

# 2004 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, used for both hay and pasture, 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 or infected with an endophyte that is apparently non-toxic.

This report provides current yield data on tall fescue varieties and other selected species 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 nonproductive 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% is 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 endophyte, are

adapted for use in Kentucky. For the new "friendly endophyte" tall fescues, the seed tag should specify the infection level. Also, seed of these varieties should be handled carefully to preserve this infection, which means keeping seed cool and planting as soon as possible.

**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, 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 three studies are reported. Tall fescue varieties were sown at Lexington (2003), Quicksand (2003), and Princeton (2002). The soils at Lexington (Maury), Quicksand (Pope), and Princeton (Crider) are 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 5 by 15 feet in a randomized complete block design with four replications. Nitrogen was topdressed at 60 lb/A of actual N in March, after the second 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 practices for these tests regarding establishment, fertility, weed control, and harvest timing were in accordance with University of Kentucky recommendations.

## Results and Discussion

Weather data for 2004 for Lexington, Quicksand, and Princeton are presented in Table 1.

Ratings for maturity and dry matter yields (tons/acre) are reported in Tables 2 through 4. Yields are given by cutting date and as total annual production. Varieties are listed by total yield in descending order. Experimental varieties are listed separately at the bottom of the tables.

Statistical analyses were performed on all data to determine if the apparent differences are truly due to varietal differences or just to chance. In the tables, varieties that are 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.

Table 5 summarizes information about distributors, endophyte 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 5, an open block indicates that the variety was not in that particular test (labeled at the top of the column), while an (x) in the block means that the variety was in the test but yielded significantly less than the top yielding variety. 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 through 4).

**Summary**

Selecting a good 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.

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**Table 1. Temperature and rainfall at Lexington, Princeton and Quicksand, Kentucky in 2004**

	Lexington				Princeton				Quicksand			
	Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	30	-1	3.14	+0.28	36	+2	4.12	+0.32	34	+3	4.48	+1.19
FEB	36	+1	1.32	-1.89	39	+1	2.44	-1.99	39	+6	3.45	-0.15
MAR	47	+3	3.43	-0.97	53	+6	4.28	-0.66	49	+8	3.84	-0.5
APR	55	0	3.06	-0.82	59	0	5.32	+0.52	51	+4	4.84	+0.74
MAY	68	+4	9.79	+5.32	72	+5	7.34	+2.38	68	+6	11.22	+6.74
JUN	72	0	3.13	-0.53	74	-1	3.4	-0.45	71	+1	6.19	+2.37
JUL	73	-3	7.65	+2.65	75	-3	4.87	+0.58	75	+1	2.3	-2.95
AUG	71	-4	2.91	-1.02	73	-4	3.02	-0.99	72	-1	1.37	-2.64
SEP	68	0	2.61	-0.59	71	0	0.2	-3.13	69	+3	6.8	+3.28
OCT	58	+1	5.65	+3.08	64	+5	4.03	+0.98	61	+7	4.19	+1.29
NOV	49	+4	6.29	+2.90	53	+6	6.94	+2.31	51	+9	3.56	-0.032
Total			48.98	+8.41			45.96	-0.13			53.09	+9.04

DEP is departure from the long-term average for that location.

**Table 2. Dry matter yields(tons/acre)and maturity rating of tall fescue varieties sown September 25, 2002 at Princeton, Kentucky.**

Variety	Maturity <sup>1</sup>	Yield(tons/acre)					
	May 10, 2004	Total 2003	2004 Yields			Total 2004	Total 2-yr
			May 10	Jun 14	Jul 21		
<b>Commercial Varieties—Available for Farm Use</b>							
KY31+ <sup>2</sup>	56.0	5.03	2.64	0.57	0.56	3.76	8.79*
Bull	60.0	4.86	2.96	0.45	0.51	3.92	8.77*
ArkPlus	60.0	4.73	2.79	0.47	0.51	3.76	8.49*
Select	59.5	4.56	2.74	0.44	0.40	3.58	8.14*
Jesup MaxQ	59.5	4.70	2.24	0.47	0.47	3.18	7.88*
<b>Experimental Varieties</b>							
RAD-MA216	60.0	4.88	2.99	0.50	0.47	3.96	8.83*
KY31- <sup>2</sup>	59.0	4.72	2.95	0.42	0.47	3.85	8.57*
FABE9301a	56.0	4.45	2.93	0.52	0.58	4.03	8.48*
KYFA9304	56.5	4.69	2.56	0.43	0.45	3.43	8.12*
KYFA9301	57.0	4.91	2.20	0.44	0.40	3.04	7.95*
PBR	50.5	3.35	2.68	0.51	0.44	3.64	6.99
EC409	52.0	3.34	2.82	0.37	0.20	3.39	6.72
Mean	57.0	4.52	2.70	0.46	0.45	3.63	8.15
CV, %	2.8	9.14	22.22	14.42	25.65	17.93	9.49
LSD,0.05	2.3	0.59	0.87	0.10	0.17	0.94	1.11

\*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 emergence, 45=boot swollen, 50=beginning of inflorescence emergence, 58=complete emergence of inflorescence, 62=beginning of pollen shedding.

<sup>2</sup> "+" indicates variety is endophyte infected; "-" indicates variety is endophyte free.

Note-due to a dry September, a fourth harvest was not taken.

<b>Table 3. Dry matter yields(tons/acre), seedling vigor, and maturity rating of tall fescue, festulolium(FL) and Kentucky bluegrass(BG) sown September 16, 2003 at Lexington, Kentucky.</b>							
Variety	Vigor <sup>1</sup>	Maturity <sup>2</sup>	Yield(tons/acre)				
	Oct.31, 2003	May 6, 2004	2004 Yields				Total 2004
			May 6	Jun 11	Jul 28	Oct 8	
<b>Commercial Varieties—Available for Farm Use</b>							
Stockman	4.0	56.0	1.98	1.51	2.27	1.89	7.66*
KY31+ <sup>3</sup>	4.8	55.0	1.74	1.25	2.34	1.70	7.04*
Hykor (FL) <sup>4</sup>	4.3	58.0	1.88	1.43	2.15	1.45	6.90*
ArkPlus	4.8	55.0	1.72	1.27	2.15	1.70	6.84*
Select	3.3	55.5	1.89	1.20	1.71	1.55	6.35
Bull	4.3	60.0	1.76	1.12	1.80	1.61	6.29
Barianne	3.8	45.0	1.23	1.08	1.75	1.51	5.57
Ginger (BG) <sup>4</sup>	2.0	60.0	0.64	0.41	0.55	1.60	3.20
Slezanka (BG) <sup>4</sup>	2.3	49.5	0.69	0.70	0.86	0.78	3.03
<b>Experimental Varieties</b>							
KYTF2	4.0	51.3	1.80	1.53	2.15	1.69	7.18*
CIS-FTF25	4.5	57.5	1.68	1.22	2.04	2.01	6.95*
KY-31- <sup>3</sup>	4.5	55.5	1.82	1.26	2.27	1.59	6.94*
KYFA0006	4.3	48.0	1.55	1.49	2.21	1.64	6.89*
KYFA9304	4.0	54.0	1.79	1.32	2.14	1.60	6.85*
KYFA9611	3.0	45.0	1.61	1.47	2.08	1.58	6.74*
MRF42	4.0	56.5	1.66	1.21	1.91	1.58	6.36
ERF38	4.0	58.5	1.50	1.16	1.94	1.60	6.20
KYFA9602	3.3	49.8	1.89	1.26	1.55	1.38	6.08
CIS-FTF24	4.5	59.5	1.52	1.05	1.48	1.52	5.57
KYFA9819 (FL) <sup>4</sup>	5.0	45.0	3.16	1.19	0.48	0.43	5.26
KYPP9901 (BG) <sup>4</sup>	2.5	60.0	0.67	0.35	0.59	0.64	2.26
HB96 (BG) <sup>4</sup>	1.0	59.0	0.03	0.04	0.00	0.00	0.07
HB95 (BG) <sup>4</sup>	1.0	58.0	0.01	0.03	0.00	0.00	0.04
Mean	3.60	54.18	1.49	1.07	1.58	1.35	5.49
CV, %	11.20	4.17	11.86	16.28	14.31	36.93	12.89
LSD, 0.05	0.57	3.41	0.25	0.25	0.32	0.70	1.00
*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD							
<sup>1</sup> Vigor score based on scale of 1 to 5 with 5 being the most vigorous seedling growth.							
<sup>2</sup> Maturity rating scale: 37=flag leaf emergence, 45=boot swollen, 50=beginning of inflorescence emergence, 58=complete emergence of inflorescence, 62=beginning of pollen shedding.							
<sup>3</sup> "+" indicates variety is endophyte infected; "-" indicates variety is endophyte free.							
<sup>4</sup> FL=festulolium; BG=Kentucky bluegrass							

**Table 4. Dry matter yields(tons/acre) of tall fescue, festulolium(FL) and Kentucky bluegrass(BG) sown October 9, 2003 at Quicksand, Kentucky.**

Variety	2004 Yields				Total
	May 21	Jul 12	Aug 24	Oct 25	2004
<b>Commercial Varieties—Available for Farm Use</b>					
Stockman	1.04	2.94	1.24	1.89	7.10*
KY31+ <sup>2</sup>	1.00	2.33	1.67	1.87	6.88*
Jesup MaxQ	0.99	2.46	1.51	1.87	6.83*
ArkPlus	1.05	2.37	1.47	1.93	6.82*
Select	0.78	2.41	1.54	1.82	6.54*
Bull	0.79	2.01	1.77	1.81	6.38
Hykor (FL) <sup>3</sup>	0.62	2.38	1.30	1.78	6.08
<b>Experimental Varieties</b>					
KYFA9819 (FL) <sup>3</sup>	3.67	1.88	1.46	0.74	7.75*
KYFA9602	2.02	2.26	1.43	1.74	7.44*
KYTF2	0.80	2.51	1.92	1.95	7.18*
KYFA9304	0.88	2.70	1.50	1.75	6.83*
KYPP9901 (BG) <sup>3</sup>	0.05	1.90	1.64	1.42	5.01
Mean	1.14	2.35	1.54	1.71	6.74
CV, %	38.39	15.34	17.55	10.09	9.52
LSD, 0.05	0.62	0.52	0.39	0.25	0.92
*Not significantly different from the highest yielding tall fescue variety in the column, based on the 0.05 LSD.					
<sup>2</sup> "+" indicates variety is endophyte infected					
<sup>3</sup> FL=festulolium; BG-Kentucky bluegrass					

<b>Table 5. Performance of tall fescue and festulolium(FL) varieties across years and location.</b>					
		<b>Lexington</b>	<b>Quicksand</b>	<b>Princeton</b>	
		<b>2003<sup>1</sup></b>	<b>2003</b>	<b>2002</b>	
<b>Variety</b>	<b>Proprietor/KY distributor</b>	<b>04<sup>2</sup></b>	<b>04</b>	<b>03</b>	<b>04</b>
<b>Commercial Varieties—Available for Farm Use</b>					
ArkPlus	FFR/Southern States	*	*	*	*
Barianne	Barenbrug USA	x			
Bull	Improved Forages	x	x	*	*
Hykor (FL)	DLF International Seed	*	x		
KY31+ <sup>3</sup>	Ky Agric. Exp. Station/Public	*	*	*	*
Jesup MaxQ	Pennington Seed		*	*	*
Select	FFR/Southern States	x	*	*	*
Stockman	Seed Research of Oregon	*	*		
<b>Experimental Varieties</b>					
CIS-FTF24	Cebeco International Seeds	x			
CIS-FTF25	Cebeco International Seeds	*			
EC409	Emerald Commodities, Inc			x	*
ERF38	Radix Research, Inc.	x			
FABE9301a	Barenbrug USA			*	*
KY31- <sup>3</sup>	KY Agric. Exp. Station	*		*	*
KYFA0006	KY Agric. Exp. Station	*			
KYFA9301	KY Agric. Exp. Station			*	x
KYFA9304	KY Agric. Exp. Station	*	*	*	*
KYFA9602	KY Agric. Exp. Station	x	*		
KYFA9611	KY Agric. Exp. Station	*			
KYFA9819 (FL)	KY Agric. Exp. Station	x	*		
KYTF2	KY Agric. Exp. Station	*	*		
MRF42	Radix Research, Inc.	x			
PBR	Barenbrug USA			x	*
RAD-MA216	Lewis Seed Co.			*	*
<p>*Not significantly different from the highest yielding variety in the test.  Open boxes indicate the variety was not in the test.  x in the box indicates the variety was in the test but yielded significantly less than the top yielding variety in the test.  <sup>1</sup> Establishment year  <sup>2</sup> Harvest year.  <sup>3</sup> "+" indicates variety is endophyte infected; "-" indicates variety is endophyte free.</p>					



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