Kentucky Tall Fescue Yield Update

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Tall fescue is a soil conserving, productive, well-adapted, management-tolerant cool season grass which covers approximately 5.5 million acres of Kentucky. This forage is used for both hay and pasture and forms the forage base of Kentucky's ruminant livestock enterprises, especially beef cattle.

Unfortunately, much of Kentucky's tall fescue is infected with an internal fungus that results in lower animal gains in growing ruminants and lowered conception rates in breeding stock, especially in hot weather. Varieties are now available that are free from this fungal endophyte and are adapted for use in Kentucky. This publication will summarize criteria for fescue variety selection as well as current University of Kentucky data on the yield, seedling vigor, and maturity for many of these newer varieties.

Selecting endophyte free tall fescue varieties

Several factors must be considered when selecting an endophyte-free tall fescue variety. Choice of the best variety for a particular situation should based on the following criteria:

1. The variety should show proven agronomic and animal performance. These positive characteristics should be shown to occur at many locations and over a period of years, if possible.

2. The variety should be adapted to Kentucky.

3. The variety chosen should be productive during the desired season of use.

4. The variety should be developed by proven plant breeding methods and should have documented unique characteristics.

5. Make sure the variety has been tested for endophyte content. This information will be prominently displayed on a green tag. If no tag is present, assume the seed is infected with the endophyte.

6. Buy quality seed that has high germination, few other crop and weeds seeds. Use a certified variety to be sure the genetics and performance you are paying for are in the bag. Look for the blue tag, which all certified varieties must carry.

Description of the Tall Fescue Variety Evaluation Tests

Data from two studies will be reported in this publication. Plots of tall fescue varieties were sown at Lexington in 1987 and 1988. The objectives of these studies was to compare dry matter yields, seedling vigor, and disease susceptibility of tall fescue varieties under

simulated grazing and hay management schemes.

Seedings were made at the rate of 20 lb seed/acre into a prepared seedbed with a disk drill. Plots were 4' x 16' in a randomized complete block design with four replications. Nitrogen was applied at 60 lbs per acre in March, June, and August/September of each harvest year.

Yields of the 1987 and 1988 tests were measured monthly with a flail type forage plot harvester to simulate pasture conditions. Varieties were visually rated for seedling vigor one month after seeding, maturity during May, and disease infestation during the summer.

The 1988 test was harvested again in 1991 using a sickle type forage plot harvester to simulate a hay management system. Fresh weights were measured in the field and subsamples were taken from each plot and weighed and dried at 65^{o}C and reweighed to determine percent dry matter on an oven dry basis. All data in this report are reported on an oven dry basis.

Results

Weather data for the 1988, 1989, and 1991 growing seasons in Lexington are presented in Table 1. With the exception of October, temperatures were near normal in 1988; precipitation was well below normal during spring and summer with a deficit of almost 10 inches from March through August. Temperatures in 1989 were slightly subnormal except for January, which was well below normal and December, which was well above normal. Precipitation in 1989 was near normal, there was a surplus of over 8 inches in February and March which was maintained throughout the year. In 1991, temperatures were consistently warmer than the normal with winter and spring much warmer than usual. There was a surplus of 2.69 inches of precipitation for the year through the end of October, most of that occurred in May.

Seedling vigor ratings, maturity ratings, dry matter yields (tons/acre), and disease ratings are reported in Tables 2,3, and 4. Yields are given by cutting and total annual production. In all tables varieties are listed in alphabetical order within maturity classes. Statistical analyses were performed on all tall fescue yield and quality data to determine if the apparent differences are truly due to better genetics or just due to chance. In the tables, the top variety in each column is marked with two asterisks (**) and those varieties not significantly different from the top variety are marked with one asterisk (*). To determine if two varieties are truly different, compare the difference between the two varieties 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 a given location.

Discussion

Tall fescues are often classified as either "Mediterranean" or "European" according to the area from which the parental material for the variety came. In general, the Mediterranean types are more productive in the fall and winter, have greater tillering ability, and have finer

leaves than the European types. However, the Mediterranean types are usually very dormant and non-productive during summer, mature earlier in the spring, and are more susceptible to some leaf diseases than European varieties under Kentucky conditions. Triumph, Cajun, Alta, and Fawn are examples of Mediterranean-type varieties. Kentucky-31 and Phyter are examples of European types. Because varieties with Mediterranean genetics mature earlier in the spring, first cutting yields tend to favor these varieties.

Mediterranean type varieties such as Au-Triumph and Cajun were earlier to mature in all studies. In general, the earlier maturing varieties (those with higher maturity scores) tend to be higher yielding, especially in the spring cuttings as tall fescue yield is strongly related to stage of maturity. However, several European-type varieties were equal or superior in total annual yield. Consider the distribution of yield across the growing season when evaluating productivity of these varieties. Infestations of Helminthsporium and Rhizoctonia were more severe among the Mediterranean varieties, especially in the 1988 production year. In 1988, varieties were also stressed by drought.

Both seedings were evaluated for seedling vigor approximately one month after seeding. In the 1987 seeding, which was irrigated after seeding for establishment, the presence of the endophyte did not result in higher seedling vigor in either Kentucky 31 or GA Jesup (Table 2). In the 1988 planting, the infected lines of both Kentucky 31 and GA Jesup had significantly higher seedling vigor ratings than Kentucky 31 and GA Jesup that were free of the endophyte. However, the highest seedling vigor in both studies came from endophyte-free varieties (Dovey in 1987 and TF Syn Y in 1988). In both studies, the seedling vigor ratings for all varieties were clustered in the 3 to 4 range, indicating that adequate vigor exists in endophyte-free varieties for proper establishment.

Table 5 summarizes all the varieties included in the Kentucky Tall Fescue Variety Tests as well as information about distributors, maturity, and performance across years and locations. In this table, shaded areas indicate that the variety was not in that particular test (labelled at the top of the column) while clear blocks mean that the variety was in the test. Most of the varieties were sown in both tests, however, some were in only test. A double Asterisk (**) indicates that the variety was the highest yielding variety in the test for that year. A single asterisk (*) means that the variety was not significantly different from the highest yielding variety. While it is good to chose a variety that has performed well over several years and locations, as indicated by the asterisks, remember to consider the distribution of yield across the growing season when evaluating productivity of tall fescue varities to make sure the variety is suitable for the desired purpose. Seasonal distribution of yield is given in Tables 2, 3, and 4.

Summary

Proper management, beginning with land preparation and continuing throughout the life of the stand, is necessary for even the highest yielding variety to be productive. Table 6 is a listing of other College of Agriculture publications related to the establishment, management, and harvesting of tall fescue. These resources, which are available through the county extension

agent's office, should be consulted to maximize the productivity of the stand of tall fescue.

Table 1. Temperature and precipitation at Lexington (1988, 1989, 1991).

	1988				1989				1991	
	Temp.		Precip.		Temp.		Precip.		Temp.	Precip.
Month	F	Dep.[1]	Inches	Dep.	F	Dep.	Inches	Dep.	F	Dep.	Inches	Dep.
January	31	-0.5	3.68	0.11	40	8.8	3.71	0.14	36	4.5	3.53	-0.04
February	35	0.4	3.37	0.11	33	-1.4	9.85	6.59	41	5.9	4.33	1.07
March	45	1.1	2.12	-2.71	47	3.5	7.09	2.26	49	5.1	5.62	0.79
April	54	-1.0	3.78	-0.23	53	-1.7	3.19	-0.82	60	4.5	3.09	-0.92
May	63	-1.2	2.55	-1.68	60	-3.8	4.97	0.74	71	6.3	6.43	2.20
June	72	-0.2	0.55	-3.70	72	-0.4	5.68	1.43	74	1.3	2.64	-1.61
July	78	2.1	3.87	-1.08	76	-0.1	3.85	-1.10	77	0.6	5.84	0.89
August	78	-3.1	3.41	-0.55	73	-1.5	3.89	-0.07	74	-0.9	3.54	-0.42
September	68	-0.7	4.94	1.66	67	-1.8	4.12	0.84	68	-0.7	3.19	-0.09
October	50	-6.8	1.81	-0.45	56	-0.5	2.90	0.64	59	2.2	3.08	0.82
November	47	2.1	6.08	2.78	45	0.1	2.89	-0.41	data not available			
December	37	0.9	3.76	-0.02	23	-13.3	1.80	-1.98	data not available			

[1]Departure from 30 year average.

Table 2. Seedling vigor, maturity, dry matter yields (tons/acre), and disease ratings measured in 1988 for tall fescue varieties sown on September 4, 1987[1] at Lexington, KY.

Variety[2]	Seedling vigor[3]	Maturity[4]	1988 HARVESTS APR14	MAY13	JUN13	AUG16	SEP15	OCT15	1988 Total	Disease[5]
					Disease[6]					
Alta	5.00	9.00	0.70*	0.22	0.53	0.47*	0.67*	0.57	3.16	2.50**
					5.00					
Fawn	4.00	9.00	0.73*	0.23	0.46	0.43*	0.65	0.55	3.05	4.50*
					9.00					
Mozark	4.00	9.00	0.69*	0.24	0.53	0.44*	0.66*	0.54	3.15	4.00*
					6.00					
Triumph	3.00	9.00	0.62	0.25	0.57*	0.43*	0.62	0.42	2.90	2.50**
					6.00					
Cajun	3.50	8.50	0.74*	0.29*	0.53	0.43*	0.71*	0.60	3.31*	4.00*
					4.50					
FTFT20	3.00	8.00	0.69*	0.25	0.56*	0.51**	0.68*	0.61	3.30*	3.50*
					5.50					
Martin	3.00	8.00	0.72*	0.26	0.56*	0.47*	0.71*	0.52	3.23*	3.50*
					4.50					
Pick M23	3.50	7.50	0.75*	0.21	0.60**	0.46*	0.64	0.63	3.30*	3.50*
					3.50					
Dovey	1.50**	7.00	0.68*	0.25	0.56*	0.45*	0.72**	0.43	3.08	4.50*
					8.50					
GA5 CL	3.00	7.00	0.57	0.21	0.45	0.37	0.61	0.54	2.76	5.50
					4.33					
GulfCoast	2.50*	7.00	0.77**	0.22	0.55*	0.46*	0.62	0.70	3.31*	3.50*
					3.00*					
Iowa TF2	3.00	7.00	0.68*	0.23	0.49	0.44*	0.60	0.69	3.14	4.50*
					4.00					
KY31 CL	4.00	7.00	0.64	0.18	0.48	0.41	0.55	0.74	2.99	5.50
					5.50					
Penngrazer	3.50	7.00	0.64	0.18	0.45	0.41	0.63	0.75	3.05	4.50*
					4.00					
ISI 84-C	6.50	6.50	0.48	0.18	0.37	0.37	0.54	0.67	2.61	5.00
					2.00*					
Tip	4.50	6.50	0.61	0.15	0.40	0.38	0.65	0.72	2.91	5.00
					4.00					
5HO	4.50	6.00	0.63	0.19	0.50	0.48*	0.65	0.67	3.11	3.00*
					3.50					
FA 274	5.50	6.00	0.57	0.23	0.59*	0.46*	0.66*	0.66	3.17	2.50**
					2.00*					
FA 293	3.00	6.00	0.73*	0.23	0.56*	0.45*	0.73*	0.61	3.31*	4.00*
					6.00					
GA Jesup IN	3.50	6.00	0.73*	0.19	0.45	0.41	0.56	0.59	2.93	5.00
					2.50*					
KY31 IN	4.00	6.00	0.69*	0.23	0.48	0.44*	0.62	0.73	3.20*	6.00
					5.50					
MSF77-1	4.00	6.00	0.69*	0.18	0.50	0.41	0.59	0.70	3.08	4.50*
					3.00*					
Phyter	3.00	6.00	0.77**	0.31*	0.59*	0.46*	0.70*	0.66	3.49**	4.00*
					4.50					

Festorina	3.00	5.50	0.73*	0.21	0.53	0.44*	0.67*	0.62	3.20*	4.00* 5.50
GA Jesup CL	4.00	5.50	0.64	0.19	0.45	0.39	0.58	0.69	2.94	6.00 2.50*
ISI 84-I	5.00	5.50	0.58	0.17	0.47	0.41	0.58	0.67	2.88	4.00* 2.50*
MO 96	3.00	5.50	0.73*	0.23	0.52	0.45*	0.66*	0.79	3.37*	4.00* 4.50
Johnstone	3.50	5.00	0.62	0.18	0.48	0.40	0.53	0.65	2.86	7.00 1.50**
Kenhy	3.50	5.00	0.68*	0.23	0.57*	0.48*	0.65	0.76	3.37*	6.00 3.50
Safe	3.00	5.00	0.67*	0.22	0.44	0.40	0.57	0.74	3.03	5.50 2.50*
FTF871	5.50	5.00	0.57	0.25	0.57*	0.47*	0.60	0.77	3.23*	3.50* 3.50
TF 8501	5.00	4.50	0.73*	0.28*	0.59*	0.48*	0.57	0.78	3.44*	5.00 3.00*
TF Syn Y	4.00	4.00	0.70*	0.21	0.52	0.46*	0.61	0.88**	3.44*	5.00 3.00*
A1	5.00	3.67	0.61	0.15	0.35	0.34	0.56	0.78	2.78	7.67 2.00*
KY7902	3.50	3.50	0.57	0.19	0.49	0.43*	0.56	0.73	2.97	5.50 2.00*
Fuego	4.00	3.00	0.57	0.26	0.57*	0.43*	0.71*	0.63	3.17	3.00* 4.50
Stef	4.00	1.50	0.56	0.35**	0.46	0.33	0.57	0.55	2.82	8.50 2.50*
Mean	3.80		0.66	0.66	0.22	0.51	0.43	0.63	3.11	4.56 4.10
C.V., %	24.27		13.07	11.13	19.54	13.08	11.65	9.61	6.81	34.26 27.31
L.S.D., 0.05	1.29		0.12	0.08	0.06	0.09	0.07	0.08	0.30	2.19 1.57

[1] Test was irrigated after seeding to promote establishment.

[2] 'IN' = Infected with the endophyte. 'CL' = Not infected (clean).

[3] Seedling vigor was rated OCT09 (1=most vigor, 7=least vigor).

[4] Maturity was rated MAY12 (1=vegetative, 3=early boot, 5=mid boot, 7=late boot, 9=early head).

[5] Rated JUL20 for combination of Helminthsporium, Rhizoctonia, and drought (1=none, 9=severe).

[6] Rated AUG09 for Helminthsporium (1=none, 9=severe).

** Top variety in the column.

* Not significantly different from the top variety in the column.

Table 3. Seedling vigor, maturity, dry matter yields (tons/acre), and disease ratings measured in 1989 for tall fescue varieties sown on September 1, 1988, at Lexington, Kentucky.

Variety[1]	Seedling vigor[2]	Matur-ity[3]	1989 HARVESTS APR13	MAY11	JUN16	JUL12	AUG10	SEP19	OCT12	1989 Total	Dis-ease[4]	Dis-ease[5]
Triumph	4.00	9.00	0.84**	0.75	0.84*	0.41*	0.22	0.37	0.34	3.76*	7.00	
					2.00*							
Fawn	3.00	7.50	0.83*	0.84	0.67	0.34	0.17	0.33	0.37*	3.55*	3.50*	
					2.00*							
Alta	7.50	7.00	0.58	0.82	0.55	0.35	0.25*	0.43*	0.34	3.33	5.50	
					3.50							
Cajun	3.50	6.50	0.82*	0.84	0.75	0.38	0.18	0.33	0.32	3.64*	4.50	
					1.67*							
Dovey	2.50*	6.50	0.75*	0.65	0.82*	0.44**	0.29**	0.49**	0.42**	3.86**	4.50	
					2.50*							
ISI 84-I	4.00	5.50	0.69	0.77	0.68	0.32	0.18	0.36	0.30	3.28	6.00	
					3.00*							
Mozark	4.00	5.50	0.80*	0.84	0.80*	0.40*	0.21	0.36	0.34	3.74*	4.50	
					2.00*							
Argentina	--	5.00	0.69	0.74	0.70	0.31	0.15	0.36	0.30	3.25	7.00	
					2.50*							
GA5 CL	3.00	5.00	0.72	0.85	0.75	0.33	0.17	0.30	0.31	3.44	4.50	
					3.00*							
GulfCoast	3.00	5.00	0.73	0.95	0.73	0.38	0.19	0.35	0.35*	3.67*	2.50*	
					3.00*							
Martin	4.00	5.00	0.73	0.73	0.74	0.41*	0.22	0.37	0.37*	3.57*	6.00	
					4.50							
Phyter	4.50	5.00	0.67	0.89	0.68	0.32	0.21	0.35	0.29	3.41	4.50	
					3.00*							
TF B-27	--	4.50	0.51	0.85	0.59	0.37	0.20	0.40	0.34	3.26	5.50	
					3.50							
Iowa TF2	4.00	4.00	0.62	0.92	0.68	0.33	0.20	0.38	0.32	3.44	5.50	
					3.00*							
MSF77-1	4.50	4.00	0.71	1.00*	0.61	0.32	0.16	0.33	0.27	3.40	2.50*	
					1.00**							
Penngrazer	3.00	4.00	0.76	1.03*	0.65	0.34	0.14	0.34	0.39*	3.65*	3.00*	
					1.00**							
Tip	4.00	4.00	0.56	0.94	0.59	0.25	0.12	0.28	0.31	3.04	6.50	
					3.50							
FA 274	3.50	3.50	0.69	1.04*	0.69	0.34	0.18	0.36	0.30	3.60*	6.00	
					3.00*							
GA Jesup CL	3.50	3.50	0.71	1.01*	0.70	0.36	0.17	0.30	0.30	3.56*	3.00*	
					1.00**							
KY31 CL	4.00	3.50	0.68	0.96*	0.68	0.37	0.22	0.32	0.29	3.53*	3.00*	
					3.00*							
Safe	4.00	3.50	0.67	0.93	0.72	0.36	0.14	0.31	0.28	3.41	5.00	
					3.00*							
TF 8501	6.00	3.50	0.66	1.07*	0.64	0.37	0.22	0.42*	0.31	3.70*	3.00*	
					1.50*							
TF B-15	--	3.50	0.39	0.77	0.56	0.28	0.16	0.31	0.25	2.72	7.00	
					3.50							
5HO	5.00	3.00	0.60	0.87	0.67	0.34	0.17	0.32	0.29	3.27	4.50	
					2.50*							
A1	5.00	3.00	0.57	0.95	0.51	0.21	0.11	0.25	0.24	2.83	6.00	
					5.00							
FA 293	5.00	3.00	0.65	0.81	0.61	0.31	0.15	0.30	0.33	3.16	5.00	
					3.50							
Festorina	3.00	3.00	0.66	1.06*	0.68	0.31	0.16	0.35	0.33	3.55*	5.00	
					3.00*							
FTF871	3.50	3.00	0.57	0.86	0.72	0.33	0.15	0.31	0.29	3.23	3.00*	
					3.50							

GA Jesup IN	2.00*	3.00	0.76	0.94	0.68	0.32	0.15	0.35	0.32	3.51*	1.50**
					1.50*						
ISI 84-C	5.00	3.00	0.47	0.92	0.57	0.23	0.15	0.30	0.29	2.93	3.50*
					3.50						
Johnstone	3.00	3.00	0.68	0.93	0.74	0.32	0.16	0.33	0.26	3.42	3.50*
					2.50*						
Kenhy	5.00	3.00	0.65	1.01*	0.72	0.33	0.20	0.38	0.32	3.62*	2.50*
					1.00**						
KY31 IN	2.00*	3.00	0.64	0.97*	0.73	0.32	0.14	0.33	0.30	3.44	2.00*
					1.00**						
KY7902	3.50	3.00	0.62	0.88	0.74	0.39*	0.19	0.39	0.30	3.51*	3.50*
					3.00*						
MO 96	4.00	3.00	0.43	1.05*	0.72	0.38	0.21	0.39	0.31	3.49	7.00
					3.00*						
TF B-14	--	3.00	0.39	0.84	0.59	0.32	0.15	0.35	0.26	2.90	6.50
					2.00*						
TF Syn Y	1.50**	3.00	0.70	1.09**	0.78*	0.39*	0.22	0.35	0.31	3.83*	3.00*
					1.50*						
Fuego	5.00	2.50	0.59	0.88	0.74	0.36	0.20	0.38	0.35*	3.50	6.00
					1.50*						
AU Vigor	7.00	1.50	0.53	0.68	0.69	0.25	0.11	0.19	0.23	2.67	1.50**
					5.00						
AU Early	7.00	1.00	0.53	0.51	0.70	0.25	0.11	0.25	0.24	2.60	4.50
					2.50*						
Kasba	9.00	1.00	0.34	0.45	0.72	0.30	0.15	0.27	0.25	2.49	5.00
					4.50						
Stef	6.00	1.00	0.38	0.65	0.85**	0.40	0.24	0.36	0.24	3.13	4.00
					2.50*						
Mean	4.24		0.63	0.87	0.69	0.34	0.18	0.34	0.31	3.35	2.67
					4.46						
C.V., %	1.24		11.82	11.13	10.42	3.46	18.94	8.60	9.07	7.71	61.96
					39.74						
L.S.D., 0.05	1.26		0.10	0.14	0.10	0.06	0.05	0.09	0.08	0.36	2.32
					2.48						

[1] 'IN' = Infected with the endophyte. 'CL' = Not infected (clean).

[2] Seedling vigor was rated 10/4/89 (1=most vigor, 7=least vigor).

[3] Maturity was rated 5/8/89 (1=vegetative, 3=early boot, 5=mid boot, 7=late boot, 9=early head).

[4] Rated for Rhizoctonia 8/9/89 (1=none, 7=severe).

[5] Rated for Rhizoctonia 9/19/89 (1=none, 9=severe).

** Top variety in the column.

* Not significantly different from the top variety.

Table 4. Maturity ratings and dry matter yields (tons/acre) measured in 1991 for tall fescue varieties sown on 1 Sep 1988 at Lexington, Kentucky.

Variety[1]	Maturity[2]	MAY08	Summer aftermath[3]	Fall stockpile[4]	1991 Total
Fawn	13.00	2.45**	1.42	0.38	4.24*
Cajun	11.00	2.17	1.34	0.62	4.14*
Triumph	11.00	2.30*	1.46*	0.57	4.33*
Alta	10.50	2.42*	1.39	0.42	4.23*
Dovey	10.50	1.94	1.44*	0.60	3.99*
Mozark	9.50	2.27*	1.64**	0.45	4.36*
Martin	9.00	2.20*	1.43*	0.72*	4.35*
GA Jesup IN	8.50	2.16	1.32	0.65	4.13*
GA5 CL	8.50	2.12	1.23	0.78*	4.13*
ISI 84-I	7.67	1.98	1.48*	0.48	3.93*
Argentina	7.50	2.02	1.32	0.66	4.01*
Tip	7.50	2.05	1.09	0.44	3.58
FA 274	7.00	2.21*	1.34	0.59	4.14*
GA Jesup CL	7.00	2.14	1.29	1.00*	4.43**
GulfCoast	7.00	2.07	1.27	0.45	3.80
KY31 CL	7.00	2.12	1.12	0.94*	4.18*
Phyter	7.00	2.08	1.20	0.87*	4.15*
FA 293	6.50	1.96	1.27	0.83*	4.06*
Johnstone	6.50	1.99	1.34	0.63	3.96*
MO 96	6.50	2.04	1.31	0.59	3.94*
MSF77-1	6.50	2.39*	1.17	0.68	4.24*
Kenhy	6.00	2.10	1.40	0.44	3.94*
TF B-27	6.00	2.08	1.57*	0.60	4.24*
Iowa TF2	5.50	1.97	1.37	0.57	3.91*
Penngrazer	5.50	2.18	1.28	0.55	4.02*
TF B-14	5.50	2.01	1.41	0.43	3.85
TF 8501	5.50	1.96	1.29	0.49	3.74
5HO	5.00	2.03	1.21	0.54	3.77
Festorina	5.00	2.04	1.28	0.65	3.96*
FTF871	5.00	1.76	1.14	0.74	3.64
ISI 84-C	5.00	2.14	1.09	0.55	3.78
KY31 IN	5.00	2.00	1.35	0.78*	4.13*
Safe	5.00	1.86	1.21	0.28	3.35
TF B-15	5.00	1.94	1.30	0.28	3.52
TF Syn Y	5.00	1.91	1.24	1.08**	4.23*
A1	4.50	1.91	0.93	0.42	3.27
AU Vigor	4.00	2.09	1.34	0.71*	4.14*
KY7902	4.00	1.74	1.17	0.61	3.51
AU Early	3.00	2.01	1.46*	0.40	3.87
Fuego	2.50	2.01	1.48*	0.52	4.01*
Stef	2.00	1.55	1.29	0.38	3.22
Kasba	1.00	1.88	1.30	0.48	3.65
Mean		2.05	1.31	0.59	3.96
C.V., %		9.47	12.13	6.52	9.95
L.S.D., 0.05		0.27	0.22	0.39	0.55

[1] 'IN' = Infected with the endophyte. 'CL' = Not infected (clean).
[2] Maturity was rated on MAY07 (1=vegetative, 3=early boot, 5=mid boot, 7=late boot, 9=early head, 11=full head, 13=early bloom).
[3] Summer aftermath is the total of harvests taken on JUN03, JUL01, and JUL29 under a pasture management system.
[4] Fall stockpile was harvested on OCT10.
** Highest yielding variety.
* Not significantly different from the highest yielding variety.

Table 5. Characterization of tall fescue varieties and their performance across years and locations.

Kentucky Tall Fescue Yield Update

J.C. Henning, L.M. Lauriault, G.D.Lacefield, and J. Pedersen

Variety	Source/Distributor	Maturity[1]	1987[2]	1988	
			88[3]	89	91
5HO	Pure Seed Testing	mid			
A1	Jacklin Seed Co.	late			
Alta	Oregon State Univ.	early			*
Argentina		early			*
AU Early	Auburn Univ.	late			
AU Vigor	Auburn Univ.	late			*
Cajun	Auburn Univ.	early	*	*	*
Dovey	Daenfeldt	early		**	*
FA 274	Pure Seed Testing	mid		*	*
FA 293	Pure Seed Testing	mid	*		*
Fawn	Oregon State Univ.	early		*	*
Festorina	Van Der Have	mid	*	*	*
FTF871	Pickseed West	mid	*		
FTFT20	Pickseed West	early	*		
Fuego	Van Der Have	late			*
GA 5CL	Univ. of Georgia	early			*
GA Jesup CL	Univ. of Georgia	mid		*	**
GA Jesup IN	Univ. of Georgia	mid			*
GulfCoast	Univ. of Georgia	early	*	*	
Iowa TF2	Iowa State Univ.	mid			*
ISI 84-C	International Seeds	mid			
ISI 84-I	International Seeds	early			*
Johnstone	Univ. of Kentucky	mid			*
Kasba	Daenfeldt	late			
Kenhy	Univ. of Kentucky	mid	*	*	*
KY31 CL	Univ. of Kentucky	mid		*	*
KY31 IN	Univ. of Kentucky	mid	*		*
KY7902	Univ. of Kentucky	late		*	
Martin	Univ. of Missouri/International Seeds	early	*	*	*
MO 96	Univ. of Missouri	mid	*		*
Mozark	Univ. of Missouri/International Seeds	early		*	*
MSF77-1	Mississippi State Univ.	mid			*
Penngrazer	FFR/Pennington Seeds	mid		*	*
Phyter	FFR/Southern States	early	**		*
Pick M23	Pickseed West	early	*		
Safe	Jacklin Seed Co.	mid			
Stef	Norfarm Seed	late			
TF 8501	FFR	mid	*	*	
TF B-14	International Seeds	mid			
TF B-15	International Seeds	mid			
TF B-27	International Seeds	mid			*
TF Syn Y	FFR	mid	*	*	*
Tip	NPI Seed	early			
Triumph	Auburn Univ.	early		*	*

[1] Maturity based on U.S.D.A. Form LMGS 470 53 (9 81).

[2] Establishment year

[3] Harvest year

Indicates that the variety was not in the test.

** Highest yielding variety in the test for that year.

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

Table 6. University of Kentucky agricultural extension publications related to tall fescue management.

Publication	Title
AGR-59	Tall fescue
AGR-108	Tall fescue in Kentucky
AGR-64	Establishing forage crops
	Seed tags: What they reveal
AGR-26	Renovating hay and pasture fields
	The fescue endophyte story
PPA-30	Sampling for the tall fescue endophyte in pasture or hay fields
AGR-119	Alternatives for fungus infected tall fescue
AGR-126	Replacement of an endophyte infected tall fescue stand
AGR-18	Grain and forage crop guide for Kentucky
AGR-1	Lime and fertilizer recommendations
AGR-103	Fertilization of cool season grasses
AGR-20	Nodding thistle and its control in grass pastures
AGR-44	Season of the year affects nutritional value of tall fescue
PPA-9	Collecting plant specimens for disease diagnosis
ID-7	Grass loafing paddocks for dairy cows
ASC-57	Forage-related cattle disorders
ASC-16	Beef: Grass tetany in beef cattle