

Richard Windows takes up the cudgels against the dreaded thatch

# IN THE Groove



An essential attribute of golf greens is that they are firm underfoot and free draining. Unfortunately this condition is often difficult to obtain due to the presence of thatch beneath many putting surfaces. Thatch restricts drainage and naturally holds water, producing a soft, spongy turf. Consequently, thatch control is one of the main aims of the greenkeeper. The recent availability of two deep scarification units in the UK will provide the greenkeeper with a much more efficient and less disruptive form of thatch removal, providing golfers with higher quality putting surfaces.

#### The fight against Thatch!

Thatch is an organic material, which can naturally accumulate in the soil profile, as grass leaves and roots go through a continuous process of senescence and death. Organic build up is possible in every kind of plant community, but in intensively managed turf areas the process is accelerated due to excess growth from possible over application of fertiliser and irrigation water. In a healthy soil/turf situation, natural microbial action will start to break down this organic 'litter' and it will subsequently become

incorporated into the organic fraction of the soil. When the rate of dead plant tissue accumulation exceeds that of natural microbial digestion, thatch in the soil profile accumulates.

Excessive thatch can restrict the free passage of water through the soil profile as the pore spaces between the soil particles can be reduced or blocked. This type of damp, often nutrient rich environment is a relatively attractive place for grass roots to colonise, especially those of annual meadow grass. Therefore thatchy' soil profiles gen-

erally support weak rooted, drought susceptible grass swards that require more applications of irrigation water and fertiliser to recover from stress, which subsequently initiates the vicious circle that contributes to more thatch build up.

As every greenkeeper knows, the key to producing good quality playing surfaces is the production of a free draining, homogenous soil profile, containing little or no thatch. Historically, the favoured and arguably the most effective method to remove thatch was by hollow coring. Not only is this operation largely unpopular amongst golfers, as the surface is disrupted and levels often compromised, it is also a relatively inefficient technique for thatch removal. A recent survey carried out by the USGA Greens Section has highlighted this inefficiency. For instance the total surface area impacted by a hollow coring operation using 12 mm tines with an intensive hole pattern of 50 x 50 mm is only 4.91% (Hartwiger & O'Brien). Obviously this means a large amount of the surface (95%) remains totally untreated and therefore little improvement to these areas is made.

### The next generation of Thatch removal

The advent of the newly developed deep scarification machines will provide Greenkeepers with a more effective method of thatch removal; the Graden VS003 Verti-cutter and the Sisis Auto-Rotorake 600 are the two machines currently available. Both operate similarly and can achieve penetration to a depth of 40-50 mm on most types of soil. The former was developed for use on Australian cricket pitches. The study by the USGA Greens Section showed that a deep scarification machine fitted with 2 mm blades impacts 7.9% of the turf surface and one fitted with 3 mm blades impacts 14.1% of the surface. It is clear to see that these figures are almost double and triple the surface area impacted compared to more conventional 12 mm hollow coring. These statistics are impressive but the question often asked by turf managers is 'how much disruption does the operation cause?'. The answer to this is simple, invariably very little. Essentially the grooves look like a severe verti-cut operation and if the operation is achieved during periods of active grass growth the 'grooves' quickly recover and the surface is back to normal within a few

days. The 'grooves' have proved to be excellent preparation to work top dressing into the surface and provide an ideal seedbed for over sown grass seed.

A further benefit from such an operation is the grinding effect of the rapidly revolving blades against buried sand and thatch. This is similar to a 'chewing' action as the sand particles rub against the thatch, which hopefully exposes a greater surface area of thatch to the enzymatic action of the natural soil micro flora, i.e. bacteria and fungi. Therefore the natural rate of thatch breakdown is often increased by microbial action at the same time of physically removing the unwanted material.

### Grooving for Golf

Many golf greens contain thin 2-3 mm layers of buried thatch in the top 40 mm of the soil profile, which are very difficult to remove by conventional coring as the layers re-seal themselves soon after treatment. These thin layers can inhibit the free passage of water through the soil profile and encourage lateral rooting and differential drying amongst the layers resulting in the loss of surface uniformity. This is wholly undesirable as free draining, homogenous soil profiles that can support deeply rooted, uniform grass swards are one of the fundamentals of turf management. Therefore it is vital to remove these layers and the deep scarification operation is proving to be effective and popular among greenkeepers to achieve this goal.

The 2 mm blades used during late August/ September, when grass growth is still active, is providing a very effective approach to removal of these layers. This operation should then be combined with the top dressing of a good quality sandy material so that surface level disturbance is minimal. For serious thatch problems, or management of creeping or velvet bentgrass greens, use of the 1mm blades through the main playing season will also provide the greenkeeper with an effective tool against continual thatch build up and removal.

### The concept

The concept of a deep scarification is a good and exciting one. It has been popular in the U.S. and Australia for a while now and early assessments in the U.K. are very encouraging indeed. The simple fact that more thatch material is removed, allowing more air and



therefore natural thatch break down to result makes it very popular amongst Greenkeepers. These desirable attributes are further complemented by the fact that disruption is minimal and superb grooves for top dressing and over seeding are left behind. Therefore the concept of deep scarification provides the greenkeeper with a valuable tool in the constant battle against the arch enemy that is thatch.

References; Hartwiger, C. & O'Brien, P. (2001) Core aeration by the numbers. USGA Greens Section Record. 39-4. Pages 8-9. Richard Windows is an STRI Turfgrass Agronomist covering South Scotland. Richard and the rest of the STRI team can be contacted on 01274 565131, email; info@stri.co.uk or visit our website <http://www.stri.co.uk/>