

Biological Control of Thatch Under Study in Connecticut

Is biological control of thatch to improve the health of lawns and golf greens possible?

The search for the answer to this question is being made by Dr. Jay S. Koths, an associate professor in the Department of Plant Science at the University of Connecticut.

This research was initiated by him in the summer of 1969 with the aid of an \$8,800 grant from the Connecticut Research Commission. It is being continued for the next two years under an \$8,000 grant from the Green Section of the U.S. Golf Association.

Thatch is normally degraded by its microbial inhabitants. The problem of thatch occurs when rotting of dead plant parts does not occur rapidly enough. It is important to maintain an ecological balance between the addition of grass parts and degradation by the microbes.

The thatch layer may impede water penetration so that the turf may dry out, causing browning. An application of fertilizer may remain on top of the thatch and be of no use to the grass. Finally, if the grass dies, reseeding will be difficult because the seeds do not germinate readily.

To investigate the processes causing this degradation, a description of the microbes living in thatch is being undertaken by Dr. Koths. He is hoping that knowledge of the role of these inhabitants will lead to the manipulation of conditions within the thatch that will enhance degradation.

To sharply change the activity of thatch-degrading microbes, Dr. Koths made some tests involving radical changes in the environment. Covering the turf with a closed polyethylene greenhouse was found to be too severe. Applying sugar solution in a mist increased microbial counts but did not hasten thatch disappearance. Fertilizer applied in the mist improved grass growth but did not speed thatch degradation.

Attempts by Dr. Koths to establish thatch decomposers in turf were partially successful. Efficient thatch-rotting organisms were isolated and grown in the laboratory. Introduced to turf, they became established and could be reisolated. But this approach will not be pursued because the thatch did not disappear faster.

The thickness of the thatch cycle varies in the season of the year. Dr. Koths found that the minimum depth occurred in late August, when the effects of the high temperatures on microbial activity resulted in a maximum thatch degradation. From this, it might be concluded that treatments should be directed toward this mid-summer period to achieve maximum control of thatch with microbes.

Dr. Koths said that the most effective treatment to control thatch thus far is top dressing the turf with soil mixtures. Golf course superintendents sometimes spread a mixture of sterilized loam, peat and sand lightly over the greens to control thatch. "It would appear," Dr. Koths says, "that replacing these partially sterile mixtures with a compost containing thatch—collected from golf greens and fairways and lawns—would contain microbes more adept at rotting thatch."

In this continuing study, being undertaken as part of the research program in the Storrs Agricultural Experiment Station, Dr. Koths is concentrating on differences in thatch-degrading microbes found in composts prepared in various ways. From these efforts, he hopes to find a more efficient method for biological control of thatch in turf.

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