GROWING CULTIVATED TURFGRASS SOD FOR TRANSPLANTING

A.J. Powell, Jr.
University of Kentucky
Department of Agronomy

The production of cultivated sod has many similarities with other crops grown in Kentucky. A well-prepared seedbed, correct selection and use of herbicides, and proper seeding and maintenance practices have many similarities with growing grass for animal production. The demand for high quality cultivated turfgrass for sodding new lawns and other turf areas in Kentucky is highly dependent upon housing starts, i.e. demand increases when building starts increase. Using high quality sod contributes immediately to the attractiveness of a new landscape, provides the advantage of a usable/playable turf area within a few weeks, and practically eliminates the mud and dust problem usually associated with the establishment of seeded turf.

There is no consistent shortage of cultivated sod in Kentucky; very little is exported to surrounding states and very little is imported into Kentucky. Because of the effects of inconsistent weather on seed establishment and for sod harvest, there may occasionally occur a short-term shortage of quality sod. Most sod is grown near the large Lexington and Louisville markets and, therefore, sod availability may always appear limited in the more rural areas of Kentucky.

The cost of harvesting sod may be as high as the cost of growing the sod to maturity. Therefore, before determining the acreage to put into production, one must decide if you will harvest and market the sod or if you will sell the mature, uncut sod directly to a sod broker. The cost of a sod harvester with dedicated tractor will be in the range of $45,000. Also, you need a forklift, pallets, etc. This high capital investment increases the acreage requirement if you decide to harvest the sod yourself.

GETTING STARTED

When a new field is to be planted to sod, always consider the previous crop history and weed problems. If planting a fall seeding within the same year in which herbicides have been used in a previous crop, germination of Kentucky bluegrass or tall fescue could be greatly impaired. Several corn and soybean herbicides, when applied in the spring, have the potential to remain in the soil at concentrations in the fall that will cause injury to germinating grasses. Therefore, it is always wise to determine what previous herbicide(s) was applied to the field and its rate of application. Plowing and disking residual herbicides may help dilute the concentration that will minimize the effect; however, soil characteristics (e.g. pH, soil texture, etc.) and other environmental conditions can also influence the rate of dissipation of residual herbicides in the soil. Therefore, before reseeding to a grass crop, consult the herbicide product label(s) for rotational crop guidelines.

WEED CONTROL PRIOR TO PLANTING

Weeds most difficult to control with maintenance applications of herbicides are quackgrass, johnsongrass, bermudagrass, nimblewill, nutsedge, crabgrass and foxtail. In addition, when growing Kentucky bluegrass sod, it is most difficult to eliminate tall fescue clumps. With a serious contamination of any of these weeds, it is often wise to use another crop (in which these weeds can be controlled) to reduce the weed population prior to establishing sod. For example, when planting a fall seeding of Kentucky bluegrass or tall fescue, you might want to consider a spring planting of corn for corn silage that will be removed in August. In this case, there are several non-residual herbicides that could be selected for most of these weed species. Another option would be to use soybeans planted in mid-May, and then used as a green manure crop and tilled into the soil in August. Another option would be to plant spring oats in April, cut the oats in July for silage or hay, or straw if you can cut the straw before the seedheads begin to fill. Another option would be to plant Sudex in June and then bale Sudex hay or use the material as a green manure crop.

If a crop seeding can be made the previous October or November, then you could seed wheat or harvest the wheat for grain and straw the following June or July, or you could seed cereal rye and harvest the straw in July.

The use of such aggressive species will help eliminate the weeds. They also give you the ability to apply herbicides that can effectively control the unwanted species. Hopefully the crop can also be used as another source of cash.

SOILS

A deep, well-drained to moderately well-drained silt loam soil with reasonably thick topsoil is most desirable for cultivated sod production. Although sloping land can be used, the potential for serious erosion is a major problem for the establishment year. The soil should be reasonably free of rocks that would interfere with mechanical harvesting.

SMOOTHING SURFACE

Smoothing the surface with a land leveler, or with disking and dragging to eliminate high spots and depressions prior to general seedbed preparation is always desirable. A non-uniform surface will result in more unharvestable turf and many problems concerning harvesting.

PREPARATION OF SEEDBED

The usual preparation techniques of plowing and/or disking, and firming with a corrugated roller are normally used. Lime, if needed, and fertilizer should be incorporated into the soil approximately 4-6 inches deep, and prior to final seedbed preparation.

LIME-FERTILIZER

Since a harvestable sod crop is grown in six months to two years from establishment, usually the original application of lime, phosphate, and potash is sufficient for the entire crop. Therefore, a soil test is very important. Soil tests will usually save money, especially if the sod is following a previous crop such as tobacco or corn. However you should always apply between 50-100 pounds of actual nitrogen per acre prior to seeding. This nitrogen is necessary to get seedling vigor and reduce weed competition.

TIME OF SEEDING

By far the best time to seed cool-season grasses such as Kentucky bluegrass and tall fescue is in late summer and early fall, between August 15 and October 1. Spring seedings are seldom successful since there is always serious weed competition, and the young seedlings are often killed by summer heat and drought.

Fall drought also causes slow germination and growth. During the following February and early March after a fall drought, it is important to roll sod fields with a heavy roller after several freezes and thaws. This presses the young seedlings into good soil contact and prevents seedling dessication.

SEEDING

To obtain uniform seed distribution, it is usually best to seed one-half of the seed in one direction and the other half at a right angle to the first. Use a turf seeder with press wheels or bars two inches or closer together. Seed should always be done on a firm seedbed so that no obvious tracks remain after seeding. The seeder should leave the field with a uniform, but slightly roughened surface.

GRASS SPECIES SELECTION

The two types of sod grown most frequently in Kentucky are Kentucky bluegrass and tall fescue. Usually with Kentucky bluegrass, two or three varieties are blended in order to get more disease resistance, aggressive rhizome development and tillering. Fifty to 80 pounds of Kentucky bluegrass are seeded per acre. This is equivalent to 17 to 28 seed per square inch of surface.

Two or more tall fescue varieties can also be blended together, but frequently only one variety is used. Because tall fescue has very few rhizomes, some Kentucky bluegrass is normally seeded with tall fescue to increase the sod strength when harvesting. The tall fescue and Kentucky bluegrass mix will require from 12 to 24 months to reach maturity.

Kentucky bluegrass is not needed when tall fescue is grown with netting. With turf-type tall fescues grown with netting, some producers have been able to establish a quality sod in four to six months. The cost of the netting is about $500/Acre, plus the cost of labor and installation equipment. Tall fescue must be seeded at about 250-300 pounds per acre and, if using Kentucky bluegrass, approximately 10-20 pounds of Kentucky bluegrass per acre is added. See the latest University of Kentucky Turfgrass Research Summary for the best varieties available, or visit the UK Turf web site at <http://www.uky.edu/Agriculture/ukturf>.

MAINTENANCE FERTILIZATION

Nitrogen is the only nutrient that should be necessary between seeding and harvest if the soil is properly fertilized prior to seeding. After an August or early September seeding, approximately 60 pounds of nitrogen per acre should be applied in October. If the seeding was accomplished in late September, then 60 pounds of nitrogen should be applied between the 15th of November and the end of December. If this late application cannot be applied, then 40 pounds of nitrogen can be applied during February or early March. Whenever possible, spring applications of nitrogen should be omitted from your maintenance program in order to reduce

mowing problems normally associated with wet soils and fast growth periods during spring. Spring applied nitrogen causes reduced root systems, excessive top growth, and increased weed competition.

For the entire year after seeding, additional nitrogen applications of between 40 and 60 pounds of nitrogen per acre can be applied during September or October, and again between the 15th of November and January. This should be sufficient nitrogen to produce a harvestable crop.

When it is absolutely necessary to apply 40 pounds of nitrogen per acre in the spring and summer in order to increase fill-in, growth or color, be aware that this also encourages weeds such as crabgrass, foxtail, dallisgrass, johnsongrass, bermudagrass, nimblewill, and nutsedge. Most serious weed problems occur because of spring and summer nitrogen fertilization.

NITROGEN SOURCE

Choosing the cheapest source of nitrogen is usually suggested when fertilizing during the fall or winter. Urea, 46-0-0, is often the cheapest source and has less bulk than other nitrogen sources. Ammonium nitrate, 34-0-0, is also an excellent source of nitrogen. Ammonium nitrate applied during hot weather has a higher foliar burn potential than urea, but there is less loss of nitrogen through volatilization. Therefore, one can choose either source depending upon the time of year of application, cost, and suspected problems.

BROADLEAF WEED CONTROL

Winter annuals such as chickweed, henbit, and mustards often become a problem during the fall after seeding. Because we often get serious drought during August/September, bluegrass seedlings are very slow to germinate and weeds become established. If broadleaf weeds begin to compete seriously and cover the young seedlings, it is suggested that the sod be sprayed as soon as the grass has grown to the normal mowing height. A combination of 2,4-D at 1 to 1½# ai/Acre, plus dicamba (Banvel) at ¼# ai/Acre is usually the best combination for spring and fall applications. Due to the potential for drift, volatilization, injury to the desirable turf, and poor broadleaf control it is usually suggested that these applications not be made during the summer.

CRABGRASS-FOXTAIL POST-EMERGENCE CONTROL

Crabgrass and foxtail can be controlled by both management practices and herbicides. In order to reduce the infestation from these weeds, many sod producers will allow the bluegrass or fescue to grow 4-5 inches tall during late spring and summer in order to prevent light from reaching the soil surface. Although this method is somewhat successful in reducing weeds, when the sod is transplanted to a home lawn during the summer and ultimately mowed to the normal height, these weed grasses often germinate and cause great consternation between the homeowner and installer.

With careful spraying, some success can be obtained by spraying young (1 to 4-leaf stage) crabgrass and foxtail with DSMA or MSMA. These are post-emergence crabgrass herbicides that must be applied during cool days (less than 85°F), when the soil is moist and the crabgrass or foxtail are growing rapidly. A repeat application must be made 7-10 days after the first application. In order to prevent spray overlap and carefully control rate of application,

producers may choose to use a sprayer equipped with foam markers or use a colored spray additive that allows quick observation of spraying pattern. This usually costs between $5-$10 per acre for the spray additive and approximately $8 per acre for the two applications of MSMA.

Another herbicide called Acclaim Plus can also be used to control these annual grasses and it gives less discoloration of the sod. Acclaim must also be applied when the soil is moist. In addition, this material may be 6-7 times more expensive than MSMA, but usually only one application is required if the crabgrass is in pre-tiller stage.

PRE-EMERGENT CRABGRASS/FOXTAIL CONTROL

Although somewhat expensive, it is usually preferred when planning on harvesting the sod during the spring or early fall, to use a crabgrass pre-emergent herbicide in the spring. These materials should be applied prior to April 15 in Kentucky. They are much more expensive than MSMA and DSMA, but they give more reliable crabgrass control, and without the phytotoxicity that is common with MSMA and DSMA. Herbicides that contain pendimethalin or prodiamine are the most commonly used products. Although these products will not affect the visual quality of the sod, many producers contend that sod harvested within a few months after the treatment will often “tear apart” during harvest.

INSECTS

The main insect problems in sod production are white grubs, either masked chafer or Japanese beetle grubs. These are both annual white grubs and do their damage from late August through October. Since sod is usually harvested within six months to two years after seeding, grubs seldom become a major problem in sod production. If they do reach levels of 15-20 grubs per square foot and damage is observed, the fields should be sprayed with an effective insecticide such as Dylox. This insecticide will be totally ineffective, however, unless it is quickly washed with rainfall or irrigation into the root zone where the grubs are actively working; a surface application of Dylox will never control white grubs if it is not watered in. When harvesting sod, one often observes 4-5 white grubs per square foot. This is not a serious grub problem and should be considered a natural occurrence of white grubs. If previous field history suggests a serious white grub problem would occur, one might consider applying Mach II or Merit during June or July - just prior to the peak grub hatch period.