



What is thatch?

Thatch is an organic material which naturally accumulates to the turf base as a result of the continuous process of senescence and death of grass leaves, stems, shoots and roots. Natural microbial action breaks down this organic 'litter', but when dead plant tissue production exceeds microbial digestion, thatch accumulates. This process is inhibited by anaerobic conditions, such as those that may occur in compacted or waterlogged soils.

On the golf course, mechanical operations such as scarification and aeration can aid natural digestion of thatch by physically removing a proportion of it each season. This is why, generally speaking, less thatch is noted to the more intensively managed putting surfaces (below left) than to fairways (below right).



Problems caused by thatch accumulations

Excessive thatch accumulations affect the quality and health of our playing surfaces in the following ways:-

- Soft, spongy underfoot conditions when wet.
- Produce slow surfaces that are prone to pitch mark damage.
- Hard, unreceptive surfaces when dry.
- Harbour for disease pathogens, e.g. fusarium patch (*Microdochium nivale*).
- Promote shallow root development, favouring annual meadow-grass over desirable species.
- Reduces drought tolerance of turf and increase hydrophobic dry patch incidence, thus uniformity loss.

Conditions that favour thatch accumulation

Thatch accumulations can be accelerated or promoted in the following ways, both individually and collectively:-

- Excessive fertiliser and irrigation application.
- Wet or poorly drained soils.
- Inadequate maintenance operations that physically remove and dilute accumulations.



Managing thatch accumulation

Achieving a balance between thatch inputs, i.e. growth rate, and control mechanisms is the key to managing thatch effectively. Air, or more specifically oxygen, is required by the microorganisms in the soil to naturally digest the organic material. Therefore, getting air into the upper soil profile by scarification, aeration and top dressing operations will ensure thatch is less likely to accumulate and that accumulated thatch is digested. By achieving this, playing surfaces remain true, firm and free draining.

Mechanisms to manage thatch accumulation

There are many methods to manage thatch; the adoption of each particular method is dependent upon the thatch problem on your course or the time of year.

- **Aeration:** Hollow coring, solid tining and Verti-Draining.
- **Deep scarification:** A relatively new concept that is effective in certain circumstances.
- **Top dressing:** This dilutes fresh accumulations.
- **Conventional scarification:** This should include verticutting and brushing.
- **Biological products?** There are products available that claim to contain thatch-digesting microbes or promote their activity. The jury is still out on their value.



Hollow coring (left) and scarification (right) are the main mechanical operations to remove thatch accumulations

Extend to the rest of the course

Thatch management operations should not be restricted to the putting surfaces and action should be taken to manage it effectively across other areas as well. Across Scotland, most putting surfaces have sufficient thatch management programmes in place but excessive accumulations are reducing the quality, in terms of playability and drainage, across more extensive areas of the course, e.g. green approaches and fairways. Therefore, it is essential more large-scale thatch removal operations be achieved to these areas in order to sustain play for longer periods through the year.