

# Alternatives to disruptive aeration and thatch management

## The USGA specification rootzone for green construction and top dressing was developed nearly 60 years ago.

It was designed to be managed with a high input of inorganic fertilisers and powerful pesticides, many of which are now banned. The inert rootzone can build a layer of thatch and become compacted. The standard remedy has been scarification, hollow coring, rootzone replacement and heavy topdressing.

Many agronomists still recommend high inputs of sand, invasive aeration and scarification for decompaction and thatch removal with programmed chemical management to control disease. Club owners and greenkeepers may find these practices are no longer viable due to cost, golfer dissatisfaction and stress on the greenkeeper. Is it time for the turf industry to move forward?

The USGA specification provides an excellent base from which to work, but new techniques also been developed. These replace hollow coring and intensive scarification with less invasive



The speed with which the transformation can take place, the pictures were taken just 60 days apart in April and June 2018 at Greenburn Golf Club in a fairly wet area of Scotland. Aeration was provided by solid 8mm tines and small spikes together with Symbio Liquid Aeration, microbial inoculants and biostimulants.

microtining to create a healthy rootzone with improved drainage when wet and water retention when dry.

## The alternative option

The alternative to physical disruption, thatch dilution and rootzone replacement is to degrade thatch, convert it to humus and encourage natural processes to decompact the rootzone and incorporate these processes into the daily management of the rootzone and playing surface.



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105-year-old sand rootzone with open vertidrain hole in healthy humus rich soil.

Healthy grassland soils comprise 50 to 60% soil particles, 15 to 25% air space and 15 to 25% water. A core out of the rough of most golf courses shows that it is almost thatch free and friable because natural processes are at work. The key to easy turf management is to get these processes to work in the largely artificial environment of a sand-based rootzone.

One misconception to knock on the head is that organic matter is bad. It is not, but too much organic material, or thatch, is bad. Organic matter in the rootzone comprises roots, humic compounds, partly degraded humus plus soil microbial life, which by itself can weigh up to 3 tonnes per hectare and which most people agree is good. When you use a loss on ignition test to measure organic matter, all the good stuff gets mixed with the bad, which can give a very misleading result.



Very limited oxygen transfer from hollow cores

**'Humus retains moisture, increases Cation Exchange Capacity, acts as a support for soil microbiology and creates the air and water space necessary for root growth...'**

So how can greens and pitches be managed without coring and heavy scarification?

Thatch will degrade very quickly with the right fungi, actinomycetes and bacteria that convert it to humus. Humus retains moisture, increases Cation Exchange Capacity (the nutrient holding capacity of the rootzone), acts as a support for soil microbiology and creates the air and water space necessary for root growth, rapid percolation and nutrient recycling.

When thatch converts to humus, much of it becomes soluble in water so frequent tining with micro tines creates channels for water to carry the humus deeper to create a healthy, disease-resistant rootzone. When fully degraded, humus is not organic.

## Creating a fast draining root zone

To naturally maintain free draining rootzones you need a minimum of 2 to 2.5% w/w humus or humic compounds in the rootzone and until the thatch is completely mineralised, which can take up to 30 years, humic compounds show up on the loss on ignition test to measure "organic matter".

The positive effect of humus cannot be overemphasised. It turns the rootzone to a rich brown colour so it is easy to see if you have enough.

If the microbes needed to convert thatch to humus are missing then products containing thatch eating fungi and bacteria have been available for over 25 years. Symbio Thatch Eater has been guaranteed to work since 1995. If you degrade half the thatch layer you double the amount of topdressing in the surface layers.

## Oxygen the best biostimulant

The most effective way to get oxygen evenly distributed throughout the rootzone is to alternate tining with 6 to 8mm block tines that hardly disrupt the surface with sorrel rolling that penetrates to the bottom of the thatch layer every two to three weeks.

There are also a number of liquid applications like Symbio Liquid Aeration that contain high numbers of oxygen atoms which allow oxygen to become available throughout the rootzone.