

MANAGEMENT

Using wetting agents for dry patch control

A review on the use of wetting agents by Neil A. Baldwin, plant pathologist, at the Sports Turf Research Institute in Bingley

Many greenkeepers are familiar with dry patch, a water-repellent condition of fine turf prevalent especially on links courses, however, this condition is also found on heathland and parkland courses. The symptoms of dry patch may be alleviated to a certain extent by applying wetting agents regularly through the growing season to aid penetration of water into affected turf. This article describes the wetting agents currently available and how to apply them effectively for dry patch control.

Wetting agents are essentially mild detergents which are designed to increase the infiltration rate of water into hydrophobic (water repellent) turf. Basically, they achieve this in two ways. Firstly, when water droplets come into contact with a hydrophobic turf surface they 'ball' up to form a large contact angle (Figure 1). If a wetting agent is added to the irrigation water then surface tension is reduced, a smaller contact angle is formed and consequently the water spreads over a greater surface area, thereby wetting more of the turf (Figure 2).

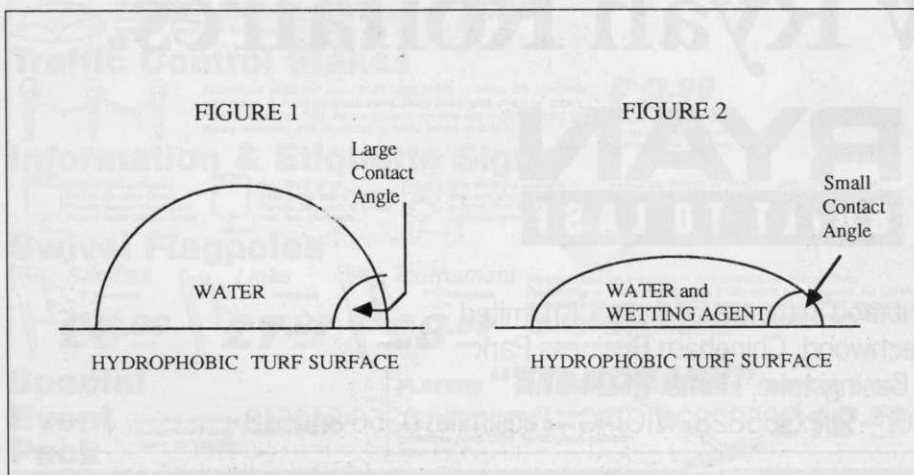
Secondly, the wetting agent, once it has entered the turf profile, can then bind to the organic materials shown to be responsible for creating the hydrophobic nature of dry patch areas. During subsequent irrigation and rainfall, wetting agents in the turf will re-dissolve to produce essentially the water-attractive turf surface originally created. Thus,



Irregular ring of dry patch affected turf (brown area) surrounding healthy turf (central green area).



Irrigation applied 3 hours before photograph was taken. Note water repellency of dry patch affected turf.



regular applications of wetting agents (as recommended by the manufacturers) will lead to an accumulation of chemical thus enabling water to penetrate more freely.

In the 1950's a mild detergent namely Teepol was commonly used on turf to aid water infiltration. Teepol is an **anionic** chemical which means that it has a strong negative electrical charge. Problems occur when anionic materials are applied to turf as they can, with frequent application, have an adverse effect on soil structure especially on soils with high clay contents. **Non ionic**

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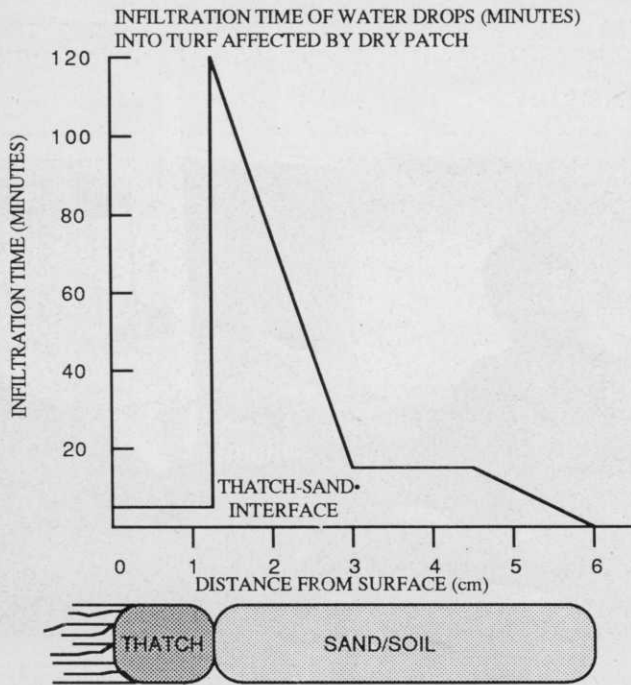


Figure 3. Just below the thatch layer is where the turf is most hydrophobic. Spreadable wetting agent formulations can be placed in this zone after hollow tining or Verti-Draining.

chemicals (which have a very small electrical charge only) do not affect soil structure and consequently may be used safely. For this reason most commercially available wetting agents are non-ionic forms.

Field trials at STRI and feedback from golf greenkeepers has enabled recommendations to be made on the timing of wetting agent applications for the alleviation of dry patch.

Generally, wetting agent applications should begin at the start of the growing season, before dry

patch is observed. If dry patch is a problem, then much can be gained from the routine applications through the April to October period, spraying the chemical at four to six week intervals. This should be combined with aeration using slit or chisel tines to aid turf penetration. In situations where dry patch is a major problem or where preventative applications have not been made, then treatment has to be more intense, and wetting agent applied every two to four weeks and forced into the turf by hand watering. However, it is extremely difficult to

obtain satisfactory results by making curative applications, emphasising the importance of a strategy based on prevention rather than cure.

To date, there has been little research comparing the relative effectiveness of the various wetting agents currently available. Research in the USA has identified Aqua-gro as being readily absorbed on to hydrophobic materials in turf which may produce lasting effects against dry patch. It is probable that Hydro-wet has similar properties. Also, Synperonic has for many years been recommended as a cost-effective wetting agent treatment. Recent research at STRI has developed, in collaboration with industry, a new wetting agent, namely Turfex, which has excellent penetrative properties into water repellent turf.

Spreadable formulations of Aqua-gro and Hydro-wet are also available. Spreadable wetting agents consist of the chemical together with a dry carrier, such as ground corn cobs, which can be easily spread on to large turf areas. These spreadable formulations can also be worked down hollow tine or Verti-Drain holes, placing the wetting agent where the turf is most hydrophobic - often just beneath the thatch layer (Figure 3). Even with extensive watering, this is often extremely difficult to achieve with liquid formulations.

Further information on dry patch and the use of wetting agents may be found in the following publications: Anon (1987) Dry Patch. *Sport Turf Bulletin* 159, 11-12. Baldwin, N.A. (1987) *Turfgrass Diseases*. Sports Turf Research Institute, 40pp, price £2.50.



Turf Irrigation Services Limited

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