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Turfgrass research review

by Dr. James B. Beard

How light affects certain turfgrasses

Association of certain variations in light quality with the performance of selected turfgrasses.

G.G. McBee. 1969. Crop Science. 9:14-17. (from the Department of Soil and Crop Sciences, Texas A and M University, College Station, Tex. 77843).

The purpose of this study was to investigate the relationship of light quality under shady conditions to the performance of turfgrasses under various light quality regimes. Bermudagrass varieties with known variations in shade tolerance were utilized. Included were Tifdwarf, Tifway, Floraturf and Common bermudagrass. All cultural practices and environmental conditions were comparable in this study with the exception of variations in light quality. One treatment involved a light regime containing predominately light in the blue or shorter wave lengths, while the second treatment was composed of light predominately from the red region. The treatment involving primarily red light or the longer wave lengths would be similar to the light quality regime found under a post oak tree canopy in Texas. With the exception of common bermudagrass, the turfgrass quality was superior under the light

regime containing a predominance of blue or shorter wave lengths than under the light regime containing red or longer wave lengths. Floraturf was best adapted to shaded environments which were deficient in blue light, while Tifway and Tifdwarf were intermediate and common bermudagrass definitely inferior.

Comments: It is blue light or short wave lengths of the visible spectrum which are screened out to the greatest degree by a deciduous tree canopy. The green and red regions or longer wave lengths tend to predominate under the shade. Both red and blue wave lengths are required for normal turfgrass growth and quality. However, this study indicates that it is the blue wave lengths which are most critical in maintaining an acceptable bermudagrass turf and are the wave lengths which are limiting the growth of bermudagrass varieties under shaded environments.

Previous research among the warm season turfgrass species indicates that the St. Augustinegrass and the zoysiagrass species are superior to the bermudagrasses in shade adaptation. Also, the red or longer wave lengths tend to enhance stem elongation and an upright growth habit. Thus, a greater percentage of the leaf and stolon tissues of creeping species, such as bermudagrass, are re-

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moved in the mowing process under shaded conditions high in red light and deficient in the blue region of the spectrum.

The pruning of lower limbs and selective thinning of a dense tree canopy will permit an increased percentage of the incidence light wave lengths to penetrate through the tree canopy to the turfgrass

leaves. This practice will result in an improved growth and development of turfs under conditions of shade.

Differential reactions to and recovery from drought stress among bermudagrass selections.

W.R. Kneebone and G.L. Seitz. 1968. University of Arizona Turfgrass Research Report 250. pp. 7-8. (from the Department of

Agronomy, University of Arizona, Tucson, Ariz. 85721).

The relative tolerance of thirteen bermudagrass varieties to drought stress as well as recuperative potential from drought stress was evaluated. The turf was mowed at a height of one inch with irrigation being withheld from the turf from April 1 to October 1. There was 0.35 inches of rain in April and none during May and June. A total of 1.4 inches of rain occurred during July plus four rain showers during August. No rainfall occurred in September.

Tiflawn proved to be the superior bermudagrass variety in these tests in terms of drought tolerance. It maintained a surprising level of shoot density and green color throughout the severe moisture stress periods which occurred during this trial. Midway was second to Tiflawn in overall drought tolerance and recovery potential with Ormond and Tifway ranking intermediate. Tufcote and Common bermudagrass were definitely inferior in drought tolerance and recuperative potential. Tifgreen was only slightly better than Common and Tufcote.

Comments: When bermudagrasses are to be utilized in semi-arid climates and an adequate irrigation capability is lacking, the selection of a more drought tolerant bermudagrass variety should be considered. Tiflawn and Midway were definitely superior in drought tolerance. □

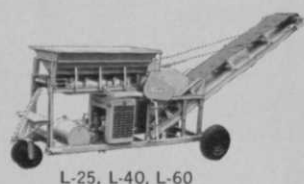
TURF SOIL

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Other references of interest:

1. *Response of plants to their environment.* V.B. Younger. California Turfgrass Culture. 17(1): 4-6. 1967. (Department of Agronomy, University of California at Riverside, Riverside, Calif.).

2. *Grass variety trials.* C. Handoll. Journal of the Sports Turf Research Institute. 42:49-53. 1967. (The Sports Turf Research Institute, Bingley, Yorkshire, England).