



# 2001 Tall Fescue Report

*R.F. Spitaleri, J.C. Henning, T.D. Phillips, G.D. Lacefield, and D.C. Ditsch*

## 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.

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 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.

**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 (1999), Quicksand (1999), and Princeton (2000). 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 5 x 15 feet 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 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 2001 for Lexington, Quicksand, and Princeton are presented in Table 1. In general, temperature and moisture in 2001 were closer to normal than in recent years.

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 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 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, a shaded area indicates that the variety was not in that particular test (labeled at the top of the column), while a clear block means 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 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.

**Table 1. Temperature and rainfall at Princeton, Lexington, and Quicksand, Kentucky in 2001.**

MON	Princeton				Lexington				Quicksand			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	35	+1	1.6	-2.3	31	0	0.9	-1.9	34	+3	2.5	-0.8
FEB	44	+6	5.0	+0.5	40	+5	3.2	0	43	+10	3.7	+0.1
MAR	44	-3	2.8	-2.1	40	-4	2.7	-1.7	42	+1	2.2	-2.2
APR	64	+5	2.2	-2.6	59	+4	1.7	-2.2	61	+8	1.7	-2.4
MAY	69	+2	2.5	-2.5	66	+2	4.9	+0.4	66	+4	4.4	-0.1
JUN	74	-1	4.8	+1.0	71	-1	2.0	-1.6	70	0	4.2	+0.4
JUL	80	+2	5.5	+1.2	75	-1	5.6	+0.6	73	-1	6.4	+1.2
AUG	79	+2	4.0	-0.1	76	+1	4.8	+0.8	75	+2	2.4	-1.6
SEP	69	-2	3.5	+0.2	65	-3	3.0	-0.2	66	0	1.1	-2.4
OCT	61	+2	7.5	+4.4	56	-1	3.6	+1.1	58	+4	1.4	-1.6

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

**Table 2. Dry matter yields (tons/acre) of tall fescue and festulolium (FL) varieties sown 23 August 1999 at Lexington, Kentucky.**

Variety	Total 2000	Maturity May 10, 2001	2001 Harvests					Total 2001	2-yr Total
			May 11	Jun 21	Aug 2	Sep 4	Oct 18		
<b>Commercial Varieties – Available for Farm Use</b>									
Atlas	10.30	59.75	2.97	1.49	0.86	1.56	0.62	7.49	17.80*
Select	10.03	56.00	3.14	1.50	0.80	1.69	0.41	7.54	17.58*
Duo (FL)	11.04	41.75	2.56	1.70	0.36	1.27	0.38	6.27	17.30*
Ky 31+ <sup>1</sup>	9.60	48.00	2.48	1.84	0.73	1.66	0.63	7.33	16.93*
Fuego	9.33	44.25	2.29	1.99	0.71	1.58	0.61	7.18	16.51*
Seine	8.93	51.25	2.49	1.97	0.65	1.68	0.78	7.57	16.51*
Maximize	8.88	54.00	2.40	1.63	0.72	1.84	0.56	7.15	16.04*
DLF-B	8.86	57.75	2.51	1.79	0.72	1.63	0.50	7.15	16.01*
BAR 9 TMPO	9.15	49.75	2.34	1.63	0.57	1.72	0.48	6.74	15.89*
Johnstone	8.89	51.50	2.65	1.78	0.56	1.53	0.37	6.89	15.78
<b>Experimental Varieties – Not Available for Farm Use</b>									
KYFA 9304	10.39	52.75	2.94	1.64	0.83	1.74	0.62	7.77	18.16*
BAR-FA-BTR7	10.75	56.75	3.00	1.28	0.94	1.54	0.60	7.35	18.11*
Jesup 584	10.11	56.00	2.76	1.59	0.93	1.74	0.53	7.55	17.67*
BAR-FA-BTR6	10.24	46.00	2.51	1.67	0.78	1.56	0.80	7.32	17.57*
Ampac pp7	10.41	61.50	2.91	1.45	0.86	1.17	0.35	6.74	17.15*
TF 9202	10.03	54.50	2.63	1.66	0.75	1.57	0.49	7.10	17.13*
GA 7CLONE-542	9.70	59.50	2.78	1.39	0.90	1.79	0.42	7.27	16.98*
GA 5-584	9.49	56.50	2.55	1.51	0.92	1.57	0.46	7.01	16.50*
Ampac-pp3	10.10	49.00	3.29	1.51	0.77	0.56	0.17	6.29	16.39*
Jesup 542	9.29	56.00	2.48	1.74	0.76	1.68	0.40	7.07	16.36*
KYTF 2	9.10	46.75	2.48	2.09	0.58	1.55	0.46	7.17	16.27*
Ampac pp8	9.78	50.25	3.00	1.39	0.80	0.87	0.27	6.32	16.10*
Ky 31- <sup>1</sup>	8.09	54.00	2.77	1.60	0.75	1.56	0.63	7.31	15.40
GA 153E-542	8.33	56.50	2.02	2.02	0.73	1.57	0.50	6.83	15.16
KYFA 9301	8.40	52.50	2.51	1.25	0.66	1.42	0.43	6.28	14.68
GA156L-542	7.64	48.00	1.95	2.10	0.44	1.67	0.48	6.64	14.28
Mean	9.50	52.71	2.63	1.66	0.73	1.53	0.50	7.05	16.55
CV, %	15.85	6.91	17.04	25.57	31.32	13.68	26.60	6.35	10.15
LSD, 0.05	2.12	5.13	0.63	0.60	0.32	0.29	0.19	0.63	2.36

\* Not significantly different from the highest value in the column, based on the 0.05 LSD.  
<sup>1</sup> "+" indicates variety is endophyte infected, "-" indicates variety is endophyte free.

**Table 3. Dry matter yields (tons/acre) of tall fescue varieties sown 13 September 1999 at Quicksand, Kentucky.**

Variety	Total 2000	Maturity 18 May 2001	2001 Harvests			Total 2001	2-yr Total
			May 28	Jul 3	Aug 6		
<b>Commercial Varieties – Available for Farm Use</b>							
Ky 31+ <sup>1</sup>	7.24	57.75	2.51	1.27	1.12	4.90	12.14*
Select	7.29	60.75	2.45	1.20	1.10	4.76	12.05*
Maximize	6.86	60.00	2.48	1.34	1.18	5.01	11.87*
BAR 9 TMPO	6.67	59.50	2.36	1.08	0.82	4.26	10.93*
Johnstone	5.99	55.00	2.06	1.29	1.34	4.69	10.68*
Atlas	5.26	61.75	2.40	1.31	1.13	4.84	10.10
<b>Experimental Varieties – Not Available for Farm Use</b>							
TF9202	7.23	61.00	2.55	1.26	0.95	4.76	11.99*
KYFA 9301	7.24	58.25	2.36	1.16	1.07	4.59	11.83*
Jesup 542	6.63	61.50	2.13	1.43	1.37	4.93	11.55*
KYFA 9304	7.16	58.50	2.35	1.11	0.91	4.37	11.52*
Jesup 584	6.44	59.00	2.32	1.29	1.27	4.87	11.32*
KYTF 2	6.35	52.50	2.46	1.14	1.12	4.72	11.07*
Ky 31- <sup>1</sup>	6.67	59.75	2.25	1.09	0.99	4.34	11.00*
GA 5 584	6.42	60.50	2.12	1.08	1.03	4.23	10.65*
Ampac pp8	5.15	52.50	1.44	1.47	1.65	4.56	9.71
Mean	6.57	58.55	2.28	1.23	1.14	4.65	11.23
CV, %	16.78	2.47	11.11	14.54	17.53	9.26	10.94
LSD, 0.05	1.57	2.06	0.36	0.26	0.28	0.61	1.75
* Not significantly different from the highest value in the column, based on the 0.05 LSD.							
<sup>1</sup> "+" indicates variety is endophyte infected, "-" indicates variety is endophyte free.							

**Table 4. Dry matter yields (tons/acre) of tall fescue, festulolium (FL), meadow brome (MB), and timothy (T) varieties sown 21 September 2000 at Princeton, Kentucky.**

Variety	2001 Harvests					2001 Total
	May 8	Jun 13	Jul 17	Aug 22	Oct 22	
<b>Commercial Varieties – Available for Farm Use</b>						
Vorage (FL)	3.82	1.49	0.58	0.30	0.85	7.03*
Ky31+ <sup>1</sup>	2.27	1.42	0.87	0.94	1.17	6.68*
Select	2.59	1.25	0.80	0.73	1.19	6.56*
Bull	2.18	1.24	0.77	0.66	1.39	6.23
Kokanee	1.95	1.54	0.53	0.67	0.76	5.45
Paddock (MB)	1.90	1.52	0.54	0.44	0.51	4.92
Outlaw (T)	3.02	0.44	0.27	0.31	0.46	4.50
Tuukka (T)	2.36	0.15	0.23	0.45	0.46	3.65
<b>Experimental Varieties – Not Available for Farm Use</b>						
KYFA 9304	2.53	1.71	0.82	0.81	1.29	7.16*
KYFA 9301	2.22	1.52	0.66	0.90	1.19	6.49*
KY 31- <sup>1</sup>	2.21	1.51	0.80	0.83	1.11	6.46*
Q4508	1.95	1.36	0.90	0.74	1.39	6.33*
KYFA 9402	2.30	1.22	0.57	0.79	1.29	6.17
KYFA 9401	2.08	1.47	0.66	0.77	1.13	6.12
CAS-EA79	1.85	1.37	0.78	0.77	1.29	6.05
KYFA 9403	2.20	1.45	0.59	0.73	1.00	5.98
KYTF2	2.38	1.35	0.50	0.70	1.02	5.95
R4663	1.31	0.52	0.30	0.33	1.56	4.01
Mean	2.29	1.25	0.62	0.66	1.06	5.88
CV, %	11.19	21.81	31.76	14.51	15.46	10.50
LSD, 0.05	0.36	0.39	0.28	0.14	0.23	0.88
* Not significantly different from the highest value in the column, based on the 0.05 LSD.						
<sup>1</sup> "+" indicates variety is endophyte infected, "-" indicates variety is endophyte free.						

**Table 5. Performance of tall fescue, festulolium (FL), meadow brome (MB), and timothy (T) varieties across years and locations.**

		Lexington		Quicksand		Princeton
		1999 <sup>1</sup>		1999		2000
Variety	Proprietor/KY Distributor	00 <sup>2</sup>	01	00	01	01
<b>Commercial Varieties – Available for Farm Use</b>						
Atlas	Proseeds	*	*		*	
Bar 9 TMPO	Barenbrug USA	*		*		
Bull	Improved Forages					
DLF-B	DLF-Trifolium		*			
Duo (FL)	Ampac Seed Co.	*				
Fuego	Advanta Seeds West/Oldfields Seeds	*	*			
Johnstone	Proseeds			*	*	
Kokanee	Ampac Seed Company					
Ky 31+ <sup>3</sup>	KY Agric. Exp. Sta./Public	*	*	*	*	*
Maximize	Turf-Seed, Inc.		*	*	*	
Outlaw (T)	Grassland West Company					
Paddock (MB)	Grassland West Company					
Seine	Advanta Seeds West	*	*			
Select	FFR Cooperative	*	*	*	*	*
Tuukka (T)	Ampac Seed Company					
Vorage (FL)	Improved Forages					*
Vulcan	International Seeds					
<b>Experimental Varieties – Not Available for Farm Use</b>						
Ampac pp3	Ampac Seed Company	*				
Ampac pp7	Ampac Seed Company	*				
Ampac pp8	Ampac Seed Company	*			*	
CAS-EA79	Cascade International Seed					
BARFABTR 6	Barenbrug USA	*	*			
BARFABTR 7	Barenbrug USA	*	*			
GA 153e 542	GA Agric. Exp. Sta./Experimental					
GA 156L 542	GA Agric. Exp. Sta./Experimental					
GA 5 584	GA Agric. Exp. Sta./Experimental	*		*		
GA 7clone 542	GA Agric. Exp. Sta./Experimental	*	*			
Jesup 542	GA Agric. Exp. Sta./Experimental	*		*	*	
Jesup 584	GA Agric. Exp. Sta./Experimental	*	*	*	*	
Ky 31- <sup>3</sup>	KY Agric. Exp. Sta./Experimental		*	*		*
KYFA 9301	KY Agric. Exp. Sta./Experimental			*		*
KYFA 9304	KY Agric. Exp. Sta./Experimental	*	*	*		*
KYFA9401	KY Agric. Exp. Sta./Experimental					
KYFA9402	KY Agric. Exp. Sta./Experimental					
KYFA9403	KY Agric. Exp. Sta./Experimental					
KYTF 2	KY Agric. Exp. Sta./Experimental	*	*	*	*	
Q4508	Wrightson Seed LTD.					*
R4663	Wrightson Seed LTD.					
TF 9202	Proseeds	*		*	*	

\* 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.  
<sup>1</sup> Establishment year.  
<sup>2</sup> Harvest year.  
<sup>3</sup> "+" indicates variety is endophyte infected, "-" indicates variety is endophyte free.

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