

# Kentucky 31 Tall Fescue — A Shade-Tolerant Turfgrass

By F. V. Juska, A. A. Hanson, and A. W. Hovin<sup>1</sup>

A good landscape plan will generally include turfgrasses grown in association with trees. Trees add to the aesthetic value of the landscape but because of shade can reduce the vigor and density of grass. At present, there are few grass species that are particularly well adapted for growing in deep shade.

## Grasses and Shading:

At Beltsville, Md., a study was set up to evaluate seven red fescue selections in comparison with Pennlawn and common red fescue, Chewings fescue, Kentucky 31 tall fescue, and common Kentucky bluegrass under shade and in full sun. In September 1963, the fine-leaf and tall fescues were seeded at 4 pounds per 1000 square feet and common Kentucky bluegrass at 2 pounds per 1000 square feet. The plot size was 2 feet by 8 feet with 1-foot alleys between plots. Black plastic screens 10 feet by 20 feet long which excluded 80 percent of the light were attached to wood frames and placed on supports approximately 2½ feet above the plots over three replications. The other three replications were grown in full sunlight. In each of four growing seasons, the shades remained over the plots from May until the first of November. During this period shades were removed only for mowing and for making observations.

## Soil and Management:

The soil, a silt loam, tested high in phosphorus, medium in potassium, and had a pH of 5.5.

<sup>1</sup> Research Agronomist, Agricultural Administrator, and Research Agronomist, Crops Research Division, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, Maryland, respectively.

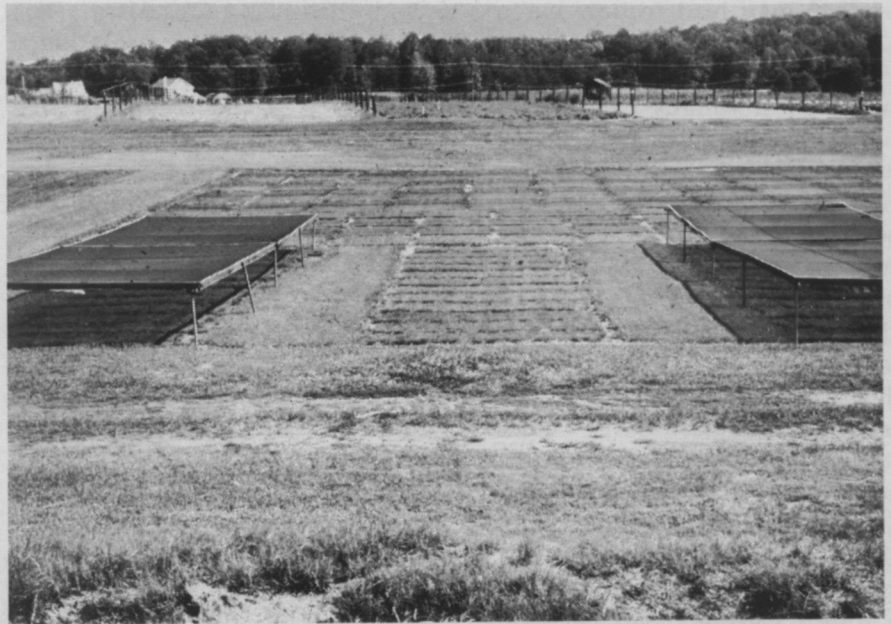


Fig. 1. Two replications of shaded plots. Center plots of grass were not shaded.

Lime was added at the rate of 1 ton per acre in 1964 and again in 1965. Potassium was added to bring this element to an optimum level. Nitrogen in the form of urea or ammonium nitrate was used. No more than 1 pound per 1000 square feet of actual nitrogen was applied at one time. A total of 3 pounds nitrogen per 1000 square feet was applied during the growing season. Both

shaded and unshaded plots were mowed at weekly intervals during the growing season and clippings removed.

## Effect of Shade:

Turf quality scores for each of the 4 years for both the shaded and unshaded plots are given in Table 1. The scores for the grasses varied between years as would be expected because of climatic

TABLE 1. Performance of Some Cool-Season Grasses Under 80 Percent Shade and in Full Sun Over a 4-Year Period (10 = Best Quality)

Varieties	Under Shade					In Full Sun				
	1964	1965	1966	1967	Avg.	1964	1965	1966	1967	Avg.
Tall fescue										
Ky. 31	7.7	7.8	9.7	6.7	7.9	6.7	8.6	9.8	9.3	8.6
Red fescue										
Pennlawn	8.7	5.6	8.7	4.3	6.8	8.3	8.4	9.6	9.4	8.9
Common	7.7	3.8	7.4	3.9	5.7	8.7	7.2	7.3	7.3	7.6
Experimentals <sup>1</sup>	6.5	2.8	5.7	3.8	4.7	7.6	6.9	7.8	6.5	7.2
Chewings fescue	7.0	4.3	8.0	5.1	6.1	7.7	8.7	9.7	8.6	8.7
Ky. bluegrass										
Common	7.0	5.6	6.9	4.3	6.0	7.7	8.7	9.4	5.9	7.9

<sup>1</sup> Mean of seven selections

**TABLE 2. Turfgrass Species Ranked According to Turf Quality (1 = Best, 1964-1967 Data Combined)**

In Shade Rank : Species	Under Full Sun Rank : Species
1. Tall fescue	1. Pennlawn red fescue
2. Pennlawn red fescue	2. Chewings fescue
3. Chewings fescue	3. Tall fescue
4. Kentucky bluegrass	4. Kentucky bluegrass
5. Common red fescue	5. Common red fescue
6. Experimental red fescues	6. Experimental red fescues

conditions and time of year when notes were taken. Ratings were taken once in 1964, twice in 1965, and three times each in 1966 and 1967. The lower quality scores for 1965 resulted from ratings taken in the fall. Scores for 1966 and 1967 were taken in the spring, summer, and fall.

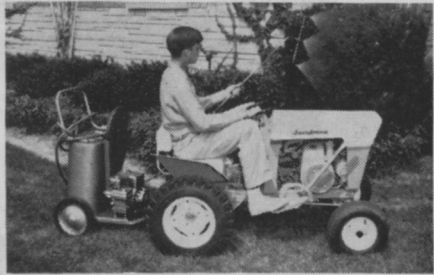
The grasses differed in their response to shade and sunlight. Differences between turf under shade and in full sunlight were evident after the first year. Turf under shade was lighter green, less dense, and more succulent. Average turf quality under shade, over all years, showed that tall fescue was about 14 percent better than Pennlawn and almost 23 percent higher than Chewings fescue. Pennlawn red fescue rated about 10 percent better under shade than Chewings. Lowest average scores for the grasses tested were assigned to experimental red fescue selections, presumably due to the narrow genetic base in this particular group.

In Table 2 all grass species are ranked as to turf quality in shade and sunlight. The three grasses that performed best under shade were also the best three in full sunlight, but not in the same order. Under shade, the turf quality for tall fescue was 23 percent higher than that for Chewings fescue; whereas, the difference between Pennlawn and tall fescue was only 3.3 percent in the sunlight. The most significant observation in this study is the excellent performance of Kentucky 31 not only under shade but also in full sunlight. Results

of this experiment suggest that Kentucky 31 tall fescue is adapt-

ed in the transition zone where a broader-leaved grass is not objectional for turf.

Lack of adequate moisture and soil fertility may restrict the growth and vigor of turfgrasses under heavy shade. The observations included in this report were based on the effects of shade alone, without obvious limitations in either moisture or soil fertility.



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