

WEBWORMS? USE LEAD

NAGA Convention Paper

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IN considering any insect problem, the most important single thing to do at the outset is to identify the pest with which one is dealing. The visible effects of several troubles appear very much the same if one makes only cursory examination of ailing turf; it is only by careful scrutiny that the cause of the disturbance can be determined. The degree of success attained in correcting the situation will depend, in large measure, upon the proper diagnosis of the causative agent, which, in turn, will furnish the key to the selection of the best procedure to follow.

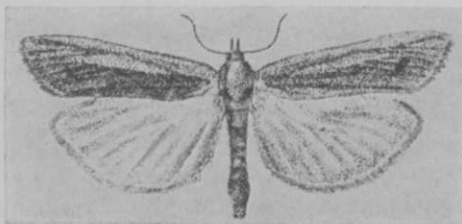
Sod webworms are always present in small numbers, but it is only on occasion that they increase to the proportion of a scourge and cause serious damage.

First indications of an impending outbreak is a flight of moths in early summer. Sod webworm moths are easy to distinguish from all others because of the characteristic manner in which the wings are folded when the insects are at rest. They are so closely applied to the sides of the body that the group is given the name of Close-winged or Folded-winged Moths. When the moths are at rest the sides of the body are almost parallel. The antennae extend forward from the head and the legs outward from the sides. The color is silvery white, light tawny, or light gray, depending on the species, of which there are several. Rarely are the insects over an inch in length, usually they are smaller.

Frequent Inspections to Guard Against Damage

During the daytime the moths remain at rest, but with the approach of darkness they take flight and are strongly attracted to lights. Another criterion for forecasting sod webworm outbreaks is that of observing the moths that are flushed from the fairways and areas of taller grass. When so disturbed, the moths fly a short distance and alight on grass stems, with the body applied closely to the stem and parallel to it.

sign I have just described should make frequent inspections of the turf to determine whether damage is starting. It is of utmost importance that an outbreak of sod webworm be detected in early stages,



Sod webworm. Adult.

because if taken in time serious harm, particularly to greens, may be averted. At the outset, the taller grass of aprons and of other areas is more subject to damage, but if the insect is not controlled it may spread to the greens. Moreover, the smaller, partly grown larvae are more susceptible to the effect of treatments than are the larger, more nearly mature individuals.

Sod webworm moths seem to drop their eggs in an indiscriminate manner as they fly at night over the turf. After a 10-day period the eggs hatch and the young larvae begin to feed upon the grass blades. As they increase in size they retreat to the lower strata of the turf and feed upon the grass stems as well as the blades. Tunnel-like structures of silken webbing are constructed at the soil surface through which the larvae move freely. Occasionally, burrows are constructed which extend downward as far as an inch into the soil. When the silken webs are broken open and the insect within is disturbed, it will appear as an active caterpillar, dirty gray in color with regularly-spaced brown spots on the body. It is capable of moving either forward or backward with consid-

The greenkeeper who observes either



Sod webworm. Greatly enlarged.

erable rapidity. When full grown, it measures about an inch in length. Another sign of the presence of sod webworm larvae is the castings or pellets, whitish to very light green in color, found on the soil surface in the feeding area.

Minor damage from sod webworms may easily pass unnoticed, but, if the insects are abundant, large areas of turf may be destroyed. Turf of high quality is more susceptible to damage than if the grass stand is thin; likewise, closely clipped grass is more likely to escape harm than is that of coarse-clipped areas. This last-named fact explains why infestations of putting greens usually arise from caterpillars migrating inward from the aprons.

Lead Arsenate

Treatment Effective

In 1931 an unusually severe outbreak of sod webworm occurred in many sections of Ohio. At that time, an intensive research program was executed by the Department of Entomology of the Ohio Agricultural Experiment Station to meet the emergency; a part of the work was done in cooperation with M. M. Parsons, greenkeeper of the Wooster CC. A number of insecticidal formulae were evaluated, but the program of control which gave the best results was the use of lead arsenate. The poison was applied in both liquid and dust forms, but, when everything was considered, the dust treatment seemed the most generally satisfactory. The procedure was as follows: A hand duster of the rotary fan type was employed to distribute the undiluted lead arsenate upon the turf, after which the grass was brushed with a stiff fibre broom for the purpose of increasing the evenness of distribution and also for dislodging as much of the lead as possible from the grass blades and depositing it next to the stems where the webworms were feeding. To each 1000 sq. ft. of surface seven and one-half lbs. were used. The turf was then watered thoroughly by means of a driving spray directed by hand. This treatment dislodged most of the lead that had remained on the upper parts of the grass plants. The use of the conventional, mechanical sprinkling system was not so successful.

Water was withheld from the treated areas for a period of 48 hours in order to allow the webworms full opportunity to feed on the poisoned herbage. With further respect to watering, it developed that areas to be treated should not be sprinkled during 36 hours before the dust was applied and under no consideration should the application be made when the grass is wet. If the grass was clipped short immediately before treatment, it was found that this facilitated lodging of the lead at the point desired at the bases of the plants.

With the exception of one green on the Wooster CC, which was suffering from a mild attack of brown-patch, it was not possible to detect the least sign of damage to grass following the treatment as outlined, regardless of whether the application had been made to the bent grass of golf courses or to bluegrass and other grass mixtures in lawns. On the other hand, the areas so treated, particularly the bent grass of putting greens, seemed to be definitely stimulated, as indicated by excellent growth and improved color.

The control of the webworms was all that could be desired. Twenty-four hours after the poison was applied, dead and dying worms could be found in abundance. This recovery of the greens and other treated areas was particularly gratifying because at the time the lead was applied, some were affected to the extent that they seemed all but doomed. Following our work in 1931, the lead arsenate treatment seems to have been generally accepted not only in Ohio but in other states as well, and numerous reports have come to my attention in which satisfactory control was secured. In some instances the lead has been applied in the form of a spray with good success. Other workers have reported success from the use of contact sprays in which the killing agent was pyrethrum, kerosene, etc.; however, the arsenate of lead would appear to be preferable because the residual effect undoubtedly is of longer duration than that of the contact materials.

A secondary effect of sod webworm infestations is the damage done to the turf by starlings, grackles, and robins. Occasionally, the abundance of birds on the greens is the first evidence the greenkeeper has of an existing sod webworm outbreak.

The balance of this address was devoted to a thorough discussion of chinch bug control. It will appear in an early issue of *GOLFDOM*.