New Mulches for Renovation Projects

by George Hamilton, Jr.

Renovating and repairing athletic fields is always a challenge. Excessive wear and constant use make it very difficult to rejuvenate turf stands. Many times the field activities require renovation to be done at non-optimal times, such as late fall or early spring. Maintaining adequate moisture in newly seeded areas can also be a problem.

Newly developed pelletized paper mulches provide athletic field managers with a new tool to use in the battle against bare spots. Unlike straw, the pelletized mulches are weed-free and stay in place after application. The pelletized mulches do not affect the playing surface and provide a neat appearance. Many of the benefits of mulches are achieved with these new materials.

Benefits of Mulching

Mulches enhance seedbeds in many different ways. Their primary benefit is water conservation. Covering the soil decreases water evaporation from the soil surface. The mulching material itself may have high moisture holding capacity and aid in maintaining moisture levels at the soil surface.

Mulch protection of the soil against rain and irrigation helps maintain soil structure. Water droplets carry a lot of energy when striking the ground. The impact of the droplets can cause the soil aggregates to disperse. The dispersion can lead to decreased soil structure and surface sealing, both of which can decrease infiltration rates.

Minimizing the change in soil temperatures at the soil's surface is another benefit of mulches. This "insulating" effect can help moderate soil temperatures during times when air temperatures are rapidly changing.

Conventional Mulches

One of the most widely used mulches is straw, which is composed of the stems of plants from small grain crop, such as oats or barley.

Straw has very good mulching characteristics and is usually readily accessible. Unfortunately, straw has some negative affects on the seedbeds and seedlings.

Straw usually contains a wide variety and large quantity of weeds. Since straw is harvested from an agricultural field, any weeds (and accompanying seedheads) are included in the harvest of the straw. Many times the weeds can be perennial grassy weeds, such as orchardgrass, that are very difficult to selectively control in turfgrass.

Straw also has a high carbon to nitrogen ratio, meaning it contains much more carbon than nitrogen. Adding straw to a soil's microbial activity system can result in a significant depletion of soil nitrogen. Soil microbes use the carbon of the straw as an energy source. Since soil microbes also require nitrogen as an energy source, they must use nitrogen from the soil because there is very little in the straw. The nitrogen deficiency results in thin and yellowed turf that is very susceptible to weed invasion.

The other main problem with straw is it is difficult to keep in place. Straw applications often require a tacifier to be applied. A tacifier can be a gum-based or synthetic product that is applied over the top of the straw to get the straw to "knit" together.

The other commonly used mulch is hydraulic mulch. These mulches can be made up of 100 percent virgin wood cellulose fibers or 100 percent recycled paper and just about any combination in between. Hydraulic mulches are usually dyed green so that they provide an aesthetic green appearance after they have been applied. Most hydraulic mulches also have very good mulching characteristics, but they require a special machine for application.

New Pelleted Paper Mulches

Pelleted paper mulches became available in 1995. The original pelleted paper mulch, PennMulch, was developed and patented by Penn State University. The PennMulch technology is based on the incorporation of water-absorbing polymer into paper fiber to significantly improve pellet and mulch performance. Other pelleted paper mulches have come on the market since the creation of this new market category.

Pelleted paper mulches are easy to apply and provide mulching characteristics similar to hydraulic mulches. They are typically made from recycled paper fibers that are dyed green to provide a green appearance after application. Pellet size is important because small pellets cover more area per unit weight than large pellets.

Paper fibers are biodegradable, so removal of pelleted paper mulches after germination is not required. Some types of pelleted paper mulches have fertilizer incorporated into the pellets to provide nutrients for new seedlings. The fertilizer also prevents the depletion of nitrogen in the soil, which can happen due to the microbial breakdown of the paper fibers.

Athletic Field Applications

Prior to pelleted paper mulches, athletic field managers did not have much of a selection of mulches to choose from. Hydraulic mulch was about the only choice, and only those fortunate mangers with access to an applicator could use it. Pelleted paper mulches now give the sports turf manager another tool for seeding projects.

High wear areas, such as goalmouths and sidelines, usually require extensive seeding in order to repair the damage. Core cultivation in conjunction with slit seeding can create a favorable seedbed. An application of mulch will increase the germination time and overall success of the seeding.

Conventional overseeding to repair thin or worn turf can also benefit from mulching. The pelleted mulches will not smother the existing grass, unlike other types of mulch. The pellets tend to migrate, following rainfall or irrigation, towards the slit created by the overseeder. This creates an optimum environment for germination and growth of the seed placed in the slits.

Repair of utility line installation is another use of pelleted paper mulch. Whether it is irrigation or electric line installations, pelleted paper mulches are ideal to help re-vegetate the disturbed trench areas.

Methods of Application

Application rates for pelleted paper mulches are very high, compared to fertilizers or seed. Typical application rates of pelleted mulches range from 60 to 80 lbs per 1,000 square feet. Application rates are as important for mulches as they are for other agricultural products. Under dosing and overdosing can result in poor product performance or turf damage.

In order to deliver this high of rate, applicators need to have high flow rates. For small areas, specialty drop spreaders with fixed rate bottoms provide a good method of application. Usually one-pass can provide an acceptable rate with the appropriate sized bottom on the spreader. Spreading by hand is also an option.

Small to medium sized areas can be treated with specialty broadcast spreaders. Companies have designed new "high-flow rate" broadcast spreaders to apply these types of mulches and other high-rate materials. These spreaders can also deliver the required rate in one or two passes.

For large areas and overseeding applications, many of the commercially available topdressers can be used. Topdressers usually cover large areas and have large holding and output capacities.

Many of these various types of applicators have been tested, calibrated and approved for pelleted mulch application. Not all types of spreading devices are acceptable. The pellet size, bulk density and application rate make it difficult to spread with ordinary spreaders.

Another Tool for Successful Seeding

Usually a major drawback of athletic field seeding is the lack of ample irrigation. The seeding may be too small to warrant setting up aboveground irrigation, or irrigation may not even be feasible. Any procedure or material that improves moisture retention will improve germination and growth.

Time is usually limited in athletic field renovations. Fast germination, growth and development are key to successful seedings. Pelleted paper mulches provide another tool for sports turf managers to use in their battle against the bare spots.

George W. Hamilton, Jr., is a senior lecturer of Turfgrass Science at Penn State University.

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Turf Managers and Biostimulants: An Ongoing Relationship

by Susan Doyle

Robert Weltzien , director of research of a major biostimulant manufacturer and Dr. R. E. Schmidt, Professor of Turfgrass Ecology, College of Agriculture and Life Sciences, Virginia Polytechnic Institute and State University, were asked to discuss sports turf managers and the role biostimulants play in field maintenance.

R.E. Schmidt: Sports Turf Managers need to understand biostimulants if they are to incorporate advanced plant nutrition in their cultural practices.

Robert Weltzien: Biostimulants are organic substances whose only function is to carry plants over stress, like a nutrient supplement for humans.

RS: Biostimulants contain metabolites that not only stimulate plant growth but are favorable to the health of plants, which is an important factor in soil fertility. Advanced concepts of plant nutrition are beyond application of minerals.

RW: If a plant is not producing enough amino acids, vitamins or hormones, the biostimulant will provide them as a supplement. For example, we have demonstrated that after treating a plant with a biostimulant, leaf tissue analysis shows more of the vitamins than that of the control (no biostimulant).

RS: Biostimulants enable turf managers to condition plants to tolerate subsequent adverse environmental conditions. We know that plants treated with appropriate biostimulants exhibit improved tolerance to drought, salinity, diseases and nematodes, just to mention a few examples.

RW: So if plants are showing any form of stress, related to nutrition, biostimulants can help. Let's take an example of chlorosis. This is usually due to a lack of iron (and manganese) and can be solved by use of a chelated iron. However, frequently there is enough iron in the soil and a biostimulant will enable the plant to take up the iron already available in the soil.

RS: Let me add that the use of biostimulants is effective to implement and integrate plant management practices. Fewer pesticides are generally required when biostimulants are employed.

Biostimulants have become, for many turf managers, an integral part in turf management practices, though fertilizers will continue to be essential in the culture of turf grasses. In appropriate uses fertilizers may actually cause a negative influence on the growth of a field. For example, high nitrogen fertility of bentgrass during high temperatures may stimulate foliar growth and increase respiration, thus causing a significant reduction on non-structural carbohydrates. This, in turn, could reduce the endogenous antioxidants causing senescence. Appropriate biostimulant treatments would enhance antioxidant (such as Vitamin E) development and condition the grass to tolerate the stress of heavy fertility and hot weather.

RW: Biostimulants supplement NPK. The attempt to get the same benefit by just increasing NPK can be disastrous. Nitrogen, beyond a certain point, weakens the root system, which is the most important part of the grass plant.

RS: And such high fertility of stolonferous grasses in some cases increases thatch development, causing anaerobic root zones. This is occurring with the new vigorous bentgrasses. The use of certain biostimulants has been shown to reduce the need of high fertility to provide the required turfgrass quality and reduce thatch buildup and the anaerobic black layer syndrome.

Susan L. Doyle is the advertising manager for ROOTSinc.

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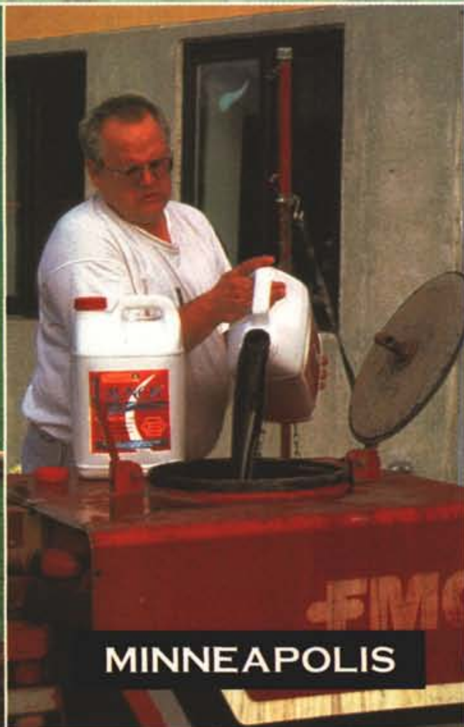

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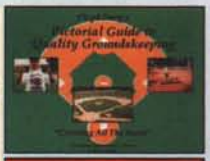

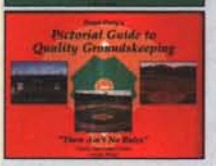

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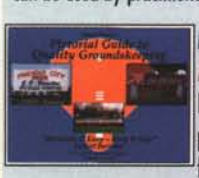

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STMA in Action

Sixty participants from many different STMA Chapters converged at the athletic facilities of the Fighting Irish on the University of Notre Dame campus on Tuesday, July 11, 2000. Attendees at this multi-chapter Sports Turf Workshop represented the Indiana, Midwest, Michigan, Ohio, Iowa and Wisconsin Chapters. Three additional chapters were represented by program speakers: Rich Moffitt, STMA President and Gateway Chapter member; Tim Moore, STMA secretary and MAFMO Chapter president; and Dale Getz, CSFM, Certification Committee co-chair and a Minnesota Chapter member.

The seeds of this multi-chapter Sports Turf Workshop were planted at the STMA Annual Conference last January. Members from the Indiana and Midwest Chapters discussed a joint chapter meeting and Getz, at that time athletic facilities manager for the University of Notre Dame, suggested the University's campus as the site. As the discussion continued, members of several other chapters expressed interest and were quickly welcomed, and the multi-chapter workshop began to take shape.

Lots of planning followed, spearheaded by Terry Updike of B & B Fertilizer as the representative of the Indiana Chapter and Ted Baker, CSFM, as the representative of the Midwest Chapter, who jointly sponsored the event, and Dale Getz, CSFM, initially in his Notre Dame position, and later, after accepting a position with the Toro Company, as liaison with the University.

Many pitched in to make the event a success. As the date drew nearer, STMA Headquarters became the central contact point. Mike Trigg and Mike Pavelich of the Waukegan Park District and Midwest Chapter developed the brochure. Terry Updike connected with Dr. Clark Throssell, assistant professor of Agronomy with Purdue University, who agreed to assist with the educational program. Updike also made the lunch arrangements and arranged and sponsored the afternoon break. Getz agreed to conduct the on-field tours of the Notre Dame Football Stadium, Loftus Sports Center, ECK Baseball Stadium and the Ivy Softball Complex and coordinated the event with the University. Getz also made the arrangements for the morning continental breakfast and morning coffee break, co-sponsored by Kenney Outdoor Solutions and the Toro Company. All the organizers spent phone time contacting potential attendees. Baker arranged the Midwest Chapter group transportation and Boyd Montgomery, CSFM, arranged the Ohio Chapter group transportation.

After registration and the opportunity to meet and network, the group moved into the University of Notre Dame's football media center. It's located within the Football Stadium and is a familiar site due to the televised post-game player and coach interviews. Terry Updike opened the morning sessions with a welcome to attendees. Next, Rich Moffitt gave an update on STMA. Tim Moore then gave a presentation on "Baseball Infields—Build Them for Optimum Playability and Easy Maintenance," an issue of daily concern in his position as ballfield coordinator of the Maryland National Capital Parks & Planning Commission. STMA Executive Director Steve Trusty gave an update on the Certification program. Dr. Throssell wrapped up the morning program with a presentation on "Species and Seed Decisions for Athletic Fields."

The group then moved to Stadium Press Box to enjoy a great lunch while overlooking the football field. Following lunch, Getz gave a brief overview of the fields to be toured and then led attendees down to the football field for an in-depth discussion. As the group walked from venue to venue, Getz first outlined the field's construction and development and pointed out key areas of the maintenance program. He then invited questions and comments. Dr. Throssell also assisted in this interactive, in-depth, on-field discussion.

Many took advantage of the photo opportunities at mid-field of the football stadium and in the football locker room. While a good time was had by all, as always at STMA meetings, the opportunity to learn, discuss problems and solutions, share ideas and network was the true heart of the program. Plans are already underway for next year's multi-Chapter meeting.

Chapter News

Mark your calendars now for STMA's 12th Annual Conference & Exhibition, "Upward and Onward," to be held Jan. 17-21, 2001, at the Tampa Marriott Waterside and the Tampa Convention Center in Tampa, Fla.

Arizona: The City of Peoria, Arizona, will host the Arizona Chapter Athletic Field Maintenance Workshop on Sept. 15. Registration begins at 7 a.m. with the program hours 7 a.m. to 3:30 p.m. For information on this event or