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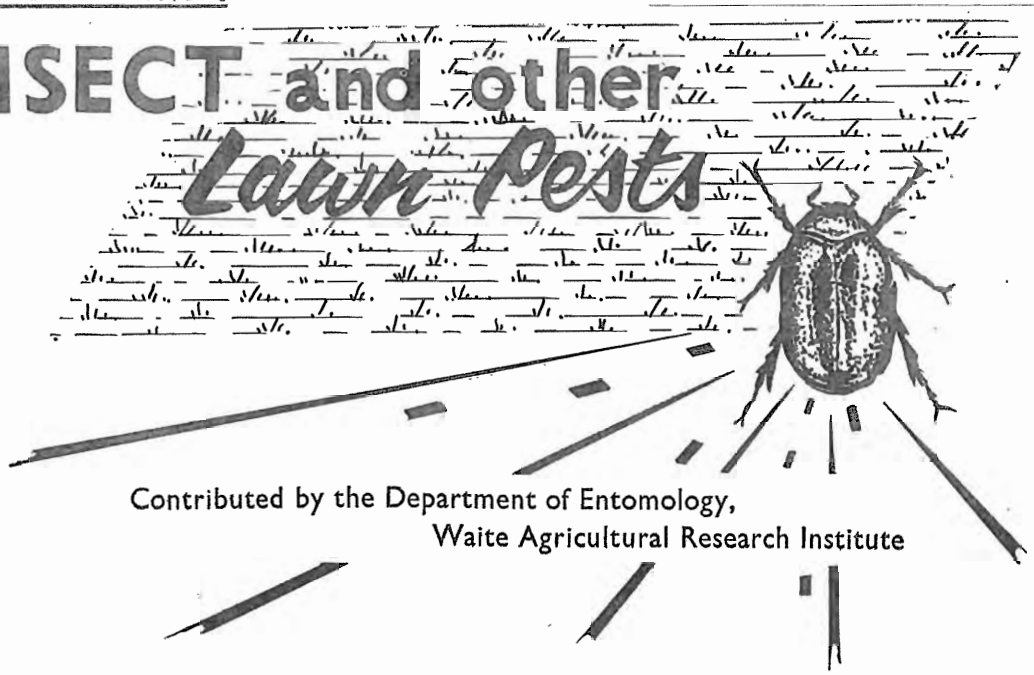
INSECT and other Lawn Pests



Contributed by the Department of Entomology,
Waite Agricultural Research Institute

THE long, hot, dry summers experienced in most parts of South Australia necessitate frequent use of the hose in gardens for a large part of the year. The resulting combination of high temperature and heavy irrigation converts lawns into "tropical oases," whose conditions greatly favour rapid multiplication of numerous pests.

Of these, the lawn beetle is the most important, but minor pests—the couch flea-beetle, white grubs, the lawn cutworm, mole and field crickets, slaters, millipedes, and earthworms—all contribute their share of damage.

THE LAWN BEETLE.

THE lawn beetle (Fig. 1) is one of the scarab or cockchafer beetles. It is native to those parts of South Africa where summer rainfall is high, and where its natural food plant couch (or as it is sometimes called "Bermuda grass"), grows wild. Conditions similar to those of the beetle's homeland are artificially reproduced in South Australia by the heavy watering of lawns in summer, and as couch is the grass most

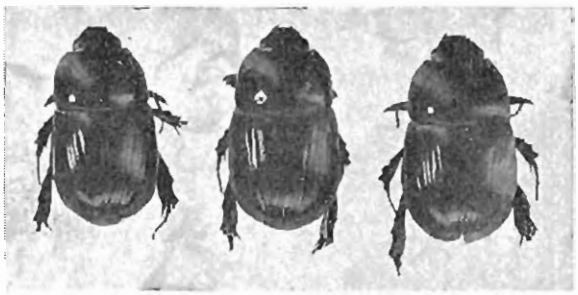


Fig. 1. Adult lawn beetles (about twice natural size). Note the stout, spiny legs, glossy upper surface, feelers not visible.

Fig. 2. Curl grubs of the lawn beetle (about twice natural size).

commonly grown, it is not surprising that lawns containing this—either alone or mixed with other grasses or clovers— are most susceptible to attack. A few beetles live in non-couch lawns, but up to the present, appear to do little or no damage to these.

In South Australia the lawn beetle was first recognized from Somerton in 1945; it has since spread widely. It is almost certain that there is no well-watered couch lawn in Adelaide or its suburbs which does not harbour the beetles unless precautions against them are taken. In addition, this pest is known to occur in several country centres, and it is probably present in others though not yet recognized.

The stage of the lawn beetle most commonly seen is the adult. This is a robust, glossy black beetle about half an inch in length (Fig. 1). It has extremely short feelers, usually hidden beneath the head, and wide, strong spiny legs well adapted for digging.

THE LIFE CYCLE.

About October, the females lay their eggs in lawns, preferring bare, dead, or weedy patches if these are present. They then die. The eggs hatch in a few days, and from each emerges a tiny grub which burrows down to the grass roots on which it feeds until fully grown.

From their characteristic shape (Fig. 2), the grubs are often called "curl grubs." They are whitish with dark yellow or brown heads. Just behind the head are three pairs of yellow legs. The remainder of the body is legless and soft, and terminates in a swollen, sac-like part often coloured grey by soil swallowed during feeding. The grubs will not be seen unless dug up, since they never come to the surface.

They feed over summer and autumn but because of variations in conditions, all do not mature at the same time. Some change into pupae and then beetles during January, February or March. Some of these autumn-born beetles die, but many burrow into the soil, become dormant, and do not resume activity till the following spring.

Those grubs which do not produce beetles in the autumn continue feeding until April, when they burrow deeper and change into pupae which remain dormant until August, when they produce beetles.

These, as well as the autumn beetles, remain in the soil till rising temperatures about October waken them. They then burrow to the surface on warm nights, and go on mating flights which may sometimes be seen round lights on bowling greens etc. After mating, the females fly to lawns, lay eggs, and soon die. The eggs hatch, and so the life-cycle begins over again.

The nature of the life-cycle explains why beetles are never seen over the winter, when they are dormant in the soil, either as beetles or pupae. The cycle is so adjusted that active stages are present only when conditions are favourable, that is, in summer.

The months mentioned above however, are approximations only, since weather conditions vary from year to year. If the summer begins early, beetles may be seen before October; if it begins later, the appearance of beetles will be delayed.

The life-cycle also limits the times when most insecticides may be usefully applied. It is obviously useless to apply an insecticidal spray to the surface of a lawn in winter when the insects are deep in the soil and when a shower of rain will wash it away.

Damage of two kinds is done by this pest—some by the adults as they burrow out, but much the greater part by the grubs which eat the couch roots. By the time feeding stops, the weather is cool, the couch becomes dormant and remains so over the winter. Damage is noticed only in the following summer when patches of grass fail to resume growth, since the few remaining roots cannot absorb enough water no matter how much is applied.

These dead patches often puzzle lawn-growers who, on digging them over, fail to find any insects there. Those responsible for the damage were present *in the previous summer.*

Since these dead patches are attractive to females for egg-laying, once an infestation has begun, it gets progressively worse every year if not checked. It was, at one time, thought that most damage was done by the beetles, but recent research has shown that the grubs are easily the worse offenders.

THE COUCH FLEA-BEETLE.

This is the only other pest which prefers to feed on couch. It is a tiny black beetle (about one-sixteenth of an inch in length) which hops for a distance of a foot or more when disturbed. It does its damage by rasping away the leaf surface so that the leaves whiten and dry.

Only rarely is it a pest, since it prefers to feed on long, weedy, neglected couch such as may be found on untrimmed lawn edges, or on lawns not regularly mowed. Most growers will never have seen either this pest or its damage.

WHITE GRUBS.

Besides the lawn beetle, the grubs of various native cockchafers may sometimes be found in lawns. These are all curl grubs but they are much larger than those of the lawn beetle when fully grown. The life-cycle extends over two (and sometimes three) years, so that grubs of various sizes may be found together. Eggs are laid in the autumn, and the grubs feed for two or three years. At the end of this time they change into pupae and then adults. Because of their continuous feeding throughout the year, the grubs prefer the more tender grasses, many of which continue to grow during the winter. Couch is rarely attacked, as its roots are then dormant.

White grubs do not go deeply into the soil. If grass is killed by them, the dead grass can be rolled back like a mat, revealing the grubs immediately below. Though, because of their continuous feeding and larger size, they could do much more damage than does the lawn beetle, extensive outbreaks in lawns have never been reported. At most they affect one or two small patches in a lawn, and years may pass before another infestation is encountered. It is very rare for the same lawn to be attacked more than once.

THE LAWN CUTWORM.

When a lawn is heavily watered in summer, grey and black-patterned, smooth caterpillars with reddish heads may be seen crawling over the grass to escape drowning. These are lawn cutworms which, when fully grown, may be as long as 1½ inches. By day they hide beneath the grass on the soil surface, but at night feed on the leaves of most lawn grasses. It is rare for them to be in sufficiently large numbers in a lawn to need special control.

MOLE CRICKETS AND FIELD CRICKETS.

Several kinds of mole crickets (Fig. 3) damage lawns by burrowing among, and feeding on, the roots of the grasses. All are alike in appearance, and all do similar damage. When present in numbers, their burrowing can make turf very spongy and uneven. Eggs are laid during the summer, and the crickets grow over the moist part of the year, completing their growth by the following summer. Most of the damage is done by the larger crickets in spring and early summer.

Field crickets are grasshopper-like, jumping brownish-black insects about an inch in length. They eat both the roots and leaves of grasses but are almost never numerous enough to require special control.

SLATERS, MILLIPEDES AND EARTHWORMS.

Slaters are greyish, beetle shaped, segmented animals, having long feelers and seven pairs of legs. They may be half an inch in length but are usually shorter.

Millipedes are long, cylindrical, brownish or black, many-segmented animals, each segment bearing two pairs of legs. They are glossy in appearance. When disturbed they coil up like a watch spring.

Slaters and millipedes feed chiefly on decaying plant material, but will eat the tender tips of shoots and roots of various plants including grasses.

Earthworms are too well-known to need description. While they may do a very small amount of good in gardens, in lawns they are pests. Not only does their burrowing make turf spongy, but their casts on the surface are unsightly, and are the greatest cause of wear and tear on mower blades. When the casts are flattened by a roller, growth of the grass beneath is retarded through being deprived of light and air. Such bare or thinly grassed spots are favoured by the female lawn beetle for egg-laying. A "wormy" lawn can never be a good, smooth, hard-wearing one.

Fig. 3. Mole crickets (about twice natural size).

SIGNS OF PEST DAMAGE.

There is no need for a lawn to be damaged by any of the above-mentioned pests. Infestation of a couch-containing lawn is a virtual certainty unless steps are taken to prevent it, while it will pay the grower of a non-couch lawn to keep it free from the minor pests, if best results are hoped for.

Only in most unusual circumstances are dead patches in lawns caused by other than animal pests. The patches indicate that satisfactory precautions were either not taken or were taken at the wrong time.

Birds often give a useful warning. If, after watering, they are numerous on the lawn, pests are probably present. If smooth, round holes a quarter of an inch across are found, these have been made by birds feeding on pests, and treatment should be undertaken as soon as possible.

TREATMENT AGAINST LAWN PESTS.

A good lawn cannot be grown if pests are not checked. To do this, two courses are open to the grower: he may use either temporary or permanent control.

Temporary Control.

This consists of at least one annual spraying with an insecticide about October, and more than one application may be necessary over the summer. This form of control is aimed at the lawn beetle; pests which flourish during the winter, or those which are not insects, will not be affected. Spraying is relatively easy, and good control of the beetle is possible. The insecticides most used are "Gammexane", lindane, chlordane and dieldrin. These, if used according to the maker's instructions on the labels, are all effective.

Permanent Control.

Permanent control of *all* lawn pests at *all times* may be accomplished by the use of arsenate of lead. Though application is more difficult than a spray, the continuous protection afforded, and the need for treatment at long intervals only, make this much the better form of control.

The arsenate is applied at a rate of 1½ ounces per square yard of turf for two consecutive years, and thereafter at a rate of one ounce per square yard at intervals of from three to five years, depending on need. The object of the treatment is to build up quickly a layer of the insecticide *in the grass roots where it is wanted,* and then to maintain this intact by the subsequent applications. Arsenate of lead is removed extremely slowly by water, is not affected by weather, and is poisonous to all pests feeding in the soil. The grass is therefore continuously protected.

To use this method, find the area of the lawn in *square yards,* multiply this by 1½ to get the number of ounces of arsenate and then divide by 16 to bring this to pounds.

Example: A lawn measures 50 yards by 30 yards, what weight of arsenate is needed?

50 x 30 = 1,500 square yards x 1½ = 2,250 ounces ÷ 16 = about 140 pounds on each of the first two years, and about 94 pounds every three to five years afterwards.

Whether three, four, or five-yearly applications are necessary can only be determined by annual inspection of the lawn.

The arsenate should be mixed with three or four times its volume of damp (not wet) sand to aid spreading. The mixture should be divided into four equal parts. One part should be spread parallel to the length, one part parallel to the width and one part parallel to each of the diagonals. This is to ensure even distribution.

The home gardener can quite effectively spread this mixture by scattering it by hand but larger areas will need a fertilizer spreader or some similar appliance if the work is not to take too long. The material cannot be sprayed on since the rate of application is so high that spraying would be impracticable.

Immediately after distribution, the lawn should be carefully watered while holding the hose in the hand, so that the insecticide will be washed down to the soil surface beneath the grass. The treatment may be carried out at any time of the year and, once begun, gives continuous protection from then onwards.

It is usually most convenient to apply the arsenate in spring immediately after the lawn has been mowed. If the lawn is to be top-dressed the arsenate should be applied first, watered in, and then covered with the top dressing.

Although control of lawn pests is always possible by one or other of the above methods, it must be pointed out that it can never be done on an economic basis. A lawn is a luxury for which the grower or user must pay. The home gardener is prepared to spend money for the pleasure he gets from a well-kept lawn; golf, bowling and lawn-tennis clubs can raise the fees of their members to meet the extra costs involved. In most cases, however, it is not practicable to treat large areas such as football

ovals or sports grounds, since the revenue received is generally quite inadequate to meet the heavy additional costs in labour and materials which treatment must necessarily incur.

In conclusion, a word of warning is necessary to anyone proposing to use an insecticide. Insecticides are not only poisonous to insects; they are also poisonous to man and other warm-blooded animals. Every precaution should therefore be taken, and the maker's instructions on the labels of the containers carefully read and followed.