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GEOTEXTILES

By David C. Louttit &
Jim Walsh

The geotextile industry has recently expanded the application of geotextile fabrics to include golf course construction and maintenance areas. One geotextile manufacturer, Hoeschst Fibers Industries of Spartansburg, South Carolina, has developed a nonwoven, needlepunched polyester fabric and has tailored it specifically for use on golf courses. Warren's Turf is the local and national distributor for the product, Terra Bond (formerly Tervira Spunbond). Jim Walsh is the local sales rep.

TerraBond is ideally suited for:

1. **Soil Separation** — TerraBond separates layers of soils easily, efficiently and permanently. It prevents intermixing of soils in sand traps and greens.
2. **Drainage & Filtration** — Because of TerraBond's construction, it prevents fine soil particles from entering and clogging drains. It is ideal for constructing french drains and catch basins.
3. **Cart Paths** — TerraBond can be incorporated into both new cart paths or maintenance of existing cart paths.
4. **Erosion Control** — TerraBond provides the necessary separation, filtration, reinforcement and planar flow to significantly reduce erosion of the soil beneath the TerraBond. Maintenance costs are thereby improved, as well as the aesthetics.
5. **Green Blankets** — TerraBond will reduce winter desiccation by protecting the green from winds and acting as an insulating blanket.

A number of clubs in the Chicagoland area have used Warren's TerraBond, and one superintendent who has found it most useful is David Louttit at Oak Hills Country Club, Palos Heights, Illinois.

Oak Hills, an 18-hole public for many years, was redesigned in the mid-70's to a 9-hole Country Club which encircles a plush condominium community. The new course has large hazards on six of the nine holes. The hazards also act as reservoirs for the storm sewer system from the condominiums. However, during periods of heavy rain, the ponds flood their banks, and as flood waters receded, we have experienced tremendous erosion problems with the bank area.

The heavy December rains of 1982 caused the already badly deteriorated banks of the pond on the 9th hole to collapse and it was decided that in the spring of 1983, the pond was to be reconstructed. At this time, we got in contact with Jim Walsh, who provided us with valuable information concerning the use of TerraBond for erosion control and pond construction.

In March, 1983, construction began on the newly-designed pond. The procedure we used follows:

1. Dimensions of new pond staked off.
2. Digging of pond to desired size and contour. The surface area was increased from 3,200 square feet to 8,000 square feet.
3. The slope of the banks were kept as close to 3:1 as possible.
4. Three feet above the desired water line, a trench was cut around the entire pond. The trench, eight inches in width and twenty inches in depth would be used to help hold the new liner in place.

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(Geotextiles) cont'd.

5. Warren's TerraBond 1120 was used to line the entire bank of the pond, from the bottom, to the trench. The TerraBond (which comes delivered on a roll 12.5 feet by 300 feet), was positioned near the trench and held in position by two men. Two other men then pulled the TerraBond down the bank until they reached the bottom. It was similar to pulling down a window shade in your kitchen. The liner was then cut from the remaining roll near the trench, allowing enough slack so the TerraBond could be tucked into the trench.
6. As the sheets of TerraBond were put into position around the bank, they were overlapped six inches to eight inches and held in place with steel hooks. The "U" shaped hooks were made of one-eighth inch steel and had sharpened tips so they could be easily pushed through the liner and into place. As we moved along, the extra liner we had left ourselves was folded into the trench. The trench was then backfilled with soil, which was carefully tapped into place.
7. After all the TerraBond had been secured and the trench had been backfilled, the banks of the pond were lined with rip-rap from the pond bottom to the desired water line.
8. Area around pond was sodded.

Since construction was completed, we have had several more floods, and our new pond has performed beautifully. Erosion control has been 100% effective, and a once troublesome pond, is now a beautiful water hazard.

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Pawpaw: The Forgotten American Fruit

—Agricultural Research, April 1983

Nutritional studies indicate that the American pawpaw (*Asimina triloba*), a long-neglected American native that bears excellent-tasting fruit, may emerge as one of our most valuable fruit trees.

Chemist John P. Cherry of the U.S.D.A Eastern Regional Research Center in Philadelphia, Pennsylvania analyzed the nutritional value of pawpaws and found that their fruit, which is unusually low in moisture content, is actually higher in unsaturated fats, proteins and carbohydrates than three other more common fruits — apples, peaches and grapes. In addition, the pawpaw has exceptionally high levels of the amino acids that are essential to the human diet — over six times the amounts found in the three other fruits tested.

According to Cherry, pawpaws also have high vitamin A and C content. For example, their vitamin A content is about the same as in apples and grapes, and although pawpaws have less vitamin C than do citrus fruits, they have more than twice the amount found in apples, peaches or grapes. Finally, pawpaws are higher in potassium, phosphorus, magnesium, sulfur and iron than the three other fruits tested.

Despite its sweet, pearlike fruit, which has the texture of a banana and a fragrant aroma, pawpaws have not been cultivated widely; they are only found growing in a few home gardens. Pawpaws are shade tolerant, have attractive foliage, and are relatively disease and insect free. Unfortunately, little has been done to improve the species through breeding and selection.