



Managing Organic Matter in Turfgrass

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What is Thatch and how does it accumulate in Turfgrass

Thatch is a layer of organic material that forms between the green vegetation and the soil surface in turfgrass ecosystems. This layer consists of both living and dead plant components, primarily stems and roots, which accumulate over time due to slow decomposition. The high lignin content of thatch makes it particularly resistant to microbial breakdown, leading to persistent accumulation in intensively managed turfgrass systems. There are several factors that contribute to excessive thatch development, including rapid and dense turfgrass growth, excessive fertilisation and irrigation, and infrequent cultivation practices.

In this whitepaper, we will explore the challenges of organic matter accumulation, best practices for managing it, and seasonal renovation methods to maintain optimal turf health.



What Happens if Thatch is Unmanaged?



Increased Drought Stress & Water Repellency

Excessive thatch accumulation leads to **desiccation** and **hydrophobic** soil conditions, making it difficult for turfgrass to absorb moisture. This exacerbates drought stress, as the high organic matter content in the soil increases water repellency. Additionally, the presence of thatch makes it more challenging to address these issues using wetting agents

Oxygen Deprivation & Disease Susceptibility

When thatch retains excessive moisture, especially during prolonged wet conditions, it creates an **oxygen-deprived environment** in the root zone. This disrupts normal root function, restricting gas exchange and weakening the turf's resilience. As a result, the turf becomes more susceptible to **disease outbreaks** and overall health deterioration.

Compromised Turf Resilience & Longevity in Sports Fields

Organic matter buildup in sports fields is influenced by mowing practices, **fertilisation, irrigation, and frequent usage**. In winter sports, end-of-season renovations are critical for removing desiccated plant material that accumulates at the base of the turf. Without proper intervention, excessive organic matter can compromise the field's resilience and reduce its long-term durability

Challenges of Organic Matter Accumulation



1

Reduced Water Infiltration & Hydrophobicity

Excessive OM creates a water-repellent layer that disrupts moisture distribution, leading to surface runoff, uneven retention, and localized dry spots. This negatively impacts turf quality and playability.

2

Restricted Root Growth & Turf Instability

Thick thatch layers limit oxygen exchange in the root zone, causing shallow root development and reduced turf stability. This makes sports pitches more susceptible to wear and tear, requiring frequent surface repairs.

3

Increased Disease Susceptibility

High OM levels create a moisture-rich, low-airflow environment that fosters fungal pathogens. Diseases like anthracnose and Dollar spot are more common in fields with excessive OM, making proactive management essential for turf health.



Best Practices for Managing Organic Matter



To mitigate the negative effects of excessive OM, turf managers employ a variety of cultural and mechanical practices.

Aeration

Regular aeration, particularly hollow tine aeration, helps physically remove organic deposits and improve soil oxygen levels, promoting microbial breakdown of OM. Solid tine aeration maintains soil permeability with minimal disruption.

Topdressing

Applying light, frequent layers of sand over the turf surface helps dilute OM accumulation, enhance water infiltration, and reduce disease occurrence, leading to a more stable playing surface.

Optimising Moisture Management

Maintaining soil moisture between 15%-20% during non-use periods and 20%-25% during high-traffic events supports OM decomposition while preserving surface stability. Deep, infrequent watering prevents excessive shoot growth and minimizes OM accumulation

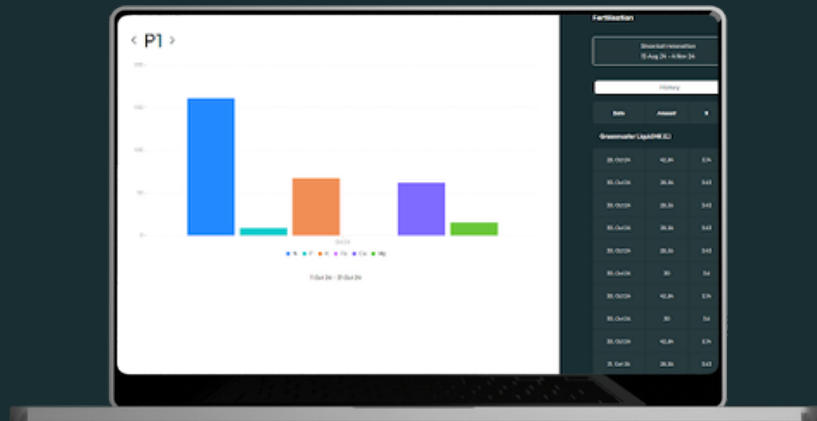
15% - 20%

**Recommended soil moisture
levels during non-use periods**

20%–25%

**Optimal soil moisture range
during high-traffic events**

Seasonal Renovations for OM Control



Seasonal renovations are a crucial component of OM management, particularly in high-use sports fields. Certain procedures involve aggressive OM removal techniques to restore soil functionality and prepare the turf for future growth. What are they?

Fraise Mowing

Considered as one of the most effective renovation methods to remove the upper layer of organic material while preserving the root zone. This process has been shown to reduce thatch accumulation and enhance turf uniformity significantly.

Deep-tine Aeration

By penetrating deeper into the soil profile, this technique alleviates compaction, improves water infiltration, and promotes root elongation. Fields that undergo deep-tine aeration experience better drainage and reduced OM-related issues



Conclusion

Maintaining optimal OM levels is essential for sustaining high-quality playing surfaces in professional sports fields. Excess OM accumulation presents several challenges, including reduced water infiltration, weakened turf stability, and increased disease susceptibility. However, by implementing targeted management strategies—such as aeration, topdressing, moisture control, and seasonal renovationsturfgrass professionals can effectively regulate OM levels.

For more information, visit www.turf.coach.

References





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