously impacted. In recent years, the most common report of fall armyworm has been associated with areas of new sod. The common scenario is that the sod is laid on site, watered and after a couple of weeks it begins to turn brown. More water and fertilizer is applied, but the turfgrass continues to decline. Finally someone checks for armyworms and either finds large caterpillars or nothing at all. In many situations, the caterpillars will not be found because they are pupae in the soil.

One important consideration to keep in mind when sod is placed at any site is that most infestations probably originate at that site. Remember that the eggs are not commonly laid on the turf, but on objects nearby. Any infestation that begins to show up several weeks after the sod was laid most likely was the result of caterpillars moving into the area after they hatched from adjacent areas. This is not to say that it is impossible for fall armyworms to come in with the sod, but rather to help producers and buyers alike, understand that most problems originate on site. If fall armyworm damage occurs within two weeks of the time the sod was purchased, then it is possible that small worms came in with the sod. However, even in that scenario, it is possible that medium sized fall armyworms were present in surrounding areas and

immediately migrated to the new sod. These caterpillars are called "armyworms" because they do indeed "march" to the best available food source.

Control Practices

The fall armyworm is more difficult to control chemically than the true armyworm. Control of fall armyworms will be improved if you cut the turf prior to treating. A light irrigation prior to treatment may also help as will treating late in the day. Chemical control is needed if natural enemies do not keep infestations below the economic threshold of 1 per square foot on general turf or 1 per square yard on golf greens. If possible, do not mow turf and remove clippings for several days after treating for any of the caterpillar pests.

Large fall armyworms are difficult to control. Don't expect 90% control. If the worms are very large (inch and a half long) then they will go into the soil very soon to pupate and control efforts may be ineffective. Timing is important and a repeat application may be necessary in some situations. For specific control information, consult the NC Cooperative Extension Service recommendations (Pest Control for Professional Turfgrass Managers 2007).