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fairway will not become firm until the thatch has been removed to a satisfactory level. Have the fairways been deep-tine aerified?



Deep-tine aerification will break up compacted soil and create waterways for water to migrate into the soil.



Have problems with trees been addressed? Tree roots will compete with turf, sacrificing the turf quality of the fairway. Trees will need to be pruned, root pruned or removed prior to amending the fairway in order for topdressing to be most effective.



Has adequate in-ground drainage been installed? If not, drain lines should be added to the area in order to remove excess water from the playing surface.

Topdressing fairways does not make water go away; it creates a buffer zone for the water to sit in before it works its way down to the heavier soil beneath. A firmer surface is created because the water is not sitting up on top and you are able to play the surface and maintain the grass.

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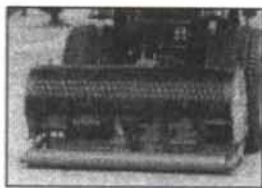
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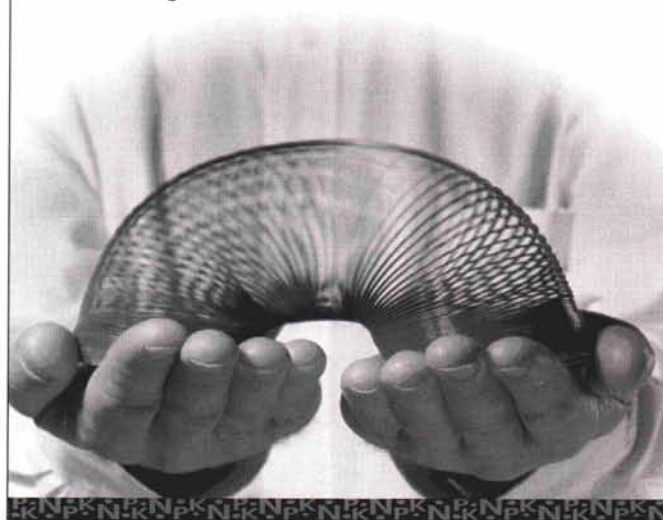
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## Benefits of Topdressing Fairways

With thatch control, a firmer playing surface between drain lines, and leveling and smoothing of the playing surface, you will be able to mow fairways lower without scalping undulations as long as they are not severe. Another added side benefit that has been observed in the Pacific Northwest is worm control.



Larry Gilhuly, director of the USGA Northwest Region, has noted that "for the past 16 years, golf course superintendents in the Pacific Northwest have been reporting significantly reduced earthworm populations when they conducted regular sand topdressing programs on their fairways. Complete removal? No, but populations are reduced enough to eliminate the topic as an issue. Courses where 0.5" to 1" of sand has been applied annually show noticeable reductions in earthworm populations. Worm populations are greatest in light- and medium-loam soils. Smaller populations of earthworms are found in heavy, poorly drained clay soils and in coarse, sandy soils. Sand is abrasive and susceptible to drought influence—two factors antagonistic to worms."

## How Much Does It Cost?

The three components of fairway topdressing incurring costs are equipment, materials and labor.

## Equipment

I list four brands of topdressers.

- **Tycrop MH-400** – 4-cubic-yard capacity. Tractor requirements 27 hp or larger. Hydraulics 6gpm.
- **Dakota Turf Tender 440** – 4.2-cubic-yard capacity. Tractor requirements 40 hp or larger. Hydraulics 6gpm.
- **Turfco Mete-r-Matic LA4** – 4-cubic-yard capacity. Tractor requirements 45 hp or larger. Hydraulics 6gpm.

- **Bannerman Turf Topper** – 3-cubic-yard capacity. 27 hp or larger. PTO on tractor required.

The price for the equipment we purchased is as follows. Tycrop MH-400 topdresser, \$17,000. John Deere tractor model 5210 (42 horsepower), \$19,379. These items were purchased in 1998.

## Material

In our case, material used is a locally obtained sand priced at \$16.75 per ton, delivered.

- Sand = 1 cubic yard = 1.3 ton
- $1/16" = 0.0625" = 0.0052'$
- 1 acre = 43,560 square feet;  
 $43,560 \times 0.00521 = 226.94$  cubic feet/acre / 27 = 8.4 cubic yards x 1.3 = 10.92 ton/acre to get  $1/16"$  sand  
 $10.92 \times \$16.75 = \$182.91/\text{acre}$ .
- Chicago Golf Club = 35 acres;  
 $35 \times \$182.91 = \$6,401.85/\text{application}$

A total of eight applications have been made since the fall of 1998 for a total of 0.5" material applied to the fairways.

## Labor

Total man-hours to topdress 35 acres of fairways = 60. 60 hours x \$10.50/hour = \$630/application. \$18/acre for application.

## Total Costs

- Labor/application = \$18.00/acre
- Material/application = \$182.91/acre
- Fuel/application = \$0.25/acre
- Equipment cost/application = \$0.42/acre

Total = \$201.58/acre/application

## Sand Selection

Be sure to choose quality sand for topdressing. Make certain that the sand you are using is washed free of silt and clay contamination. Sand that is too coarse will result in conditions that are droughty. Sands that have excess fines are even worse and simply do not address the excess-moisture issue. Choose the right sand even if the cost results in less area being topdressed.

For years, green and tee topdressing programs have generated positive results. Fairway topdressing is an extension of those programs to larger areas. Make sure that you have enough storage area for the sand. The delivery trucks are large, averaging 21 yards of material each. You need to have adequate space to store the sand where it will not become contaminated.



Also, set up multiple staging areas if possible to reduce the time spent traveling from the sand pile to the fairway.

Many attachments are available for the topdressers. These include a two-way conveyor, a swivel kit for the conveyor and twin-spinner attachments. The topdresser/material handlers can replace some of the work trucks perform, resulting in greater efficiency and less damage to sensitive areas.







When topdressing, each pass is approximately 40' wide. Be sure to overlap slightly on the previous pass of sand.

The material can be incorporated into the areas during deep-tine aerification. Heavier applications are possible in the spring and fall when smothering is not a factor. Dragging the material is no different than brushing other areas that have been topdressed, such as tees and approaches. A steel drag mat or brush works well to knock the sand into the turf. In some areas, hand-brooming will be required for excess overlap or heavy accumulations of sand.

*(continued on page 16)*

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Be sure to have spare reels for your mowers, and be prepared to grind your reels following topdressing. In some instances, the sand will dull the blades of mowers if it has not been worked into the turf thoroughly or if a heavy application has been made.



### Guidelines for Starting

Begin in a small area with five to 10 acres. Once you start, don't stop—apply sand to the turf consistently. The program lasts three–four years or until the desired level of 3–6" of sand has been applied to the area. Fairway topdressing is not a panacea; good drainage to the area is essential prior to beginning the program. Localized dry areas will be created with topdressing fairways as a dry profile is being created.



These can be alleviated through the use of wetting agents and hand-watering.

### What Have We Learned?

Core aeration can be detrimental to the building of sand on fairways unless the cores are removed. Avoid mixing heavy soil with the sand if a sand cap is desired. Core aeration will dilute the effect of the topdressing and lessen its impact while increasing the amount of time required to develop better playing surfaces.

Be sure to budget enough money to make a wide-scale commitment. Fairway topdressing is a costly undertaking and the costs need to be addressed up front, prior to embarking on the project. If you are limited in the amount of money you have, address the worst areas and expand from there. Once the results are visible, the program will take off.

If the earthworm population is large enough, the worms will dilute the sand that is near the surface unless you are religious with applications. You must apply more sand than the worms are able to churn into the native soil.

(continued on page 18)



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It is helpful to have multiple staging areas throughout the golf course to reduce the amount of travel and wear associated with the topdressing equipment. If you are limited to one spot, be sure that the tracks from the equipment are spread out evenly. If you are committing to a large area of topdressing, more than one machine may be necessary to complete the task in a timely manner. Sprinkler heads and quick couplers will require raising. As the sand builds up on the fairways, the irrigation components will become low and require re-leveling.



Purchase a four-wheel-drive tractor. The unit that we have is two-wheel-drive with turf tires. In dry weather, the machine is fine. However, if the loaded tractor is faced with an incline or wet turf, it will slide and break traction.

### Our Present Program

At Chicago G.C., topdressing initially occurred four times a year with 1/16" of sand applied per appli-

cation. Due to the heavy earthworm activity, sand that was applied has been diluted with soil. We budget \$33,000 a year for topdressing material to cover greens, tees, approaches and fairways. This is not enough to apply sand to all of the fairways at the 0.5" - 1" rate recommended.



Presently, we are focusing on six of the wetter fairways, lightly topdressing them through the season with heavier applications of sand applied in the spring and fall with 0.25" of material per application.



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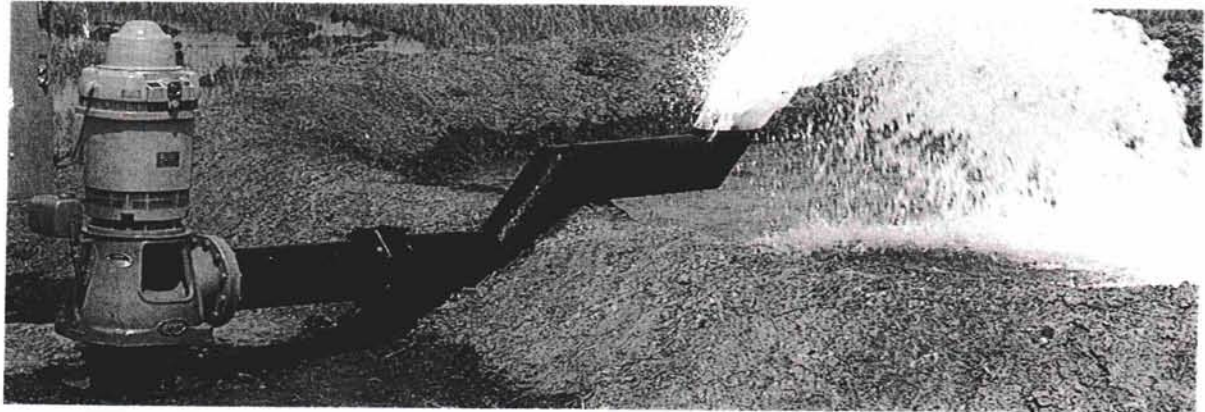
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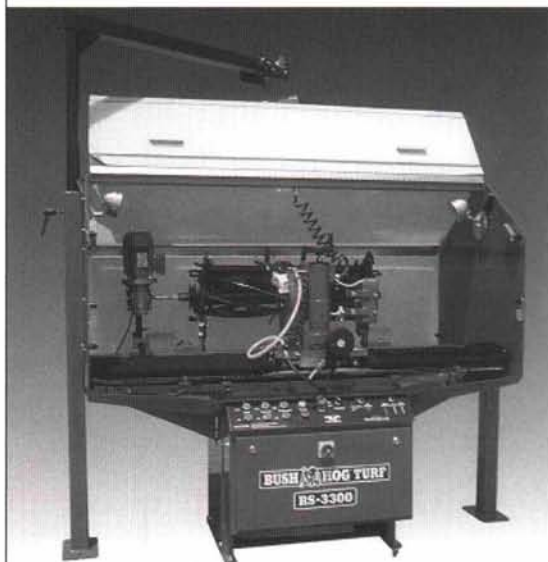
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