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MARYLAND NOTES CHANGES IN SOD PRODUCTION SINCE 1968

By J. Thomas Gilbert, Jr. and Billy V. Lessley[1]

This is the first in a series of three articles about the structure and costs-returns for sod production in Maryland. This article introduces the sod industry's characteristics in Maryland, the second provides costs-returns per acre for sod produced and marketed on an unharvested basis and the third presents costs-returns data for the integrated sod industry to include production, harvest and delivery. The data are based on a research project conducted for the 1976 crop year through the Maryland Agricultural Experiment Station.[2] The objectives of the project were to: (1) present a general description including size and scope, organization, operation, investment and economic impact of the commercial turfgrass industry in Maryland, (2) develop cost and return data for different sizes of sod farms as well as different systems of harvesting and transporting sod, (3) determine economic profitability of marketing sod by alternative marketing systems, and (4) compare 1976 costs and returns to costs and returns identified in a similar study conducted for the 1968 and 1969 crop years.

In 1976, sod was produced by 63 growers in 16 counties in Maryland. The largest acreage, as well as the largest number of producers, was found in those counties lying within and near the Baltimore and Washington, D.C. metropolitan areas. Montgomery, Howard and Harford counties had 55 percent of the turfgrass producers and 63 percent of the total cultivated acreage. There were an estimated 8,712 acres of sod produced with 2,497 acres of these being harvested and sold. These acreages include an estimated 2,078 acres produced and 611 acres sold by seven producers who chose not to cooperate in the study. Total gross receipts at the farm level amounted to approximately $5.4 million.

The remainder of this article will only report data provided by the "identified" 56 cooperating producers.

The most important variety of sod in terms of acres grown and total sales was a 30-30-30-10 percent mixture of Merion Kentucky Bluegrass, South Dakota Kentucky Bluegrass, Adelphi Kentucky Bluegrass and Red Fescue. Fourteen producers grew 1,179 acres of this mixture and sold 322 acres for $616,515, or an average of $1,915 per acre. This mixture was followed closely by 1,077 acres of the 30-30-30-10 percentage mix of Merion, South Dakota and Fylking Kentucky bluegrasses and Red Fescue. Approximately 368 acres of this mix were sold for $505,432, or an average of $1,373 per acre. Relative to acres produced, the above two variety mixtures accounted for 34 percent of the total acreage grown by the 56 producers.

Since 1969, varieties and especially mixtures of turfgrass varieties grown in Maryland have changed dramatically. In 1969, single variety turfgrasses grown by participating growers accounted for 5,366 acres, or 54 percent of the total acreage. In 1976, single varieties accounted for only 525 acres, or eight percent of the identified acreage produced. The phasing out of single variety turfgrasses by the adoption of multi-varital mixtures has come about for several reasons. At the recommendation of the Turf and Seed Certification Section of the Maryland Department of Agriculture, growers were and are producing mixtures that are more sun tolerant and disease resistant than single varieties. However, the main reason for the dramatic change from 1969 has been the adoption and application of the Maryland Sod Certification Program which establishes certain specifications and requirements pertaining to the composition of variety mixtures.

The 30-30-30-10 and 40-40-20 percent variety mixtures of Kentucky bluegrasses and Red Fescue produced in Maryland in 1976 were sold extensively for use in housing and industrial landscaping development where purchasers were willing to spend more money to establish a nice lawn with moderate management.

Kentucky-31 Tall Fescue with a Kentucky bluegrass variety was used considerably in full sun areas where lack of water could be a problem. In terms of production, most of the Kentucky-31 tall fescue dominated mixes were grown on the Eastern Shore of Maryland.

Common Kentucky Bluegrass, a relatively cheaper grass, has not been recognized as a possibility for certification. It was generally used on small landscape jobs or on large tract housing projects where people were trying to get a quick stand of grass to prevent erosion.

Other grasses such as Tufcote Bermudagrass and Zoysia are specialty grasses which have fairly limited markets and are confined to especially dry areas where it is not too cold in the winter.

The 56 growers who cooperated in this study produced 6,634 acres of turfgrass of which 1,886 acres or 28.4 percent were harvested. The distributions of turfgrass produced and harvested are reported in Tables 2 and 3.

For the study, various farm size groupings were developed to measure difference in structure and cost-return information by farm size. The size groups were: less than 100 acres, 100-150 acres, 151-300 acres, and greater than 300 acres. The grouping resulted in a distribution of a few farms with more than 300 acres and a large number of farms with less than 100 acres of cultivated turfgrass. Eight growers with farms in the largest acreage category

[1]Research Assistant and Professor, Department of Agricultural and Resource Economics, University of Maryland.
[2]Scientific Article Number A2480, Contribution Number 5510 of the Maryland Agricultural Experiment Station, Department of Agricultural and Resource Economics.

produced 48 percent of the 6,634 identified acres in production while 35 growers in the smallest acreage category produced only 17 percent of the total cultivated acreage. Of the 35 growers, 24 had turfgrass operations of 40 acres or less. These 24 produced 427 acres of turfgrass, or only 6 percent of the total identified acreage.

Harvest intensity reported in Table 3 was calculated as a percent by dividing net acreage harvested for each group by the combined net acreage under cultivation for each group. One might expect harvest intensity to increase as farm size increases. However, this was not portrayed in the industry. The largest farms, those with more than 300 acres of turfgrass, accounted for 48 percent of the identified turfgrass grown but harvested only 26.7 percent of their combined acreage, even though they accounted for 45 percent of the identified harvested turfgrass. Farms with 151-300 acres grew 23 percent of the identified turfgrass and harvested 33.7 percent of the acreage within their farm category to account for 28 percent of the State's identified acreage. The smallest farm size category produced only 18 percent of the identified turfgrass in Maryland in 1976, but harvested and sold 29.7 percent of their acreage. Farms with 100-150 acres had the lowest harvest intensity of 22.9 percent and reduced the State harvest intensity for all farms of identified acreage to 28.4 percent. The lack of a uniform harvest intensity or natural increase can be explained by several factors.

First, in the less than 100 acre category, 24 of the 35 farms had 40 acres or less and generally either treated sod as a secondary enterprise or had engaged in the production of sod and could not get it marketed because of problems in the original production of the crop. Interestingly, five of the farms were considering discontinuing production for the 1977 season. Too, a few were speculating on land while using sod as a crop for low maintenance after the initial stages of establishment.

Secondly, six farms in the size group of 100-150 acres of turfgrass had farms or other enterprises large enough to treat sod as secondary. Also, the majority of producers in this group did not strive to produce Maryland certified sod.

Turfgrass producers on the seven identified farms with 151-300 acres sold 521 acres and served to increase the average harvest intensity for all farms. However, six of these seven farms were characterized as having a very good marketing organization. The other grower discontinued business in 1976 and reported selling acreage for a substantially reduced price.

Table 2. Identified Acreage of Cultivated Turfgrass by Size of Farm, 1976

Farm Size (Net Acres of Turf)	Number of Growers	Combined Net Acres of Cultivated Sod	Average Acres Per Farm	Percent of Total Acres Accounted for by Each Group
Less Than 100 Acres	35	1,133	32.4	17.08
100-150 Acres	6	765	127.5	11.53
151-300 Acres	7	1,547	226.5	23.32
Greater Than 300 Acres	8	3,189	398.6	48.07
All Participating Growers	56	6,634	118.4	100.00

[a]There were seven producers who chose not to cooperate in the study.

Table 3. Acres of Identified Turfgrass Harvested by Size of Farm, 1976

Farm Size (Net Acres of Turf)	Number of Growers	Number of Growers Who Also Harvested	Combined Net Acres of Harvested Sod	Average Acres Harvested per Farm	Harvest Intensity (Percent)	Percent of Total Harvested Sod Accounted for by Each Group
Less Than 100 Acres	35	21	337	9.6	29.7	17.85
100-159 Acres	6	4	175	29.2	22.9	9.28
151-300 Acres	7	3	521	74.4	33.7	27.63
Greater Than 300 Acres	8	6	853	106.6	26.7	45.24
All Participating Growers	56	34	1,886	30.5	28.4	100.00

There were seven producers who chose not to coperate in the study.

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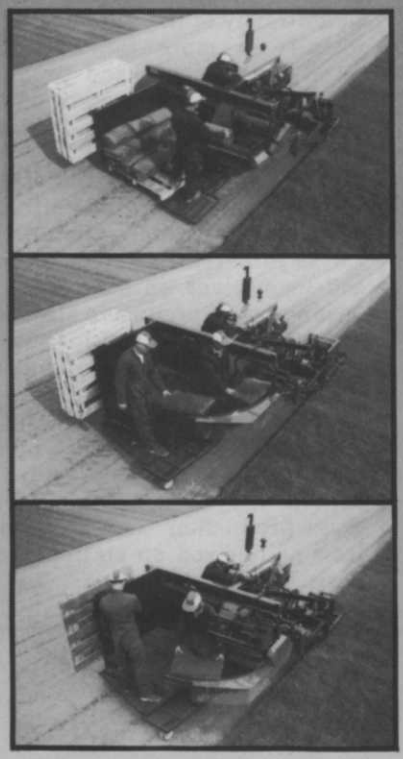

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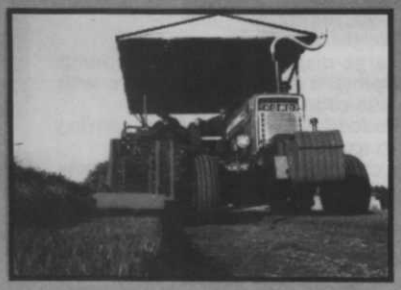

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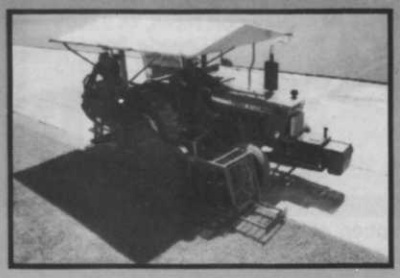

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Maryland Sod Industry

Finally, a factor contributing to uneven industry distribution and different levels of production-harvest intensity was the higher degree of vertical integration which existed on the largest turfgrass farms. Of the eight producers identified in this group, six harvested their own sod and five had a landscape company tied directly to the sod farm. Consequently, a more intensely monitored management and production program was ever present on these farms to insure sufficient quantity and quality of turfgrass.

Table 3 also shows that of the 56 turfgrass producers identified, 34 had integrated their operations so far as to harvest some or all of the sod themselves. In addition to harvesting, some producers also loaded and delivered the sod for the final buyers. The structure and cost-return information for these vertically integrated services will be the subject of the third article while the next article will primarily be concerned with a discussion of turfgrass production costs and returns from selling sod on an unharvested basis. **WTT**

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PROSCAPE

By **Michael Hurdzan,** Ph.D., golf course architect and consultant

Q. *What is your opinion of plastic liners under sandtraps for weed control?*

A. The use of plastic sheets under the sand in sandtraps has been tried for a number of years with varying results. The theory is that by placing a physical barrier between the soil subgrade of the trap and the sand, weeds would be shallow-rooted and easier to control and underlying soils would not contaminate the sand. In theory this seems sensible, but as a practical matter often less than exciting results are obtained.

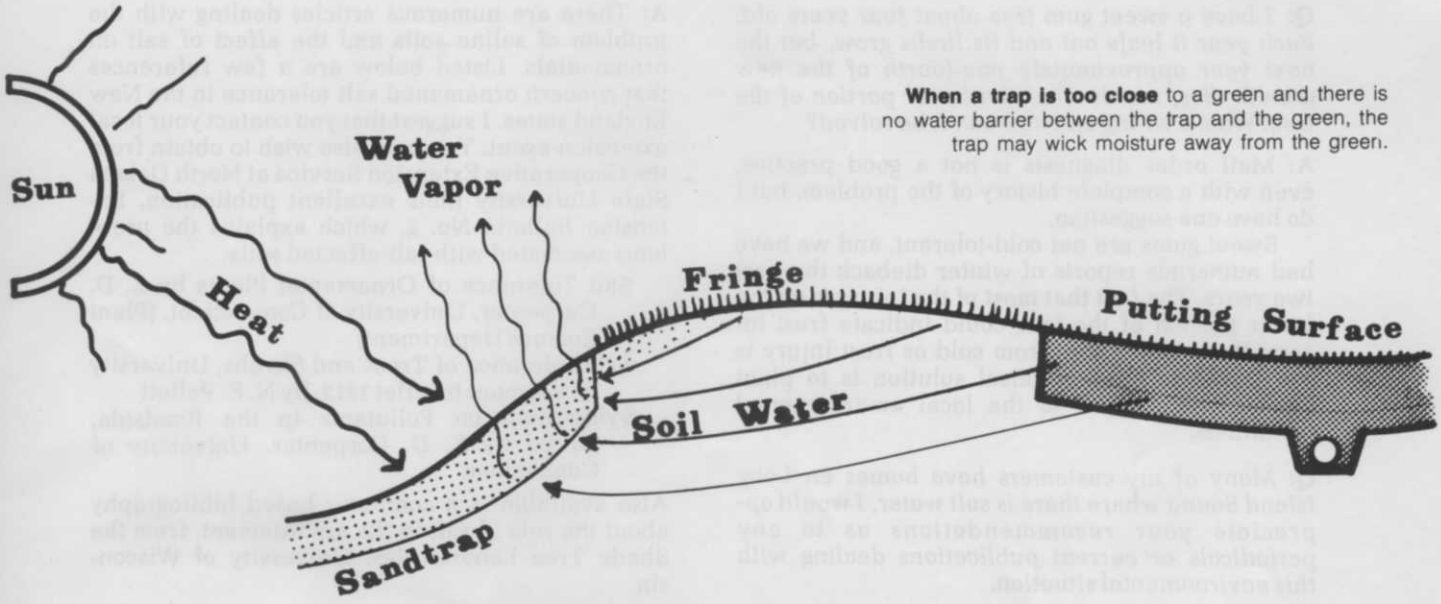
First, there is the problem of properly placing the plastic film on the trap floor. In new construction, it is simply laid on the base grade and the edges cut off just below the sand surface or tucked back into the topsoil. The ideal method is to tuck the edges into the topsoil about 7-8 inches below grade.

Once the plastic sheeting is installed, small holes must be made in the plastic to allow water movement to the tile drains. If these holes are too big they reduce the benefit of the plastic liner and if they are too small then they impede drainage.

After installation of the plastic is complete and the sand is placed over it, wind and water erosion or golfer use can expose the plastic to snagging. This is particularly true on slopes and crowns within the trap that commonly become devoid of sand.

Based on these observations, I suggest one might be better off to use the funds allocated for plastic installation to simply buy more or better sand and try to achieve a minimum sand depth of 6-8 inches, which will resist weed growth and keep the sand surface loose.

There is one instance where I would strongly suggest the use of plastic film as liners for sandtraps. This is where the sandtrap is placed so close to the green that when the sun heats up the exposed sand surface and causes rapid surface evaporation, it wicks water away from the surrounding soils. This situation is further complicated because of the accumulation of sand blasted out of the trap often produces a droughty soil profile. If a plastic liner were installed under this exposed sand face it would reduce the need for spot watering these dried areas and would result in a more attractive turf area. **WTT**



When a trap is too close to a green and there is no water barrier between the trap and the green, the trap may wick moisture away from the green.

VEGETATION MANAGEMENT

By Roger Funk, Ph.D., Davey Tree Expert Co., Kent, Ohio

Q: *I have a sweet gum tree about four years old. Each year it leafs out and its limbs grow, but the next year approximately one-fourth of the new growth dies, mostly near the lower portion of the tree. What's wrong and how can it be solved?*

A: Mail order diagnosis is not a good practice, even with a complete history of the problem, but I do have one suggestion.

Sweet gums are not cold-tolerant, and we have had numerous reports of winter dieback the past two years. The fact that most of the injury is on the lower portion of the tree could indicate frost injury. Protecting a tree from cold or frost injury is difficult. The most practical solution is to plant trees more adapted to the local environmental conditions.

Q: *Many of my customers have homes on Long Island Sound where there is salt water. I would appreciate your recommendations as to any periodicals or current publications dealing with this environmental situation.*

A: There are numerous articles dealing with the problem of saline soils and the effect of salt on ornamentals. Listed below are a few references that concern ornamental salt tolerance in the New England states. I suggest that you contact your local extension agent. You may also wish to obtain from the Cooperative Extension Service at North Dakota State University their excellent publication, Extension Bulletin No. 2, which explains the problems associated with salt-affected soils.

Salt Tolerance of Ornamental Plants by E. D. Carpenter, University of Connecticut, (Plant Science Department)

Salt Tolerance of Trees and Shrubs, University of Vermont brieflet 1212, by N. E. Pellett

Symposium on Pollutants in the Roadside, edited by E. D. Carpenter, University of Connecticut

Also available is a computer based bibliography about the role of salt in the environment, from the Shade Tree Laboratories, University of Wisconsin.