TOPDRESSING: EFFECTS ON CULTURAL PRACTICES AND DISEASE INCIDENCE

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Use of light, frequent, sand topdressing has increased, since the concept was introduced by Dr. John H. Madison. This may be due in part to: (1) Superintendents recognizing the benefits of regular topdressing in their cultural programs; (b) Application ease and convenience of applying a homogeneous material as opposed to complications involved in mixing and blending soil, peat, and sand; and (c) The need to modify poorly constructed greens or greens compromised of heavy compaction-prone soil mixes. Even though light, frequent sand topdressing has been adopted by many superintendents the concept is not without controversy. This controversy has warranted the need for further research that may be beneficial in answering most of the short and long term effects associated with light, frequent, sand topdressing use.

A topdressing study was initiated in May 1981 at the University of Nebraska Turfgrass Research Facility located near Mead. The study was designed to compare light, frequent, sand topdressing to traditional topdressing on a Penncross creeping bentgrass green. The green was comprised on one-third silty-clay loam soil, one-third sand, and one-third peat moss. Traditional topdressing consisted of sand topdressing in the spring and fall at a rate of 0.4 yd^3/1000 sq ft/application, following soil coring and core removal. Light, frequent sand topdressing was applied at 0.1 yd^3/1000 sq ft/application. Seven to eight applications were made each growing season with a two to three week frequency fo application, depending on the turfgrass growth rate. The greens were cored and cores removed prior to light, frequent, sand topdressing treatment each spring. This practice has continued since the initiation of the study. Topdressing treatments were further subdivided to include interactions of nitrogen and surfactant treatments. Nitrogen was applied at 2, 4, 6, 8 and 10 lbs/1000 sq ft/growing season. Surfactants were applied across nitrogen treatment at 0, 8, 16, 24 and 32 oz active ingredient/1000 sq ft/growing season. The surfactant used was Surfside 37.

Outbreaks of Pythium Blight (Pythium spp.) and Brown Patch (Rhizoctonia solani) occurred in each growing season from 1981-83. Pythium blight and brown patch outbreaks did not occur simultaneously. In both cases outbreaks were considered to be heavy and weather conditions were conducive to severe disease development. In all cases disease severity was greatest in light, frequent, sand topdressing treatments and least in turfs receiving traditional topdressing programs. Pythium blight and brown patch incidence increased linearly with nitrogen rate from 0 to 10 lbs N/1000 sq ft/growing season. Incidence of both disease declined when surfactant treatments exceeded 16 oz a.i./1000 sq ft/growing season on the traditional program. The effect surfactant was interactive with N-treatment effects, decreasing disease incidence linearly in the light frequent topdressing program.

Pythium blight and brown patch occurred in traditional and light, frequent treatments but was always most severe in light, frequent treated plots. Surfactant treatment effects were most dramatic in light, frequent, sand topdressing programs. Comparison of surface soil moisture retention in traditional and light, frequent treatments demonstrated a higher moisture content near the surface of the latter when compared to the former. This was

apparently due to the tendency of light, frequent, sand topdressing treatments to form a temporary or perched water table. This allowed crowns, stolons and shoots to be exposed to free water for more extensive periods than that occurring in the traditional program. This increased the potential for disease development. Surfactant treatments decreased soil surface water content and increased infiltration rates thus reducing the necessary free water for development.

In an associated study light, frequent, sand topdressing was applied to six seeded creeping bentgrasses in a cultivar evaluation. Applications were made based on turfgrass growth rate and thatch accumulation tendency. Penncross and Penneagle required 8 to 9 applications annually while Seaside required only five. Emerald, Prominent and an Emerald-Penncross blend were intermediate, requiring 6 to 7 applications each season. Superintendents considering a light, frequent, sand topdressing program should carefully consider the cultivar comprising their greens and its implication on frequency and number of topdressings required to obtain satisfactory results.

Ball roll or putting speed was assessed using a USGA-Green Section Stimpmeter. Ball roll was significantly greater on turfs receiving light, frequent, sand topdressing than those receiving the traditional treatment. This was consistently the case, regardless of season or time after mowing treatment.

Results of this investigation are not entirely conclusive and long term effects of these treatments need continued study. This research has led to recommending the use of surfactant treatments in conjunction with light, frequent, sand topdressing programs, especially when these are initiated on soils with high clay content. It is apparent that surfactant treatments should exceed 16 oz a.i./1000 sq ft/growing season. The choice of the surfactant should be restricted to nonionic types that have proven track records for tolerance on creeping bentgrass. Superintendents should contact turfgrass specialists in their area for this information.