



Keeping  
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Research  
**50**

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## FESCUE TURFGRASSES

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The *Festuceae* tribe contains more than 100 species of fescues with only seven used for turfgrass. Four fescue species evaluated for turfgrass use in Kansas are *Festuca arundinacea*—tall fescue, *F. rubra*—red fescue, *F. rubra* var. *commutata*—chewings fescue, and *F. ovina* var. *duriuscula*—hard fescue. The last three are fine leaf fescues, while tall fescue is a coarse-textured species.

### TALL FESCUE

Tall fescue is a cool-season, perennial, bunch-type species adapted to a wide range of soil and climatic conditions. It is widely used in the transitional zone between the cool humid and warm humid regions. For a cool season turfgrass, tall fescue has good drought and heat tolerances, which are often needed in the transition zone (Table 1).

Several tall fescue cultivars are available and more are being developed. Until recently nearly all the tall fescue used in Kansas was Kentucky-31 (K-31). A substantial increase in tall fescue usage

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will come as cultivars with finer leaf texture, higher shoot density, better tolerance to close mowing, and somewhat better drought tolerance are developed. Those are the primary characteristics that plant breeders are working on.

Table 1. Stress tolerances of four fescues.

Stress	Stress rating*			
	Tall fescue	Red fescue	Chewing fescue	Hard fescue
Drought	VG-G	VG-G	VG-G	VG-G
High temperature	G	F	F	F
Low temperature	G-F	F	F	F
Shade	G-F	E	E	E
Wet soil condition	VG	P	P	F
Wear	VG-G	G-F	G	G-F
Soil compaction	G	F-P	F-P	F
Acid soil	VG-G	G	VG-G	G
Alkaline soil	VG-G	F	F	F

\* Stress ratings are relative to the most commonly used cool and warm season turfgrass species. E = excellent, VG = very good, G = good, F = fair, P = poor.

Cultivar evaluations have been conducted at two Kansas sites: the Horticulture Research Center at Wichita and at Manhattan turfgrass research plots.

**Wichita Trial.** Nineteen tall fescue cultivars were established in 4- × 6-ft plots with 3 replications, September 14, 1978. The seeding rate was 4.6 lbs seed/1000 sq ft. This study was part of a Southern Regional Tall Fescue Trial. Routine maintenance included mowing at 2½ inches with clippings removed, nitrogen applied at 4.0 lbs N/1000 sq ft per year, and irrigation as needed to alleviate stress.

Leaf texture refers to the width of individual leaf blades. Finer (narrower) leaf tall fescues generally are desired so long as all other characteristics are acceptable. Tall fescue cultivars exhibiting the finest texture were Monaco, Belt Syn 16-1, Belt TF 11, Belt T 525, Rebel, and AG-125 (Table 2). Coarsest textured were Alta and Goar, while K-31 was intermediate.

Cultivars with the best visual quality were Rebel, Belt Syn 16-1, and Falcon (Table 2) with two-year average visual-quality ratings of 7.1, 7.0, and 6.9 respectively, all substantially better than K-31 with an average quality of 6.1. Goar, Alta, and Fawn had the poorest visual quality ratings.

The summer of 1980, unusually hot and dry, was a good test year for summer stresses on cool season turfgrasses. The August 26 rating revealed that cultivars best withstanding stress were Monaco, Falcon, Kenwell, Rebel, and Belt KPH. Superior late fall performance was noted for Rebel.

**Manhattan Trial.** Eight tall fescue cultivars were seeded September 9, 1978, at 5 lbs seed/1000 sq ft in 4 × 8-ft plots with 3 replications. Maintenance consisted of mowing at 2 inches with clippings returned, nitrogen applied at 3.0 lbs N/1000 sq ft per year, and irrigation to avoid stress.

Table 2. Wichita tall fescue trial, 1979-1980, results.

Cultivar	Leaf texture*	Visual quality**					Avg. Avg.	
		1980 Season					1980	1979
		7/11	8/26	9/30	10/21	1980		
Rebel	7.0	6.0	6.7	7.3	8.0	7.0	7.3	
Falcon	6.0	7.0	6.7	7.3	6.7	6.9	6.9	
Belt Syn 16-1	7.7	6.0	6.3	7.7	7.0	6.8	7.3	
Monaco	9.0	6.7	6.7	7.3	6.3	6.8	5.8	
Belt T 525	7.0	6.0	6.3	7.3	7.3	6.7	5.6	
Belt TF 11	7.0	6.7	5.7	7.0	7.0	6.6	5.9	
Belt KPH	6.0	6.7	6.7	6.7	6.3	6.6	5.7	
PHB-1-S	6.0	7.0	6.0	6.3	7.0	6.6	5.4	
K-31	6.3	6.7	6.0	6.7	6.7	6.5	5.8	
Blend 36-1	5.0	6.3	6.0	6.7	6.7	6.4	5.3	
Clemfine	5.7	6.7	6.0	6.0	6.7	6.4	5.8	
Kenmont	5.3	5.7	6.0	7.0	6.0	6.2	6.1	
AG-125	7.0	6.7	6.0	6.7	5.0	6.1	5.8	
Kenwell Lot 650	5.7	6.0	6.7	6.3	5.3	6.1	6.0	
K5-27	6.0	6.0	5.6	6.3	6.0	6.0	6.0	
Kenhy	5.3	5.3	6.3	5.3	7.0	6.0	5.6	
Fawn	5.0	5.7	5.0	6.0	6.3	5.8	4.7	
Alta	4.0	5.7	5.0	5.3	4.3	5.1	4.2	
Goar	4.0	4.3	3.7	4.7	3.7	4.1	3.4	

\* Leaf texture: 9 = narrowest, 1 = widest leaf blade width. Visual evaluation.

\*\* Visual quality: 9 = ideal, 6 = acceptable, 1 = no live turf. Visual quality is based on turf density, color, and uniformity.

Based on the 2-year average, Rebel, Clemfine, and K-31 demonstrated the best visual quality with ratings of 7.2, 7.1, and 6.9, respectively (Table 3). They also performed well in the summer. Rebel had very good late fall quality.

## FINE LEAF FESCUES

Fine-leaf fescues are perennial, cool-season turfgrasses with narrow, needle-like leaves. They are widely used in cool-humid regions of the United States, but in Kansas they are used only in the eastern fourth of the state. They should only be used for shaded, droughty sites (Table 1). Lack of high-temperature tolerance, especially in wet soil, is the primary limiting factor in eastern Kansas. Also, they tend to go dormant during hot, dry weather, but their ability to go dormant accounts for their good tolerance to drought.

A cultivar adapted to Kansas would be highly beneficial because fine leaf fescues have excellent shade tolerance. The best species now available in Kansas for shade are tall fescue, certain bluegrass cultivars, and zoysia, but none grows well in dense or prolonged shade.

Table 4 contains the results of a trial conducted at Wichita. The plots received 3.0 lb N/1000 sq ft per year, were mowed at 2.0 inches, and were irrigated to prevent moisture stress. Seven cultivars were tested, only three survived but were all susceptible to *Helminthosporium* leaf spot in 1974 and 1977.

With similar maintenance conditions, a trial of 7 cultivars was conducted at Manhattan from 1971 to 1973. Only Illahee, Raineer, and Pennlawn produced acceptable turf quality with 3-year averages of 7.0, 6.4, and 6.3, respectively.

A trial containing 15 cultivars was seeded in the fall, 1976, at Manhattan (Table 5). Maintenance was similar to that in the previous fine-leaf fescue trials. Only Polar produced an acceptable quality turf, followed by Koket and Jamestown.

Table 3. Tall fescue cultivar trial, Manhattan, 1979-1980, results.

Cultivar	Visual Quality*					
	1979	1980				
	Avg.	4/10	7/8	9/3	10/31	Avg.
Rebel	7.0	6.0	7.3	8.3	7.9	7.4
Clemfine	6.6	6.0	7.8	8.3	7.7	7.5
K-31	6.4	5.9	8.1	8.0	7.5	7.4
Kenhy	6.2	5.7	7.3	7.8	7.3	7.0
FA 232	6.1	5.7	6.2	7.3	6.6	6.5
FA 444	6.0	6.3	7.0	7.5	6.7	6.9
FA 330	5.7	5.2	6.0	6.2	6.7	6.0
FA 111	5.4	5.0	6.8	7.0	6.8	6.4

\*Visual quality: 9 = ideal, 6 = acceptable, 1 = no live turf

Table 4. Results from fine leaf fescue trials at Wichita, 1973 to 1978.

Cultivar	Visual Quality*						Avg.
	1973	1974	1975	1976	1977	1978	
<b>Wichita</b>							
Golfrood <sup>b</sup>	6.7	5.2	4.8	6.0	5.5	4.5	5.5
Raineer <sup>b</sup>	5.9	4.7	3.7	4.7	4.5	4.5	4.7
Dawson <sup>a</sup>	5.4	4.1	5.0	4.0	4.0	4.5	4.5

\* Visual quality: 9 = ideal, 6 = acceptable, 1 = no live turf

<sup>a</sup> Creeping red fescue—Very short rhizomes provide slight creeping.

<sup>b</sup> Chewings fescue—A bunch type.

Table 5. Visual quality of fine leaf fescues valuated at Manhattan, 1977 to 1980.

Cultivar	Visual quality*		
	1979	1980	4-yr. Avg.
Polar <sup>b</sup>	6.1	6.6	6.0
Koket <sup>b</sup>	5.3	5.4	5.5
Jamestown <sup>b</sup>	5.5	4.7	5.4
Waldorf <sup>b</sup>	5.0	5.4	5.2
Scarlet <sup>b</sup>	5.3	5.1	5.1
Atlanta <sup>b</sup>	5.8	5.5	5.1
Dawson <sup>b</sup>	5.1	5.3	5.1
Wintergreen <sup>b</sup>	5.2	5.1	5.0
Reptans <sup>a</sup>	4.9	5.3	5.0
Ruby <sup>a</sup>	5.5	5.4	5.0
Scaldis <sup>c</sup>	5.0	5.7	4.8
Highlight <sup>b</sup>	4.8	4.0	4.8
Boreala <sup>a</sup>	4.5	4.7	4.8
Engina <sup>b</sup>	4.4	4.6	4.4
Centurion <sup>b</sup>	2.6	4.0	2.7

\* Visual quality: 9 = ideal, 6 = acceptable, 1 = no live turf

<sup>a</sup> Creeping red fescue

<sup>b</sup> Chewings fescue

<sup>c</sup> Hard fescue

## CONCLUSIONS

Tall fescues grew well at both Wichita and Manhattan but with substantial differences among cultivars. Several recently released cultivars (Rebel, Falcon, Clemfine, and Belt Syn 16-1) have performed as well as or better than Kentucky 31.

Fine-leaf fescues do not produce a high quality turf in Kansas. When used for shaded, droughty sites, Illahee, Raineer, Pennlawn, and Polar should be considered.

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