

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.



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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 managers with access to an applicator could use it. Pelleted paper mulches now give the sports turf manager another tool for seeding projects.

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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 above-ground 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.

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September 2000 23