



## A New Turfgrass Insect Pest?

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**D**uring droughty seasons, insect activity normally is greater on turf areas than during wet seasons. The 1957 season in the Northeastern States was one of record breaking droughts; New York City reported it to be the driest in 131 years, and so it follows that general insect activity was unusually high on turf in these areas of the Northeast.

Sod webworm and cutworm infestations were particularly heavy last season, while beetle grubs and chinch bugs occurred only at random in localized areas. There was, however, one insect that was exceedingly more prominent in '57 than during previous years, and to some degree was evident on almost every golf course visited by members of the Northeastern Green Section staff. This was the "frit fly," *Oscinella frit* (L). It is also called the "grain fly."

To what extent this insect has been causing injury, we at this time have no precise information, but it has been found in great numbers in dense turf areas, and most abundant on Merion bluegrass turf and bentgrass putting greens. Golfers have complained about them as they have been disturbing on putting surfaces where they seem to be attracted to the golf ball. Superintendents have noted them and have asked for identification of this fly which acts somewhat like the leafhopper. The purpose of this article is to identify this insect pest and to provide something of its known background in agriculture.

Frit flies are considered to be common insects and one or more species may be collected rather easily by sweeping with an insect net. Certain head and wing characteristics readily establish individ-

uals as belonging in the Dipterus family Chloropidae. To the naked eye, the adult looks like a miniature housefly.

The common name of this insect pest is derived from its activity on grain crops. The larvae destroy immature kernels of grain, in many heads they eat out almost every kernel; such light and worthless kernels the Swedes called "frits," hence the common name of this fly.

The extremely active adults of the more than 25 known species are for the most part bare, without many hairs or pubescence, black to slightly pale in color, with short to very short wings. The adult fly generally ranges from 1.1 to 2 mm. in length.

The "frit fly" which occurred so commonly on Merion bluegrass and on bentgrass putting green surfaces during the summer of 1957 was identified by the United States National Museum in Washington. Owing to the difficulties sometimes experienced in separating specifically one species from another, it is well to have specimens reviewed by Museum experts rather than rely on a superficial examination or snap judgment in naming them.

Some of the species of "frit flies" display a rather wide variation in habits. A number of them are common in meadows and other grassland areas where the ground cover is allowed to grow rank and uncared for. Others infest the stems of wheat, oats, rye, clover, in addition to lawn and golf course grasses. Some live in the wounds of lesions made in plants by insects while others spend their feeding period in excrement. There seems to be at least one or two species which are troublesome to man and animal. One is known as the "eye gnat." It is reported as tormenting to man and domestic animals in certain areas of southern California, and may be partly responsible for the transmittal of pink-eye disease of humans. Another species spreads Naga sore and conjunctivitis or sore eye in India.

Oscinella frit, the species which could, under favorable conditions, develop into a serious golf green pest is widely distributed throughout the United States, and appears to be essentially destructive to grasses belonging to the family Gramineae. "In 1889 H. Garman of Kentucky reported first occurrence of the 'frit fly' in the United States. About the same

time J. Fletcher reported its presence in Canada. In 1913 Criddle detected three summer broods. The first brood occurred from June 12 through July 13 (heaviest between June 25-30); the second July 16 through July 26; and the third from August 10 through August 28." (1)

The larvae or maggot stage of this species is short, thick, and cylindrical in appearance. The mouth parts which consist of stout hooks are designed principally for tearing and rasping plant tissue. The maggots of the late fall brood overwinter in the mined stems of grass and grain. "Injury caused by the frit fly can be easily mistaken for that caused by the Hessian fly due to the similarity of attack. Larvae of the frit fly are distinguished from the larva of the Hessian fly from the fact that the former are located in the center of the stem and crawl actively when removed, while the Hessian fly larva is between the bases of the leaves and is extremely inactive. The frit larva often causes the central leaf to turn brown and die while leaves about it remain green. In cool moist weather, the insect may be abundant and yet only a few plants will show this symptom. Since the larva does not usually cut the central leaf entirely off in periods of low transpiration, the leaf will remain green for some time, whereas the same injury in hotter and drier weather would kill the leaf at once." (1)

"Adults of the frit fly are rare on grain after it has begun to shoot-up to head, or on grasses approaching maturity; however, they are abundant on wheat and grass that is in the early stage, stooling, or producing new shoots. Bluegrass lawns that are sprinkled and mowed yielded frit flies practically all season." (1) The attraction of the frit fly for new shoots unquestionably explains its heavy infestation in two of our most prolific producers of new shoots in turf grasses—Merion bluegrass and creeping bentgrass.

Control of "frit flies" may be obtained by spraying infested turf and sod land with DDT. The insecticide can be used in a wettable powder or emulsion form. Dusting with a 10 per cent DDT formulation may be expected to produce good results in control. Treatments for the most part will kill adult flies and exposed maggots. The latter stage, however, in addition to the flies should be effec-

tively controlled when individuals come in direct contact with DDT treated vegetation over a period of several or more weeks subsequent to treatment.

#### REFERENCE CITED

(1) Aldrich, J. M., U.S.D.A.; European Frit Fly in North America, Journal Of Agricultural Research, Vol. 18, 1920.

## Superintendents Award \$1,900 from Scholarship and Research Fund

A total of \$1,900 in scholarships and research grants will be placed this year by the Golf Course Superintendents Association Scholarship and Research Fund. Directors of this organization awarded a \$400 Scholarship to Purdue University, two \$100 Scholarships to Pennsylvania State University, and four separate research grants.

Continuing with a program started in 1951 at University of California at Los Angeles, the school will have the second Research Grant of \$250 for work on Kikuyugrass control. The Georgia Coastal Plain Experiment Station at Tifton, Ga., will receive a \$250 research grant, Kansas State College at Manhattan, Kans., will also receive a \$250 research grant.

These latter are placed in the field of general turf research. In a more specialized field, a \$500 Grant will be made to the University of Wisconsin, Madison, Wis., for the field of Nematode research.

This year will mark the third year of operation of the GCSA Scholarship and Research Fund and emphasizes the interest and need for training in the field of turfgrass management and additional specialized turf research. It is expected that additional funds will be placed this coming fall. The Fund was organized through the efforts of the Golf Course Superintendents Association and shares offices with the GCSA in St. Charles, Ill., but operates entirely separately from that organization.



Kent Potts, left, Agronomy student at Texas A. and M. College, receives a \$200 Trans-Mississippi Golf Association Scholarship from Dr. Marvin H. Ferguson, Mid-Continent Director and National Research Coordinator of the USGA Green Section. Potts and another student, Carlton Gipson, are studying the effects of different types of golf shoes—spike, lug-sole and ripple-sole, on turf used for golf greens. The awards were presented at a recent meeting of the Student Chapter of the American Society of Agronomy at the college.