

THE CONTROL OF FUNGAL DISEASES ON TURF

John Tomalin, BSc., Farm Protection

Agricultural and horticultural chemicals which find a use on sports and fine turf are few and far between, notable exceptions are the hormone weed killers and the fungicides based on organic mercury compounds.

The introduction of Benlate*, benomyl fungicide, for the control of fungal diseases on turf, represents a major advance in this small but highly specialised area.

Since 1970 J. R. Escritt and A. R. Woolhouse, at the Sports Turf Research Institute, have been evaluating Benlate on turf diseases. The results have been impressive and recommendations were made in 1973 for the use of Benlate against Fusarium Patch, Red Thread and Dollar Spot, the main diseases affect-

However, the use of fungicides is not the complete answer to disease control problems, whether from an economical or managerial view point, on any crop let alone sports turf.

Diseases require certain conditions for infection and successful development on plants. When these conditions are optimal the growth and spread of disease is rapid. Such conditions are best illustrated by taking the three major diseases of sports turf in the UK as examples.

Fusarium Patch, caused by the fungus *Fusarium Nivale*, is favoured by moist cool conditions in the spring and autumn, although it can develop under such conditions at almost any

time. It is further encouraged when the growth of grass is soft and lush, often associated with high rates or frequent use of nitrogen fertiliser.

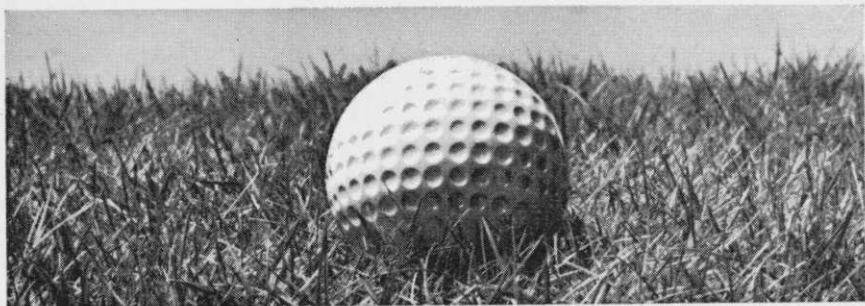
Red Thread, caused by species of *Corticium*, develops best under dry conditions of mid summer particularly in areas of low soil fertility where the grass tends to be starved.

Dollar Spot, caused by *Sclerotinia Homocarpa*, is particularly common on turf of sea marsh origin, and red fescue grasses.

There are other factors which can affect the potential establishment of disease, which to some extent can be controlled by good management. These can be grouped as management factors, and include all the various operations normally carried out by groundsmen in the care and preparation of playing surfaces. Also, knowing the conditions under which disease best develops, good cultural practices can provide conditions much less suitable for disease development. It follows that any disease which may develop will be less of a problem as it will not be growing in optimum conditions and second, the use of another management aid, a fungicide, will be more effective since it will be acting against a less actively growing organism.

Other factors remain outside the control of man—these are the environmental factors. Climatic conditions are unpredictable and sudden fluctuations or persistent conditions will

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have a considerable bearing on the incidence and development of disease, even under ideal management conditions. For example, Fusarium Patch can spread rapidly if ideal climate conditions persist, and at this stage a fungicide is at a disadvantage as it is not acting in optimum conditions. However, it is usually the only management factor that can be effectively employed, and only then as a curative treatment.

Until the recent introduction of systemic fungicides, the majority were essentially preventive in action, that is to be effective they should be applied before the disease becomes apparent.

When applied in situations which demand curative activity the disease is generally only checked, and certainly only rarely controlled outright. Curative treatments cannot prevent damage, or the killing of grass in the case of Fusarium Patch.

The major advantage of the systemic fungicides such as Benlate is that they possess curative activity since they are capable of penetrating plant tissues and attacking the disease from inside the foliage as well as by contact action on the leaf surface. Therefore when applied under conditions where disease is present and climatic conditions favour the spread of disease, control is obtained. The damage caused to turf grasses by disease under these conditions can therefore be minimised.

The Sports Turf Research Institute results in its trials with Benlate as a preventive and curative treatment have been impressive. Against

Fusarium Patch a rate of 6 oz of Benlate per 1000 sq. ft. (approximately 18 lb/acre) is necessary for control, while for Red Thread and Dollar Spot a lower rate of 4 oz Benlate per 1000 sq. ft. (12 lb/acre) is adequate. The Benlate should be applied in two gallons of water over 1000 sq. ft. (7 gal/acre). This moderately high volume is necessary to ensure adequate coverage and penetration of the spray solution into the sward. Only in this way can Benlate come into intimate contact with the disease in order to ensure good control. Skimping with the volume of water can lead to poor or partial control.

There is a tendency when applying sprays as curative treatments to make spot applications over the infected area. This is a dangerous practice since the very fact the disease is present shows that conditions have favoured infection and it could break out at any time on an adjacent area of the same sward. Fusarium Patch is a good example in this case. It is therefore important when treating diseased turf that the entire area is sprayed, rather than spot applications.

One area of misjudgement, and most important, is the correct timing of applications. As indicated previously, the incidence of disease is difficult to predict under UK conditions, and therefore most applications will tend to be curative in nature. It is therefore essential to apply any fungicide as soon as disease appears; the longer application is delayed the more difficult disease becomes to control. A close watch should be kept during

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periods when conditions are such that disease is likely to occur. Normally one well timed application of Benlate will give control, but, if conditions which favour disease persist then repeat applications at 3-4 week intervals may be necessary.

There are some areas of turf which have a history of disease where it reappears each year. This is true of Fusarium Patch, for example, golf greens which are situated in hollows or overhung by trees, are particularly susceptible, and also bowling green turf of sea marsh origin which tends to be attacked by Dollar Spot. In this type of situation it is well worth applying Benlate as a preventive treatment during high risk periods.

As far as application equipment is concerned, any sprayer will suffice, although conventional boom sprayers are preferred as they give a more even coverage. Hand operated knapsack sprayers are liable to leave areas unsprayed and over or under dosed if used carelessly.

Apart from the high activity of Benlate on turf diseases, there are other factors which make it an attractive material. It is a very safe fungicide in all aspects and is widely used. Since 1970 it has been extensively used in agriculture and horticulture on a wide range of crops, achieving new standards of disease control on many crops, including, we believe, turf. In an age when there is growing concern about our environment and a trend towards conservation, Benlate has proved extremely safe to both the operator and wild life. It is also exceptionally safe on plant life and there is no problem of a check to growth or discolouration of the grass.

To conclude, it can be seen that Benlate offers improved disease control on turf but such a material can only be considered in terms of one more weapon in the armoury of management skills. It is critical, whether preventive or curative control

measures are proposed, that accurate identification of the disease, or the potential for disease outbreak, is made. This should be used in conjunction with the correct rate and timing of chemical application, co-ordinated with correct management to ensure normal plant growth.

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NEW PRODUCT

A unique plastic capable of being nailed to wood without splitting is being used to produce letters, numbers and backgrounds for tee boards, and other signs around the golf course.

The plastic, called Duraply is marketed by **Sharman Parker Ltd. of Chapel-en-le-Frith, Cheshire.** It is rot-proof, fade resistant, simple and effective to use. If letters or numbers need to be changed a pair of pincers are used to remove the nails, and then the new letters or figures can be nailed on.

By maintaining a small stock of Duraply numbers, letters and backgrounds clubs can now make or alter tee-boards and other signs at a moment's notice with very little cost.



Further information is obtainable from Sharman Parker Ltd., Smithfield Mill, Market Street, Chapel-en-le-Frith, Stockport, Cheshire, SK12 6JS.

NEWS

Scottish Agricultural Industries Limited has acquired **The Boothby Peat Company Limited**, a company well established in the horticultural industry as suppliers of peat and peat products.

This acquisition further supplements SAI's activities in the horticultural market which are handled by its fast-developing subsidiary, SAI Horticulture Limited.

SAI is Scotland's leading fertiliser manufacturer with wide experience of fertiliser technology and with a number of unique fertiliser manufacturing processes. Fertilisers manufactured by SAI are sold throughout the UK and in many overseas countries. A complete range of mini-granular compound fertilisers, specially designed

for the UK grower and amenity turf markets is available. SAI also supplies a range of chemical and sundry items to these markets.

The Boothby Peat Co Ltd has been acquired in order to widen SAI's product range and so provide a more complete service to horticulture.

Informality was the keynote of a recent visit undertaken by the Northern Section of the British Golf Greenkeepers' Association to the factory and warehouse facilities of Toro (U.K.) Sales and Service in Co. Durham.

Chairman John Scott and Secretary Walter Heeles headed the 35-man team which travelled by coach from Harrogate to make the visit last month (March).

During the day the visitors inspected warehousing and assembly areas and were able to see at first hand the procedures for preparation



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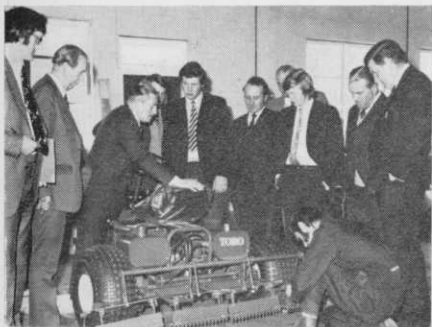
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It was the first time the northern section of the BGGGA had visited the Toro facilities and the members were keenly interested in what they saw, as well as the co-operation of the Toro staff.

Seen here in the factory complex at St. Helens, Bishop Auckland after a visit to the Darlington warehouse, a number of the visitors take a really close look at the Toro equipment.



A new formulation of Casoron for control of soil and water weeds has been approved by the Ministry and is to be marketed by **Duphar-Midox**.

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LETTERS

Extracts from letter to C. H. Dix from Len Partridge, Head Greenkeeper, Brighton Municipal Golf Course, Victoria, Australia.

308, Dendy Street,
Brighton,
VICTORIA, Australia, 3187
24.3.74

"My good wishes to all the Greenkeepers of the U.K., although I'm on the other side of the globe, so to speak, I take a keen interest in what is going on in the U.K.

I was very sad to hear of the death of Eddie Mac from Hillside.

I have moved from Kingswood Golf Club Centre. I am looking after the needs of Brighton Municipal Council Course. We have a lovely 18-hole course near the beach; you could call it a links, very busy, the average number of players each day would be about 300, as it is a public course. I have six men on the course—the machinery is quite good; I have just taken on a Greens Master 3, TORO and waiting for a **Super Pro**. Most courses have this type of machine now to cut the cost, because as you may know, we have a shortage of labour, believe it or not. So all you young would-be Greenkeepers in the U.K. who want a new life, there is one right here in Aussie land.

The average weekly wage for a Head Greenkeeper is \$100 which is about £50, plus a house, 4 week annual holiday and lots of other things thrown in. Conditions are much the same as the courses in England. As far as working the courses—weather-wise, well it is **mad**. Could be 90° one minute and

within an hour, could be as low as 60°—that is the way it has been this past six months. We are now in late autumn. Although the summer has not been as hot as last year, I have had the sprays working full time on the course during the hours of darkness. No hope of watering during the day, chiefly because of play and always a risk of burning from the sun, the temperature sometimes reaching the high 90 mark. The only break we have from the growth of grass is during the drought, other than that, it grows and grows.

Most of the Tournaments and Club Competitions are played in autumn and winter, you can imagine why. Just imagine playing a competition in the heat, one would never get around.

My son Peter is the Assistant Greenkeeper at the famous Victoria Golf Club. He started work with me at Formby right from school. He is now 24 years old, recently married and has a good future life in the Greenkeeping world.

We have a number of Poms as Greenkeepers, one outstanding being Bill Hunt from Kingston Heath. A Championship Course, about 2 miles from Brighton. He hails from Bolton, Lancs.

I am a member of the Victorian Golf Curators' Association which is something similar to the British counterpart (B.G.G.A.). We have meetings every two months at various Clubs, but as Victoria is a large State, about the size of the U.K. in fact, you can imagine how far we travel to a meeting, sometimes 50 or 60 miles is just 'round the corner'. We have machine demonstrations and play golf—just a good get-together.

President of the Victorian Golf Curators is Leslie Barlow, c/o Woodlands Golf Club, Mordialac, Victoria, Australia. He is very interested in forming a convention with the U.K., seeking ways of visiting the U.K., and

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