

EARTHWORMS AND THEIR CONTROL

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THE twenty-five species of earthworm found in Britain are of small size compared to the 12 ft. long examples found in Australia or to an Indian species which produces casts 6 in. high, but some of them cause considerable trouble on golf courses, particularly when they occur in large numbers on the greens. To the farmer and gardener the earthworm is a welcome ally, constantly turning over and aerating the soil and so improving fertility. In contrast, it is a serious pest to the green-keeper as its habit of ejecting casts on the surface overwhelmingly negates its usefulness. In fact, only two of the 25 native species actually produce surface casts, but since a wormkiller which will affect only casting species has not yet been developed, the unobtrusive varieties must, of necessity, suffer for the sins of the casting types.

Worms cannot stand excessively hot or cold weather and are also susceptible to injury from drought conditions. They are, therefore, most active during mild, damp weather which is most usually encountered in the spring and autumn and these are the times when control measures are likely to produce the best results. When the weather is cold or drought prevails the worm burrows deeper to avoid surface conditions—they may penetrate 6 ft. below the surface if sufficient soil is available—and there is less chance of them coming into contact with a lethal dose of wormkiller.

Methods of Control

Leaving aside for a moment direct chemical poisoning of the earthworm, the pest can also be discouraged by managerial practices. Maintaining a fairly acid soil, for example, discourages worm activity as the casting species seldom occur where the soil pH is less than 5.0. Again the application of

excessive quantities of decomposable organic material in top dressings, and particularly in fertilisers, should be avoided as this provides a ready food supply and the worm population is likely to increase. This objection, incidentally, does not apply to peat as most forms of this vegetable are too acid to encourage the earthworm.

Chemical Control Methods

Chemicals employed against earthworms fall into two classes, the expellents which bring the worms to the surface and the poisons which kill below ground level.

Among the expellents, Mowrah meal was popular in the past, largely because of the spectacular numbers of worms which could be brought to the surface by its use. The substance is fairly efficient if well watered in, but it has very little long-term effect and treatment must be repeated at frequent intervals. It also deteriorates rapidly if stored under damp conditions. Derris dust is similar in action to Mowrah meal, but many worms die below the surface and its effect is rather more prolonged—an application in the autumn should last until the following summer. Copper sulphate has the advantage of cheapness but will scorch the turf if applied too heavily, being a plant poison and also has a corrosive effect on any metal containers which may be used during its application. Plastic containers are, therefore, an advantage, a precaution which should also be taken when mercuric chloride, another expellent, is used. Finally, permanganate of potash can also be used and has the advantage of being non-toxic to humans and ornamental fish.

Although the above materials can produce temporarily satisfactory results,

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the absence of any prolonged effect is a serious disadvantage. The poisons, which provide control of longer duration, are more popular for professional use for this reason and have the added attraction of killing worms under the surface, so obviating the need for messy sweeping-up operations. The most widely used materials are detailed below.

Chlordane

This material is available as a liquid (25% emulsifiable concentrate) or in a 20% granular form. Somewhat variable results have been obtained with chlordane up and down the country, between one and five years' control being encountered.

Lead Arsenate

Lead arsenate is generally more reliable and longer lasting than any of the other materials and this offsets its high initial cost. An application at 2 oz. per sq. yd. can be relied on to produce five years' control and up to eight years' worm-free conditions are not infrequently obtained with this material. Complete failure is, however, occasionally encountered with lead arsenate and in view of this it would be wise to treat one green on a golf course to determine persistency under local conditions before undertaking a general full-scale worm-killing programme.

Carbaryl

Carbaryl (or sevin) wormkillers have recently been introduced and have the

advantages of low human toxicity, absence of any poisonous effect on beneficial soil micro-organisms and absence of any scorching effect. They do not, however, persist in their effect for longer than three months.

Lastly, a cautionary word would not be out of place. A number of the above wormkillers are harmful to humans and care should be taken during their use. Chlordane in particular should be cautiously handled, as in the concentrated form it can reach the bloodstream by contact with the skin, possibly with very unpleasant results.

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inevitable question is were they golf? Each of us had a club in his hands, the problems identical, the mutual object was to beat the other man. That dreary emphasis on luck can be challenged by the net-cord in tennis, in cricket the thin-edge that escapes the slips.

And now to greenkeeping. It was done by Africans. They kept the grass down by "swapping" with an implement made up of a sharpened piece of hoop-iron, bent like a hockey stick and attached to a wooden shaft. It was done with one hand, but the action strongly resembled a short golf swing. The greens were usually smoothed, after a match had passed through, by dragging a piece of sacking over the sand.

It is doubtful if the greenstaff on those out-stations would be accepted as members of the B.G.G.A. No suggestion of a colour bar. They were recruited from the local prison.

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