

RESEARCH UPDATE

Giant must awaken and smell the coffee

by Kent W. Kurtz, Ph.D., Cal Poly-Pomona

The sports turf profession in the United States, with the exception of golf, has not been overly active in funding or conducting research for the improvement and development of safer natural grass surfaces. Many ideas, techniques and cultural practices currently used to maintain sports turf can be traced to research originally funded by the golf course industry.

Sports turf research in the United Kingdom has been very successful and productive. The Sports Turf Research Institute (STRI) located in Bingley, England, is an example of a cooperative effort that has made significant contributions to the sports turf industry.

Several sports-related organizations, including golf, have joined in an effort to conduct research for the betterment of the industry. These groups provide the guidelines and funding, and the results of the research are shared by the total industry. The sports turf industry here in the United States could learn a great deal from our colleagues at the STRI, and observe the manner in which these professionals go about their research activities and cooperate in the implementation of the results.

Turf research

Even though research on sports turf has not kept pace with other areas in the turfgrass field, several significant contributions and applied projects are worth mentioning.

Field paints and colorants. It is now possible to wipe out an old logo or endzone name, paint in the new one and not have to wait for grass seed to germinate and grow in to cover over the old paint.

An opaque paint is used to cover the old paint and the new color is applied over the same area. This is done using natural earth colors and pigments, i.e., burnt and raw sienna plus white paint—colors that change the area to look like dormant grass when they are applied correctly and allowed to dry.

Colorants can look natural. Several turfgrass colorants are on the market but very few have true natural grass green colors. One developed in California is so close to the natural green that it can't be detected easily.

These colorants are used in climates where natural grass goes dormant or in situations where weak spots develop in cool-season grasses

and a cosmetic touch-up is necessary. These colorants consist of blue-green pigments resembling the true color of Kentucky bluegrass. They are color-fast, and will not rub off on player uniforms.

Pre-germinated seed. Turfgrass seed is pre-germinated to encourage faster establishment, particularly when time is a factor or where cold weather may increase the germination time. Different methods of seed pre-germinations are used by professional field supervisors at major stadiums to accelerate the growth of perennial ryegrass and Kentucky bluegrass.

A senior project by Nicholas Spardy at Cal Poly University-Pomona evaluated all the known methods of seed pre-germination. Each of the methods produced viable seedlings, though some were slower than others. Here is the procedure found superior:

Perennial ryegrass seed is taken out of the seed bag and placed in a large container of water. The water is changed every six hours and air is bubbled through the hose continuously using an air hose placed in the bottom of the container. The oxygen in the air replaces the carbon dioxide which is given off by the respiring seed; the constant oxygen supply increases the metabolic process in the seed and it germinates more rapidly. Within seven days more than 90 percent of the perennial ryegrass seed had germinated and green leaves $1\frac{1}{4}$ to $1\frac{1}{2}$ inches long were visible on the seed.

Once the seed has germinated it can be mixed with a carrier such as medium-to-fine sand or an organic material and then distributed onto a prepared surface on the playing field (surface can be vertical mowed, sliced or aerified).

Once the pre-germinated seed is placed onto the field it can be top-dressed with sand or an organic material and kept moist until well established.

Seed Combinations for the Transition Zone. In order to achieve faster spring green-up, produce a wear-tolerant athletic surface and extend green color later into the fall season, combination seedings using seeded zoysiagrass and tall fescue show great promise.

Jack Murray at the U.S. Department of Agriculture at Beltsville,



Rose Bowl field supervisor Richard Gonzales (left) and the author examine the turf at the Rose Bowl after a geotextile was used to protect it from fans at a Bruce Springsteen concert.

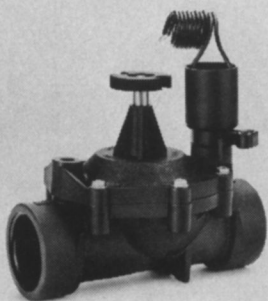
Md. feels that seeded zoysiagrass (1 lb./1000 sq.ft.) combined with the new turf-type tall fescues (2-3 lb./1000 ft.) and grown and sold as sod may meet the needs of many sports field managers, particularly in the transition zone.

Field Warming Covers. The introduction of field warming covers has made the job of establishing new seedings faster and easier. Several companies have introduced covers made of either polyester or a plastic material. Purpose of the cover is twofold: to accelerate seed germination or the spread of stolons and to increase the soil temperature for better turfgrass establishment. They can also be used to prolong green color on warm-season grasses in the fall or to bring dormant turf out of winter dormancy sooner.

These new covers are superior to the polyethylene materials used in the past. They are easier to spread out on a field surface, and they can be reused several times because the ultraviolet rays from the sun will not crack the material.

Research conducted at both Cal Poly-Pomona and at the Rose Bowl indicates a soil temperature increase from seven to 15 degrees Fahrenheit compared with a surface not covered.

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warranty.

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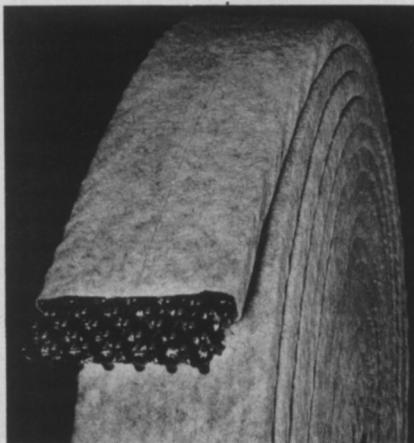
Drainage system more cost-effective than pipe

Drain-It, manufactured by American Wick Drain Corp. for Atlantic Construction Fabrics, is a new prefabricated, highway-grade drainage system that combines high flow capacity, strength and durability with economical installation. It is designed for golf courses, athletic fields, parks, building grounds, bridge abutments and retaining walls.

Drain-It's high flow capacity results from the use of a multi-channel, formed polyethylene core covered by

a polypropylene fabric to prevent clogging. According to the company, the non-woven, needle-punched fabric also allows water entry over 95% of its surface for up to 35% higher volume drawdown than perforated pipe.

It is one inch thick and weighs 8 oz./sq.ft. Sections can be joined using duct tape and a utility knife. Drain-It features a core crush strength of 8000 psi to withstand the pressures of back-filling and compaction during installation without loss of flow area. Drain-



It comes in rolls of 100 and 150 feet in six, 12, 18 and 24 inch depths.

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In cool environments this could mean the difference between seed germination and no germination.

Studies at Cal Poly-Pomona reveal that within 14 days perennial ryegrass seedlings were eight inches tall compared with 2½ inches tall where covers were not used. When used with pre-germinated seed the success of faster turfgrass establishment is enhanced, particularly where a balanced starter fertilizer was placed in the seedbed.

Geotextiles. The introduction of fabrics collectively known as geotextiles has greatly reduced the wear factor on many athletic fields. These covers are made of 100 percent polyester needle-punched, non-woven fabric that resists heavy traffic. They allow air, water and sunlight to pass through the fabric so the grass can carry on its normal functions.

Major stadiums have used geotextiles to protect turf from concerts, circuses and events that require thousands of chairs for field seating. When used as bench tarps for players to stand on during football games they have miraculously preserved the grass surfaces. Without the geotextile covers the turfgrass areas would be ground into soil, sand, mud and grass plant parts. **LM**

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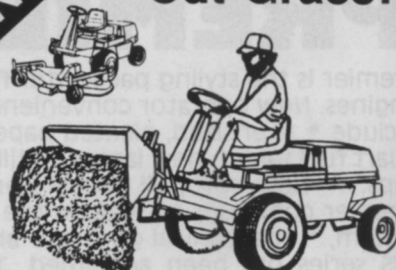


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