



Hydraulic mulching was used to establish this athletic field at the Punahau School in Honolulu, Hawaii. Photo courtesy: Dr. Charles Murdoch, University of Hawaii.

Establishing or Improving Turf with Hydraulic Seeding

By Daniel Ingham and Mike Augsdorfer

Hydraulic planting, which includes both sprigging and seeding, is a unique and effective means of establishing an athletic surface or improving an already established field. The process is somewhat like spray-painting a surface: The operator merely points and shoots the solution (called slurry) directly onto the soil. The slurry often includes fertilizer and mulch, along with water, so all the necessary ingredients for successful growth of turf are included in one application. The mulch and water help to keep the seeds or sprigs in place, resisting the erosion impact of irrigation and rainfall.

The cost of hydraulic planting falls somewhere between traditional mechanical planting and sodding. Basically, the tradeoff is time versus dollars. A facility that can afford to spend a great deal of money on establishing a new field — such as professional sports teams or major college athletic facilities — will usually opt for having the field

completely sodded. A facility that must minimize expenses will usually go with mechanical planting, which is less consistent and takes more time. Hydraulic planting, however, is not substantially more expensive than mechanical planting and can provide a good-quality athletic surface with less “downtime” than mechanical planting.

Michael Lansdale, owner of Metamorphosis Hydroseeding in Santa Cruz County, CA, says hydraulic seeding is a very effective way to establish a consistent turf stand quickly and efficiently. “Hydroseeding is a process of blending seed with water and fertilizer and a mulch component and tackifier, a sort of organic glue,” he explains. “It distributes the seed evenly and gives the seed protection. The mulch component gives it a moisture-holding ability.”

Scott Johannes of Sanders Hydroseeding, Inc., in Santa Ana, CA, uses a similar method. “We add a mulch — either recycled paper or virgin wood — into the tank, and that holds moisture to give the seed a better chance of

germinating,” he explains. Johannes says that hydraulic seeding is a cost-effective method for seeding large areas and adds that hydromulch can act as a nurse crop around a spot sprigging to encourage the spreading of the turfgrass.

Hydraulic planting is most popular in the Southwest, particularly for establishing bermudagrass fields with sprigs. Metamorphosis Hydroseeding and Sanders Hydroseeding are just two of several companies that perform complete hydraulic planting services in California. “We do sports fields all the time,” says Lansdale. “It’s very effective with all sorts of turfgrass varieties.” The company recently used common bermudagrass to seed a football field for Piedmont High School, east of San Jose, CA.

Johannes says Sanders Hydroseeding has also been involved in a number of sports field projects, including several practice fields at Citrus College and a youth athletic park for the city of Mission Viejo. The company also does extensive work on golf courses, including hybrid

bermuda sprigging on the south golf course at Coto de Caza, CA.

Another company that has worked on a variety of projects throughout California is Southern California Hydroseed and Hydromulch, Inc., of Temecula, CA. The company has worked on a number of different landscape projects, including high school athletic fields in Bakersfield and many golf courses in Southern California. Owner Mike Santoro uses "rotor-stator" pumps that can handle sprigs with minimal damage and maximum productivity. "These pumps can push through as much as 1,000 feet of 1 1/2-inch hose, allowing the applicator to move freely about and minimize the distances traveled by the heavy equipment on prepared surfaces," he explains. Santoro adds that large areas can be sprayed from the perimeter, so workers and equipment will not disturb the final grade.

Of course, California isn't the only place where hydraulic planting is popular. TransAmerica Hydroseeding of Vermont handles projects throughout the New England states. "One reason is the places you can get to and, more generally, the

price," says Yvon Montour, president of TransAmerica Hydroseeding. Montour says his company can seed or sprig up to 10 acres per day with results that are as good as or better than standard mechanical seeding or sprigging methods.

Briargreen, Inc., of Kent, WA, handles many hydraulic-seeding projects in the Pacific Northwest. "A lot of the surfaces are sand, and one of the advantages of hydraulic seeding is that moisture retention agents can be added, so the seed can be kept wet," says Carol Davis, general manager of Briargreen, Inc. "We have trucks that shoot about 250 feet, so we can access the whole field from the perimeter. A typical three-acre field can be shot in six hours." For overseeding Davis recommends mowing the areas to be overseeded very short. The hydraulic-seeding mixture is then made thinner, so that it will slide around the established grass and settle. Briargreen recently completed a 12-acre project at a junior high school in Federal Way, WA. The company has also worked with Lakota High School in Federal Way and various Little League fields throughout the state.



Hydraulic seeding is also an effective means of overseeding areas of thin or worn turf. Photo courtesy: the Broyhill Company.

Mike Hebrard, president of Athletic Field Design in Portland, OR, recommends hydraulic seeding for large areas of turf. "If you have proper irrigation, you're going to be in good shape," he notes. "It gives you better protection

continued on page 20

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Hydraulic Seeding

continued from page 19

from wind, excessive rain, birds, etc." Hebrard says many times hydraulic seeding is specified for a particular project, especially if the job involves growing grass on slopes along the side of a field. In many cases hydraulic seeding is used to establish fields that are not irrigated in the fall because rain is so plentiful at that time. "Some guys will let their seeds soak in the tank overnight to get some germination," he adds.

Do It Yourself

Although hydraulic planting is usually contracted out to a company that specializes in this type of work, turf managers who frequently overseed or need to reestablish fields from time to time may want to consider purchasing hydraulic-seeding equipment and doing the job themselves. Hebrard thinks hydraulic seeding may be the easiest way to establish turf. "Anyone seeding for the first time can get better, more even distribution with a hydroseeder than with a dry seeder," he concludes.

Hydraulic seeding is the most cost- and labor-efficient method of seeding, once you have the equipment. Landscape contractors have found it easier and cheaper to hydraulically seed turf than to plant it the old-fashioned way. It is also cheaper than sodding, while offering some of the benefits.

A hydraulic seeder consists of a mixing tank, a pump, a motor and a hose. The prime power source is commonly a gasoline or diesel engine used to drive a pump and agitating system, which keeps the slurry mixed within the tank.

Tank agitation systems use either a recirculation pump or rotating paddles to keep the slurry mixed within the tank. Recirculation systems agitate the tank solution by using the main pump to divert some of the flow back into the main tank. While this method is efficient, recirculation pumps can damage some of the seed when the contents of the tank are circulated through the pump impeller.

In the paddle system, the motor, in addition to driving the pump, also drives a slow-speed paddle that gently keeps the seed slurry mixed and in suspension. However, paddle-system machines are generally more expensive.

Tank capacities range from 100 to 6,000 gallons, and the small units can be mounted in the back of a pickup truck or

on a small trailer. The cost of these small pickup truck- and trailer-mounted units today ranges from about \$2,000 to \$10,000.

Slurry Composition

Hydraulic seeding is not complicated, but the process is not well-understood either. The procedure entails mixing grass seed, mulch material, fertilizer and materials such as tackifiers with water. This mixture is sprayed under pressure onto the desired surface. A green dye is also mixed with the material to allow the operator to see where it has been applied and for aesthetic value until the seed germinates.

Better seed-to-soil contact and the addition of fertilizers to the mix helps to increase the germination rate. Pre-soaking seeds in the tank can help speed germination as well.

Repair, renovation and overseeding are easily accomplished by prepping the area prior to application and reducing mulch levels to avoid smothering existing grass. Preparation consists of cutting grass very short prior to application; dethatching and aerating will increase soil-to-seed contact and promote quick, deep rooting. For these types of applications, a reduced amount of mulch will allow the seed/mulch mix to settle between existing grass for better seed-to-soil contact.

Hydraulic planting mulch is the material that makes hydraulic seeding possible. This water-laden mulch travels farther than either the water or seed alone

would. Once on the soil, the mulch creates a "mat" that holds the seed in place, retains soil moisture, resists wind and water erosion, and creates a favorable environment for seed germination.

Seeding results are directly proportional to the application rate and density of the mulch used. More mulch is usually better than less. Mulch materials can be wood fiber, chopped newspaper, chopped corrugated cardboard, paper mill sludge or some combination of these.

A tackifier is a powdered organic glue that, when added to the seed slurry, serves to keep the mulch blanket in place and help it to withstand wind and rain erosion. On a flat surface, such as a sports field, tackifiers help reduce dust and prevent high winds from drying out the mulch or blowing the seed away.

Virtually any fertilizer formulation can be incorporated into the hydraulic-seeding slurry. Applying fertilizer and other material through a water solution offers materials flexibility, application flexibility, and reduced manpower requirements. Even dusty, hazardous materials such as soil sulfur, necessary for the correction of high calcium situations, can be spread through hydro-fertilization. Other materials can be applied, including insecticides and herbicides. Also, soil amendments such as lime and gypsum, or organics such as sludge and humus can be applied with or without the seed.

Because many small seeders are designed similar to a standard sprayer, they can be used for purposes other than hydraulic seeding. They can be used to apply large amounts of liquid fertilizer, herbicides, wetting agents and liquid-soluble soil amendments if other sprayers are not available or out of service. They can also be used for emergency irrigation if the regular irrigation system shuts down for any reason. A change of nozzles is all that is required for some of these alternative applications.

Whether you do it yourself or contract the job out to a company that specializes in this type of work, hydraulic seeding is an effective way to establish turf for a new field or to overseed a previously established field. Hydraulic seeding is particularly useful in areas that are vulnerable to erosion by wind or other natural events. If complete sodding is too expensive, hydraulic seeding is a cost-effective alternative for establishing turf on an athletic field. □

Hydraulic-Seeding Equipment Manufacturers

Bowie Industries, Inc.,	(800) 433-0934
Broyhill Company,	(800) 228-1003
Conwed Environmental,	(800) 366-1180
Easy Lawn, Inc.,	(800) 638-1769
Finn Corporation,	(800) 543-7166
GeoQuip, Inc.,	(800) 848-1212
Hydro Turf Inc.,	(708) 551-1555
Hydro-Turf & Associates,	(612) 452-6749
James Lincoln Corp.,	(800) 551-2304
Jiffy Equipment Corp.,	(812) 333-2428
Klusmeier Inc.,	(800) 659-9967
LESCO Corp.,	(216) 333-9250
Reinco Inc.,	(800) 526-7687
TGMI, Inc.,	(800) 241-8464
Turf Products, Inc.,	(612) 452-6749
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