## Extending the Use of Sod

**by Henry Thomas Wilkinson**
**Dept. of Plant Pathology, U. of I.**

During the past decade, public awareness and concern of the esthetics and the quality of the environment has increased dramatically. Education, modern communications, and inflation have spawned consumers who demand greater quality of merchandise and service for their invested dollars. More dollars are invested now than ever before in the maintenance of turgrass. The consumer is demanding high quality turf based on investment rather than on biology. For example, demands for high quality sod to be established and maintained on marginal agricultural soils have increased with renewed interest in urban development. The demand has been met by hundreds of companies specializing in lawn establishment and/or maintenance. Because the consumer is now paying for serves that were previously ;not done or accomplished by himself, his expectations have increased: the lawn should be lush, green and carpet-thick all season long. Intensively managed turfgrass is greatly predisposed to a miriad of problems including stress and disease. It is my belief that if the grass plants were managed as opposed to managing the consumer, fewer catastrophic diseases would occur in turfgrass lawns. Sodded lawns seem to have more problems than seeded lawns but, the development of disease in sodded lawns is a result of rather than the cause of aberrant grass growth. The pathogens that attact a sodded lawn will also attack a seeded lawn. Proper establishment of sod is a key in extending its use to meet consumer demands. Fusarium blight syndrome, yellow patch, and yellow ring are diseases associated with the lower crown and roots of the grass plant. Heat and drought stresses are damaging to sod when they affect the crowns and roots of the grass plant. The susceptability of grass to the forementioned problems result from the conditions under which the sod is forced to grow not on the quality of the sod when it is initially transplanted. I believe that if the growth and vigor of grass roots, rhizomes, and crowns in sod are managed properly, the successful use of sod can be accomplished with lasting results.

There are three basic phases of establishing a sodded turf: sod production; sod bed preparation; and post transplant management. There are variables in each of the three phases that will enhance the successful establishment of sod.

### Select Soil Type

The sod producer or farmer can select the soil type upon which to raise the sod from seed. Usually the best mineral and peat soils are selected. As research continues to examine the intricacies of interfacing a sod with a sod bed soil, we will learn more about the impact of different soils used to grow sod and the performance of that sod on different sod bed soils. The blend of grass cultivars use to produce the sod should be selected carefully for the conditions under which the sod will be grown. The cultivar blend comprising the sod is the only variable in sod establishment that once selected, cannot be changed without starting the process of sod establishment anew. The chemical

(cont'd. page 7)

(The Use of Sod cont'd.)

program for sod production and the age of marketed sod are also very important variables in sod production. For example, excessive nitrogen, phosphorus, and potassium applied to grass can produce excessive thatch and a weakened root system in less than two years. The longer sod is grown under a high management program, the more tenuous is its ability to establish after transplanting.

**Sod Bed Preparation**

The second phase, sod bed preparation, too often is neglected yet the sod bed is the soil which must support the vital roots, rhizomes, and crowns for the duration of the turfgrass's survival. While not easily changed, the soil type is the most critical variable. Some changes can be effected but this is very costly. It is more important to understand exactly what the soil type is. Knowing the soil type will greatly facilitate deciding which cultivation method(s) to employ and how to manage appropriate soil moisture for the turfgrass rooting. The texture, structure and porosity of a soil will each greatly affect the rooting of sod. Heterogeneous textures with some structure usually have sufficient porosity for movement of moisture and oxygen into soil thereby attracting deep root penetration. Such a soil need noly be prepared for sod by leveling to insure good sod-soil contact. Finer textured soils often lack particle heterogeneity, have poor structure and very small pores. Such soils hold excessive water which is unavailable to the grass, little oxygen, and often a high level of resistance to sod-root penetration. To manage this soil type, carefully planned cultivation and fertilization practices must be used. Appropriate culviation can create large soil pores thereby increasing availability of water and oxygen for root growth. The poorer the soil the more carefully planned the establishment of sod must be. The nutritional status of the sod bed soil is also important to consider prior to transplanting the sod. Generally we recommend that fertilizer if needed should be incorporated into the sod bed soil and not applied to the sod after it is transplanted. The rate and type of fertilizer should be used based on a soil analysis. A key in establishing sod is to encourage the grass plants in the sod to develop roots that penetrate the soil profile. Sod beds are usually devoid of vegetation or covered with a dead turf. While not conclusively tested, a dead turf layer under transplanted sod merely compounds the difficulty of sod establishment. The dead layer interferes with oxygen and water movement and extends the distance sod roots must grow to reach soil where nutrients can be assimilated. The dead turfgrass could also be a source for many facultative parasites which when presented a grass plant experiencing difficulty in rooting, would attack and further weaken the grass.

**Transplant Management**

The third pase of sod establishment, post transplant management, I have divided into critical management (8 wks) and long term management (►8 wks). During the first 8 wks following the transplanting of sod, soil moisture and heat, and sod to soil contact are critical. Research to determine the hbest guidelines for managing these variables is ongoing at the University of Illinois but based on our preliminary results, the greatest sod rooting occurs when sod is laid onto moistened soil and then topically watered on a daily basis. This program will minimize heat stress and dessication of the sod and encourage newly for-

(cont'd. page 9)

(The Use of Sod cont'd.)

ming roots to penetrate the sod bed. No fertilizer should be applied to the turf after it is transplanted or before it has successfully rooted. Another practice that has proven very useful is to roll the transplanted sod with a light roller (200-300 lbs.) between 24 and 48 hr. after transplanting. The time delay between transplanting sod and rolling allows the sod and soil moisture levels to equilibrate thereby creating a uniform soil profile for rooting. You can imagine the impact a layer of dead sol would have on attempts to create a uniform soil profile. There are three basic management concerns in long term management: nutrient status; cultural practices; and pest control. The scope of this paper will not permit me to discuss these at any length. The approaches, methods, and materials used in turf management differ from location to location and between operators. I would suggest however, that the grass plant has evolved with a more predictable set of requirements for growth. As I alluded to earlier, it is the crowns, roots, and rhizomes i.e., the subterranean tissues, that are vital for longevity and quality of turfgrass. I will close by suggesting that if long term management practices are directed at promoting root and rhizome development and directed less at shoot and leaf growth and quality, the sod will be more resistant to stress, grow longer, and still maintain reasonable quality.

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established trees and shrubs. Spray ivy plants until moist but avoid excessive runoff. Repeat treatment as necessary.

The use of herbicides usually requires a second treatment in a season. Make the second application in the same way as the first when regrowth is 4 to 6 inches high.

In wooded areas, poison ivy make take on a climbing habit to the point where the leaves and fruit may be as high as 40 feet from the ground. To kill these vines, wrap strips of cloth around the vine to a height of 18 inches and a thickness of 1 to 2 inches. Carefully saturate the wrapping with a mixture of 1 point of low-volatile "Brush Killer" concentrate and 1 pint of fuel oil. Repeat if necessary. The solution must in no way touch the desirable tree upon which the ivy vine is growing.

Another method is to cut the vine off 6 inches above the ground line, then carefully paint the stump with the same solution. Dormant ivy vines crawling upon fence posts may also be dormant sprayed to runoff with low-volatile brush killer solution, at the rate of 1 quart to concentrate to 5 gallons of fuel oil.

If single plants occur in ornamental hedges, carefully locate the individual poison ivy vines, cut them off 6 inches above the ground and paint the stumps carefully with a mixture of 1 pint of low-volatile "Brush Killer", or low-volatile 2,4,5-T and 1 pint of fuel oil. This is best done in late fall or winter when there is less danger from fumes in such areas.

As an added precaution to prevent fume damage, slip a plastic sack over the treated stumps, then cover with soil. This is especially advisable in areas where susceptible plants, such as grapes, iris, peonies, and privet hedges are growing.

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