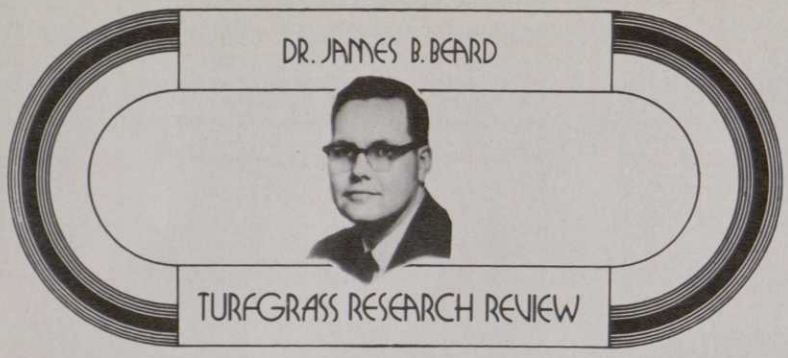

HOW QUICKLY CAN SOD TAKE ROOT?

Post-harvest cultural practices affecting the rooting of Kentucky bluegrass sods grown on organic and mineral soils. *J.W. King and J.B. Beard. 1972. Agronomy Journal. 64(3):259-262. (from the Department of Crop and Soil Sciences, Michigan State University, East Lansing, Mich. 48823).*

The effects of sod harvesting depth, underlying soil type, soil moisture, fertilizer placement and post-harvest irrigation rate on the transplant rooting capability of Merion Kentucky bluegrass sod were investigated in this study. The experiments were conducted under outdoor summer conditions utilizing root observation boxes, which had inside dimensions of 10 by 10 inches square and were 18 inches high. Each box had a glass face front that sloped inward from the top front edge to the base of the box. The box was filled with the appropriate textured soil and a 10-inch-square sod piece transplanted onto the top after the soil was permitted to settle. Subsequently, the sods were irrigated daily and the turf cut at weekly intervals at a height of 1.5 inches.

The specific treatments compared in this study included (a) sod harvesting depths of 0.75 and 0.4 inches, (b) transplanting the sod onto a clay loam subsoil versus a sandy loam topsoil, (c) sod transplanting onto a soil having a moisture content near field capacity versus one in an air dry condition, (d) fertilizer placement involving either incorporation throughout the upper three inches of the soil (soil fertilization) or application over the surface of the sod immediately after transplanting (surface fertilization), and (e) irrigation rates of 0.8, 1.6, 2.4 and 3.2 inches of water per week.

Data collected during these experiments included a determination of the number of roots visible on the glass face at two and five-inch soil depths 7, 10, 14, and 21 days after transplanting. The experiments were terminated after three weeks, and the total root production determined by washing the soil from the root system, collecting the roots and determining the root organic matter content by an ashing technique. Six experiments were conducted over a period of two summer growing seasons.

Results of the sod harvesting experiments revealed that root organic matter production was superior when the sod was cut at a 0.8 inch depth in comparison to a thinner (0.4 inch) depth. Sod harvested at the thinner depth was very prone to desiccation effects, which probably contributed to the reduced rooting.

No difference in root organic matter production was observed between soil fertilization and surface fertilization of the sod. Thus, the authors concluded that fertilizer placement at the rates utilized in the study and with sods having adequate nutritional levels was not a significant factor in sod rooting during the first three weeks after transplanting.

The beneficial effects from incorporating topsoil into construction site subsoils prior to sod transplanting was supported by these investigations. The incorporation of sandy loam topsoil into the upper three inches of a clay loam subsoil resulted in a 45 per cent increase in root organic matter production and visible root

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counts compared to transplanting onto a clay loam subsoil. In addition, root production was twice as great when the sod was transplanted onto a sandy loam topsoil as onto a clay loam subsoil.

The soil moisture content at the time of sod transplanting was found to be very important. Transplant rooting was delayed substantially when the sod was transplanted onto an air dry soil, even though the sod and underlying soil were irrigated intensely immediately after transplanting. A delay in rooting of as much as 11 days was observed in certain experiments when transplanted onto an air dry soil. This delayed rooting increases the time that the sod is prone to desiccation and thinning.

Comparisons among the four irrigation rates showed that root organic matter production usually increased with the irrigation rate. This was particularly true when the sod was transplanted onto a dry soil. A weekly irrigation rate of two inches or 0.3 inch per day appeared adequate for rooting of transplanted Kentucky bluegrass sod under the climatic conditions in southern Michigan.

Finally, seasonal observations of transplant sod rooting revealed that rooting was impaired during the May to June period of extensive seed head development.

Comments: Although sodding can be done at any time during the growing season, provided an adequate moisture level can be maintained through irrigation, late August and early September are particularly favorable periods for sodding due to the optimum temperature and moisture conditions normally occurring during the fall period. The primary objective in sod transplanting is to ensure its rapid rooting into the underlying soil.

Soil preparation prior to sodding should be the same as for seeding. The steps in soil preparation for sodding include (a) eradication of persistent, difficult to control weeds, (b) ensuring adequate surface and subsurface drainage, (c) partial or complete soil modification, if needed on intensively trafficked areas, (d) removal of rocks and debris, (e) deep cultivation, (f)

incorporation of fertilizer and lime at rates indicated by soil tests and (g) final soil preparation to a moisture, granular, firm state with the desired surface contours.

The experiments previously described reveal the importance of the proper sod harvesting depth in transplant rooting. An excessively shallow sod harvesting depth increases the proneness to desiccation and reduces the rooting capability. Earlier studies have indicated that the transplant rooting rate decreases as the harvesting depth is increased above 0.8 inch. Although the thicker harvesting depths are less prone to moisture stress injury, the rate of rooting is also decreased because of the reduced number of rhizomes that are severed during harvesting. Thus, the optimum harvesting depth of Kentucky bluegrass sod, in terms of subsequent transplant rooting, is in the range of 0.8 inch.

Soil conditions at the time of sod transplanting can significantly influence subsequent sod rooting, as has been demonstrated in this study. Loam soils are definitely preferred in terms of transplant rooting compared to finer textured subsoils having a high clay content. In addition, the moisture content of the underlying soil is particularly important. The significance of this factor in transplant sod rooting has not been recognized previously. Thus, it would be preferable to cultivate and prepare the final seedbed immediately prior to sodding in order to ensure a favorable soil moisture level for rapid transplant rooting.

Following transplanting, the sod should be rolled to eliminate air pockets under the sod and to ensure good moisture exchange with the underlying soil. In addition, the sod should be irrigated sufficiently to ensure adequate moisture levels throughout the upper six inches of the soil root zone. Subsequently, the sodded area should be irrigated lightly every day at noon to maintain an adequate moisture level in the sod until rooting into the underlying soil occurs. The actual quantity of water applied should be adjusted in relation to the evapo-transpiration rates occurring at the specific time and location. □