



The finished job.

Need Insurance? Hydromulching Is One Good Policy

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AGRICULTURE HAS always been a risky business, but in recent years, every business has become tremendously more risky as insurance horror stories go on and on. Not so long ago *Time* ran a cover story "Sorry, America, Your Insurance is Cancelled." Everyone is affected and everyone is paying more and more for this litigious society.

That said, it's nice to know there are still some things in life that are relatively simple and easy to understand. There are still some things we can do to protect an investment and to ensure success. For example, if you are going to seed some new greens, or a golf course, or hillsides, or even wildflower areas, there's an insurance policy you should know about. It's called hydromulching!

Hydromulching got its start in the early 1960s when state highway departments learned that mulch was an asset in establishing grasses quickly and economically on non-irrigated hilly terrain. The protective mat provided a favorable micro-environment for seed germination and growth while also protecting the seed, fertilizer, and top mix from wind and rain erosion.

Historically, a light straw mulch has been used on golf greens for a long time to stabilize the soil and to gain improved germination. Straw or some similar material is applied by hand over the entire green surface immediately after seeding. It isn't an easy job, particularly in determining the proper thickness and in applying the material uniformly. Of course, once germination takes place,

the straw cover has to be carefully removed and in a timely manner to avoid both disease and smothering the young grass. The straw frequently contains weed seeds, which contaminate the green. Under high winds, it can be blown away. For all of these reasons, it is rarely used today.

Hydromulching is becoming more and more popular. With the current shortage of bentgrass seed and with architects designing greens with more undulations and contours, hydromulching takes on new importance. Hours of careful labor and expensive seed, soil, and fertilizer can be washed away by a sudden storm, irrigation malfunction, or high winds. Not only is repair, re-grading, and reseeding expensive, but any delay in the construction schedule

has incalculable consequences. Field experiences also show hydromulching increases total seed germination, because evaporation rates and soil moisture levels are better controlled. These considerations increasingly assume precedence over the extra costs of hydromulching applications.

The practice of hydromulching greens is becoming especially prevalent along the Atlantic seaboard and in the Southeast in the fall. It is a good tool to help ensure fast, uniform turf establishment, particularly on sandy soil mixes. These tend to dry out, and hydromulching helps hold some moisture for the new seed. Clubs seem interested in this kind of insurance, because it frequently pays dividends in the form of saved labor and time.

HYDROMULCHING, fortunately, need not be a significant cost factor, since the process doesn't require much labor or equipment. However, several points should be considered before taking out this insurance policy on your course:

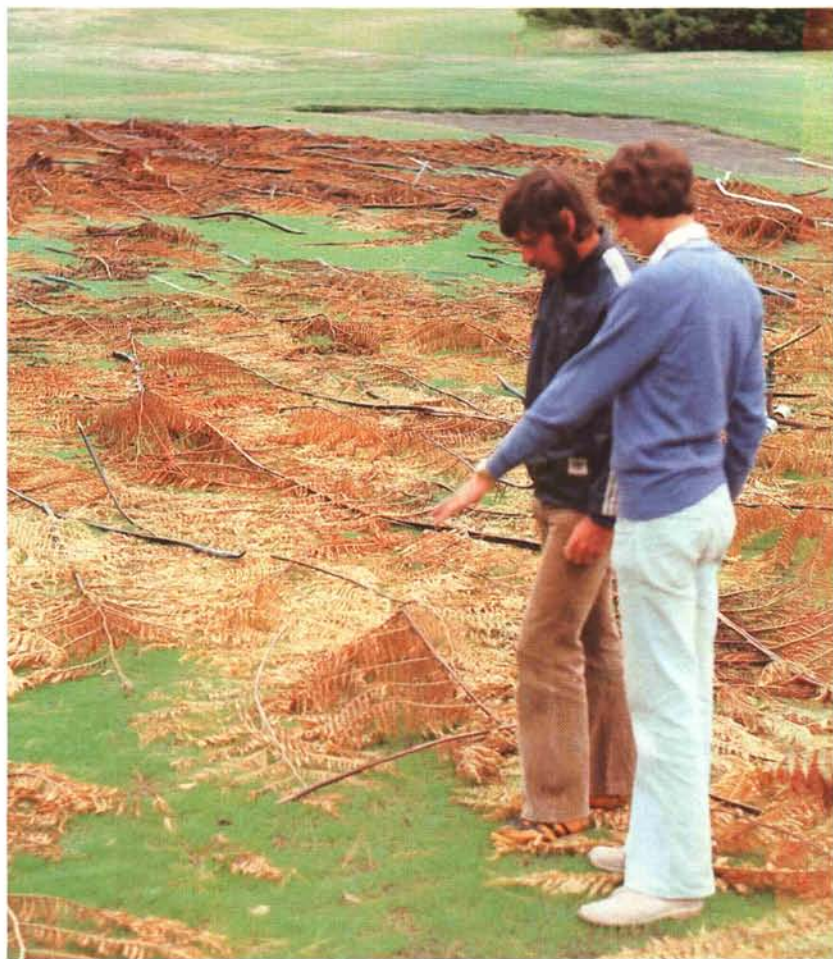
1. Applying hydromulch to a putting green is an art. The most important variable is a skillful operator. Not all operators have the knack to do the job correctly and to apply the proper amount of material.

2. Although hydromulching materials are much improved, no mulch is perfect. All mulching materials are subject to movement in the event of heavy rains. The chances of erosion are significantly less, however, if the proper hydromulching technique is followed.

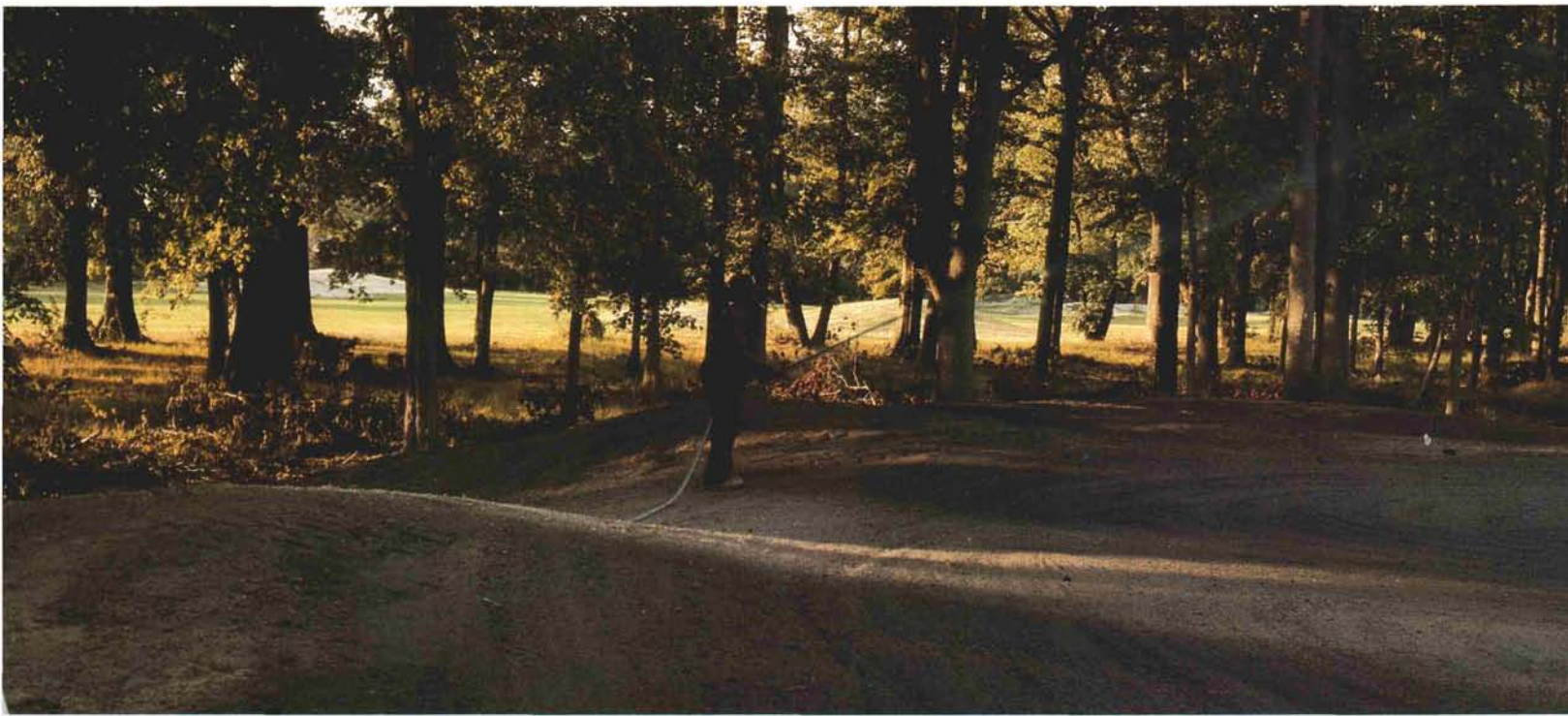
3. The putting green area should be seeded and fertilized prior to the hydromulching operation. Bentgrass seed is too small to be included in a tank mixture with the mulch. The mulch itself may tie up the seed and germination will occur in the mulch layer instead of in the soil. Seed contact with the soil is important for the highest percentage germination.

4. The germination rate will be faster and more uniform by lightly rolling the surface after seeding and before hydromulching. The purpose of rolling is to firm the surface. When the mulch is degraded and mowing begins, smoothness will be significantly better.

Selecting a good operator for your hydromulching job is a most important step. Most golf courses hire an outside contractor for both his experience and machinery. Seldom is this work done by the golf course crew. The hydraulic mulcher is the basic piece of equipment.



(Above) Straw or, in this case, palm leaves were used in years past as a cover for new seed. (Top) The paper mulch is compressed and very dry when loaded into the tank. (Opposite page, top) Applying mulch with a hose operated by a remote valve. (Bottom) Most paper mulches are recycled newspapers or corrugated cardboard.



It is a fairly simple unit with an agitation system for mixing and keeping the mulch in suspension, a pump with a gun for application, and a gasoline engine to power the agitator and the pump.

An experienced operator will always clean the tank as a first step. Too often the hydraulic mulching equipment has been used previously for a highway roadside development, private or commercial real estate sites, or park con-

struction. These jobs use grasses and fertilizers that are undesirable for golf courses, especially putting greens. Filling the tank with water and discharging through the nozzle is always a good idea.

Once the tank is clean, it is important to prepare the mix properly. A good operator will always preside over the tank-filling operation. To start, the tank is loaded half full of water. Usually of

at least 500-gallon capacity, the tank is trailer-mounted and pulled behind a tractor or truck. The mulch is added through the loading hatch while the tank continues to fill with water, and it is thoroughly mixed with the water by agitation in the tank. If too much mulch is added, the nozzle might clog.

A nozzle is selected to produce a fine mist, not a coarse spray. The pump is generally set at full pressure (100-150 psi) to maximize the shooting range (30-50 feet). With a fine mist nozzle and proper pump speed, a uniform application of mulch mat can be applied.

Once the load is prepared, the operator is ready to "shoot" the green. The mulch is applied either from a tower-mounted gun on the tank, or for even better control, through a hose and a remote valve. An experienced operator knows exactly how much mulch to apply over a new putting green, all the while considering wind direction and speed. The operator can visually meter his pattern and rate by the color and the thickness of the mulch. Mulches contain a water-soluble, harmless green dye for application and aesthetic purposes. The color eventually disappears as the mulch decomposes. If the operator applies too much mulch, the soil surface may be sealed. This impedes the seedlings' growth. The goal is to apply just enough mulch so that a degree of anchoring and protection is produced for the seed without having it buried.

TABLE 1.
A Few Selected Commercial Paper and Wood Fiber Mulches

Brand Name	Type	Ingredients
1. Cellin Mulch	Ground Newspaper	Wetting Agent and Dye
2. Cellin Plus	Ground Newspaper	Wetting Agent, Dye, and Tackifier
3. Cellin K	Ground Cardboard	Wetting Agent and Dye
4. Cellin K Plus	Ground Cardboard	Wetting Agent, Dye, and Tackifier
5. Super South	Ground Newspaper	Wetting Agent and Dye
6. Spray Mulch	Ground Magazine	Wetting Agent and Dye
7. Weyerhaeuser	Ground Cardboard	Wetting Agent and Dye
8. Sunlock	Ground Newspaper	Wetting Agent and Dye
9. Terra Mulch	Ground Newspaper	Wetting Agent and Dye
10. Hydro-Loc	Ground Newspaper	Wetting Agent and Dye
11. Conweb	Wood Fiber Mulch	Wetting Agent and Dye
12. Conweb 2000	Wood Fiber Mulch	Wetting Agent, Dye, and Tackifier

SEVERAL MULCHING materials other than straw are available for golf courses today. Paper products or ground wood fiber are the most popular. The first paper mulch was produced in 1961. Most paper mulches are recycled newspapers, corrugated cardboard, or magazine paper. Those derived from newspapers or corrugated cardboard are considered to be the best. The corrugated cardboard source has longer wood fiber, offering more stability and protection for the seed. A paper mulch will contain no germination- or growth-inhibiting substances. It is also weed free. The application rate is 1,000 to 1,500 pounds per acre over bentgrass seed. The higher rate is advised for more undulating greens. More than ten different commercial brands are available today (Table 1).

The wood cellulose mulch derived directly from a natural wood source is another form of wood cellulose fiber. It has the advantage over paper mulches by being even more effective on potentially high-erosion areas. However, these are significantly more expensive and the gently sloping terrain of most putting greens does not justify the extra cost. If a wood cellulose mulch is selected, the application rate is 10 to 20 percent less to achieve the same results as a paper mulch.

There usually is not a tackifier or sticker-type material included with the mulches. These erosion-control agents are usually purchased separately and added to the mulch, although some manufacturers offer mulches with a tackifier. The water-insoluble tackifier is added to the tank at the rate of 5

gallons per 500 pounds of mulch. This ingredient is very important not only in holding the individual mulch fibers together, but also allowing them to hold more tenaciously to the putting green surface, particularly on greens with severe undulations. This helps to create a more crusty surface that is less susceptible to erosion from excess water. If site conditions are ideal and excessive moisture is not expected, a tackifier is unnecessary.

A wetting agent is also mixed into all paper and wood cellulose mulches, enhancing the flow of the mulch from the tank through the nozzle. The wetting agent reduces the surface tension of the water, so the mulch slurry will pass through the equipment better. Furthermore, many of the mulches are compressed into a bale for packaging purposes, and the addition of a wetting agent helps wet the paper and wood mulch chunks as they are loaded into the mixing tank. The manufacturers remove as much of the moisture from the mulches as possible for easier shipping. Consequently, the material entering the tank is usually very dry.

Once the mulch is applied, all that remains is to keep it moist through bentgrass establishment. Less water than usual is needed during the germination stage since the evaporative water loss from the soil surface is reduced. Most mulches reduce the syringe frequency from four to five times a day down to one or two times.

The bentgrass seeding rate for greens is 1.5 pounds per 1,000 square feet. Most superintendents have noted germination in four to five days after hydromulching,

whereas bentgrass usually germinates in seven to ten days in favorable weather without hydromulching. A uniform turf cover is usually achieved in four to five weeks, using less seed with a higher germination yield encouraged by the properly applied mulch.

Since the sand in the upper profile is stabilized sooner using a mulch, putting green mowers pick up less sand with the first mowing, which reduces the need for extra lapping on the mowers.

WHAT IS THE COST of this insurance? If it is figured on a per-acre basis, actual mulching costs are not great. Paper mulches range from \$200 to \$240 per acre, while the wood cellulose mulches cost between \$300 to \$340 per acre. If a tackifier is added to the tank mixture, there is an additional \$50 to \$60 per acre. It is usually just as economical to purchase a paper or wood mulch with a tackifier than to add the tackifier separately.

A contractor usually charges \$500 to \$700 per acre for renting the equipment and applying the mulch. The biggest variable in the cost is how far the contractor must transport his equipment to the site. In most instances, the total contracted cost is between \$2,000 and \$3,000 for 18 putting greens. This equates to a range of \$110 to \$170 per green. Expensive? Well, since the basic construction cost of most new putting greens today is \$25,000 or more, this is less than 1/2 percent of the total cost. It seems worth the expenditure.

Because of economic needs or membership requirements, many golf courses must seed their new greens later in the growing season than desirable. This need to stretch the normal seeding season is met to a large degree by hydromulching. The mulch has a buffering effect on the soil temperature in the upper profile. It keeps the soil warmer later into the fall, and it will also protect the new seedlings during high summer temperatures.

Hydromulching is a useful tool worth consideration by golf courses planning to build or reconstruct putting greens. It helps establish bentgrass more uniformly, and it protects against seed movement. It saves labor and time. The short supply and high cost of bentgrass seed, not to mention the benefit of reduced irrigation, uniform establishment with faster and higher germination rates, and reduced erosion possibilities, makes hydromulching a valuable tool in successful putting green establishment. It is a proven management technique.