

Thatch Accumulation & Affects on Disease Development

Thatch

Thatch plays an important role in turf where it protects turfgrass crowns and leaves from the shearing action of foot traffic. 1.3cm of thatch depth is considered appropriate where protection of turf from wear is concerned on greens (Couch: 2000). Thatch accumulation occurs at greater than 1.9cm in thickness and can result in turf that is more susceptible to stresses from the physical environment and also prevents moisture from reaching the root zone, limits soil applied pesticides from reaching their targets and increases disease and insect problems (Couch: 2000).

What is Thatch

What is thatch? Everyone knows that thatch is a layer of decomposing stems and roots that sits on the soil surface. But what causes it and how do we contribute to it as turf managers? Thatch is a symptom of an imbalance in tissue production and decomposition processes. In other words, thatch is the result of an over abundance of leaf material which the plant is unable to sustain, whilst beneficial microbes within the turf system can't break it down quickly enough before more is produced. Hence accumulation occurs. So if we are getting very thatchy turf surfaces, this can tell us two things. (1) We are potentially applying too much nitrogen or over irrigating, inducing too much leaf growth or (2) which is most likely in sand based profiles, we have a soil profile very low in beneficial thatch degrading microbes. Hence, by addressing these two issues, we may reduce our thatch accumulation and the frequency of our scarifications.

Thatch Accumulation and Disease

Many of the fungi that parasitise (infect) the leaves and crowns of turf also grow as saprophytes in the thatch. A saprophyte is a fungi that feeds by the digestion of dead organic material thus bringing about decay. Hence, this means that some turf diseases (Fusarium, spring dead spot in couch, Dollar spot, Pythium blight, Helminthosporium) can feed upon dead organic material (thatch), and then once turf becomes stressed and conditions for their growth and spread occur, they attack live green tissue as well. Therefore, thatch buildup means increased amounts of inoculum or disease spores and thus increases the potential for disease incidence and severity. However, in general for disease to occur the plant must still be under some form of stress and the key to disease management is to reduce the quantity of stressful periods that the turf is subjected to.

So if we reduce the concentration of thatch on our fine turf, we severely reduce the disease inoculum laying near our turf, hence leading to less disease pressure when conditions become ideal for their infection.

There are a large number of beneficial fungi that inhabit thatch that are not damaging to turf. These fungi are extremely important in assisting in the decomposition of thatch material and actually help us manage our thatch levels.



Thatch

Thatch Management

Thatch management is of vital importance in turf disease management. In today's environment, turf managers are under increasing pressure to reduce their renovation practices and keep greens & other surfaces in play for the maximum period of time. However, without reducing our thatch, it is likely that we are increasing the potential for disease incidence, which increases fungicidal applications and the costs associated with that as well as producing a less vigorous surface to play upon.

Therefore, renovation is critical in greens maintenance and should be considered when thatch levels reach a depth of 1.9cm in thickness or more. Although some thatch development is inevitable, turf managers can also help further reduce thatch accumulation, by not exceeding the Nitrogen output, by limiting over irrigation and by boosting soil microbial populations through the use of organic materials. Other factors leading to thatch accumulation are very acidic conditions and poor aeration (Beard, 1973). Poor aeration is likely to be due to compaction or through using irrigation waters high in sodium, both of which affect soil structure and limit pore spacing.

T-Thatch

T-Thatch is a product, recently developed by Terralift that can assist in the breakdown of severe or minor thatch build-up in fine cut turf situations. T-Thatch is a complete treatment containing thatch eating microbes, microbe food supply and Potassium to harden the turfgrass plant and limit top-growth during thatch decomposition. T-Thatch is generally applied at rate of 10-20L/ha (5-10L Part A + 5-10L Part B).

References

Beard, J,B (1973). "Turfgrass Science and Culture" Prentice Hall, New Jersey, USA.

Couch, H,B (2000). "The Turfgrass Disease Handbook" Krieger Publishing, Florida USA.

