GRAU'S ANSWERS TO TURF QUESTIONS

BY FRED V. GRAU

Lime's Role in Turf Sanitation Is Poorly Understood

The supt. is deeply involved with sanitation. His concern is to maintain sturdy, healthy turf as free as possible from fungus diseases and troublesome insects. Several now common practices contribute significantly to sanitation in turf.

Aeration (aerifying, coring, slitting) stands at the top of the list. Several excellent machines pierce crusted soil to free poisoned air and admit fresh air charged with oxygen. Abundant oxygen in the soil pores is of primary importance to turf sanitation. Beneficial bacteria must have oxygen so that they may reduce organic wastes, render nutrients available to the plants, and consume disease producing fungi, slimes and algae. Reduction of organic wastes (excess clippings, lignin and protein residues from organic amendments, dead roots) is essential to the production of healthy turf.

Thatch Removal (verticutting, aerothatching, renovating) at intervals reduces the accumulation of excess grass growth which, in the absence of bacterial decay, creates a severe problem.

Thatch in turf acts just like thatch on a roof — it keeps out water.

Furthermore, diseases and insects are snugly harbored in thatch awaiting only the proper environment (moisture, temperature, pH) to wipe out or severly damage the turf.

Bacteria Need Food

Fertilization (N-P-K in proper balance) is an integral part of sanitation. Bacteria needed for organic breakdown require carbon for energy and nitrogen for food. Many fertilizers furnish little or no carbon, forcing bacteria to draw from sources in the soil. When carbon is inadequate nitrogen can not be utilized effectively. Some of the newer; synthetic fertilizers are excellent sources of C and N for bacteria. Other things being equal, stimulation of bacteria favors turfgrass sanitation.

Lime (ground agricultural limestone, burned lime, oyster shell lime, hydrated lime) plays a remarkable, but poorly understood, role in turf sanitation. Active calcium and magnesium as nutrients are essential for the maximum activity of bacteria. Lime adjusts pH toward the neutral or alkaline range where other essential nutrients become more available to plants. Most fungi grow best under acid conditions which develop in the soil and in the microclimate (the space between tips of grass blades and the soil). Many cases of fungus control with lime have been recorded. This includes dollarspot on fairways, brownpatch on greens and leafspot complexes (notably Helminthosporium and Curvularia acting alone or in combination).

Value of Lime

Dramatic evidence of the value of light treatments with hydrated lime in checking leafspot diseases was recorded in July and August of 1963 in Omaha, Lincoln, Kansas City, Springfield, Mo., and other Midwestern cities. A telephone call described destruction of putting green turf under prolonged 95 plus temperatures with very high humidity. Damage was described as "water soaked," "turf seems to wear out," "grass seems to be melting." Fungicides were powerless to control these things.

Over the phone we recommended: Spray hydrated lime at ½ to 1 lb. per 1,000 sq. ft. with and without 2 lbs. per 1,000 sq. ft. of insoluble powdered nitrogen material and leave a control (check) plot.

Two days later a personal inspection revealed:

Growing Turf the Hard Way

Second in a series by TOM MASCARO

When a golfer misses a putt any thing can happen!!!

1. Hydrated lime alone stopped disease and grass had recovered about 50 per cent.
2. Hydrated lime plus 2 lbs. per 1,000 sq. ft. of powdered nitrogen material stopped disease and grass had recovered about 75 per cent.
3. Control (check) plots steadily deteriorated under continued 95+ temperatures.

Start to Collect Clippings

One complaint was that grass wouldn't grow – no clippings. Two days after the lime-plus treatments, mower baskets once more started filling.

Too simple? Perhaps. But let's look at what seemed to take place. The hot-humid microclimate was highly favorable to the fungi that were operating to make the grass "melt" or "wear out." The light spray of hydrated lime, lightly rinsed in, caused a "flash" change in the microclimate to a high of pH 9.5 or thereabouts. (No actual measurements were taken here – this is factual information from previous research.)

Fungi wither at this high pH range and can not survive. Necessary bacteria are encouraged once more and effective turfgrass sanitation is achieved. The small addition of nitrogen added further stimulus to the bacteria (carbon and nitrogen). Grass started to grow and recover from the disease(s), even with continued unfavorable growing conditions.

Where inorganic mercury materials had been used for diseases, grass growth was checked severely and recovery was slow.

Sanitation in turfgrass may be furthered by several procedures, not the least of which is the timely and judicious use of lime. Let not the reader be confused by soil tests which read "pH 7.0" or "pH 7.4" It is possible for the pH in the microclimate to be in the acid range and thus highly favorable to fungus diseases, even though the soil reaction below is neutral to alkaline (favorable).

This department welcomes letters pro and con on experiences in sanitation with lime and other methods and materials. The concept of turfgrass sanitation deserves thorough study.

A Black Algae Problem

Q. Each fall when the rains come some of our greens are severely affected by black algae. Is there a cure-all that would stop this when the greens get too much water?

We have a thatch problem but the turf is

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