

## THE FORMATIVE YEARS

The cultivated sod industry, like the seed industry, began as a mechanism to transplant natural stands of common bluegrass from their rural location to the urban environment. Tied closely to the construction industry, both industries grew as man left the farm to take part in the American industrial revolution.

The original sod producer was really a landscape contractor who would pay farmers in the neighborhood of \$100 per acre to cut and remove the pasture sod from their fields. If a job called for instant grass, the contractor would go looking for the fields and the men required. Equipment was primitive and the work required many men to accomplish.

By the 20's, a few cities could support a firm devoted mainly to obtaining and delivering sod to contractors. Unfortunately, few of these companies still exist today. The Depression delayed the progress of the sod industry during the early 30's. By the end of the 30's the market had begun to recover. The concept of planting fields specifically for sod use had taken hold, although pasture sod production still takes place today, mainly for specific jobs requiring native grasses or very low quality sod.

According to Ben Warren of Warren Turf Nurseries in Palos Park, IL, the sod business was one of few healthy and promising businesses in the late 30's when he started. Warren had worked for his uncle as a landscape contractor for nearly ten years and wanted to step out on his own. He surveyed various markets for potential and noticed that two sod companies in the Chicago area were doing very well. In 1938, Warren founded his business, and has since led the way for other sod growers in the U.S., at least in cool season turfgrass sod production.



**Ben Warren**

*Organizer of both Midwest Sod Growers Association and the American Sod Producers Association. Warren is a pioneer in improved turfgrasses for sod and owner of sod nurseries in five states totalling 4,500 acres.*

Warren later used vegetative production techniques for much of his bluegrass sod. Vegetative production's history parallels cool season sod production. Early production of bentgrass and bermudagrass stolons dates back to the 20's. Large nurseries of bermudagrass began in Florida at that time and that state developed the first certification program for vegetative parent material, not sod. Southern Turf Nurseries in Tifton, Georgia and Cal Turf in Ventura, California were leaders in mechanization and development of vegetative sod production. See sidebar for more information.

The transition from pasture sod to cultivated sod is still taking place in Europe. A small amount of pasture sod is still used in the U.S. Eastern sod specialists have four categories

for sod. The first is cultivated sod which is produced from seed or stolons, carefully managed for weed control, harvested and sold as high quality turf. The second is semi-cultivated sod which is obtained from pastures seeded for the purpose of sod harvesting. Improved pasture sod is third. This sod comes from natural stands which are fertilized and harvested. Finally, there is unimproved pasture sod. The only management of this sod is mowing prior to harvesting.

The quality improved with each type of sod. The sod producer gained control over his product through improved turfgrasses, mechanization, chemicals, irrigation, and advances in the science of management.

In the mid-40's, Ryan developed the sod cutter. This engine powered oscillating knife enabled sod producers to harvest faster and improved the consistency of their product. Considerable labor was still required to roll and load the sod. In 1954, Ryan added a devise to cut the sod into sections and in the 60's an implement to roll the sod as it was cut. Despite this early progress, ways to cut manpower did not develop until the mid 60's.

Merion Kentucky bluegrass made a tremendous impact on the sod industry as it did on the seed industry. Pasture sod harvested and planted one fall on a job site, would be nearly all crabgrass the next fall. Disease just wiped out the common bluegrass during the summer, Fred Grau, former turf specialist at Pennsylvania State University and director of the USA Green Section, said. Merion provided the disease resistance to withstand summer stress, quick establishment in sod fields, and a more attractive sodded lawn.

Slow release fertilizers were first developed in the late 40's. The

ability to reduce burn potential, supply a steady stream of nutrients to the sod, and speed up grass growth gave sod producers new control over their product. Combined with the release of Merion in 1950, the sod cutter, slow-release fertilizer gave new substance to the business of growing sod. Many of the large sod producers today got started in the 50's. However, they started with comparatively small acreages and took advantage of Merion and eventual equipment improvement to break the 1,000 acre mark. Those who did not respond to improved turfgrass are not around to tell about it.

Those who did take advantage of Merion, like William Ruthven of Canada, were able to ship hundreds of miles into markets where Merion was not available. He shipped sod as far away as Chicago and Washington, D.C. Canada still figures well in sod today with the largest single farm in North America, Gem Sod Farms in Edmonton, Alberta, and Brouwer, the largest supplier of sod harvesters and also a large sod grower in Keswick, Ontario. Today, transportation costs and inspections make export of Canadian sod less attractive on a competitive basis with U.S. sod.

During the late 40's and early 50's, sod producers gained the assistance of selective herbicides and irrigation in producing a good crop in a reasonable period of time, usually 12 to 18 months.



**Wiley Miner**

*Leader of sod industry in New Jersey and developer of one of the first effective sod harvesters.*

After Merion was introduced, it was often grown as a monstand. The blend and mixture of turfgrass varieties did not come until the late 60's.

The 60's showed the sod industry as a viable and creative group. The sod grower began the decade as an independent using his ingenuity to solve equipment and marketing problems. He ended the decade organized, with improved equipment, and responsive to changes in turfgrass technology.

Many sod growers tried to solve the material handling problems of sod. They include: Wiley Miner of Princeton Turf Nursery of Hightstown, NJ, and Woodrow Wilson of Eastside Nursery of Canal Winchester, OH, who developed the Princeton harvester; Gerry Brouwer of Keswick, Ontario, Canada who developed the Brouwer harvester; John Nunes of Nunes Manufacturing of Patterson, CA who developed the Nunes harvester; Martin Beck Sr. of Beck Turf Nurseries in Auburn, AL, who developed Beck's Big Roll harvester; and others who put time, energy and money into solving the equipment problem, such as Ben Warren; William Daymon of Michigan with his sod roller; Ray Jensen of Southern Turf Nurseries of Tifton, GA, with his zoysia plugger and stolonizer; and Toby Grether of Cal Turf Nurseries in California with his fork lift and net layer. In fact, today out of the five major makers of sod cutting and harvesting equipment, four are sod producers as well as equipment manufacturers.

From the standpoint of sod organizations, the Midwest Sod Growers Association was the earliest in the mid-50's. Consisting of sod producers from Illinois, Wisconsin, Michigan and Indiana, the Illinois group organized to correct through lobbying highway sod standards in 1957. The group was fighting specifications for 3-inch thick sod for highways. They knew that thinner sod actually took root more quickly than thick sod.



Common bluegrass pasture sod near Washington D.C. in the 40's. Photo courtesy F.V. Grau.

They also knew the weight problem of thick sod and the likelihood of sliding down embankments. They won their case and continued to serve as a force in sod production until the formation of the American Sod Producers Association.

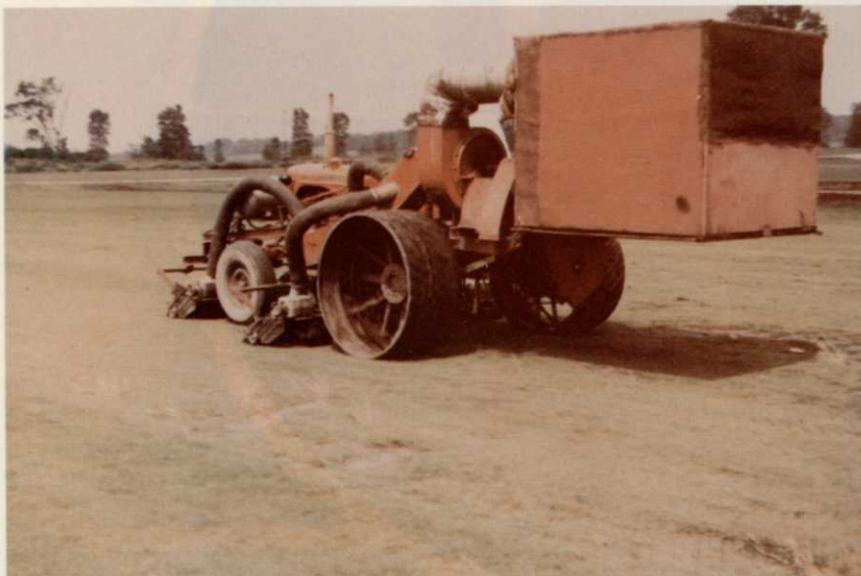
Another early organization was the New Jersey Cultivated Sod Growers Association, formed in 1964 with the leadership of Wiley Miner and Dr. Henry Indyk of Rutgers. This group supported the development of a sod certification program for New Jersey. The mid-60's were very exciting years for New Jersey sod

growers with the creation of an organization, the development of certification and the first demonstrations of a sod harvester prototype designed by Miner at the New Jersey summer field days in 1966.

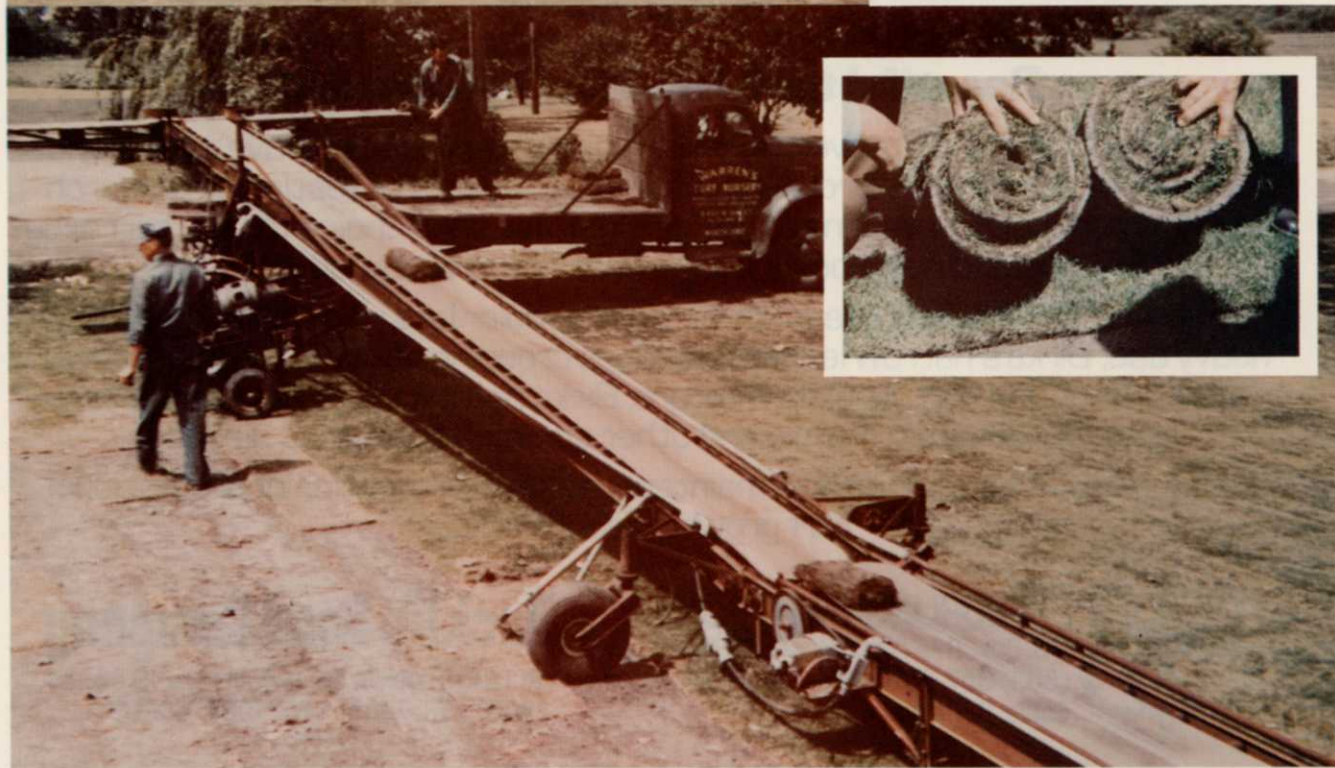
During the 60's a group of five sod producers and a number of turf specialists began meeting at the Golf Course Superintendents Association of America Show. They included Ben Warren, Tobey Grether, Wiley Miner, Gene Johanningsmeir of Michigan, and Jim Ousley of Florida. Meeting with them were turf specialists Dr. Henry Indyk of Rutgers, Dr.

William Daniel of Purdue, Don Juchartz of Michigan State University, and Dr. Elwyn Deal of the University of Maryland. Finally in 1967, at the GCSAA Show in Washington, D.C., Warren made the motion to create a national association and Miner seconded it. The industry finally had its own voice. Growing slowly at first, the organization has had three executive directors in its history. First was George Hammond of Paint Valley Bluegrass in Columbus, OH; second was Indyk from 1969 to 1973; and third Bob Garey from 1973. In 1973 American Sod Producers Association began holding a winter meeting as well as a summer field day. Today, ASPA has nearly half of the sod producers of the U.S. as members and supports research at various universities across the country.

Those states that have sod certification started it in the 60's. New Jersey established the first certification program which was followed by Maryland and Virginia. Basically, certification consists of inspection of fields prior to planting, approval of the seed blend or mixture, and periodic inspections during pro-



**Early vacuum** at Warren's Turf Nursery in 1956. (left) Sod cut at 1/2 and 1 inch (below). Loading truck from field showing manpower requirements of sod cutting below). Photos by F. V. Grau.



duction. The state publishes a list of approved certified seed lots for sod growers seeking certification. Pre-plant inspections are meant to find grassy weed problems such as yellow nutsedge. A serious problem with such weeds will exclude the field from certification unless it is fumigated for total weed control.

Seed inspection is intended to find those lots of seed which have no bentgrass of *Poa annua*. It is possible to purchase certified seed with the minimum allowable percentage of *Poa annua* or bentgrass. Some lots harvested from exceptionally clean fields may have virtually no bent or *Poa annua*. It is lots from these fields that inspectors are looking for to recommend to sod growers. Indyk believes that if certification accomplishes nothing else, it gets seed growers to direct their best seed to sod producers in states with certification programs.

Of course, not all sod produced in these states is certified. As little as 10 percent of the acreage may be certified sod. But when landscape architects who support certification specify certified sod, only that ten percent of the acreage is eligible.

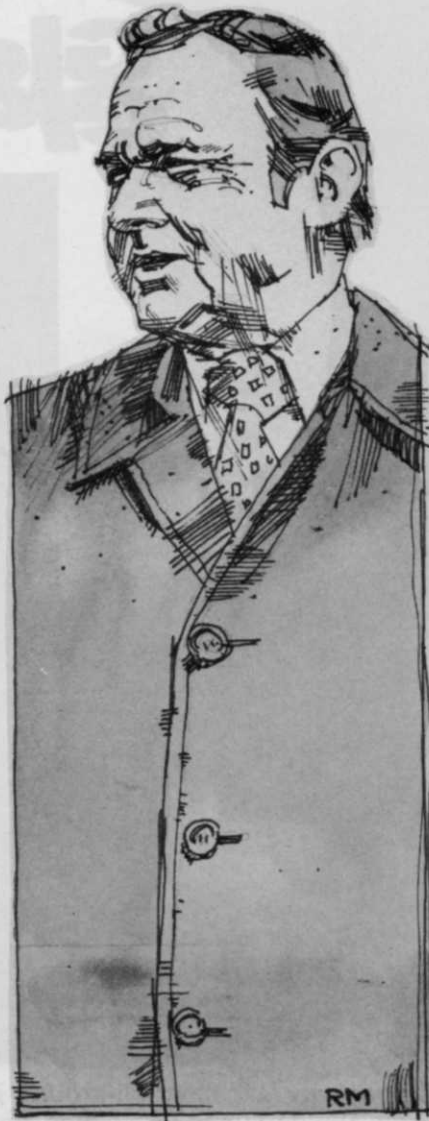
One unique and pressing problem today with certification is that suppliers of sod to New Jersey whose farms are in New York want to grow and meet certified sod requirements. New Jersey says these growers are out of jurisdiction and therefore cannot meet New Jersey certified sod requirements.

Florida had a certification program for vegetative parent material before New Jersey's sod certification program, according to Indyk. Other states considering programs are California and Nebraska. Pennsylvania has a program underway.

Some midwestern sod producers feel certification is unnecessary and slows down progress with new turfgrass varieties. According to these growers competition keeps everyone on their toes. Dr. Jack Butler of Colorado State University in Colorado Springs feels this way. He helped sod producers in Illinois as director of that state's turf program during the 60's. Ben Warren and Dr. William Daniel of Purdue also feel this way.

Certification is also a marketing tool. It is intended to eliminate doubts of those afraid of sod quality. Confidence in sod varies across the country. Architects and contractors strongly recommend sod in some areas, such as Illinois, California, Colorado, and many eastern states.

Sod producers continue to work for other ways to strengthen the position of sod compared to seeding. One way is to gain legislation which requires grass cover prior to release of bonding and issuance of occupancy permits. Contractors may not be willing to wait 60 days for seed to germinate and establish an acceptably thick turf. They are liable often for six months or more. The extra cost of sod must be sold to the customer. In the Midwest, seeding costs approximately 6 - 8 cents per square foot as compared to sod at that figure wholesale plus the cost of installation. Retail sod is priced in the area of 15 cents per square foot in Ohio.



**Henry Indyk**

Rutgers University turf expert who helped organize New Jersey and American Sod Producer Associations.

The instant lawn concept has been pushed for years. Although there are many questions and doubts about improved perennial ryegrasses and tall fescues, they may provide some challenge in certain areas. Establishment time is cut to about four weeks with these turfgrasses when seeded. Basically, it is a question of what is acceptable turf cover for job completion.

The 70's saw the sod harvester take over the sod industry. The Brouwer, Nunes and Princeton harvesters are now found on nearly every sod farm. The harvester drastically cut manpower requirements in harvesting sod. Whereas harvesting with a sod cutter may require up to ten men to accomplish, harvesters cut this number to three in many cases.

The harvester cuts and lifts the sod onto a conveyer. Depending upon the model, harvesters can cut rolls, slabs or folds of sod. After the harvester has rolled or folded the sod, a person on the back of the machine places the sod onto a pallet. When the pallet is filled, the harvester puts it down for pick up by a forklift, and continues cutting. The need to pick up individual rolls of sod from the field is eliminated. The cutting speed of harvesters is faster than sod cutters as well.

The harvester allowed sod producers to handle more acreage with fewer employees. Other improvements to harvesters will further speed up production and reduce waste. These changes however, come at a price. Harvester manufacturers have to prove the cost/benefit of more expensive machinery.

The sod cutter is by no means extinct. Ryan and Turfco of Minneapolis manufacture sod cutters for smaller acreages and for situations where portability is important, such as the remaining pasture sod market. Many cemeteries, golf courses, and parks have sod nurseries for replacement of damaged turf areas. A number of firms making sod cutters and harvesters have stopped doing so. Ryan manufactured the Brouwer harvester in the late 60's. Names like Daymon, Big Brute, Sod Winder, Big J, Gieringer, and Hadfield are now history.

Other progress has helped the sod producer. The improved turfgrasses reduce losses to disease, netting reduces the dependency on sod knitting and shortens production time when needed, and better field drainage gives the sod farmer better



**William Daniel**

Purdue University turf professor who provided early support to the Midwestern, Michigan and American Sod Producer Association.

control over weather. Sod production is now a fairly precise operation with considerable control by the grower. If needed, he can push a crop of sod to be harvested six to eight months after seeding. For this purpose some sod producers keep a portion of their acreage netted and well irrigated. They can also utilize more aggressive Kentucky bluegrass cultivars to speed up the sod, or increase fertilization.

Eastside Turf Nursery grows blends of bluegrass to give the sod the potential to adjust to varying levels of maintenance following installation. Certification officials in New Jersey, Maryland and Virginia encourage such thinking. Shade tolerant bluegrasses and creeping red fescues are often added to provide a hedge against installation in shady areas. Some sod growers provide customers with educational pamphlets on sod care to assure proper maintenance of the sod. ASPA provides such pamphlets to members.

The future holds further developments for sod, especially in the areas of harvesting and installation. Installation remains the labor intensive portion of sod use. "The amount of sod sold could double if a method to lay the sod by machinery could be found," says Dr. Daniel. The device would have to be easily portable, reliable, and maneuverable on site. It should lay the sod faster than it was harvested.

Princeton and Beck's Turf Nurseries have experimented with the width and length of the roll for speeding up harvesting and laying. Princeton offers a 20-inch width on some of its harvesters and Woodrow Wilson claims a 48-inch length is the longest that one man can lay in one motion. As for width, Wilson claims the 20-inch width reduces trimming since it fits standard dimensions of tree lawns and other turf areas better than 16- or 18-inch widths.

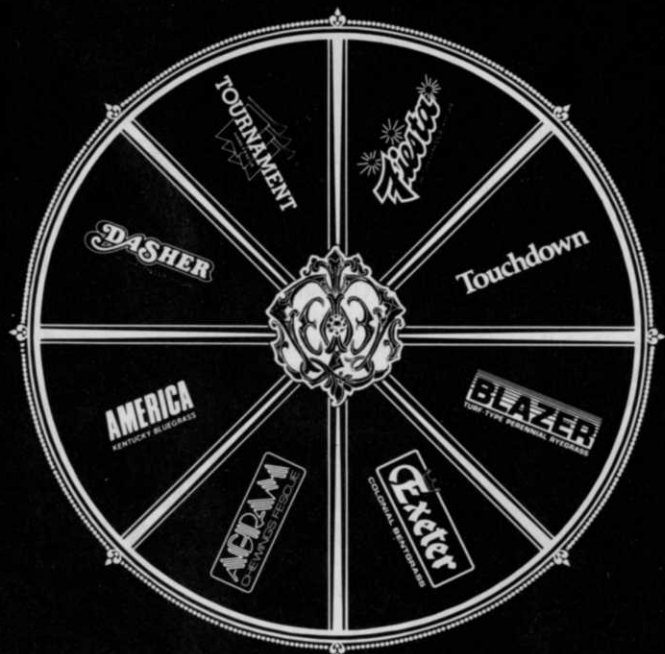
Beck's offers a sod handling system which includes a harvester that cuts three 18-inch wide rolls simultaneously and a forklift, modified, like those that move rolls of carpet, to transport the sod from the harvester to the truck and from the truck onto the job site. The lengths of the rolls can be set according to the measurements of the job. The system is only available on a franchise basis.

Advanced models of current harvesters further reduce manpower and material handling needs. The

new Brouwer harvester has automatic steering which either eliminates strips between rows or standardizes them for vegetative regrowth. The large Princeton, costing more than \$100,000 is a combine-like harvester which reloads pallets as one is filled and lowered, has a closed cab, and the additional horsepower of machines that size.

Equipment for net setting, leveling the seedbed, moving pallets, and unloading at the job site have all added to the mechanization of the sod industry.

Warm season operation has had its share of inventors too. Stolonizers, pluggers, planters and other means of handling vegetatively grown sod and stolons were invented simultaneously with cool season machinery by major southern sod producers such as Southern Turf Nurseries and Cal Turf. Ray Jensen and Toby Grether developed various pieces of equipment for southern sod production.



## The Pickseed Winners Circle

These winners were selected for their outstanding turf quality and durability. They will withstand the ravages of man and nature, maintaining a beautiful dense turf that will resist disease, overcome summer and winter stress, and help prevent weed invasions.

These winners will reduce your maintenance costs and provide you with a better looking turf. Go with the winners.

**PICKSEED**  
PICKSEED WEST, Inc.  
BOX 888, TANGENT, OREGON 97381 (503) 926-8885

Write 147 on reader service card