

# The 1998 Tall Fescue Report

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## Introduction

Tall fescue (*Festuca arundinacea*) is a productive, well-adapted, persistent, soil-conserving, cool-season grass that is grown on approximately 5.5 million acres in Kentucky. This grass is used for both hay and pasture and is the forage base of most of Kentucky's livestock enterprises, particularly beef cattle.

Much of the tall fescue in Kentucky is infected with an internal fungus (endophyte) that results in decreased weight gains in growing ruminants and lower pregnancy rates in breeding stock, especially in hot weather. Varieties are now available that are free of this fungal endophyte.

This report provides current yield data on tall fescue varieties plus a few bluegrass and perennial ryegrass varieties in trials in Kentucky as well as guidelines for selecting tall fescue varieties.

## Important Considerations in Selecting a Tall Fescue Variety

**Local Adaptation and Seasonal Yield.** The variety should be adapted to Kentucky as indicated by good performance across years and locations in replicated yield trials such as those presented in this publication. Choose high-yielding varieties, but choose varieties that are productive during the desired season of use.

Tall fescues are often classified as either "Mediterranean" or "European" types according to the area from which the parental material for the variety came. In general, the Mediterranean types (Cajun and Fawn, for example) are more productive in the fall and winter than the European types such as Kentucky 31. Although they mature earlier in the spring, the Mediterranean types become very dormant and non-productive during the summer in Kentucky and are more susceptible than European varieties to some leaf diseases, such as *Helminthosporium* and *Rhizoctonia*. Therefore, Mediterranean varieties are less preferred for use in Kentucky than European types. Because Mediterranean varieties mature earlier in the spring, first cutting yields are generally higher for these varieties when the two types are harvested at the same time. However, the European types produce more in the summer, allowing for extended grazing.

**Endophyte Level.** Make sure the seed has been tested for endophyte content. Seed with infection levels of less than 5% are regarded as being endophyte-free. This information will be prominently displayed on a green tag attached to the seed bag. If no tag is present, assume the seed is infected with the endophyte. Several varieties, both with and without the endo-

phyte, are adapted for use in Kentucky as determined by the tests in this report.

**Seed Quality.** Buy high-quality seed that is high in germination and purity and free from weed seed. Buy certified seed or proprietary varieties of seed of an improved variety. An improved variety is one that has performed well in independent trials. Other information on the label will include the test date, which must be within the previous nine months, and the level of germination and other crop and weed seed. Order seed well in advance of planting time to assure that it will be available when needed.

## Description of the Tests

Data from four studies are reported. Tall fescue varieties were sown at Lexington (1996 and 1997), Quicksand (1996), and Princeton (1996). The soils at Lexington (Maury), Quicksand (Pope), and Princeton (Crider) were well-drained silt loams. All are well-suited for tall fescue production.

Seedings were made at the rate of 20 lb/A into a prepared seedbed with a disk drill. Plots were 4' x 15' in a randomized complete block design with four replications. Nitrogen was topdressed at 80 lb/A of actual N in March (60 lb/A for newly seeded stands), and 60 lb/A of actual N after the first cutting and again in late summer. The tests were harvested using a sickle-type forage plot harvester to simulate a spring cut hay/summer grazing/fall stockpile management system. The first cutting was harvested at each location when all tall fescue varieties had reached at least the boot stage. Fresh weight samples were taken at each harvest to calculate dry matter production. Management goals for all tests for establishment, fertility, weed control, and harvest management were to limit the factors affecting yield to variety and environment.

## Results and Discussion

Weather data for 1998 for Lexington, Quicksand, and Princeton are presented in Table 1. In general, 1998 was wetter than average in April, May, and June at all locations. High rainfall in late May and June led to second cutting yields that were comparable to those of first cuttings. Summer and fall rainfall was lower than average, while temperatures were above average at all locations.

Ratings for maturity and dry matter yields (tons/acre) are reported in Tables 2 through 5. Yields are given by cutting date and as total annual production. Varieties are listed by descending maturity rating or by descending total yield. Experimental varieties are listed separately at the bottom of the tables and are not available commercially. Statistical analyses were performed

on all data (including experimentals) to determine if the apparent differences are truly due to varietal differences or just to random chance. In the tables, varieties not significantly different from the top variety in the column for that characteristic are marked with one asterisk (\*). To determine if two varieties are truly different, compare the difference between them to the LSD (Least Significant Difference) at the bottom of the column. If the difference is equal to or greater than the LSD, the varieties are truly different when grown under the conditions at the given locations. The Coefficient of Variation (CV) is a measure of the variability of the data and is included for each column of means. Low variability is desirable, and increased variability within a study results in higher CVs and larger LSDs.

Most of the tall fescue varieties tested are free of the endophyte. For best results in establishing a stand of endophyte-free tall fescue, plant in late summer and take the first harvest the following year as hay. This management will allow the plants to get firmly established before these fields are moved into a pasture rotation. After this cutting, follow recommendations about pasture fertilization and grazing rotation. Take care not to overgraze low endophyte tall fescue, especially during periods of extreme drought stress.

Table 6 summarizes information about distributors, endo-

phyte infection, and yield performance across locations for all varieties currently included in tests discussed in this report. Varieties are listed in alphabetical order by species, with the experimental varieties at the bottom. Remember that experimental varieties are not available for farm use, while commercial varieties can be purchased from agricultural distributors. In Table 6, shaded areas indicate that the variety was not in that particular test (labeled at the top of the column), while clear blocks mean that the variety was in the test. A single asterisk (\*) means that the variety was not significantly different from the top variety. It is best to choose a variety that has performed well over several years and locations. Remember to consider the relative spring maturity and the distribution of yield across the growing season when evaluating productivity of tall fescue varieties (Tables 2-5).

## Summary

Selecting a good endophyte-free variety of tall fescue is an important first step in establishing a productive stand of grass. Proper management, beginning with seedbed preparation and continuing throughout the life of the stand, is necessary for even the highest-yielding variety to produce to its genetic potential.

**Table 1. Temperature and Rainfall at Quicksand, Lexington, and Princeton in 1998.**

	Quicksand				Lexington				Princeton			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
MON	° F	DEP <sup>1</sup>	IN	DEP	° F	DEP	IN	DEP	° F	DEP	IN	DEP
JAN	43	+12	2.98	-0.31	41	+10	3.96	+1.10	44	+10	2.95	-0.85
FEB	44	+11	3.06	-0.54	41	+6	2.54	-0.67	45	+7	3.43	-1.00
MAR	47	+6	2.30	-2.04	46	+2	3.40	-1.00	50	+3	2.29	-2.65
APR	56	+3	8.28	+4.18	54	-1	6.20	+2.32	59	-0	6.10	+1.30
MAY	67	+5	6.91	+2.43	67	+3	6.14	+1.67	72	+5	3.81	-1.15
JUN	73	+3	10.05	+6.23	73	+1	10.81	+7.15	77	+2	12.62	+8.77
JUL	75	+1	3.77	-1.48	75	-1	7.98	+2.98	80	+2	6.49	+2.20
AUG	74	+1	2.15	-1.86	76	+1	0.29	-3.64	78	+1	1.40	-2.61
SEP	72	+6	2.57	-0.95	74	+6	0.61	-2.59	77	+6	0.26	-3.07
OCT	59	+5	1.96	-0.95	58	+1	2.41	-0.16	63	+4	3.20	+0.15

<sup>1</sup>Dep is departure from the long-term average for that location.

**Table 2. Dry Matter Yields (Tons/acre) of Fescue and Ky Bluegrass (BG) Varieties Sown 23 Aug 1996 at Lexington, Kentucky.**

Variety	1997 Total	1998 Harvests				1998 Total	2-yr Total
		May 20	Jul 10	Aug 17	Oct 29		
<b>Commercial Varieties - Available for Farm Use</b>							
Stargrazer	8.28 *	3.63 *	1.73 *	0.58	0.25	6.19 *	14.47 *
KY31+	7.74	3.54 *	1.58	0.67 *	0.33	6.12 *	13.86 *
Dovey	6.99	3.45 *	1.93 *	0.72 *	0.62 *	6.73 *	13.72 *
Barcel	7.02	3.30	1.53	0.61	0.33	5.78	12.80
Festorina	7.00	2.79	1.45	0.58	0.39	5.22	12.22
Lato (BG)	5.33	2.91	1.18	0.41	0.20	4.70	10.03
Kenblue (BG)	3.81	3.02	1.04	0.28	0.27	4.61	8.42
<b>Experimental Varieties - Not Available for Farm Use</b>							
TF9201	8.81 *	3.53 *	1.74 *	0.60	0.28	6.15 *	14.96 *
KYTF2	8.26 *	3.77 *	1.80 *	0.62	0.32	6.50 *	14.76 *
KY31-	8.37 *	3.61 *	1.62	0.63	0.44	6.30 *	14.67 *
KYFA9403	8.14 *	3.80 *	1.68	0.73 *	0.32	6.53 *	14.67 *
KYFA9303	7.65	4.01 *	1.58	0.66 *	0.49	6.74 *	14.39 *
KYFA9304	7.77	3.54 *	1.62	0.65 *	0.33	6.15 *	13.93 *
TF9005	7.23	3.58 *	1.43	0.78 *	0.41	6.19 *	13.42
KYFA9404	7.13	3.60 *	1.53	0.60	0.51 *	6.25 *	13.37
BARFA4113	7.45	3.30	1.54	0.58	0.36	5.79	13.24
GA156	7.19	3.56 *	1.48	0.66 *	0.32	6.02 *	13.20
KYFA9302	7.40	3.21	1.55	0.61	0.44	5.80	13.20
KYFA9301	7.45	3.29	1.44	0.65 *	0.31	5.69	13.13
FA-89K	7.39	3.02	1.49	0.66 *	0.44	5.61	13.00
BAR-FA-6FR	7.1	3.30	1.49	0.62	0.39	5.79	12.85
BARFA2HG	6.77	3.18	1.43	0.58	0.25	5.44	12.21
GA153	5.89	3.53 *	1.47	0.55	0.34	5.89	11.78
Mean	7.22	3.41	1.64	0.61	0.36	5.92	13.14
CV, %	9.67	14.28	9.88	15.32	24.28	9.50	7.29
LSD, 0.05	0.99	0.69	0.21	0.13	0.12	0.79	1.35

\* Not significantly different from the highest numerical value in the column based on the 0.05 LSD.

**Table 3. Dry Matter Yields (Tons/acre) of Fescue Varieties Sown 20 August 1996 at Princeton, Kentucky.**

Variety	Maturity <sup>1</sup> April 28	1997 Total	1998 Harvests			1998 Total	2-yr Total
			May 8	Jun 25	Jul 28		
<b>Commercial Varieties - Available for Farm Use</b>							
Stargrazer	43.50	6.39 *	2.05	0.86 *	0.72 *	3.63	10.02 *
Stag	54.25 *	6.01 *	2.31 *	0.79	0.74 *	3.83	9.84 *
Orygun	52.50 *	5.74	2.60 *	0.78	0.67 *	4.05 *	9.79 *
KY31+	49.00	5.42	2.40 *	0.78	0.64	3.82	9.24 *
Festorina	41.75	5.17	2.42 *	0.84 *	0.76 *	4.02 *	9.19 *
Puna (Chicory)	-	6.92 *	0.59	0.00	0.00	0.59	7.51
<b>Experimental Varieties - Not Available for Farm Use</b>							
KYFA9302	52.25 *	6.10 *	2.37 *	0.79	0.82 *	3.98 *	10.08 *
KYFA9303	50.25	5.69	2.59 *	0.91 *	0.76 *	4.26 *	9.95 *
OFIB-1	53.75 *	5.83	2.31	0.84 *	0.84 *	3.99 *	9.82 *
TF8503	47.00	5.88	2.24	0.82 *	0.74 *	3.79	9.67 *
EA30	53.25 *	5.52	2.60 *	0.76	0.73 *	4.09 *	9.61 *
KYFA9304	43.25	5.87	2.10	0.94 *	0.65	3.69	9.56 *
KYFA9403	42.00	6.02 *	2.06	0.83 *	0.63	3.53	9.55 *
KYFA9402	48.75	5.81	2.23	0.75	0.72 *	3.70	9.51 *
KYTF2	39.00	5.57	2.35 *	0.90 *	0.56	3.80	9.38 *
KY31-	48.00	5.63	2.22	0.72	0.70 *	3.65	9.28 *
KYFA9301	43.50	5.50	2.15	0.79	0.62	3.57	9.07 *
KYFA9401	42.50	5.50	2.01	0.83 *	0.62	3.46	8.96
BAR-FA-6FRD	43.50	4.88	2.29	0.79	0.75 *	3.83	8.71
TF9005	50.25	4.50	2.43 *	0.79	0.75 *	3.97 *	8.47
EA70	49.50	4.67	1.89	0.87 *	0.68 *	3.44	8.10
Mean	45.13	5.65	2.20	0.78	0.67	3.65	9.30
CV, %	5.86	11.89	9.64	13.21	18.33	6.84	8.30
LSD, 0.05	3.74	0.95	0.30	0.15	0.17	0.35	1.09

\* Not significantly different from the highest numerical value in the column based on the 0.05 LSD.

<sup>1</sup> Maturity rating scale: 37=flag leaf visible 45=boot swollen 50=beginning of inflorescence emergence  
58=complete emergence of inflorescence 62=beginning of pollen shedding

<b>Table 4. Dry Matter Yields (Tons/acre) of Fescue Varieties Sown 5 September 1996 at Quicksand, Kentucky.</b>						
<b>Variety</b>	<b>1997 Total</b>	<b>1998 Harvests</b>			<b>1998 Total</b>	<b>2-yr Total</b>
		<b>Jun 2</b>	<b>Jul 23</b>	<b>Nov 5</b>		
<b>Commercial Varieties - Available for Farm Use</b>						
Stag	5.87 *	2.48	0.77 *	0.81 *	4.06	9.93 *
Stargrazer	5.63 *	2.67 *	0.81 *	0.81 *	4.29 *	9.92 *
KY31+	4.90	2.49	0.77 *	0.64	3.90	8.80
Bull	4.97	2.46	0.72 *	0.65	3.83	8.79
<b>Experimental Varieties - Not Available for Farm Use</b>						
KYTF2	6.05 *	2.90 *	0.76 *	0.84 *	4.51 *	10.56 *
KYFA9401	5.88 *	2.52	0.81 *	0.77 *	4.09 *	9.98 *
TF9005	5.40 *	2.83 *	0.80 *	0.90 *	4.53 *	9.93 *
KYFA9301	5.53 *	2.81 *	0.75 *	0.77 *	4.32 *	9.85 *
TF8503	5.43 *	2.70 *	0.84 *	0.77 *	4.31 *	9.73 *
KYFA9403	5.52 *	2.50	0.83 *	0.84 *	4.17 *	9.69 *
KYFA9303	5.50 *	2.59 *	0.78 *	0.76 *	4.12 *	9.62 *
KY31-	5.44 *	2.62 *	0.78 *	0.76 *	4.16 *	9.61 *
KYFA9304	5.15 *	2.69 *	0.75 *	0.81 *	4.25 *	9.40 *
BAR-FA-6FRD	5.3 *	2.30	0.75 *	0.80 *	3.85	9.19
KYFA9302	5.22 *	2.45	0.75 *	0.74	3.95	9.17
KYFA9402	5.02 *	2.41	0.80 *	0.79 *	4.00	9.02
OFIB-1	5.05 *	2.23	0.82 *	0.67	3.73	8.78
Mean	5.41	2.57	0.78	0.77	4.12	9.53
CV, %	14.02	9.25	11.45	13.09	7.67	9.37
LSD, 0.05	1.08	0.34	0.13	0.14	0.45	1.27
* Not significantly different from the highest numerical value in the column based on the 0.05 LSD.						

**Table 5. Dry Matter Yields (Tons/acre) of Fescue, Festulolium (FL), and Perennial Ryegrass (PRG) Varieties Sown 11 September 1997 at Lexington, Kentucky.**

Variety	Maturity <sup>1</sup> May 3	1998 Harvests				1998 Total
		May 6	Jun 19	Jul 22	Oct 29	
<b>Commercial Varieties - Available for Farm Use</b>						
Bestfor (PRG)	38.0	3.20 *	0.77 *	0.92 *	0.39	5.28 *
Tandem (FL)	36.9	2.78 *	0.55	0.55	0.82	4.71 *
Quincy	53.0	1.32	0.66 *	1.04 *	1.44 *	4.46
Boxer (PRG)	37.8	2.66	0.66 *	0.47	0.64	4.43
Amazon (PRG)	35.3	2.44	0.37	0.44	0.69	3.94
Kemal (FL)	40.5	2.35	0.49	0.41	0.68	3.93
Jesup	54.3	1.34	0.56	0.81	1.13	3.85
Seine	47.3	1.06	0.62 *	0.79	1.35 *	3.81
Fuego	43.0	1.09	0.69 *	0.88	1.11	3.77
Martin II	52.3	1.14	0.71 *	0.84	1.07	3.76
KY31+	47.3	0.92	0.58	0.91 *	1.30 *	3.71
Festorina	47.5	1.07	0.66 *	0.71	1.09	3.54
Tetramax (PRG)	38.3	2.34	0.29	0.32	0.55	3.50
Quantum	57.8 *	0.98	0.62 *	0.84	1.06	3.49
Bull	53.5	0.99	0.44	0.80	1.13	3.35
Johnstone	44.0	0.67	0.59	0.90	1.18	3.34
<b>Experimental Varieties - Not Available for Farm Use</b>						
KYFA9304	46.8	1.40	0.80 *	1.08 *	1.32 *	4.60 *
WFL96 (FL)	36.6	2.69	0.57	0.52	0.77	4.55
KYFA9402	50.3	1.36	0.72 *	1.00 *	1.34 *	4.43
KYTF2	40.5	1.23	0.76 *	1.02 *	1.17	4.17
KYFA9401	45.3	1.15	0.70 *	0.95 *	1.22	4.02
KY31-	49.8	1.18	0.62	0.92 *	1.20	3.92
KYFA9302	52.8	1.13	0.63 *	0.85	1.20	3.81
OFIB-1	55.8 *	1.12	0.66 *	0.86	1.11	3.74
KYFA9403	44.3	0.91	0.70 *	0.89	1.16	3.67
KYFA9301	43.3	0.90	0.56	0.93 *	1.24 *	3.62
TF8805	47.0	1.09	0.52	0.83	1.10	3.55
TF8503	46.0	0.48	0.42	0.96 *	1.00	2.87
WVPB-BR31(Brome)	38.5	1.12	0.73 *	0.60	0.35	2.81
WVPB TF500	40.5	0.88	0.23	0.60	0.76	2.47
Mean	44.8	1.54	.59	0.76	1.00	3.89
CV, %	5.42	22.37	23.72	16.68	14.69	13.24
LSD, 0.05	03.3	0.47	0.19	0.17	0.20	0.70

\* Not significantly different from the highest numerical value in the column based on the 0.05 LSD.

<sup>1</sup> Maturity rating scale: scale: 37=flag leaf visible 45=boot swollen 50=beginning of inflorescence emergence 58=complete emergence of inflorescence 62=beginning of pollen shedding 3=final stage of seed development.

Table 6. Performance of Tall Fescue, Bluegrass (BG), Festulolium (FL), and Perennial Ryegrass (PRG) Varieties and Chicory across Years and Locations.		Quicksand		Lexington			Princeton	
		1996 <sup>1</sup>		1996	1997	1996		
Variety	Proprietor/KY Distributor	97 <sup>2</sup>	98	97	98	98	97	98
<b>Commercial Varieties - Available for Farm Use</b>								
Amazon (PRG)	Willamette Seed Co.							
Bull	D.L.F. Trifolium							
Barcel	Barenbrug Research/Barenbrug USA							
Bestfor (PRG)	D.L.F. Trifolium					*		
Boxer (PRG)	Willamette Seed Co.							
Dovey	Barenbrug Research/Barenbrug USA				*			
Festorina	Advanta Seeds West/Oldfields Seeds							*
Fuego	Advanta Seeds West/Oldfields Seeds							
Jesup	Pennington Seed							
Johnstone	Willamette Seed Co./Public							
Kemal (FL)	Danish Plant Breeders							
Kenblue (BG)	KY Agric. Exp. Sta./Public							
KY31+ (Endophyte infected)	KY Agric. Exp. Sta./Public				*			
Lato (BG)	Turf-Seed Inc.							
Martin II	International Seeds, Inc.							
Orygun	Turner Seeds							*
Puna (Chicory)	Burlingham Seeds						*	
Quantum	International Seeds Inc.							
Quincy	Univ. of Florida							
Seine	Advanta Seeds West							
Stag	Cascade International	*					*	
Stargrazer	FFR/Southern States	*	*	*	*		*	
Tandem (FL)	Advanta Seeds West					*		
Tetramax (PRG)	D.L.F. Trifolium							
<b>Experimental Varieties - Not Available for Farm Use</b>								
BARFA2HG	Barenbrug Research/Experimental							
BARFA4113	Barenbrug Research/Experimental							
BARFA6FRD	Barenbrug Research/Experimental	*						
EA30	Cascade International							*
EA70	Cascade International							
FA89K	Barenbrug Research/Experimental							
GA153	GA Agric. Exp. Sta./Experimental							
GA156	GA Agric. Exp. Sta./Experimental				*			
KY31- (endophyte free)	KY Agric. Exp. Sta./Experimental	*	*	*	*			
KYFA9301	KY Agric. Exp. Sta./Experimental	*	*					
KYFA9302	KY Agric. Exp. Sta./Experimental	*					*	*
KYFA9303	KY Agric. Exp. Sta./Experimental	*	*		*			*
KYFA9304	KY Agric. Exp. Sta./Experimental	*	*		*	*		
KYFA9401	KY Agric. Exp. Sta./Experimental	*	*					
KYFA9402	KY Agric. Exp. Sta./Experimental	*						
KYFA9403	KY Agric. Exp. Sta./Experimental	*	*	*	*		*	
KYFA9404	KY Agric. Exp. Sta./Experimental	*			*			
KYTF2	KY Agric. Exp. Sta./Experimental	*	*	*	*			
OFIB-1	Olsen-Fennell Seeds Inc.	*						*
TF8503	Royal Seeds West	*	*					
TF8805	FFR Cooperative							
TF9005	Barenbrug Research/Experimental	*	*		*			*
TF9201	FFR Cooperative			*	*			
WFL96 (FL)	University of Wisconsin							
WVBP-BR31 (Brome)	D.L.F. Trifolium							
WVPB TF500	Western Production Inc.							

<sup>1</sup> Establishment year  
<sup>2</sup> Harvest year  
\* Not significantly different from the highest-yielding variety in the test. Shaded boxes indicate that the variety was not in the test. Open boxes indicate the variety was in the test but yielded significantly less than the top-ranked variety in the test.



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