

How To Combat Insect Pests

By RAY HUTSON*

Entomology Dept., Michigan State College

INSECT pests causing trouble upon golf courses may be divided into three groups: (1) insects attacking players; (2) insects attacking shrubbery, trees and miscellaneous; and (3) insects attacking turf on fairways and greens.

Insects likely to annoy players on golf courses by biting and stinging are those that are of such nature as to constitute a special problem; and those that may be largely alleviated by routine operations. In the first group we may mention such pests as black flies, greenheads, deer flies and mosquitoes. The second group includes chiggers, stable flies, fleas, wasps, bees, hornets, and ants. Chiggers do not naturally fall in the latter group but are included only to avoid a separate grouping, since they are not insects but mites. Other insect pests may occur occasionally.

Blackflies, greenheads, deer flies and mosquitoes are special problems because they breed in water. Sometimes the water is on the golf course; more often it is not, but nearby. The difficulties of the problem of ridding the course of such plagues are apparent from the preceding statement. A clearer statement of the case may be had by recalling that wind shift will sometimes carry these insects onto the course from varying distances. The only recourse in many such cases is through an understanding of what is happening; of the conditions that will bring about an abatement, and great diligence in trying to get members to believe that the nuisance is due to the location of the course and not to the way it is kept.

Blackflies, greenheads, deer flies and mosquitoes usually rest between meals on trees, shrubbery and in heavy rough out of the wind. The implication here is that one reason for prevalence of these pests is the prevalence of trees, shrubbery and heavy rough. All should be held to a minimum and handled to afford a chance for the wind to sweep through. Shrubby close around trees is inviting to insects as well as golfers. Dusting with pyrethrum dust or spraying with pyrethrum or nicotine is useful in

eliminating them around especially troublesome spots.

Little more of a general nature can be said concerning blackflies, deerflies, and mosquitoes. Large scale control projects directed against these insects exist in many parts of the U. S. Generally, the methods employed consist in attacking the problem at the source, i. e., controlling drainage. Greenheads, when prevalent, are hard to do anything about. Studies indicate that the only means of doing anything about them lies in efforts over a large area.

In the case of the second group of insects, those that may be controlled by routine operations, some practical methods of control have been worked out.

Clippings Encourage Breeding

Stable flies, when present on the course, come from accumulations of rotting vegetable matter such as the accumulations of mowing rough or clipping greens. Piling clippings of weeds or grass from any source is an invitation to stable-fly breeding. Clippings should be disposed of completely insofar as the course and its surroundings are concerned, except in the case of short clippings from greens which, if scattered thinly, will dry out quickly and no longer attract stable fly breeding.

Fleas sometimes become a nuisance about certain spots on golf courses. Application of 1% rotenone dust on the affected areas has always given complete control. Stinging bees, wasps, hornets, and ants usually occur in restricted locations and readily succumb to fumigants such as calcium cyanide. Application should be made at night to eliminate the chance of retaliation by the victim which is usually quiet at that time.

Chiggers sometimes occur in rough. Fifty pounds of dusting sulphur per arce has cleaned several infestations for me. Application was with an ordinary orchard power duster.

There are a number of insects that are sometimes troublesome on trees, shrubs, and miscellaneous equipment, such as fence posts, steps, and bridges. Insects affecting trees and shrubs in the main belong to a few groups of which the most

* GSA Convention Paper.

Southern California Section PGA members are virtually unanimous in opposing proposed bill to register golf professionals under jurisdiction of the state's athletic commission. The pros don't want to get tangled with politics. In view of the mess the California State Athletic Commission got into with fighters and wrestlers, and the stink of graft that came out of that affair, the Southern California pros seem to be plenty smart in shying off.

important are those that defoliate trees; or that burrow beneath the bark of deciduous trees, and plant lice which cause malformation of ornamental shrubbery.

Defoliating insects are spectacular in their work and cause many questions. On deciduous trees, defoliation for about three successive years will kill many trees. Young or unhealthy trees may be killed more quickly. However, as a rule, a deciduous tree after defoliation in the spring will put out new leaves and recover.

As a usual thing, trees that are infested by defoliating insects will be attacked periodically. In the case of canker worm, gypsy moth, tent caterpillar, and the walnut worm it occurs yearly; as is also the case with Japanese beetle, Asiatic beetle, elm-leaf beetle, and willow-leaf beetle. In the case of the June beetle, which happens to have a predilection for oak trees, the defoliations will not come every year but usually at three-year intervals. Fortunately, the feeding habits of defoliating beetles are such that a poisonous material placed upon the tree at the time of the attack will result in their eating enough poison to bring about their death.

It should be apparent that there is little object in putting poison on to kill the insects after most of the damage has

been done and it should also be equally apparent that, if the poison is put on while the insects are small, there is more likelihood of a quick kill. June beetles, of course, are full grown at the time they start feeding and, as they feed at night, it would be a good idea to keep in mind that they occur at three-year intervals and ascertain when they are due in the particular locality where trees are to be protected. Application of arsenicals usually is used in the control of leaf feeding and can be brought about only through the employment of high-powered spraying or dusting machinery.

It is just as futile to undertake the control of defoliating insects on a large oak or elm tree with inadequate machinery as it is to undertake to come out of a deep sand-trap with a driver. Ordinary orchard equipment will not suffice for control under such circumstances. The only thing that can be done, the only kind of equipment that will work for such operations, is a high-powered tree spraying or dusting outfit. Such machinery is extremely expensive and it is, of course, a good idea to supply control measures before the outbreak becomes large, because it will become increasingly expensive as it is spread.

In line with the matter of the expense attached to spraying large trees for certain insects such as canker worms and gypsy moth it is a good idea to keep in mind that bands of sticky material such as Tangle-foot can be applied about such trees with a good chance of protecting them if the application is made at the proper time. In the case of canker worms in Michigan the larger portion of the difficulty arises from the fall cankerworm, the

General Outdoor Adv Co

Kansas City fee course operators are sharing the expense of a billboard campaign which will be continued for 3 months. The copy will be changed monthly. The first board is shown in accompanying cut.

The district's fee course operators began what will be a season of lively promotion with a special bogey event at 6 courses. The prize at each club was a year of free golf. The initial competition and billboard advertising stirred up golf interest earlier than usual in the community, indicating that the cooperative work will give the course owners additional weeks of play.

females of which ascend the trees during the month of October or early November. Bands must be put on at that time. In gypsy moth areas the banding can be done at a different time.

The band of sticky material is applied by smoothing a ring of bark of the tree sufficiently high off the ground to forestall anyone leaning up against the tree and into the banding material, and consists of nothing more or less than a coating of the sticky material applied in a ring about the tree. It should be an inch and one-half or two inches in width when dealing with large trees. Sometimes when extremely large numbers of caterpillars of the adult females undertake to ascend the tree, they will bridge the sticky material with their bodies. Hence, the bands should be freshened occasionally. When this material is once put on, subsequent applications are much easier.

Three pounds of arsenate of lead with a quart of emulsified mineral oil, commonly referred to as summer oil emulsion, is the insecticide employed in spraying against the various defoliating insects, with the single exception of Japanese beetle. Dusts containing arsenicals are also effective. Complete thorough coverage is necessary in any case.

Spraying with arsenate of lead does not protect against Japanese beetle because the beetles do not eat a sufficient amount of the material to cause death but seemingly avoid trees sprayed with whitish material. Various schemes for getting around this difficulty have appeared from time to time with varying success. At present, the best means of protecting large trees against Japanese beetle seems to be that of spraying them with a mixture of 3 lbs. of aluminum sulphate and 25 lbs. of hydrated lime in 100 gals. This amount whitewashes the tree but it persists at the time that the beetles are flying and seems to give a very good degree of protection.

The Japanese beetles on rosebushes and other ornamental plants possessing an odor present another problem since the use of materials like the spray employed on trees would be unsightly. There is still considerable room for improvement in materials available for this purpose but it seems that the use of certain prepared Japanese beetle sprays offers a means of protecting valuable shrubs. It goes without saying that shrubbery will not require the extremely high-powered machinery necessary to spray large trees.

Conifers are sometimes defoliated by sawflies. Defoliation in a coniferous tree is much more serious than in a deciduous tree. The reason for this is that the needles on coniferous trees live for some time and one single defoliation will result in the death of a coniferous tree. It happens that sawflies are fairly easy to kill under the circumstances that ordinarily obtain on the golf course and the only thing that needs to be done is a periodical inspection to see whether or not they are present during the time they are abundant, which happens to be during early and mid-summer. Applications of arsenical dusts or sprays are very efficient against them and one application will usually suffice in a given year. Arsenate of lead at the rate of 3 lbs. in 100 gals. or calcium arsenate dust consisting of 19 parts lime and 1 part calcium arsenate has repeatedly given very excellent control.

(To be concluded in May GOLFDOM)



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