

Cutting Sod for Rhizome Values

W. H. DANIEL, Turf Specialist

Purdue University

How deep should sod be cut? This question has been raised many times. However, for the most part answers were based upon observations and practically none were based upon proven data.

Many of the state highway specifications in the Midwest are requiring that sod should be cut between 2 and 3 in. to be laid along roadsides. Naturally sod growers and farmers are reluctant to sell that much top-soil with every crop of sod. Besides, soil moving is expensive and labor consuming so the contractor must protect himself through higher bids. Also, this extra work requires a longer period for sod laying.

A series of three experiments was devised to determine just how deep to cut sod. They were: (1) counting the number of rhizomes within four depths in the soil; (2) planting rhizomes to see where new root growth initiated, and (3) re-laying various depths of cut sod and observing the extent of new root and rhizome development.

In the first experiment, counting the rhizomes was accomplished by taking a 4-in. plug, 3 in. deep and cutting it into $\frac{3}{4}$ -in. increments. Plugs were taken of good, medium, and poor quality sod depending on the density of turf, the maintenance it had and location. Most samples were taken where sod was being cut and sold for turf purposes. Three locations of each quality were obtained with three samples in each locality, or a total of nine plugs for each—the good, medium, and poor quality.

Per Cent of Rhizomes In Each $\frac{3}{4}$ -inch Layer

	0-0.75"	.75-1.5"	1.5-2.2"	2.2-3.0"
<i>Quality of Sod</i>	%	%	%	%
High	88	11	1	0
Medium	72	20	6	2
Poor	64	25	9	2

As an average 75 per cent of the rhizomes were in the upper $\frac{3}{4}$ -in. of sod and over 90 per cent were in the upper 1.5 in. Keep this in mind as we proceed on the next experiment.

The second experiment, that of planting the rhizomes and observing the new growth, was accomplished by separating individual rhizomes

from the sod and planting them in the greenhouse. The existing roots on the rhizomes were pruned to 0.5, 1.0 and 1.5 in. These rhizomes also had the shoots detached from them. Then one additional group of rhizomes had the terminal shoot left on, but had all the roots cut off. All the groups were replicated five times and planted in a mixture of soil, sand, and vermiculite. After growing one month, until new shoots were emerging, the rhizomes were washed free of soil.

To our surprise, all the new root growth initiated at the nodes on the rhizomes. That is, none of the new roots formed anywhere on the cut ends or sides of the old roots. Also, the length of roots left on the rhizomes appeared to have little effect upon the new growth. The rhizome that had the shoot left on it had longer roots which could be explained as a benefit of having attached leaves. From these results and from the fact that over 90 per cent of the rhizomes are in the upper 1.5 in., it appears useless and wasteful to cut sod any deeper than this. The deeper sod is cut, the farther these new roots formed on rhizomes have to grow before entering the prepared soil below; thus, a slower knitting of the sod to the soil.

To verify these results the third experiment, that of re-laying sod cut at various depths, was carried out by getting 8-in. plugs of good and poor quality sod cut to 0.75, 1.5, 2.25 and 3 in. The various depths were replicated three times and placed in the greenhouse and let grow for $2\frac{1}{2}$ weeks. The plugs were then washed out and data taken on the number of new roots emerging below the plug, the length of the roots, and the new rhizomes formed. In every case, the sod cut at .75 in. showed the most new roots with the 1.5 in. next, the 2.25 in. next and the 3-in. last.

In summarizing the results of these experiments, it seems evident that sod cut either at 1.5 in. or less would be superior to that cut at deeper depths. About 90 per cent of the rhizomes are in the upper 1.5 in. of soil, and when roots are cut off they die and new roots are initiated from these rhizomes. Therefore, the thinner the sod, the faster it will knit itself to the soil below. Only to the extent that poor sod is used, or poor care is given during adverse drought or drying periods, could there be reason for additional sod depth.