by Dr. James B. Beard

TURFGRASS RESEARCH REVIEW

Balancing nitrogen-potassium nutrition in turfgrasses

Effects of nitrogen-potassium levels on the growth and chemical composition of Kentucky bluegrass.

C.A. Monroe, G.D. Coorts and C.R. Skogley. 1969. Agronomy Journal. 61:294-296. (from the Department of Agronomy and Mechanized Agriculture, University of Rhode Island, Kingston, R.I. 02881).

The interrelationship of nitrogen and potassium on the growth and development of Kentucky bluegrass was investigated. The growth and development responses determined included shoot growth, weight of roots and rhizomes, tiller number, blade width and rhizome length. In terms of the various growth and development responses, a balance between nitrogen and potassium nutrition was the most important factor. Higher potassium levels stimulated tillering, root and rhizome growth. Higher nitrogen levels restricted root and rhizome growth. Higher potassium levels

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increased leaf blade width, while higher nitrogen levels reduced the leaf blade width.

Comments: There is a tendency in modern turfgrass culture to use higher rates of nitrogen fertilization without comparable increases in the other two major elements, particularly potassium. The data reported in this study is further evidence in support of several previous investigations which stress the importance of maintaining a balance in nitrogen-potassium nutrition of turfgrasses.

Effect of time of thatch removal on survival and earliness of growth of three turf-type bermudagrasses.

W. W. Huffine. 1969. Turfgrass Production and Management Research, 1968. Oklahoma State University Progress Report P-610. pp. 7-9. (from the Department of Agronomy, Oklahoma State University, Stillwater, Okla. 74075).

The primary objective of this study was to determine the proper timing of thatch removal for rapid spring greenup of three bermudagrass varieties. Sunturf, Tifgreen and U-3 bermudagrass varieties were dethatched at four dates: (a) February 3, (b) February 15, (c) March 1 and (d) March 14. Dethatching was accomplished with a vertical mower which was passed over the area 10 times. The blades of the mower were set as near as possible to the soil surface. A vacuum machine was then used to remove the chopped vegetative material from the area. The rate and degree of spring greenup were evaluated on April 1.

The preferred time for thatch removal varied with the particular bermudagrass variety. Under the conditions of this study (central Oklahoma during the 1968 season) thatch removal on or about

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March 1 was preferred for rapid spring greenup of Sunturf, while the interval between February 15 and March 1 was preferable for Tifgreen and U-3. Thatch removal dates, which were either earlier or later than this, resulted in a slower rate of spring greenup of the bermudagrass varieties. However, the rate of spring greenup was more rapid at all dates of thatch removal in comparison to a bermudagrass turf which received no thatch removal.

Comments: This study indicates that (a) thatch removal from bermudagrass turfs in the spring will assist in spring greenup and (b) that the timing of thatch removal can be critical in achieving the maximum rate of spring greenup. The specific date will vary with region. The optimum dethatching dates presented in this paper apply only to climatic conditions comparable to those found in central Oklahoma. In other locations having different climatic patterns, in terms of spring temperatures, an adjustment in the time of thatch removal will be required.

Evaluating turfgrass for shade tolerance.

G. W. Wood. 1969. Agronomy Journal. 61(3):347-352. (from the Department of Plant and Soil Sciences, University of Vermont, Burlington, Vt. 05401).

In this study the shade adaptation of a number of turfgrass varieties and species was evaluated under controlled climate and field shade conditions. Eight Kentucky bluegrass and eight red fescue varieties were evaluated in controlled climate chambers. Four light intensity levels were used in the growth chambers: 3,000, 1,500, 500, 230 foot candles. In the field shade study 57 varieties of Kentucky bluegrass, 18 varieties of red fescue, 1 hard fescue, 5 colonial bentgrasses and 2 creeping bentgrasses were evaluated. The field shade conditions consisted of a tree canopy which permitted approximately 5 per cent of the incident sunlight to penetrate to the turf. The tree canopy consisted of red maple, white birch and red oak. Total shoot and root growth were evaluated eight weeks after planting.

As a group, the red fescues were superior to the Kentucky bluegrasses in adapting to the shade, during the initial eight weeks of growth from seed. Among the red fescue varieties, Golfrood and Ruby were outstanding in shoot growth in both the controlled climate chamber and field shade studies. Rough bluegrass was also superior to the Kentucky bluegrasses in shoot growth during the initial eight weeks following planting. Shoot growth of creeping and colonial bentgrass varieties was inferior to that of the Kentucky bluegrasses and red fescues.

Comments: This study gives an indication of the relative establishment rate and initial seedling vigor of a large number of red fescue and Kentucky bluegrass varieties under intense shade conditions. Establishment of an adequate turf is one of the first requisites of the culture of turfs under shaded conditions. However, this type of study should not be used as a basis for determining the overall adaptation of turfgrass varieties to shaded environments. A much longer term study is required to evaluate the overall shade adaptation. Effects such as disease will frequently become an additional factor in turfgrass shade adaptation in long term studies.

The number of varieties evaluated in this study is much too great to report in this brief summary. For those interested in a particular variety, it is suggested that they review the original paper cited above. □