

A

PERENNIAL

PROBLEM

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IN the months of August and September we can usually expect to receive a few inches of rain which will begin to moisten the soil after the fairly dry summer. From many points of view this rain is most desirable but there are inevitably snags in all good things. The greenkeeper will find that in addition to a greater amount of grass cuttings in the mower's box he may well have an extra helping of worm casts also.

Casting

The earthworm is brought up by autumn rain from the deeper regions of the soil where it spends the dry summer and once again begins to cast on the surface. This is most unfortunate when the soil surface in question happens to be one of your prize golf greens or on a fairway or tee. It is a great pity that some, though not all, earthworms have this bad habit of casting on the surface because they do help a great deal in aerating the soil with their burrows. These burrows also help the penetration of moisture into the soil. At St Ives there is a difference between the drought resistance of plots treated with wormkiller (lead arsenate) and untreated plots, the latter suffering a lot less from drought in dry weather. However, the troubles caused by allowing the earthworms to work unchecked more than counter any possible benefits.

On greens the activities of the earthworm are most unsightly and result in an increase of annual meadow grass and weeds in the turf. On tees the resulting muddiness of the surface leads to heavier wear and the need for more renovation whilst on fairways the effect of large numbers of casts is to give a greasy surface which is unpleasant for walking on and can make slopes very slippery.

At most golf courses some wormkilling measures are taken though they are sometimes of limited extent. The usual difficulty is in the expensiveness of the presently available control measures. Lead arsenate, that old standby of so many greenkeepers now costs approximately £200 per ton, i.e. about £5 to £7 per green according to the size of the green and approximately £60 per acre for the treatment of fairways excluding the cost of labour involved in applying the material. Of course, this should give good results for several years — maybe six or more — but we do hear reports of the material not always working in which case it is an expensive failure. It is safer to carry out a trial of say $\frac{1}{2}$ cwt. and observe results in twelve months time than to go ahead with larger quantities in the first place. Calcium arsenate which is a rather cheaper material is now unfortunately unobtainable as nobody manufactures it any longer.

Choice

There are alternative materials, Chlordane for instance is very popular at present though again we get odd reports of complete failure even when the right amount of Chlordane has been used. It costs approximately £12 per acre for the material, i.e. £1 to £1 10s. per green and it usually gives good results for at least one year. For those who prefer to use a less poisonous material, Derris dust or Mowrah meal are available each costing about £27 per acre excluding the cost of the labour involved — rather a lot with Mowrah meal which requires watering in with a high pressure hose to get the best results,

followed by sweeping up of the dead worms afterwards. The results obtained from these materials depend very much on the timing of the work. It is important that the material shall be used when the worms are very near the surface preferably in warm moist weather as often occurs in October. The treated areas may be free from worms for up to two years though one year is more usual. Neither of these products persist in the soil and where only small areas are treated worms soon re-invade from the surrounding areas. Where a good initial kill of worms is achieved over a large area then it may remain worm free for a year or two until the worm population builds up again.

Persistent

Copper sulphate has been used occasionally in the past as a worm-killer with success but there is some risk of damaging the turf if too much is applied. On areas of undulating turf there is a considerable risk of the copper sulphate running into hollows and causing the grass to be killed in these low parts. The copper remains in the soil and the subsequent re-establish-

ment of grass is difficult. As a result of this one hesitates to recommend the use of copper sulphate for wormkilling.

Caution

Irrespective of which material is used the greenkeeper will have to do the actual job of applying it. It is up to him to see that the right amount of material is used. It is not reasonable to expect an amount of material sufficient for one green to treat three or four greens and still give good results. It is very helpful if a careful note is kept of the quantities applied to each area and if possible a small sample of the material used should be kept. If the results are not all they should be it will be possible to check how much worm-killer has been used and also to check the quality of the material used. Finally, the greenkeeper should always take great care when handling these materials especially the more poisonous ones such as lead arsenate, calcium arsenate or chlordane, taking care to avoid working in dust or spray drift and to wash thoroughly before eating or smoking and to wash in any case when the job has been finished.

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