


## Thatch Versus Stem Biomass

**T**hatch is defined as an intermingled organic layer of dead and living shoots, stems, and roots that have developed between the zone of green vegetation and soil surface. Inherent in this definition is an assumption that this intermediate zone is dominated by dead organic material. This terminology has been satisfactory for many decades. However, the introduction of newer high-density turfgrass cultivars having vigorous lateral stem development dictates the need for additional refinement in the definition. **In the latter case this intermediate zone is dominated by living stoloniferous lateral stems rather than dead organic material. Accordingly, an additional term is proposed to describe this situation, which is stem biomass.**

It is important to have two differentiated terms because the cultural practices utilized in managing these two types of intermediate zones are distinctly different. In the case of thatch, an accumulated layer can be

removed on a corrective basis by vertical cutting into the actual thatch layer dominated by dead organic material. In contrast, such an approach within a stem biomass dominated intermediate layer results in excessive damage to the turf which is quite slow to recover. In the case of stem biomass, the preferred cultural approach is a preventive basis involving a low nitrogen nutritional level, assuming the cultivar tolerates the lower level, combined with a close cutting height, with 1/8 to 1/10 inch (3.2–2.5 mm) being particularly effective for greens situations. An additional preventive approach that may be used when needed is grooming and/or relatively frequent, light vertical cutting. In other words, **stem biomass micro-correction is a surface-oriented approach in which preventive measures are essential.** In contrast, **management of a thatch preferably involves preventive approaches, but in addition, corrective approaches involving interior mechanical operations also are an option if needed.** 


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**Brown patch is more intense in dense, high cut turfs when compared to lower mowing in more open stands.**

However, under high disease pressure conditions, mowing height appears to have little affect on brown patch severity. Generally, mowing high within the recommended range helps turf to better tolerate summer stresses, diseases, insect pests, and helps to reduce weed colonization. Hence, for numerous agronomic reasons, it is generally best to maintain the highest possible mowing height in the summer.

In summary, the best cultural practices for managing brown patch in cool-season grasses include the following: apply balanced N + P + K fertilizers in the autumn using as much slow-release N as possible; irrigate early in

the morning; avoid excessive and/or nighttime irrigation; and maintain the mowing height high within the recommended range for the species grown. If possible, improve drainage and air circulation, reduce thatch, and alleviate soil compaction. 

### References

Fidanza, M.A. and P.H. Dernoeden. 1997. A review of brown patch forecasting, pathogen detection, and management strategies for turfgrasses. *International Turfgrass Society Res. J.* 8:863–874.

Lyr, H. 1995. *Modern Selective Fungicides—Properties, Applications, Mechanisms of Action.* Gustav Fischer Verlag, New York.

## Summer Stresses

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9. Maintain as high a cutting height as possible within the confines of the particular use on putting greens, tees, fairways, and sports fields.
10. Avoid an excessive thatch accumulation that encourages root development in the thatch/mat layer only.
11. Minimize intense mechanical maintenance practices, such as topdressing, vertical cutting, and turf cultivation, during critical summer stress periods.

Adjustment of cultural practices to maximize root growth and development results in a turf with much better potential to survive summer stresses. The importance of roots in relation to turfgrass culture must not be overlooked by turf managers. Warm-season grasses generally possess more extensive root systems than do cool-season turfgrasses. Because of the very close mowing height, turfgrasses growing on putting greens possess a much shorter root system. 