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Research Report

by Dr. David D. Minner

Forward Motion

Athletic field turfgrass response to calcined clay topdressing

Sports turf management has its own unique challenges. Researchers at turfgrass centers across the world are exploring issues to qualify and quantify sports turf specific information. Periodically, sportsTURF will devote this column to reports on research that is in progress or on studies that have recently been completed.

The following studies represent the work of David Minner and Jeffrey Salmond. These reports provide brief overviews of the research. For more detailed information, see the sources listed at the end of the column.

If you have current research to share with readers, please contact STMA Headquarters: (800) 323-3875.

Modifying athletic field soils with calcined clay and tillage

This study seeks to evaluate calcined clay in a tilling renovation process, and to monitor its effects on turfgrass growth. We're conducting the study on an irrigated football practice field at an Ames-area high school.

The 15,750-sq.ft. experimental plot area is situated between the hash marks and the goal lines. Plots are centered on every yard-line marker, such that 7.5 ft. falls on one side of the yard line and 7.5 ft. falls on the other side of the same yard line. Each individual plot measures 15 ft. by 50 ft.

We treated plots with calcined clay at two different rates in seven replications. Untreated controls balance the study. Treatments have been completely randomized.

We seeded the total plot area in the spring of 1998 with a three-cultivar bluegrass blend. We will continue to topdress with calcined clay for the calcined clay plots and with sand for the control plots through 1998.

This study seeks to evaluate calcined clay as a topdressing material, and to determine its effects on turfgrass growth. To provide actual-use conditions, we're conducting the study on an Ames-area high school football/soccer practice field. We're comparing calcined clay materials with sand treatments.

We initiated the study in August 1996, on an irrigated practice field containing native clay-loam soil. We arranged a 9,000-sq.ft. experimental plot area between the hash marks and 20-yd. lines. Each of the 12 individual plots measure 15 ft. by 50 ft. We treated six with calcined clay, and six with sand topdressing.

Plots are evaluated each month for turfgrass quality and percent turfgrass cover. We are conducting the study in conjunction with Don Larson, facilities manager of Ames Schools. It will continue through 1999.

Managing cool-season grasses as part of a SportGrass system

New and innovative systems are being developed for natural grass fields. Coaches, athletes, and trainers prefer natural grass, as it reduces physical stress on players. However, artificial surfaces are known for their durability and infrequent maintenance needs. SportGrass is the first product that combines the playability of natural grass with some of the more durable characteristics of synthetic turf.

Most natural-grass systems tend to become raised above the level at which the grass was first established. Over time, the accumulation of thatch and the process of topdressing can add as much as 0.5 to 2.0 in. of material to the original soil line.

Stabilizing materials that were once near the surface can be lowered in the

profile, as organic and mineral materials accumulate above the synthetic stabilizer. We are interested in finding out if this burying of the stabilizing materials reduces their effectiveness. We also want to know if current management practices can be used to prevent accumulation of thatch above the synthetic stabilizer.

Stabilizers also tend to reduce surface resilience and increase surface hardness (as measured by gmax). Two separate studies established in fall 1996 seek to evaluate mat management above the surface of the stabilizers and to evaluate field hardness.

Study 1: This study seeks to evaluate conventional methods of turfgrass management as they apply to SportGrass. Experiments are designed to determine how grass management practices influence the accumulation of organic matter within and above the synthetically reinforced zone.

Study 2: This study seeks to evaluate how grass species, seeding rates, and traffic intensity influence the performance of the natural grass/synthetic turf combination. It rates the performance of a SportGrass system with respect to hardness and footing.

Preliminary results have been posted for both studies. Research is continuing on both.

Stabilizing sand-based athletic fields with Enkamat

This study seeks to determine the proper placement depth for Enkamat and to evaluate it as a stabilization material for sand-based systems. Demonstration plots have shown that when Enkamat is exposed to the surface during field wear, there is a potential for tripping by field users wearing cleated shoes. The research asks how deep Enkamat needs to be placed to prevent exposure to the surface, and looks for benefits of field stabilization with Enkamat.

We constructed a 50-ft. by 50-ft., 6-in. deep, sand-based pad in fall 1997, at the ISU Horticulture Research Station. We placed the sand-based system over a 4-in. gravel blanket with a network of 4-in. drain pipes. Individual plots are 13 ft. by 16 ft., allowing us to sub-divide each treatment plot for further study.

Plots include sand and Enkamat at 0.75 in. and at 1.75 in. The experimental design is a randomized, complete block with three replications of the three treatments.

Plots will be evaluated May through August for turf appearance, surface hardness, and traction. From mid-August

through September, all treatments will receive simulated traffic. The entire study area will receive both hollow- and solid-core aeration in 1998, to determine if Enkamat disrupts this routine management practice.

We will evaluate the turf again during a non-traffic recovery period between October 1 and mid-November.

For more detailed versions of these and other ISU research reports, visit the Internet Web Site: <http://www.hort.iastate.edu/hort/frames/pubs/pframe.html>. For printed copies of this research as posted on that Web page, contact STMA Headquarters by phone: (800) 323-3975, fax: (712) 366-9119, or e-mail: TrustyTips@aol.com. □

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