EFFICIENT FERTILIZER UTILIZATION FOR SOD PRODUCTION

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As production costs continue to spiral the sod grower seeks ways to reduce costs. Since increased fertilizer costs have added to the cost spiral the fertilization program should be evaluated carefully. Several points are suggested for consideration.

1. Mix P_2O_5 and K_2O into the seedbed when planting. When complete fertilizers are applied on the surface of established sod most of the P_2O_5 and K_2O will be removed with the sod. Although this may serve as a bit of "insurance" by sending these nutrients with the sod to the new site, this seems to be inefficient fertilizer utilization. It would seem more reasonable to mix the fertilizer into the soil since this will encourage rooting. In addition, with each removal of a sod crop a new layer of essentially unfertilized soil is incorporated into the topsoil upon plowing or other tillage. This "subsoil" is usually low in nutrients and needs fertilization.

2. Soil test. A soil test is necessary to determine optimum levels of P_2O_5 and K_2O for sod production.

3. Return Clippings to the sod. Of course, this is standard operating procedure on most sod farms. But where clippings are removed considerable amounts of nutrients are also removed. Data from English's thesis are summarized in Table 1 pointing out the N, P_2O_5 and K_2O removal in sod clippings when different nitrogen rates were used on a muck soil.

4. Use appropriate nitrogen rates. Higher nitrogen rates reduce root and rhizome growth, weakening the sod as reported in earlier studies. Higher nitrogen also encourages more topgrowth necessitating more frequent mowing if the clippings are to be short enough to fall down into the sod and decompose readily. Remember nitrogen should be applied to attain the density of plants needed to compete with weeds and to develop a strong root and rhizome system. Color of topgrowth is not necessarily the best indicator of nitrogen needs for sod. Soil is a very important variable in determining nitrogen needs. Annual needs on organic soils may range from 75-150 pounds per acre while on mineral soils rates will range from 120-300 pounds per acre.

5. Apply fertilizer when needed by the plant. Fertilizer applied at a time when nitrogen can be leached before the plant can utilize it is certainly not efficient use.

6. Plant cultivars and species having low nitrogen requirements. The sod grower must provide the grass demanded by the consumer, but in many cases the grower can have a positive influence on the particular cultivar, blend or mix the consumer purchases. In many cases the consumer really needs a lower nitrogen requiring grass.

7. Follow good maintenance practices. Proper irrigation can keep leaching to a minimum. Control of diseases, insects, and weeds is also necessary to obtain maximum use of the fertilizer dollar. An alternative to the regular mowing requirements could be infrequent mowing. This could reduce the fuel and labor

costs of regular mowing, but would necessitate special equipment for harvest and handling the clippings (hay). A specialized market for the product may need to be developed as well. Two years of data from the M.S.U. Muck Experimental Farm suggest that mowing frequencies of up to 8-week intervals have not had a detrimental effect on sod strength. Within a few weeks after clipping removal a good quality sod can be harvested in most cases.

Removing the "hay" crop does remove nutrients necessitating additional fertilizer input. The costs of the increased fertilizer, specialized equipment and marketing would have to be weighed against any income generated from "hay" sales and reduced mowing costs to determine if reduced mowing frequency is feasible for a given operation.

Table 1. Effect on nitrogen rate on nutrient uptake in Merion Kentucky bluegrass clippings grown on muck soil.

Annual N Rate lbs/A/yr	Clipping wt. Tons/A	Nitrogen (Avg) %	Nutrient uptake, pounds per acre		
			N	P_2O_5	K_2O
0	0.2	3.0	14	5	14
75	0.9	3.3	60	8	55
150	1.3	3.6	92	11	77
300	2.8	4.5	255	24	171
600	4.2	5.4	456	36	255