



Turfgrass Sod Production

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Introduction

Sod production involves growing a solid stand of high quality turfgrass and then harvesting the grass along with roots and a thin layer of topsoil. Many sod producers also transport and install the sod.

Marketing

The primary markets for sod are landscapers and building contractors. Sod is used in parks, golf courses, athletic fields, schools, garden centers, home lawns, road construction sites, commercial properties, and cemeteries. The 2014 USDA Census of Horticultural Specialties reported slightly less than 1,000 acres of sod harvested in Kentucky. The value of sod sales in Kentucky was split almost evenly between wholesale and retail sales.¹

Market Outlook

The demand for sod is highly dependent on new home construction and industrial development. Because turfgrass is highly perishable once harvested, sod is difficult to ship long distances, thus favoring local production. Most Kentucky-grown sod is marketed locally and little is exported to or imported from neighboring states. Although temporary sod shortages may occur, generally, shortages of cultivated sod in Kentucky are rare, indicating that current production is meeting demand. The market is extremely tight and new growers would have to produce a better quality turfgrass at a lower price to compete.

Production Considerations

Species selection

Kentucky bluegrass (*Poa pratensis*) and tall fescue (*Festuca arundinaceae*) are the two main sod grasses grown com-



Site selection and planting

Soils suitable for sod production include deep, well-drained to moderately well-drained silt-loam or sandy-loam soils



mercially in Kentucky. Other species that could be produced include bermudagrass (*Cynodon dactylon*) and zoysiagrass (*Zoysia japonica*).

In the case of Kentucky bluegrass, two or three cultivars are blended for better disease resistance, as well as for more aggressive rhizome development and tillering.

Two cultivars of tall fescue may similarly be blended; however, more commonly, only one variety is used. Instead, some Kentucky bluegrass can be mixed with the tall fescue seed to increase sod strength when harvesting. This is unnecessary when netting is used in tall fescue production.

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with reasonably thick topsoil. The site should be relatively level and free of rocks. The cropping history, including weed infestations and potential pesticide carryover problems, should be taken into consideration prior to planting.

A well-prepared seed bed is critical to commercial sod production. The field should first be cleared and then smoothed to eliminate high spots and depressions. Lime and fertilizer are added as needed based on a soil test prior to final seedbed preparation. Fields are typically plowed and/or disked, then firmed with a corrugated roller. The best time to seed Kentucky bluegrass and tall fescue is in late summer and early fall. Tall fescue sod producers have been able to improve sod strength and reduce production time from seeding to harvest by installing netting immediately after planting. Tall fescue can be harvested in six months after seeding when netting is used, whereas Kentucky bluegrass may require 12 to 18 months to harvest.

Maintenance

Frequent mowing is an essential aspect of sod maintenance. Mowing weekly or every other week improves turf density, controls many weeds, and removes excess turf growth. Providing supplementary water during the growing season may be necessary to produce quality sod, depending on rainfall amounts.

Pest management

Weed infestations reduce the quality, and thus the marketability, of the sod. For this reason it is important to eliminate major weed problems prior to planting and to keep them under control throughout production. The primary insect pests in sod production are white grubs; however, they seldom become a major problem if the sod is harvested within a year or two after seeding. Likewise, diseases are seldom a problem in young sod.

Harvest

Sod is harvested once it is mature enough to remain intact when cut and handled. For decades, sod has

been harvested with a tractor dedicated sod harvester that requires at least three people to operate. However, modern sod harvesters are automated, which allows the sod to be harvested more rapidly with only a single operator. Harvested sod is stacked in rolls or as flat slabs on pallets. Sod is generally harvested, delivered and installed on the same day. For some sports fields and industrial sites, sod is harvested with “big roll” harvesters and planted by rolling-out the sod.



Labor requirements

When using traditional equipment, labor needs can total approximately 50 hours per acre for land preparation, production and harvest. The use of modern, automated equipment greatly reduces labor.

Economic Considerations

Sod is an expensive enterprise, with the cost of harvesting and installation far outweighing the cost of actually producing the sod to maturity. Considerable risk is also involved, including potential losses due to poor establishment, serious erosion, flooding, perennial weed invaders, drought, market decline, saturated markets, and customer satisfaction.

Sod production requires much of the usual farm equipment used for hay and row crops; however, highly specialized equipment is needed for harvest. The purchase of a sod harvester with a dedicated tractor is a cost that can easily exceed \$50,000. “Big roll” harvesting equipment would be equally expensive. The price of automated sod harvesters may exceed \$250,000, but much of that cost may be recovered in the labor saved by only requiring one operator. Considerable expense may also be incurred for irrigation system installation and operation. Depending on the market, at least 100 acres in sod production may be needed to justify the purchase of such equipment. A forklift, large rotary finishing mower and pallets are also needed.

Production costs and breakeven price levels may vary considerably between different sod production systems, markets and varieties. A cost of production

estimate updated for 2018 indicated variable costs of \$2,350 per acre, labor costs of \$585 per acre and fixed costs of \$1,050 per acre. Total expenses per acre were approximately \$4,000, or \$0.97 per square yard based on marketing 85 percent of the total acre. These costs account for straight-line depreciation of initial equipment expenses. Research from Alabama and Tennessee has indicated favorable economies of scale when new sod farms are established with 100 or more acres. The current market value of sod depends upon many factors and varies based upon the turfgrass species. Current estimates range between \$8,000 and \$12,000 per acre.

¹2014 Census of Horticultural Specialties, State Data, Table 30. https://www.nass.usda.gov/Publications/AgCensus/2012/Online_Resources/Census_of_Horticulture_Specialties/hortic_2_030_030.pdf

Selected Resources

- Turfgrass Science (University of Kentucky) <http://www.uky.edu/Ag/ukturf/>
- Turfgrass Weed Control for Professionals, AGR-225 (University of Kentucky, University of Illinois,

Cornell University, Purdue University, Iowa State University, Kansas State University, Rutgers, Michigan State University, University of Minnesota, University of Missouri, University of Nebraska-Lincoln, Ohio State University, Penn State University, University of Wisconsin, 2018)

<https://mdc.itap.purdue.edu/item.asp?ItemNumber=TURF-100#.WKRyuvI4d1B>

- Commercial Tall Fescue-Kentucky Bluegrass Sod Production in Tennessee, PB164 (University of Tennessee, 2000) <http://utextension.tennessee.edu/publications/Documents/PB1649.pdf>
- Turfgrass – Sod Production: An Economic Evaluation (Auburn University, 2004) <http://ageconsearch.umn.edu/bitstream/198174/2/203.pdf>

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