

2014 Tall Fescue and Bromegrass Report

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Introduction

Tall fescue (*Festuca arundinacea*) is a productive, well-adapted, persistent, soil-conserving, cool-season grass grown on approximately 5½ 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 produces ergot alkaloids and 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 a nontoxic endophyte. Varieties in the latter group are also referred to as "novel" or "friendly" endophyte varieties, because their endophyte improves stand survival without creating animal production problems.

Smooth bromegrass (*Bromus inermis* Leyss) is a perennial pasture and hay grass native of Europe. It has creeping underground stems or rootstocks from which the leafy stems arise. Smooth bromegrass is palatable to all classes of livestock, from emergence to the heading stage. Meadow bromegrass (*Bromus biebersteinii* Roem. & Schult) is a native of southeastern Europe and the adjacent Near East. It resembles smooth bromegrass but has only short rhizomes or none at all. Meadow bromegrass is densely tufted and has a similar growth habit to tall fescue. Hybrid brome grasses are a cross between smooth and meadow brome grasses. Alaska brome grass (*Bromus sitchensis*), also called Sitka brome grass, is a long-lived perennial bunchgrass that will actively grow at moderate rates during the spring and summer season. It does not spread by rhizomes and is more suited to environments with harsh winters.

Prairie brome grass (*Bromus willdenowii*) is a tall, cool-season, leafy short-lived, perennial, deep-rooted bunchgrass. It was introduced from South America. Seedheads are produced throughout the growing season, and to maintain productive stands for several years, it is necessary to manage at least one growth cycle each year for seed production and natural reseeding. Some prairie brome grasses are susceptible to winterkill. Mountain brome grass (*Bromus marginatus*) is native to North America from Alaska to northern Mexico, where it can be found in many types of habitat. It is a short-lived, perennial, cool-season, sod-forming grass. Leafy growth and a deep, well-branched root system give protection on erodible slopes. It is similar to California brome grass (*Bromus carinatus*), and some consider them to be synonymous.

All brome grasses have several advantages over tall fescue, including retaining quality as they mature and better growth during dry weather, but they are generally less well adapted in Kentucky.

This report provides current yield data on tall fescue varieties and similar grass species in trials in Kentucky as well as guidelines for selecting tall fescue varieties. Tables 12 and 14 show a summary of all tall fescue and brome grass varieties tested in Kentucky for the past 15 years. The UK Forage Extension Web site at www.uky.edu/Ag/Forage contains electronic versions of all forage variety testing reports from Kentucky and surrounding states and a large number of other forage publications.

Important Selection Considerations

Local adaptation and seasonal yield. Before purchasing tall fescue seed, make sure that the variety is 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 persistent varieties and varieties that are productive during the desired season of use.

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

Endophyte level. Seed with infection levels of less than 5 percent is regarded as endophyte-free. A statement to that effect will be displayed prominently on a green tag attached to the seed bag. If no tag is present, assume the seed is infected with the toxic endophyte. Several varieties, both with and without the endophyte, are adapted for use in Kentucky. With the new "novel 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. "Novel endophyte" varieties need a high infection level to improve stand survival.

Seed quality. Buy premium-quality seed that is high in germination and purity levels and free from weed seed. Buy certified seed of improved varieties. An improved variety is one that has performed well in independent trials. The label also includes the test date (which must be within the previous nine months), the level of germination, and the amount of 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 six studies are reported. Tall fescue varieties were sown at Lexington (2011, 2012 and 2013), Princeton (2012) and Quicksand (2013). The bromegrass trials were sown in Lexington in 2012. The soils at Lexington (Maury), Princeton (Crider) and Quicksand (Nolin) are well-drained silt loams. They are well suited for tall fescue and bromegrass production.

Seedings were made at the rate of 25 pounds per acre for tall fescue and 20 pounds per acre for bromegrass into a prepared seedbed with a disk drill. Plots were 5 feet by 20 feet in a randomized complete block design with four replications with a harvested plot area of 5 feet by 15 feet. Nitrogen was topdressed at 60 pounds per acre of actual nitrogen in March, after the first cutting, and again in late summer, for a total of 180 pounds per acre over the season. 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 when all tall fescue and bromegrass 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 (P, K and lime based on regular soil tests), weed control, and harvest timing were in accordance with University of Kentucky recommendations.

Results and Discussion

Weather data for Lexington, Princeton and Quicksand are presented in tables 1, 2 and 3.

Ratings for maturity (see Table 4 for maturity scale), stand, and dry matter yields (tons/A) are reported in tables 5

through 10. Yields are given by cutting date for 2014 and as total annual production. Stated yields are adjusted for percent weeds, therefore the tonnage given is for crop only. Varieties are listed by total yield in descending order. Experimental varieties are listed separately at the bottom of the tables.

Table 1. Temperature and rainfall at Lexington, Kentucky in 2011, 2012, 2013 and 2014.

	2011				2012				2013				2014 ²			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	29	-2	2.10	-0.76	38	+7	4.80	+1.94	38	+7	4.50	+1.64	25	-6	2.28	-.58
FEB	39	+4	6.34	+3.13	40	+5	5.39	+2.18	36	+1	1.78	-1.43	30	-5	5.47	+2.26
MAR	47	+3	4.76	+0.36	56	+12	5.64	+1.24	39	-5	5.47	+1.07	39	-5	3.08	-1.32
APR	58	+3	12.36	+8.48	56	+1	3.26	-0.62	55	0	4.46	+0.58	58	+3	5.27	-1.89
MAY	64	0	6.72	+2.25	69	+5	4.02	-0.45	65	+1	5.23	+0.76	66	+2	5.72	+1.25
JUN	74	+2	2.61	-1.05	73	+1	2.42	-1.24	72	0	7.32	+3.66	75	+3	2.93	-0.73
JUL	80	+4	6.29	1.29	81	+5	2.50	-2.50	72	-4	9.33	+4.33	74	-2	3.18	-1.82
AUG	75	0	2.89	-1.04	75	0	1.68	-2.25	72	-3	3.68	-0.25	76	+1	6.53	+2.60
SEP	66	-2	5.52	+2.32	67	-1	6.40	+3.20	67	-1	2.21	-0.99	69	+1	3.63	+4.3
OCT	55	-2	4.10	+1.53	55	-2	2.00	-0.57	55	-2	7.02	+4.45	57	0	5.55	+2.98
NOV	50	+5	9.53	+6.14	43	-2	1.81	-0.65	41	-4	3.06	-0.33				
DEC	41	+5	5.58	+1.60	42	+6	9.57	+4.94	36	0	4.19	+0.21				
Total			68.80	+24.25			49.49	+4.94			58.25	+13.70			44.14	+6.96

¹ DEP is departure from the long-term average.

² 2014 data is for the ten months through October.

Table 2. Temperature and rainfall at Princeton, Kentucky in 2012, 2013 and 2014.

	2012				2013				2014 ²			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	40	+6	3.01	-0.79	38	+4	6.31	+2.51	30	-4	1.70	-2.10
FEB	54	+6	1.73	-2.70	39	+1	3.09	-1.34	32	-6	4.75	+0.32
MAR	60	+13	3.27	-1.67	42	-5	4.34	-0.60	43	-4	7.43	-0.51
APR	60	+1	0.62	-4.18	57	-2	5.72	+0.92	59	0	8.5	+3.70
MAY	71	+4	1.36	-3.60	66	-1	4.26	-0.70	68	+1	1.96	-3.00
JUN	74	-5	2.38	-1.47	74	-1	7.55	+3.70	76	+1	3.25	-0.60
JUL	83	+5	1.40	-2.89	75	-3	4.44	+0.15	73	-5	1.56	-2.73
AUG	77	0	4.27	+0.26	75	-2	5.59	+1.58	78	0	9.33	+5.32
SEP	69	-2	5.45	+1.82	71	0	5.37	+2.04	69	-2	0.97	-2.36
OCT	57	-2	2.94	-0.11	59	0	4.04	+0.99	59	0	4.36	+1.31
NOV	45	-2	2.11	-2.52	44	-3	1.37	-3.26				
DEC	45	+6	4.77	-0.27	38	-1	5.41	+0.37				
Total			33.01	-18.12			57.49	+6.36			40.81	-0.65

¹ DEP is departure from the long-term average.

² 2014 data is for the ten months through October.

Table 3. Temperature and rainfall at Quicksand, Kentucky in 2013 and 2014.

	2013				2014 ²			
	Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP
JAN	38	+7	5.61	+2.37	29	-2	2.66	-0.63
FEB	38	+5	1.81	-1.79	36	+3	4.52	+0.92
MAR	40	-1	4.55	+0.21	43	+2	5.68	+1.34
APR	56	+3	3.55	-0.55	58	+5	5.12	+1.02
MAY	64	+2	3.98	-0.50	65	+3	2.71	-1.77
JUN	73	+3	6.44	+2.62	75	+5	1.81	-2.01
JUL	75	+1	5.24	-0.01	72	-2	7.14	+1.89
AUG	73	0	5.85	+1.84	74	+1	7.94	+3.93
SEP	68	+2	1.71	-1.81	69	+3	1.93	-1.59
OCT	58	+4	2.07	-0.84	57	+3	6.36	+3.45
NOV	43	+1	3.05	-0.83				
DEC	40	+7	6.84	+2.70				
Total			50.70	+3.36			45.87	+6.55

¹ DEP is departure from the long-term average.

² 2014 data is for the ten months through October.

Table 4. Descriptive scheme for the stages of development in perennial forage grasses

Code	Description	Remarks
Leaf development		
11	First leaf unfolded	Applicable to regrowth of established (plants) and to primary growth of seedlings.
12	2 leaves unfolded	Further subdivision by means of leafdevelopment index (see text).
13	3 leaves unfolded	
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19	9 or more leaves unfolded	
Sheath elongation		
20	No elongated sheath	Denotes first phase of new spring growth after overwintering. This character is used instead of tillering which is difficult to record in established stands.
21	1 elongated sheath	
22	2 elongated sheaths	
23	3 elongated sheaths	
.	
29	9 or more elongated sheaths	
Tillering (alternative to sheath elongation)		
21	Main shoot only	Applicable to primary growth of seedlings or to single tiller transplants.
22	Main shoot and 1 tiller	
23	Main shoot and 2 tillers	
24	Main shoot and 3 tillers	
.	
29	Main shoot and 9 or more tillers	
Stem elongation		
31	First node palpable	More precisely an accumulation of nodes. Fertile and sterile tillers distinguishable.
32	Second node palpable	
33	Third node palpable	
34	Fourth node palpable	
35	Fifth node palpable	
37	Flag leaf just visible	
39	Flag leaf ligule/collar just visible	
Booting		
45	Boot swollen	
Inflorescence emergence		
50	Upper 1 to 2 cm of inflorescence visible	
52	¼ of inflorescence emerged	
54	½ of inflorescence emerged	
56	¾ of inflorescence emerged	
58	Base of inflorescence just visible	
Anthesis		
60	Preanthesis	Inflorescence-bearing internode is visible. No anthers are visible.
62	Beginning of anthesis	First anthers appear.
64	Maximum anthesis	Maximum pollen shedding.
66	End of anthesis	No more pollen shedding.
Seed ripening		
75	Endosperm milky	Inflorescence green
85	Endosperm soft doughy	No seeds loosening when inflorescence is hit on palm.
87	Endosperm hard doughy	Inflorescence losing chlorophyll; a few seeds loosening when inflorescence hit on palm
91	Endosperm hard	Inflorescence-bearing internode losing chlorophyll; seeds loosening in quantity when inflorescence hit on palm.
93	Endosperm hard and dry	Final stage of seed development; most seeds shed.

Smith, J. Allan, and Virgil W. Hayes. 1981. p. 416-418. 14th International Grasslands Conference Proc. 1981. June 14-24, 1981, Lexington, Kentucky.

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 and 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.

Tables 11 and 13 summarize information about distributors, 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; commercial varieties can be purchased from agricultural distributors. In tables 11 and 13, an open block indicates that the variety was not in that particular test (labeled at the top of the column); 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 based on the 0.05 LSD. 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 and brome grass varieties (tables 5-11, 13-14).

Tables 12 and 14 are summaries of yield data from 1999 to 2012 of commercial varieties that have been entered in the Kentucky trials. The data is listed as a percentage of the mean of the commercial varieties entered in each specific trial. In other words, the mean for each trial is 100 percent—varieties with percentages over 100 yielded better than average and varieties with percentages less than 100 yielded lower than average. Direct, statistical comparisons of varieties cannot be made using the table 12 and 14 summaries, but these comparisons do help to identify varieties for further consideration. Varieties that have performed better than average over many years and at several locations have very stable performance, while others may have performed very well in wet years or on particular soil types. These details

may influence variety choice, and the information can be found in the yearly reports. See the footnotes in tables 12 and 14 to determine to which yearly report to refer.

Summary

Selecting a good variety of tall fescue and brome grass 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.

The following is a list of University of Kentucky Cooperative Extension publications related to tall fescue management available from your county Extension office and are listed in the “Publications”

section of the UK Forage Web site, www.uky.edu/Ag/Forage:

- Lime and Fertilizer Recommendations (AGR-1)
- Grain and Forage Crop Guide for Kentucky (AGR-18)
- Tall Fescue (AGR-59)
- Establishing Forage Crops (AGR-64)
- Tall Fescue in Kentucky (AGR-108)
- Forage Identification and Use Guide (AGR-175)
- Rotational Grazing (ID-143)

About the Authors

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Table 5. Dry matter yields, seedling vigor, maturity, and stand persistence of tall fescue varieties sown September 14, 2011, at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct 11, 2011	Maturity ²			Percent Stand						Yield (tons/acre)						3-year Total		
		2012	2013	2014	2011	2012	2013	2014	2012	2013	2014			Total					
		Apr 25	May 23	May 12	Oct 11	Mar 21	Oct 24	Mar 22	Oct 22	Apr 11	Oct 25	Total	Total		May 12	Jun 16		Oct 27	
Commercial Varieties—Available for Farm Use																			
Teton II	4.5	54.5	61.5	58.0	100	100	100	100	100	100	100	100	3.09	5.32	1.16	0.56	1.56	3.27	11.69*
BarOptima PLUS E34	4.8	45.0	59.0	51.5	100	100	100	100	100	100	100	100	3.03	5.65	0.93	0.57	1.50	3.00	11.69*
Martin2 647	4.0	53.5	62.0	57.0	100	100	100	100	100	100	100	100	2.73	5.48	1.08	0.47	1.53	3.09	11.30*
Jesup MaxQ	4.6	54.0	62.0	56.5	100	100	100	100	100	100	100	100	3.21	5.20	1.02	0.40	1.37	2.79	11.20*
DuraMax GOLD	5.0	54.0	62.0	56.0	100	100	100	100	100	100	100	100	3.20	4.88	1.11	0.43	1.50	3.03	11.12*
Bronson	4.6	54.0	62.0	56.5	100	100	100	100	100	100	100	100	3.10	4.98	1.12	0.45	1.42	2.98	11.07*
BarElite	5.0	45.0	58.0	52.0	100	100	100	100	100	100	100	100	2.81	5.04	1.06	0.53	1.50	3.09	10.94*
Tower 647	5.0	45.0	58.0	48.0	100	100	100	100	100	100	100	100	3.07	4.93	0.77	0.53	1.43	2.73	10.72*
Jesup EF	4.8	55.5	61.5	55.0	100	100	100	100	100	100	100	100	2.77	4.97	1.07	0.45	1.43	2.95	10.70*
Cajun II	4.6	54.0	62.0	57.0	100	100	100	100	100	100	100	100	2.73	4.88	1.12	0.47	1.40	2.98	10.58*
Enhance	4.0	45.0	59.0	55.0	100	100	100	100	100	100	100	100	2.95	4.75	0.91	0.42	1.12	2.44	10.14
KY31+ ³	5.0	46.3	58.0	53.0	100	100	100	100	100	100	100	100	2.75	4.80	0.80	0.51	1.27	2.58	10.13
Kentucky 32	4.3	56.0	61.5	58.0	100	100	100	100	100	100	98	2.97	4.62	1.05	0.42	1.05	2.52	10.11	
HyMark	5.0	52.5	62.0	56.5	100	100	100	100	100	100	100	100	2.58	4.66	1.12	0.45	1.16	2.73	9.97
Select	4.8	53.5	61.5	56.0	100	100	100	100	100	100	100	100	2.70	4.49	0.96	0.41	1.29	2.67	9.85
Experimental Varieties																			
AGRFA 148	5.0	52.0	61.5	55.0	100	100	100	100	100	100	100	100	3.32	5.57	1.05	0.47	1.38	2.90	11.79*
NFTF 1411	4.9	55.0	62.0	55.5	100	100	100	100	100	100	100	100	3.02	5.65	1.03	0.41	1.50	2.94	11.62*
KYFA0804	4.8	57.0	60.0	59.0	100	100	100	100	100	100	99	3.32	5.08	1.10	0.44	1.21	2.75	11.15*	
IS-FTF53 HAPPE	4.3	49.3	59.5	56.0	100	100	100	100	100	100	100	100	3.07	5.02	0.86	0.48	1.53	2.86	10.95*
B-11.BC	4.6	53.5	62.0	55.5	100	100	100	100	100	100	100	100	2.90	5.03	1.18	0.47	1.33	2.98	10.91*
KY31- ³	5.0	48.0	61.0	54.5	100	100	100	100	100	100	100	100	3.00	4.94	0.96	0.50	1.26	2.72	10.66*
IS-FTF 54	3.9	57.5	61.0	58.5	100	100	100	100	100	100	100	100	2.76	4.84	1.09	0.51	1.30	2.90	10.50*
KYFA0905	4.6	45.0	58.0	54.5	100	100	100	100	100	100	100	100	2.61	5.02	1.00	0.49	1.34	2.83	10.46*
XLFTF	4.5	49.8	60.5	55.5	100	100	100	100	100	100	100	100	2.79	4.57	0.75	0.41	1.37	2.52	9.89
KYFA0902	4.6	45.0	58.0	54.5	100	100	100	100	100	100	100	100	2.48	4.22	0.82	0.38	1.22	2.42	9.12
Mean	4.6	51.2	60.5	55.4	100	100	100	100	100	100	100	100	2.92	4.98	1.00	0.46	1.36	2.83	10.73
CV,%	7.7	3.8	1.8	2.5	0	0	0	0	0	0	1	13.07	9.58	15.45	17.91	19.59	13.53	9.39	
LSD,0.05	0.5	2.7	1.5	1.9	0	0	0	0	0	0	2	0.54	0.67	0.22	0.12	0.38	0.54	1.42	

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

² Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 4 for complete scale.

³ KY31- is the variety KY31 from which the toxic endophyte has been removed. KY31+ contains the toxic endophyte. Jesup MaxQ, DuraMax GOLD, Martin2 647, Tower 647 IS-FTF53 HAPPE contain a non-toxic endophyte. BarOptima PLUS E34 contains a beneficial endophyte. The other varieties do not contain an endophyte.

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

Table 6. Dry matter yields, seedling vigor, maturity, and stand persistence of tall fescue and festulolium (FL) varieties sown September 7, 2012, at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct 16, 2012	Maturity ²		Percent Stand				Yield (tons/acre)					2-year Total		
		2013	2014	2012		2013		2014		2013	2014				
		May 20	May 9	Oct 16	Mar 20	Oct 22	Apr 9	Oct 28	Total	May 9	Jun 16	Aug 6		Oct 28	Total
Commercial Varieties—Available for Farm Use															
BarOptima PLUS E34	2.4	56.0	45.0	89	91	92	93	94	8.53	1.20	0.83	0.40	1.28	3.71	12.24*
Jesup EF	2.5	58.0	55.5	95	97	96	96	96	8.51	1.31	0.75	0.31	1.12	3.49	12.00*
Teton II	2.6	58.5	56.5	93	93	94	94	94	8.00	1.35	0.76	0.44	1.01	3.56	11.56*
Estancia Arkshield	3.4	56.0	54.0	96	97	97	97	97	7.60	1.29	0.87	0.44	1.27	3.87	11.47*
Tuscany II	3.3	57.0	53.5	97	95	96	95	95	8.08	1.12	0.79	0.30	1.03	3.25	11.33*
Select	2.9	57.0	55.5	94	95	96	97	96	8.14	1.26	0.69	0.29	0.90	3.14	11.29*
Bull	2.1	58.5	57.0	91	91	92	92	94	7.53	1.45	0.78	0.32	1.14	3.69	11.22*
Jesup MaxQ	1.8	57.5	56.0	94	95	96	96	96	7.90	1.10	0.80	0.35	1.05	3.30	11.19*
KY31+ ³	4.3	56.0	47.5	99	99	99	99	99	8.13	0.97	0.71	0.25	1.06	2.99	11.12*
Bronson	2.9	56.5	56.5	93	97	97	97	97	7.54	1.34	0.69	0.31	1.07	3.41	10.94
Kentucky 32	2.0	58.5	56.0	92	92	92	94	94	7.65	1.24	0.70	0.30	0.88	3.11	10.77
Cowgirl	2.6	57.5	55.5	96	96	96	97	97	7.25	1.27	0.73	0.31	0.97	3.28	10.53
Flourish	2.0	56.5	46.3	91	92	93	94	94	7.66	0.94	0.66	0.31	0.86	2.77	10.43
Mahulena (FL)	1.9	59.5	58.0	84	88	91	92	92	6.65	1.34	0.63	0.37	0.81	3.15	9.80
Fojtan (FL)	2.5	56.5	50.0	90	90	92	94	94	7.08	0.92	0.62	0.21	0.85	2.60	9.68
Experimental Varieties															
KYFA0906	3.4	56.0	47.5	95	97	96	96	96	8.43	1.03	0.79	0.38	1.08	3.29	11.71*
TF 0401	2.9	58.0	55.5	95	96	96	95	95	8.09	1.23	0.79	0.48	1.10	3.60	11.69*
IS-FTF 70	3.1	56.0	46.3	96	96	97	97	97	8.32	1.14	0.78	0.30	1.08	3.29	11.61*
PPG-FTF 104	2.0	56.0	48.5	89	90	93	93	93	7.97	1.11	0.76	0.33	1.06	3.27	11.24*
KYFA0905	2.6	56.5	48.0	92	92	94	94	95	8.03	0.99	0.66	0.30	1.06	3.02	11.05
KYFA0901	3.5	56.5	56.0	96	96	96	95	96	7.65	1.09	0.61	0.30	1.13	3.13	10.78
KY31- ³	3.5	56.5	52.5	99	99	99	99	99	7.63	1.03	0.72	0.30	0.91	2.96	10.59
Mean	2.7	57.0	52.6	93	94	95	95	95	7.84	1.17	0.73	0.33	1.03	3.27	11.10
CV,%	20.7	2.1	3.6	3	3	2	2	2	7.37	10.09	15.46	33.61	14.68	11.70	7.23
LSD,0.05	0.8	1.7	2.7	4	4	3	3	3	0.82	0.24	0.16	0.16	0.21	0.54	1.13

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

² Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 4 for complete scale.

³ KY 31- is the variety KY31 from which the toxic endophyte has been removed. Jesup MaxQ and Estancia Arkshield contain a non-toxic endophyte. BarOptima PLUS E34 contains a beneficial endophyte. KY31+ contains the toxic endophyte. The other fescue varieties in this test do not contain an endophyte.

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

Table 7. Dry matter yields, seedling vigor, maturity, and stand persistence of tall fescue varieties sown September 5, 2013, at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct 14/ 2013	Maturity ²		Percent Stand								Yield (tons/acre)				
		2014	2013	2014		2013		2014		2013		2014				
		May 8	Oct 14	Oct 14	Oct 28	Apr 2	Oct 28	May 8	Jun 16	Aug 5	Oct 30	Total				
Commercial Varieties—Available for Farm Use																
BarOptima PLUS E34	3.4	48.0	100	97	99	100	97	99	100	100	100	1.16	1.28	0.47	1.29	4.19*
Select	4.0	55.0	99	98	99	98	99	98	99	100	100	1.35	1.13	0.42	1.18	4.08*
Goliath	3.4	56.0	99	96	97	1.09	1.17	0.46	1.27	3.99*						
KY31+ ³	4.3	49.8	100	100	100	1.12	1.23	0.46	1.16	3.96*						
Jesup MaxQ	3.0	56.0	100	96	98	1.08	1.12	0.46	1.00	3.66						
Cajun II	3.0	55.0	96	82	92	0.80	0.98	0.50	1.18	3.46						
Bronson	3.5	55.5	100	95	95	0.79	0.92	0.36	1.19	3.26						
Experimental Varieties																
AGRA-179/AR584	4.0	44.8	100	97	100	1.09	1.30	0.60	1.42	4.42*						
KYFA9732/AR584	4.1	45.0	100	99	100	1.23	1.30	0.58	1.28	4.39*						
GT213/AR584	4.1	52.5	100	100	100	1.16	1.33	0.52	1.31	4.32*						
KYFA0701	4.6	52.5	100	98	98	1.15	1.17	0.49	1.27	4.07*						
KY31- ³	3.1	52.5	100	98	99	1.13	1.21	0.51	1.16	4.01*						
HTWC4	3.9	51.8	100	97	99	1.13	1.11	0.47	1.30	4.01*						
AGRA-178/AR584	3.4	46.3	100	99	100	1.19	0.99	0.51	1.25	3.94*						
KYFA9821/AR584	3.1	50.5	99	97	99	1.09	1.23	0.44	1.06	3.82*						
AGRA-200/AR584	4.4	41.0	100	99	100	1.06	1.18	0.59	0.96	3.80*						
KYFA9301/AR584	4.0	50.8	100	99	100	1.17	1.02	0.48	1.06	3.74*						
BARFAF13131	2.3	49.3	99	85	93	0.82	1.01	0.38	1.30	3.51						
AGRA201/AR605	2.1	55.0	99	93	94	0.90	0.90	0.39	1.03	3.23						
Mean	3.6	50.9	99	96	98	1.08	1.14	0.48	1.19	3.89						
CV,%	16.7	5.3	1	4	2	25.56	10.89	19.75	17.56	12.62						
LSD,0.05	0.8	3.8	2	5	3	0.39	0.18	0.13	0.30	0.70						

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

² Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 4 for complete scale.

³ KY 31- is the variety KY31 from which the toxic endophyte has been removed. Jesup MaxQ contains a non-toxic endophyte. BarOptima PLUS E34 contains a beneficial endophyte. AR584 and AR605 are non-toxic endophytes inserted into the experimental tall fescue varieties. KY31+ contains the toxic endophyte. The other fescue varieties in this test do not contain an endophyte.

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

Table 8. Dry matter yields, seedling vigor, maturity, and stand persistence of tall fescue and festulolium (FL) varieties sown September 12, 2012, at Princeton, Kentucky.

Variety	Seedling Vigor ¹ Oct 29, 2012	Maturity ²		Percent Stand					Yield (tons/acre)					2-year Total
		2013	2014	2012	2013		2014		2013	2014				
		May 14	May 20	Oct 29	Mar 19	Oct 25	Apr 9	Oct 22	Total	May 20	Jun 18	Oct 22	Total	
Commercial Varieties—Available for Farm Use														
Tuscany II	3.6	56.5	59.5	100	100	100	99	99	7.78	1.53	0.60	0.98	3.11	10.89*
Mahulena (FL)	2.5	59.0	61.5	100	100	100	100	100	7.72	1.58	0.68	0.80	3.06	10.77*
Flourish	2.3	55.0	58.0	97	99	99	99	99	7.66	1.43	0.60	0.89	2.92	10.59*
BarOptima PLUS E34	3.0	53.5	57.0	100	100	100	100	100	7.37	1.56	0.65	0.83	3.04	10.41*
Kentucky 32	2.3	57.0	61.5	99	99	99	98	100	7.23	1.51	0.56	1.05	3.11	10.35
Estancia Arkshield	4.6	57.5	60.0	100	100	100	100	100	7.21	1.48	0.66	0.98	3.12	10.33
Select	3.1	56.5	60.5	99	100	100	100	99	7.31	1.65	0.49	0.84	2.98	10.30
Teton II	2.8	57.5	60.5	100	100	100	100	99	7.49	1.35	0.52	0.92	2.79	10.28
Jesup EF	4.0	57.5	61.5	100	100	100	100	100	7.25	1.59	0.51	0.89	2.99	10.24
KY31+ ³	5.0	54.5	56.0	100	100	100	100	100	7.37	1.28	0.67	0.91	2.86	10.23
Cowgirl	3.0	56.5	59.5	100	100	100	100	100	7.03	1.43	0.58	1.07	3.09	10.12
Jesup MaxQ	3.6	57.5	61.5	100	100	100	100	99	7.44	1.27	0.56	0.78	2.61	10.05
Bull	3.4	58.0	60.0	99	100	100	100	100	7.21	1.20	0.58	1.04	2.82	10.03
Fojtan (FL)	2.5	53.5	57.5	100	100	100	100	100	7.17	1.35	0.55	0.91	2.80	9.98
Bronson	3.4	56.5	59.5	100	100	100	100	96	6.59	1.43	0.51	0.76	2.70	9.29
Experimental Varieties														
TF 0401	3.3	57.0	59.0	100	100	100	100	100	8.22	1.57	0.68	1.15	3.40	11.62*
IS-FTF 70	2.8	53.0	57.0	100	100	100	97	98	7.70	1.31	0.59	1.03	2.94	10.64*
KY31- ³	4.6	55.5	59.5	100	100	100	100	99	7.70	1.43	0.57	0.95	2.95	10.64*
KYFA0906	4.1	54.5	56.5	100	100	100	100	100	7.35	1.42	0.58	1.08	3.08	10.43*
KYFA0901	3.8	57.0	61.5	100	100	100	100	100	7.28	1.40	0.57	1.14	3.11	10.39*
KYFA0905	3.8	54.5	57.5	100	100	100	100	100	7.38	1.28	0.53	1.11	2.92	10.30
PPG-FTF 104	2.5	55.0	57.5	99	99	99	99	99	7.13	1.22	0.47	0.96	2.65	9.77
Mean	3.4	56.0	59.2	100	100	100	100	99	7.39	1.42	0.58	0.96	2.96	10.35
CV,%	19.0	2.0	2.8	1	0	0	1	2	7.93	17.63	21.97	19.59	14.24	8.55
LSD,0.05	0.9	1.6	2.3	2	1	1	2	3	0.83	0.35	0.18	0.27	0.60	1.25

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

² Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 4 for complete scale.

³ KY 31- is the variety KY31 from which the toxic endophyte has been removed. Jesup MaxQ and Estancia Arkshield contain a non-toxic endophyte. BarOptima PLUS E34 contains a beneficial endophyte. KY31+ contains the toxic endophyte. The other fescue varieties in this test do not contain an endophyte.

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

Table 9. Dry matter yields, seedling vigor, and stand persistence of tall fescue varieties sown August 29, 2013, at Quicksand, Kentucky.

Variety	Seedling Vigor ¹ Oct 3, 2013	Percent Stand			Yield (tons/acre)				
		2013	2014		2014				
		Oct 3	Mar 27	Nov 3	May 7	Jul 11	Sep 18	Oct 28	Total
Commercial Varieties—Available for Farm Use									
KY31+ ²	3.3	100	100	100	2.39	1.91	1.01	0.93	6.24
Select	3.3	100	98	98	2.59	1.91	0.86	0.75	6.11
Jesup MaxQ	2.0	100	97	98	2.09	1.94	0.93	0.87	5.83
Bull	2.0	100	98	97	2.21	1.75	0.99	0.76	5.72
BarOptima PLUS E34	2.3	99	97	97	1.86	2.12	0.90	0.83	5.71
Cajun II	1.5	95	78	90	1.18	1.30	0.84	0.68	4.00
Experimental Varieties									
KYFA9732/AR584	4.3	100	100	100	2.95	2.13	1.39	0.87	7.34*
KY31- ²	2.0	100	96	98	2.08	2.51	1.38	0.93	6.91*
KYFA9301/AR584	3.6	100	99	99	2.48	2.02	1.21	0.98	6.69*
KYFA0701	4.5	100	100	99	2.24	1.78	1.14	0.84	6.01
KYFA9821/AR584	1.5	100	98	98	1.88	2.16	0.98	0.79	5.80
HTWC4	3.1	100	94	97	1.97	1.82	0.99	0.76	5.55
Mean	2.8	99	96	98	2.16	1.95	1.05	0.83	5.99
CV,%	33.6	1	5	2	15.74	22.12	19.84	21.23	11.24
LSD,0.05	1.3	1	6	3	0.49	0.62	0.30	0.25	0.97

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

² KY 31- is the variety KY31 from which the toxic endophyte has been removed. Jesup MaxQ contains a non-toxic endophyte. BarOptima PLUS E34 contains a beneficial endophyte. AR584 is a non-toxic endophyte inserted into the experimental tall fescue varieties. KY31+ contains the toxic endophyte. The other fescue varieties in this test do not contain an endophyte.

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

Table 10. Dry matter yields, seedling vigor, maturity, and stand persistence of bromegrass varieties sown September 7, 2012, at Lexington, Kentucky.

Variety	Type	Seedling Vigor ¹ Oct 16, 2012	Maturity ²			Percent Stand					Yield (tons/acre)					2-year Total	
			2013		2014	2012	2013		2014		2013	2014					
			May 20	May 12	Jun 13	Oct 16	Mar 20	Oct 22	Apr 9	Oct 27	Total	May 12	Jun 13	Aug 7	Oct 28		Total
Commercial Varieties—Available for Farm Use																	
Macbeth	Meadow	2.6	62.0	59.2	29.0	94	91	92	92	92	5.86	1.19	0.72	0.37	1.19	3.47	9.34*
Fleet	Meadow	1.7	62.0	60.0	29.0	72	71	87	87	87	5.66	1.22	0.75	0.48	1.09	3.54	9.20*
AC Knowles	hybrid	2.5	60.5	55.5	60.0	95	87	92	92	92	5.56	1.10	0.93	0.30	0.98	3.32	8.88*
Peak	smooth	4.0	58.0	54.5	29.0	91	86	86	84	86	5.18	1.15	0.66	0.41	0.88	3.10	8.28*
Carlton	smooth	3.3	56.0	52.0	60.0	92	75	86	86	86	4.46	0.63	0.86	0.24	0.64	2.36	6.82*
Experimental Varieties																	
BARBcF1FRRL	Meadow	3.8	61.5	60.0	29.0	98	94	94	93	94	5.90	1.51	0.75	0.41	1.07	3.73	9.63*
BARBiF1GRL	smooth	4.5	57.5	55.0	29.0	99	98	98	98	98	5.67	1.48	0.57	0.35	1.10	3.50	9.18*
MSB	—	3.9	56.5	53.0	29.0	96	92	93	93	94	5.32	1.20	0.56	0.33	1.13	3.22	8.54*
Mean		3.3	59.3	56.1	36.8	93	87	91	91	91	5.46	1.19	0.72	0.36	1.01	3.28	8.74
CV,%		26.0	1.5	1.9	0.0	7	10	5	5	4	13.86	14.42	8.07	17.45	29.52	13.94	12.42
LSD,0.05		1.3	1.3	1.6	0.0	10	12	7	7	6	1.12	0.25	0.09	0.09	0.44	0.68	1.61

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

² Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 4 for complete scale.

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

Table 11. Performance of bromegrass varieties at Lexington.

Variety	Type	Proprietor/KY Distributor	2012 ¹	
			2013 ²	2014
Commercial Varieties—Available for Farm Use				
AC Knowles	hybrid	—	*	*
Carlton	smooth	Pickseed USA	x ³	x
Fleet	meadow	—	*	*
MacBeth	meadow	Cisco Seeds	*	*
Peak	smooth	Allied seed	*	*
Experimental Varieties				
BAR BcF1FRRL	meadow	Barenbrug USA	*	*
BAR BiF1GRL	smooth	Barenbrug USA	*	*
MSB	—	Pickseed USA	*	*

¹ Establishment year.

² Harvest year.

³ x in the box indicates the variety was in the test but yielded significantly less than the top yielding variety in the test. Open boxes indicate the variety was not in the test.

* Not significantly different from the highest yielding variety in the test.

Table 12. Summary of Kentucky bromegrass yield trials at Lexington 2006-2014 (yield shown as a percentage of the mean of the commercial varieties in the trial.)

Variety	Type	Proprietor/KY Distributor	2006 ^{1,2}	2008	2010	2012	Mean ³ (#trials)
			4-yr ⁴	3-yr	3-yr	2-yr	
AC Knowles	hybrid	—	85		82	104	90(3)
Bigfoot	hybrid	Grassland Oregon	108	116	105		110(3)
Canterbury	mountain	Barenbrug USA		79			—
Carlton	smooth	Pickseed USA				80	—
Doina	smooth	Barenbrug USA		114	108		111(2)
Fleet	meadow	—	110			108	109(2)
Hakari	Alaska	Barenbrug USA		85	85		85(2)
MacBeth	meadow	Cisco Seeds		136	119	110	121(3)
Olga	smooth	Barenbrug USA		116	101		109(2)
Peak	smooth	Allied Seed		97		97	97(2)
Persister	prairie	—		72			—
RAD-BI29	smooth	Columbia Seeds	96	86			91(2)

¹ Year trial was established.

² Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2006 was harvested four years, so the final report would be "2009 Tall Fescue and Brome Report" archived in the KY Forage website at <www.uky.edu/Ag/Forage>.

³ Mean only presented when respective variety was included in two or more trials.

⁴ Number of years of data.

Table 13. Performance of tall fescue varieties across years and locations.

Variety	Proprietor/KY distributor	Lexington						Princeton		Quicksand
		2011 ¹			2012		2013	2012		2013
		12 ²	13	14	13	14	14	13	14	14
Commercial Varieties—Available for Farm Use										
BarElite	Barenbrug USA	*	*	*						
BarOptima PLUS E34	Barenbrug USA	*	*	*	*	*	*	x ³	*	x
Bronson	Ampac Seed	*	*	*	x	*	x	x	x	
Bull	Caudill Seed				x	*		x	*	x
Cajun II	Smith Seed Services	x	x	*			x			x
Cowgirl	PureSeed				x	*		x	*	
DuraMax GOLD	DLF International Seeds	*	x	*						
Enhance	Allied Seed	*	x	x						
Estancia Arkshield	Mountain View Seeds				x	*		x	*	
Flourish	Allied Seed				x	x		*	*	
Goliath	Ampac Seed						*			
HyMark	Fraser Seeds	x	x	*						
Kentucky 32	Oregro Seeds	*	x	x	x	x		x	*	
KY31+ ⁴	Ky Agric. Exp. Station/Public	x	x	x	*	x	*	x	*	x
Jesup EF	Pennington Seed	x	x	*	*	*		x	*	
Jesup MaxQ	Pennington Seed	*	*	*	*	*	x	*	x	x
Martin 2 647	DLF International Seeds	x	*	*						
Select	FFR/Southern States	x	x	x	*	x	*	x	*	x
Teton II	Mountain View Seeds	*	*	*	*	*		*	x	
Tower 647	DLF International Seeds	*	x	*						
Tuscany II	Seed Research of Oregon				*	*		*	*	
Experimental Varieties										
AGRFA 148	AgResearch	*	*	*						
AGRFA-178/AR584	AgResearch						*			
AGRFA-179/AR584	AgResearch						*			
AGRFA-200/AR584	AgResearch						*			
AGRFA-201/AR605	AgResearch						x			
BARFAF13131	Barenbrug USA						x			
B-11.BC	Ampac Seed	*	*	*						
GT213/AR584	AgResearch						*			
HTWC4	KY Agric. Exp. Station						*			x
IS FTF 53 HAPPE	DLF International Seeds	*	*	*						
IS FTF 54	DLF International Seeds	*	x	*						
IS-FTF 70	DLF International Seeds				*	*		*	*	
KY31- ⁴	KY Agric. Exp. Station	*	x	x	x	x	*	*	*	*
KYFA0701	KY Agric. Exp. Station						*			x
KYFA0804	KY Agric. Exp. Station	*	*	*						
KYFA0901	KY Agric. Exp. Station				x	x		x	*	
KYFA0902	KY Agric. Exp. Station	x	x	x						
KYFA0905	KY Agric. Exp. Station	x	*	*	*	x		*	*	
KYFA0906	KY Agric. Exp. Station				*	*		x	*	
KYFA9301/AR584	KY Agric. Exp. Station						*			*
KYFA9732/AR584	KY Agric. Exp. Station						*			*
KYFA9821/AR584	KY Agric. Exp. Station						*			x
NFTF 1411	Noble Foundatiion	*	*	*						
PPG-FTF 104	Mountain View Seeds				*	*		x	x	
TF 0401	Brett Young				*	*		*	*	
XLFTF	ProSeeds Marketing	*	x							

¹ Establishment year.

² Harvest year.

³ "x" in the box indicates the variety was in the test but yielded significantly less than the top yielding variety in the test. Open boxes indicate the variety was not in the test.

* Not significantly different from the highest yielding variety in the test.

⁴ KY31- is the variety KY31 from which the toxic endophyte has been removed. KY31+ contains the toxic endophyte. Jesup MaxQ, Estancia Arkshield, DuraMax Gold, Martin 2 647, Tower 647 and IS-FTF53 HAPPE contain a non-toxic endophyte. BarOptima PLUS E34 contains a beneficial endophyte. AR584 and AR605 are non-toxic endophytes inserted into the experimental tall fescue varieties. The other varieties do not contain an endophyte.

Table 14. Summary of Kentucky tall fescue yield trials 1999-2014 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor	Lexington										Princeton								Quicksand				Mean ³ (#trials)
		99 ^{1,2}	01	03	05	07	09	11	12	98	00	02	04	06	08	10	12	99	01	03	05			
		2-yr ⁴	3-yr	2-yr	3-yr	3-yr	3-yr	3-yr	2-yr	2-yr	2-yr	3-yr	3-yr	3-yr	3-yr	3-yr	2-yr	2-yr	2-yr	4-yr				
Atlas	ProSeeds Marketing	107															89				98(2)			
Atlas Select	ProSeeds Marketing														96						-			
Aprilia	ProSeeds Marketing													94							-			
BarElite	Barenbrug USA					99		100							92						97(3)			
Bariane	Barenbrug USA			87	99															95	94(3)			
Barolex	Barenbrug USA				90																-			
BarOptima PLUS E34	Barenbrug USA			122	101		107	109							99	102					107(6)			
BAR 9 TMPO	Barenbrug USA	96															97				97(2)			
Bronson	Ampac Seed				88	100	105	102	97						101	91				102	98(8)			
Bull	Improved Forages			98	102				100		102	104				98			97		100(7)			
Cajun II	Smith Seed Services							97							101						99(2)			
Carmine	DLF International		99															97			98(2)			
Cowgirl	Rose-AgriSeeds							94						102	100	99					99(4)			
DLF-B	DLF International	96																			-			
DuraMax GOLD	DLF International							102					106								104(2)			
Enhance	Allied Seed							93					107								100(2)			
Estancia ArkShield	Mountain View Seeds			102					102			101				101					102(4)			
Festival	Pickseed West		107										102					107			105(3)			
Flourish	Allied Seed								93							103					98(2)			
Fuego	Advanta Seeds	99																			-			
Goliath	Ampac Seed						100									99					100(2)			
Hoedown	DLF International		104															106			105(2)			
HyMark	Fraser Seeds							91							102						97(2)			
Jesup EF	Pennington Seed							98	107	106						103	100				103(5)			
Jesup MaxQ	Pennington Seed			98	104	110	103	100				94			95	100	98		100	102	100(11)			
Johnstone	ProSeeds Marketing	95	108														95				99(3)			
KENHY	KY Agric Exp Sta.												89								-			
Kentucky 32	Oregro Seeds							93	96						99	94	101				97(5)			
Kokanee	Ampac Seed		89									86									88(2)			
KY31+ ⁵	KY Agric Exp Sta.	102	118	112	108	105	102	93	99	122	108	104		104	93	112	100	107	124	98	110	106(19)		
Maximize	Turf-Seed	96	95														105	93			97(4)			
Martin2 647	DLF International							104													-			
Nanryo	Jap. Grassland ForageSeed/ USDA-ARS, El Reno, OK					99															-			
Noria	ProSeeds Marketing					100															-			
RAD-ERF50	Radix Research, Inc.													113							-			
Resolute	Ampac Seed		90															65			78(2)			
Savory	DLF International													92							-			
Seine	Advanta Seeds	99											96								98(2)			
Select	FFR/Sou. St.	106	106	94	99	102	98	90	100	105	105	97	105	102	105	99	100	107	112	102	91	101(20)		
Stockman	Seed Research of OR			108										101	98					105		103(4)		
Teton II	Mountain View Seeds							107	103								100					103(3)		
Texoma MaxQ II	Pennington Seed				95																-			
TF0203G	Seed Research of OR					90															-			
TF33	Barenbrug USA									70											-			
Tower 647	DLF International							98													-			
Tuscany	Forage Genetics		112																		-			
Tuscany II	Seed Research of OR								101					98			106				-			
Vulcan	International Seeds									97											-			
5CAN	Brett Young						86														-			

¹ Year trial was established.

² Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties.

To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 1999 was harvested two years, so the final report would be "2001 Tall Fescue Report" archived in the KY Forage website at <www.uky.edu/Ag/Forage>.

³ Mean only presented when respective variety was included in two or more trials.

⁴ Number of years of data.

⁵ KY31+ contains the toxic endophyte. Jesup MaxQ, Texoma MaxQ II, DuraMax GOLD, Martin2 647, Tower 647 and Estancia Arkshield contain a non-toxic endophyte. BarOptima PLUS E34 contains a beneficial endophyte. The other fescue varieties in this table do not contain an endophyte.



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