

Turf being inspected last summer at Basingstoke Golf Club.
Inset: Colin Hutt, David Snowden and Martyn Bennet at the course



The rain that caused so much damage to golf clubs last summer also left what could be another lasting legacy: turf disease. **Ron Waller** of Basingstoke GC details how his course was hit by black layer – and what the greenkeeping team did to solve the problem

Basingstoke Golf Club, a private members' venue in Hampshire with over 700 members, celebrated its centenary year in 2007. The course was designed by Scottish professional, James Braid (1870-1950), five times Open champion, a member of the 'Great Triumvirate' (alongside JH Taylor and Harry Vardon) and a renowned golf architect of many courses throughout the world. Although it poured down in 1928 when James Braid played the first, opening round, the course was laid out at a time when summer golf was the expectation, and it was traditional and cutting-edge to underpin greens with a layer of clay which would retain the water in our typically sunny and dry British summers.

They never foresaw the summer of 2012. Nor did the agronomist or geologist (if they had one in 1928) take account of the London clay underpinning much of our course. Consequently, like many clubs, our greens were challenged by the constant deluges in the wettest summer

since 1912. Our green staff, led by Colin Hutt, did their utmost to keep the course playable in the worst of the weather but, over time, the constantly lying water did its worst. Black layer began to appear on greens. Meanwhile, golfers complained.

What is black layer?

An inch to several inches in thickness, black layer is a cyclic anaerobic condition in a green's fibrous, vertical profile, evident as a discoloured, horizontal stripe of rich, black, smelly earth across a green; chemically, a layer of metal sulphides (MeS). This cyclic process can develop when greens are very wet over an extended period of time; the suffocated, oxygen breathing bacteria die off rapidly in the water's toxicity and the pre-existing organic material in the greens' upper layers provides ample food for the anaerobic microbes which thrive in waterlogged conditions. Physically, soil pores fill with hydrogen sulphide (H₂S) as the chemistry changes and green

drainage rapidly decreases. The smell of rotting eggs, a rapid decline in turf quality – ranging from thinning, bronzing and yellowing to outright loss – limited root growth and turf death have occurred at many golf courses. Not an issue to be taken lightly.

Our team tried various accepted methods, for example narrow tining, but still the rain fell and the greens continued to drown. Meanwhile, golfers complained (now of tining!)

After extensive research, our shrewd pair, Colin Hutt (head greenkeeper) and Martyn Bennet (deputy head greenkeeper) devised 'a cunning plan', a mixed-chemical hit employing Oxy-Rush, a liquid oxygen generator, mixed with Pervade, a penetrating wetting agent, which would pull Oxy-Rush through the top layer. They selected this treatment as it seemed to offer a fairly accurate shotgun blast.

As experienced greenkeepers, they knew there is no 'magic bullet' and only the cumulative effects of a series of varied treatments, that is

chemical and physical, would be successful.

They contacted Agronomic Services to discuss our situation with the managing director, David Snowden.

The trio concluded that a single, mixed-chemical sprayed treatment across all greens without tining would allow the chemicals to penetrate and target the upper section, thereby dealing with the visible playing layer. Prior tining would have allowed Oxy-Rush through too quickly, missing the playing layer. As golfers slept, in the yellowing dawn-light and rising mist of early summer, the team set off, towing their chemistry set.

This first mixed-chemical treatment, which was generally successful in most of the greens, was followed by verti-draining to a depth of ten inches. Colin and Martyn were concerned about some of the greens that had not responded quickly and, after a course walk with David, another treatment was agreed. (Perhaps, significantly, many of these greens requiring a

second treatment are above our wide strip of London clay.)

After a second mixed-chemical treatment, the Koro was set to 18 millimetres to aid thatch removal and approximately 40 tonnes of top-dressing was applied to the greens – which are around one hectare in size.

After this series of carefully targeted procedures, many hours' labour and research, we were pleased to see the complete eradication of the 'black death', the greens firming up to their usual high standard and, within a short time, the team had the stimp reading around 11.5 and a club championship which tested our best to their limit.

One caveat: although it is still hotly debated and researched, water saturation is often the primary cause of black layer, but it is rarely the single cause. Remember that if sulphur molecules are not present in the soil, then the sulphur redox bacteria causing the problem cannot survive, which should eliminate the

production of hydrogen sulphide gas. On a wet afternoon in the shed, it is worth checking fertilisers and other chemicals used on greens for sulphate content as these can provide the basic chemistry necessary for black layer, that is elemental sulphates; some agronomists recommend a modification in the chemical diet, a short use of nitrate-based fertiliser as a temporary change and alternative.

Develop a cultivation programme to improve water movement through the soil and increase air exchange. Examples include deep coring, verti-draining, use of the Graden GS04 scarifier / aerator, irrigation use that prevents over-watering and standing water, reduction in sulphur containing fertilisers and ensuring greens have adequate light and air. Of course, golfers will still complain.

Note: If any courses are suffering the 'black plague', Colin Hutt and Martyn Bennet can be contacted at Basingstoke Golf Club.

Ron Waller is a director of Basingstoke Golf Club