



TURFAX™

Volume 9, Number 3



May–June 2001

of the International Sports Turf Institute, Inc.

The International Newsletter about Current Developments in Turfgrass

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Thatch and Mat Must Be Minimized

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Thatch refers to an organic layer found in turf above the soil surface. This organic layer is composed of living, dead, or partially decomposed stems, roots, and leaves. At one time, a 0.5 inch (13 mm) thatch layer was considered desirable on greens. Today, due in part to lower mowing heights, **a thatch depth of less than 0.3 inch (10 mm) is suggested.**

Mat refers to a layer of mixed topdressing and organic matter (usually old stem tissue and roots) that develops below the thatch layer. On extremely well-managed putting greens there may be more mat than thatch. **Under low mowing (<5/32 inch; 3.8 mm), thatch and mat layers can become extremely dense, making it very difficult to brush-in topdressing.** Mat layers can be just as detrimental as thatch in the summertime and both need to be aggressively managed.

Some thatch is desirable because it provides cushion for equipment, people, and impact of a ball. Dense thatch, however, is detrimental. **Thatch reduces the environ-**

mental stress tolerance of turf, predisposes plants to supraoptimal heating in summer, and promotes disease and insect pests. When a thatch layer becomes thick, the stem-bases of plants develop in the thatch rather than at or below the soil line. Stems developing in thatch are far less insulated from extremes of hot or cold and wet or dry weather conditions. All roots emanate from stems and they also are more vulnerable to environmental extremes when they become largely restricted to the thatch layer. Furthermore, buds that produce the new shoots, tillers, and roots also are jeopardized by virtue of being exposed to environmental extremes in thatch rather than insulated by soil. Hence, the most important plant tissues (i.e., the growing point and/or meristems, and roots) are more vulnerable to desiccation during drought, freezing temperatures in winter, and supraoptimal temperatures in the summer. Wet thatch, in particular, contributes to scald damage during hot, rainy periods or when turf is excessively irrigated during the summer. Green plants in coring holes, surrounded by brown turf in the summer, are a good indicator of a thatch and/or mat problem. This is because the coring hole provides an opening unobstructed by thatch or mat, which allows for better water infiltration and air exchange. The surrounding damaged turf with a thatch or mat layer holds water. The water absorbs and transfers heat from the sun, which builds to lethal levels causing scald during periods of high temperature stress.

Thatch also provides harborage for insect pests and pathogens. **Black cutworms (*Agrostis ipsilon*), chinch bugs (*Blissus* spp.), sod webworms (several species), black turfgrass *Ataenius* (*A. spretulus*), and other insect pests find thatch a suitable medium in which to survive.** Most pathogens can survive unfavorable periods as spores, sclerotia, fruiting bodies, or as mycelium embedded in dead organic matter. Pathogens often live saprophytically on dead organic matter in thatch and soil during environmental periods that are unfavorable for infection of plant tissues. In particular, **pathogens causing dollar spot (*Sclerotinia homoeocarpa*), leaf spot (*Bipolaris* spp. and *Drechslera* spp.), and anthracnose**

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