

## Plant Pathology Fact Sheet

# Does Fungicide Usage Increase Thatch Accumulation In Turf?

By Paul Vincelli

A buildup of thatch--a layer of dead and living stems and roots that accumulates on the soil surface--is often a result of intensive turf maintenance programs. Thatch can accumulate in sods of Kentucky bluegrass, creeping bentgrass, fine fescues, bermudagrass, and zoysiagrass.

While a little thatch is not harmful, accumulation of more than about one-half inch of thatch can lead to problems. If the thatch layer is thick, roots will tend to grow in the thatch rather than the soil below. Thatch may become hydrophobic during hot, dry weather. This can make the turf difficult to irrigate thoroughly and subject to frequent drought stress. Thatch will not protect roots of cool-season grasses from high daytime temperatures as effectively as soil, so roots can be exposed to high temperature stress. Conversely, thatch will not protect roots of warm-season grasses from extremely cold temperatures during winter, thus making plants more susceptible to winter kill. Also, some fungal pathogens of turf are

good colonizers of the organic matter in thatch. A thicker thatch means that more fungal inoculum is available for infection should conditions be favorable. So a heavy thatch can increase disease and weaken turf during times of drought, heat, or cold.



EXCESS THATCH LAYER

Thatch accumulation is a symptom of an imbalance in the turf ecosystem between tissue production and decomposition of plant tissues such as roots, stems, and stolons. Tissue is produced quickly in an intensively managed turf, but if it is decomposed quickly, thatch does not accumulate. Since fungi are very important in the decomposition of thatch, some scientists have investigated whether

fungicides used to control turf diseases also aggravate thatch accumulation. At least four separate research programs have addressed this subject (scientists at Cornell University, The University of Maryland, and Rutgers University, as well as UK). I think it is of interest to summarize their findings.

Several fungicides--but not all fungicides tested--have been found to increase thatch accumulation in some instances. Those found to increase thatch included products containing benomyl (Tersan 1991), iprodione (Chipco 26019), mancozeb (Fore, Manzate 200, Dithane F-45), and thiram (various products).

How do these products promote thatch accumulation? Benomyl is toxic to earthworms, which are known to greatly accelerate thatch decomposition through their feeding activities. It is less clear how the other fungicides affect thatch accumulation, although direct toxicity to decomposing fungi may be part of the answer.

The fungicides mentioned above increased thatch accumulation in some but not all instances. After reviewing these studies, I feel that the best explanation for this discrepancy is as follows. In sites where turf management was most intensive and the potential for thatch accumulation was

greatest (high fertility, frequent irrigation, frequent fungicide use), several fungicides aggravated thatch accumulation. In sites with moderate management (moderate fertility and irrigation, regular aerification, and moderate fungicide usage), most fungicides tested did not promote thatch accumulation, including those that did promote thatch accumulation in intensively managed sites.

Should we avoid using those fungicides reported to aggravate thatch accumulation? I think not, especially if following the old adage, "Everything in moderation". Those same fungicides offer one or more significant advantages, which can include relatively low cost, good efficacy, and in several cases, virtually no potential for development of fungicide resistance. I believe they have a place in a turf disease control program, particularly since I advocate rotating fungicides to avoid buildup of pathogen resistance to them.

Follow a good turf management program, use fungicides judiciously, and don't rely exclusively on fungicides, including those that increase thatch accumulation. If you follow this strategy, fungicidal control of turfgrass diseases probably will not create thatch problems.

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