The1995 Tall Fescue Report

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Introduction

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

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

This report provides current yield data on tall fescue varieties and a few perennial ryegrass and *Bromus* varieties included in yield 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. While they mature earlier in the spring, the Mediterranean types become very dormant and non-productive during the summer in Kentucky and are more susceptible than European varieties to some leaf diseases, such as Helminthsporium and Rhizoctonia. Therefore, Mediterranean varieties are less preferred for use in Kentucky than European types. Because Mediterranean varieties mature earlier in the spring, first cutting yields are generally higher for these varieties when the two types are harvested at the same time. However, the European types produce more in the summer, allowing for extended grazing.

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

Seed Quality. Buy either certified or Plant Variety Protected (PVP) seed, which will guarantee that the genetics and performance you are paying for are in the bag. Look for the blue tag, which must be attached to all bags of certified seed or look for Plant Variety Protection labelling, which is the proprietor's guarantee. Other information on the label will include the test date, which must be within the previous nine months, and the level of germination and other crop and weed seed. Order seed well in advance of planting time to assure that it will be available when needed.

Description of the Tests

Data from five studies will be reported. Tall fescue varieties were sown in 1993 at Lexington and in 1994 at Princeton, Quicksand, and on a reclaimed surface mine site near Quicksand as part of **The Forage Variety Testing Program**. Also, a test was sown in 1994 at Lexington as part of the Kentucky Tall Fescue Breeding Program. The soils at Quicksand (Pope), Lexington (Maury) and Princeton (Crider) were well-drained silt loams. All are well-suited tall fescue production. The planting medium at the surface mine is material composed primarily of gray shale and sandstone. These materials are almost always very low in organic matter and frequently low in Phosphorus and Potassium. This medium can be well drained to the point of being drouthy or poorly drained to the point of remaining flooded, depending on the particle size of the material below and the degree of compaction. Seedings were made at the rate of 20 lb/A into a prepared seedbed with a disk drill. Plots were 4' x 15' in a randomized complete block design with four replications. Nitrogen was topdressed at 50 lb/A of actual N in March, May, and August. 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 spring growth of alfalfa was at the bud/first flower stage and all tall fescue varieties had reached at least the boot stage. Fresh weights were measured in the field and converted to dry matter production using long-term averages for percent dry matter of tall fescue. Management of all tests for establishment, fertility, weed control, and harvest management was according to University of Kentucky Cooperative Extension Service recommendations.

Results and Discussion

Weather data for Quicksand, Lexington, and Princeton are presented in Table 1. For the most part temperatures across the state were warmer in the winter and early spring as well as in the summer months of July and August. Quicksand and Lexington were

cooler in May and Princeton was warmer in October. Generally speaking, surplusses in precipitation were measured across the state in January, while general deficiencies were measured in February, March, and April. May was a wet month everywhere. Lexington and Princeton remained wet in June and then dried up until August. Quicksand was dry from June through August but was wetter in September, when it was dry in the rest of the state. Precipation was unevenly distributed across the season and within months at all locations. In every month except June, at every location, with or without a surplus, there was at least one rainfall event of greater than 1 inch. Several months received all of their precipitation in a matter of 2-3 days. In August, Princeton received 2.97 inches in one day. Precipitation was also unevenly distributed across the state such that Quicksand had a seasonal surplus of 0.28 inches, while Lexington had a surplus of 3.53 inches and Princeton had a deficiency for the season of 1.66 inches.

Ratings for emergence, percent stand, verdure, and maturity and dry matter yields (tons/acre) are reported in Tables 2-6. Yields are given by cutting date and as total annual production. Varieties are listed by descending maturity rating within species. Experimental varieties are listed separately at the bottom of the tables and are not available commercially. Statistical analyses were performed on all data (including experimentals) to determine if the apparent differences are truly due to varietal differences or just to random chance. In the tables, the variety with the highest numerical value in each column is marked with two asterisks (**) and those varieties not significantly different from that variety 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), which is a measure of the variability of the data, is included for each column of means. Low variability is desirable and increased variability within a study results in higher CV's and larger LSD's.

Overall varieties matured much earlier at Princeton (Table 6) compared to Quicksand (Table 2) and even Lexington (Table 4) where the first harvest was taken a week later. Some varieties were past the optimum stage of harvest for tall fescue, which is late boot/early head (maturity rating = 6.5-9.5). Yields of the 1993 seeding at Lexington were somewhat lower in 1995 than in 1994. This reduction, occurring mainly in the first cutting, has been observed in variety trials for other cool-season grasses of the same age in Kentucky this year and in previous years. Yields of the test sown at Princeton and Quicksand in 1994 compare well to the first production year yields of the test sown in 1993 at Lexington; however, 1995 was an exceptional year for newly seeded tall fescue at Lexington (Table 5). Management of this test, which was part of the Kentucky Tall Fescue Breeding Program, was different from the other tests, in that, heavier rates (50 lb/ac) of nitrogen had been applied in the previous fall in anticipation of harvesting the plots for seed. Also, because of the anticipated seed harvest, the first harvest was delayed until seed heads were fully developed. In addition to increasing yields, this

practice generally causes a severe decline in forage quality and therefore is not recommended. The surface mine test did not yield much mainly due to soil factors (Table 3). Yields in May and August in that test were not measurable.

Some of the endophyte-free varieties have been observed to have low seedling vigor, which has been blamed for stand failures in some cases. While differences in seedling vigor have been noted between endophyte-free and endophtye-infected varieties, other work at the University of Kentucky indicates that seedling vigor differs from year to year in the same variety. The reason for this variation is not clear, but can be related to soil and environmental conditions at seeding, as well as age, size, and production environment of the seed. With the exception of the surface mine test, which was a severe environment, endophyte statue did not affect stand establishment in any of the variety tests discussed in this publication.

It is recommended that late summer seeded low-endophyte tall fescues be harvested as hay the following spring to give the plants an opportunity to become established. After this cutting, follow recommendations about pasture fertilization and grazing rotation. Take care not to overgraze low endophyte tall fescue, especially during periods of extreme drought stress.

Several perennial ryegrass varieties were included in the studies sown in 1994. These were treated the same as the tall fescue varieties. They are listed at the under the tall fescue varieties in Tables 2, 3, 5, & 6, again in order of descending maturity .
Of the perennial ryegrasses tested, ‘Bison’ performed well in both tests in which it was entered (Tables 2 & 6), while ‘Greenstone’ performed well only at Quicksand. ‘Zero-Nui’ did not yield as well at Princeton or Quicksand but it was not different from the other ryegrasses, ‘Linn’ and ‘KYPRG1', in the Breeding Test at Lexington (Table 5). ‘Moy’ and ‘BG3' did not perform well in any test in which they were entered (Tables 2 & 6). While the performance of some varieties of perennial ryegrass appears encouraging, even similar to that of tall fescue in some tests, giving support to their greater use in Kentucky, it is important to remember that the data reported here is for one year only and perennial ryegrass is a short-lived grass in Kentucky and stands can be severely reduced by winter injury and/or summer drought stress. Therefore, fields sown to ryegrass will need to be reseeded periodically. The perennial ryegrass varieties sown at Quicksand and Princeton were also sown at the surface mine in 1994 but did not survive in that harsh environment.

Three varieties of *Bromus* are in the 1993 test at Lexington (Table 4) and as with the perennial ryegrasses in the other tests, they were managed the same as the tall fescues. 'Barton', a smooth brome variety, is included for comparison with the newer varieties of Bromus, 'Gala' and 'Matua'. While these are all different species of *Bromus*, they had of similar maturity in the spring. However, 'Matua' produced seedheads throughout the growing season while 'Barton' and 'Gala' did so only in the spring. There was no difference in yield between the three varieties in 1995; however, 'Matua' had significantly higher total yields though not comparable to the better yielding

tall fescues.

Table 7 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 dealerships. In table 7, 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. 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. It is best to choose a variety that has performed well over several years and locations. Remember to consider the distribution of yield across the growing season when evaluating productivity of tall fescue varieties (Tables 2-6).

Summary

Selecting a good endophyte-free variety of tall fescue is an important first step in establishing a productive stand of grass. Proper management, beginning with seedbed preparation and continuing throughout the life of the stand, is necessary for even the highest yielding variety to produce to its genetic potential. Other College of Agriculture publications related to the establishment, management, and utilization of tall fescue are listed in Table 8 and are available from your local county Extension office.

TABLE 1. TEMPERATURE AND RAINFALL IN QUICKSAND, LEXINGTON, AND PRINCETON IN 1995.

	QUICKSAND/SURFACE MINE				LEXINGTON				PRINCETON			
	TEMPERATURE		RAINFALL		TEMPERATURE		RAINFALL		TEMPERATURE		RAINFALL	
MONTH	F	DEP.	INCHES	DEP.	F	DEP.	INCHES	DEP.	F	DEP.	INCHES	DEP.
JAN	37	+6	5.49	+2.20	34	+3	3.75	+0.89	37	+3	4.12	+0.32
FEB	36	+2	2.68	-0.92	34	-1	1.65	-1.56	40	+1	4.21	-0.22
MAR	48	+4	3.11	-1.23	48	+4	2.85	-1.55	53	+5	2.47	-2.47
APR	57	+2	3.79	-0.39	56	+1	3.39	-0.49	61	+2	2.84	-1.96
MAY	63	-2	8.76	+4.28	63	-3	9.75	+5.28	67	-1	7.70	+2.74
JUN	71	-1	3.74	-0.08	72	0	4.75	+1.09	74	-1	5.21	+1.36
JUL	76	+1	1.51	-3.74	72	+2	3.32	-1.68	79	+1	4.14	-0.15
AUG	78	+5	1.17	-2.84	79	+6	4.61	+0.68	82	+6	4.14	+0.13
SEP	66	0	5.03	+1.51	66	0	2.68	-0.55	69	-1	1.91	-1.43
OCT	57	+1	4.40	+1.49	56	0	3.99	+1.42	62	+2	5.05	+2.00

TEMPERATURES ARE IN DEGREES FAHRENHEIT.

DEP. IS DEPARTURE FROM THE LONG-TERM AVERAGE FOR THAT LOCATION.

TABLE 2. DRY MATTER YIELDS (TONS/ACRE) AND RATINGS FOR EMERGENCE, PERCENT STAND, AND MATURITY OF TALL FESCUE VARIETIES SOWN 24 AUGUST 1994, AT QUICKSAND, KENTUCKY.

	EMERGENCE	% STAND	MATURITY	1995 HARVESTS				1995
VARIETY	SEP20 94	OCT31 95	MAY02 95	MAY02	JUN15	AUG11	OCT31	TOTAL
COMMERCIAL VARIETIES - AVAILABLE FOR FARM USE								
CATTLE-CLUB, TF	2.75*	93.75*	8.50*	1.06	1.12*	0.54	1.27*	3.99
ENFORCER, TF	2.25	100.00**	8.50*	1.40	1.08*	0.55	1.17	4.20*
STARGRAZER, TF	2.75*	100.00**	8.00*	2.05**	1.13*	0.69*	1.17	5.03*
ADVANCE, TF	2.00	100.00**	7.50*	1.22	1.06*	0.59	1.04	3.91
BARCEL, TF	2.75*	93.75*	7.50*	0.90	1.03*	0.43	1.15	3.52
KY31IN, TF	3.00**	100.00**	7.50*	1.82*	1.20*	0.68*	1.46**	5.16**
FESTORINA, TF	2.50*	100.00**	6.50	1.02	1.14*	0.58	1.24	3.98
JOHNSTONE, TF	2.50*	93.75*	6.50	1.36	0.90	0.64	1.11	4.01
ZERO-NUI, PRG	4.50++	43.75	10.00++	1.29	0.71	0.25+	0.91++	3.16
GREENSTONE, PRG	4.25+	62.50++	9.00+	2.48++	1.08+	0.32+	0.79+	4.66++
BISON, PRG	4.75+	30.00	7.00	2.26+	1.25++	0.23+	0.66	4.41+
EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE								
ISI8872, TF	2.50*	100.00**	9.50**	2.04*	1.05*	0.54	1.25*	4.88*
GA-199B, TF	2.75*	100.00**	9.00*	1.60*	1.10*	0.60	1.11	4.41*
ISI8873, TF	3.00**	100.00**	8.50*	1.57*	1.09*	0.84**	1.30*	4.80*
KY31CL, TF	3.00**	100.00**	8.00*	1.85*	1.16*	0.69*	1.32*	5.03*
BAR-FA2HG, TF	3.00**	100.00**	7.50*	1.25	0.98*	0.45	1.05	3.74
BAR-FA4113, TF	3.00**	100.00**	7.50*	1.31	0.94*	0.42	0.98	3.64
GA-178, TF	3.00**	100.00**	7.50*	1.55*	1.09*	0.69*	1.32*	4.64*
KYTF1, TF	2.50*	100.00**	7.50*	1.55*	1.10*	0.70*	1.25*	4.60*
KYTF2, TF	2.00	100.00**	5.50	1.56*	1.22**	0.70*	1.24	4.73*
MOY, PRG	4.25+	46.25+	8.50+	1.57	0.60	0.26+	0.82+	3.24
BG3, PRG	4.00+	20.00	5.00	0.70	1.10+	0.33++	0.71+	2.84
MEAN	3.05	85.63	7.75	1.52	1.05	0.53	1.11	4.21
CV, %	13.90	14.58	23.75	29.52	20.18	24.09	13.91	16.36
LSD, 0.05	0.60	17.64	2.60	0.64	0.30	0.18	0.22	0.97

EMERGENCE RATING SCALE: 0=NONE 5=EXCELLENT

MATURITY RATING SCALE: 1=VEGETATIVE 11=FULL HEAD
3=EARLY BOOT 13=EARLY BLOOM
5=MID BOOT 15=FULL BLOOM
7=LATE BOOT 17=SEED (DOUGH)
9=EARLY HEAD 19=MATURE SEED

**HIGHEST NUMERICAL VALUE IN THE COLUMN FOR TALL FESCUE (TF).

*NOT SIGNIFICANTLY DIFFERENT FROM THE HIGHEST NUMERICAL VALUE IN THE COLUMN FOR TALL FESCUE BASED ON THE 5% LSD.

++HIGHEST NUMERICAL VALUE IN THE COLUMN FOR PERENNIAL RYEGRASS (PRG).

+NOT SIGNIFICANTLY DIFFERENT FROM THE HIGHEST NUMERICAL VALUE IN THE COLUMN FOR PERENNIAL RYEGRASS BASED ON THE 5% LSD.

TABLE 3. DRY MATTER YIELDS (TONS/ACRE) AND PERCENT STAND RATINGS OF TALL FESCUE VARIETIES SOWN 24 AUGUST 1994, ON A SURFACE MINE SITE NEAR QUICKSAND, KENTUCKY.

VARIETY	% STAND OCT31 95	1995 HARVESTS JUN15	1995 HARVESTS OCT31	1995 TOTAL
COMMERICAL VARIETIES - AVAILABLE FOR FARM USE				
KY31IN	97.50**	0.57*	0.42**	0.99**
STARGRAZER	91.67*	0.60**	0.30*	0.90*
JOHNSTONE	76.67*	0.56*	0.21	0.77*
ENFORCER	86.67	0.52*	0.24	0.76*
BARCEL	21.67	0.50*	0.12	0.62
CATTLE-CLUB	81.25	0.38	0.19	0.57
ADVANCE	65.00	0.36	0.19	0.55
FESTORINA	30.00	0.28	0.09	0.37
EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE				
ISI8872	75.00*	0.52*	0.39**	0.91*
GA-178	85.00	0.47*	0.26	0.73*
KYTF1	75.00*	0.50*	0.19	0.69*
KY31CL	81.67	0.40	0.27	0.67
ISI8873	48.75	0.40	0.19	0.59
GA-199B	85.00	0.35	0.23	0.59
KYTF2	62.50	0.40	0.11	0.51
BAR-FA-4113	26.67	0.30	0.08	0.38
BAR-FA2HG	15.00	0.24	0.03	0.27
MEAN	66.36	0.44	0.21	0.65
CV, %	24.13	32.04	49.40	33.98
LSD, 0.05	22.99	0.20	0.15	0.32

**HIGHEST NUMERICAL VALUE IN THE COLUMN.

*NOT SIGNIFICANTLY DIFFERENT FROM THE HIGHEST NUMERICAL VALUE IN THE COLUMN BASED ON THE 5% LSD.

TABLE 4. DRY MATTER YIELDS (TONS/ACRE) AND MATURITY RATINGS OF TALL FESCUE VARIETIES SOWN 7 SEPTEMBER 1993, AT LEXINGTON, KENTUCKY.

VARIETY	MATURITY MAY10 95	1994 TOTAL	1995 HARVESTS MAY10	JUN08	AUG07	OCT30	1995 TOTAL	2-YR TOTAL
COMMERCIAL VARIETIES - AVAILABLE FOR FARM USE								
ISI8874, TF	11.00**	4.54*	1.60*	0.47	0.33	1.18*	3.58*	8.12*
PS-B27, TF	11.00**	3.61	1.62*	0.46	0.28	1.11*	3.47*	7.08
SC89-3, TF	11.00**	4.00	1.74**	0.47	0.32	1.01	3.54*	7.54*
ADVANCE, TF	10.00	4.18*	1.17	0.53*	0.45**	1.33**	3.48*	7.65*
CATTLE-CLUB, TF	9.00	4.20*	1.35	0.41	0.22	1.04	3.02	7.22*
JOHNSTONE, TF	9.00	4.12*	1.35	0.54*	0.41*	1.22*	3.53*	7.65*
KY31IN, TF	9.00	4.69**	1.31	0.46	0.35*	1.15*	3.28*	7.97*
STARGRAZER, TF	9.00	4.51*	1.40	0.60**	0.39*	1.27*	3.66*	8.17**
DESPERADO (8404), TF	9.00	4.62*	1.28	0.53*	0.36*	1.05	3.22*	7.84*
GALA, *BROMUS*	11.00++	2.19	0.69	0.45+	0.45++	0.84+	2.43+	4.63
MATUA, *BROMUS*	11.00++	4.26++	0.93+	0.49++	0.37+	0.86++	2.65+	6.91++
BARTON, *BROMUS*	9.00	2.48	1.19++	0.49++	0.31	0.73+	2.73++	5.21
EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE								
CAS-E18, TF	11.00**	4.42*	1.62*	0.46	0.33	1.16*	3.57*	7.99*
CAS-E60,TF	11.00**	4.22*	1.70*	0.54*	0.33	1.15*	3.72**	7.94*
KY31CL, TF	11.00**	4.47*	1.51*	0.45	0.28	1.11*	3.35*	7.82*
WX9-200-6, TF	9.50	4.02	1.22	0.46	0.29	0.97	2.95	6.97
MEAN	10.09	4.03	1.36	0.49	0.34	1.07	3.26	7.29
CV, %	3.71	9.92	14.24	15.25	22.29	16.34	10.94	9.51
LSD, 0.05	0.53	0.57	0.27	0.11	0.11	0.25	0.51	0.99

MATURITY RATING SCALE;

1=VEGETATIVE	11=FULL HEAD
3=EARLY BOOT	13=EARLY BLOOM
5=MID BOOT	15=FULL BLOOM
7=LATE BOOT	17=SEED (DOUGH)
9=EARLY HEAD	19=MATURE SEED

1994 TOTAL INCLUDES 5 HARVESTS DATED MAY10, JUN03, JUL15, AUG11, AND OCT24.

**HIGHEST NUMERICAL VALUE IN THE COLUMN FOR TALL FESCUE (TF).

*NOT SIGNIFICANTLY DIFFERENT FROM THE HIGHEST NUMERICAL VALUE IN THE COLUMN FOR TALL FESCUE BASED ON THE 5% LSD.

++HIGHEST NUMERICAL VALUE IN THE COLUMN FOR *BROMUS*.

+NOT SIGNIFICANTLY DIFFERENT FROM THE HIGHEST NUMERICAL VALUE IN THE COLUMN FOR *BROMUS* BASED ON THE 5% LSD.

TABLE 5. DRY MATTER YIELDS (TONS/ACRE) AND RATINGS FOR STAND AND VERDURE OF TALL FESCUE VARIETIES SOWN 19 SEPTEMBER 1994, AT LEXINGTON, KENTUCKY AS PART OF THE KENTUCKY TALL FESCUE BREEDING PROGRAM.

	% STAND	VERDURE	1995 HARVESTS			1995
VARIETY	NOV19 94	JUL17 95	JUN06	JUL18	OCT26	TOTAL
COMMERCIAL VARIETIES - AVAILABLE FOR FARM USE						
KY31IN, TF	6.50**	6.00*	4.04**	1.67	2.63*	8.34**
CATTLE-CLUB, TF	5.75*	5.75*	3.70*	1.88*	2.52*	8.10*
PHYTER, TF	5.50*	6.00*	3.33*	1.92*	2.81**	8.06*
JOHNSTONE, TF	6.00*	5.50*	3.27*	2.01*	2.43*	7.71*
FAWN, TF	5.25*	5.25*	3.42*	1.88*	2.23	7.54*
FORAGER, TF	5.25*	5.25*	2.99	1.99*	2.34*	7.32*
CAJUN, TF	6.50**	5.25*	2.96	1.58	2.36*	6.89
LINN, PRG	7.00	4.75+	3.78++	1.56+	0.95+	6.29++
ZERO-NUI, PRG	8.25+	5.00++	3.25+	1.16+	1.19+	5.60+
EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE						
KYTF2, TF	5.50*	6.50**	3.48*	2.22**	2.37*	8.08*
KY31CL, TF	5.25*	5.00	3.57*	1.61	2.39*	7.57*
KYTF1, TF	5.25*	5.75*	3.23	1.90*	2.41*	7.54*
KYPRG1, PRG	9.00++	5.00++	3.10+	1.62++	1.26++	5.98+
MEAN	6.23	5.46	3.40	1.77	2.14	7.31
CV, %	15.03	16.47	16.55	20.69	18.92	12.54
LSD, 0.05	1.34	1.29	0.81	0.52	0.58	1.31

VERDURE IS RELATED TO GROWTH HABIT, DENSITY, AND COLOR.

**HIGHEST NUMERICAL VALUE IN THE COLUMN FOR TALL FESCUE (TF).

*NOT SIGNIFICANTLY DIFFERENT FROM THE HIGHEST NUMERICAL VALUE IN THE COLUMN FOR TALL FESCUE BASED ON THE 5% LSD.

++HIGHEST NUMERICAL VALUE IN THE COLUMN FOR PERENNIAL RYEGRASS (PRG).

+NOT SIGNIFICANTLY DIFFERENT FROM THE HIGHEST NUMERICAL VALUE IN THE COLUMN FOR PERENNIAL RYEGRASS BASED ON THE 5% LSD.

TABLE 6. DRY MATTER YIELDS (TONS/ACRE) AND SEEDLING EMERGENCE AND MATURITY RATINGS OF TALL FESCUE VARIETIES SOWN 2 SEPTEMBER 1994, AT PRINCETON, KENTUCKY.

	EMERGENCE	MATURITY	1995 HARVESTS				1995
VARIETY	SEP25 94	MAY04 95	MAY04	JUN06	AUG10	NOV02	TOTAL
COMMERCIAL VARIETIES - AVAILABLE FOR FARM USE							
ADVANCE, TF	0.75	11.00**	1.86	1.16*	0.93*	1.29*	5.24
BARCEL, TF	1.75	11.00**	2.17	1.16*	0.51	1.18*	5.02
CATTLE-CLUB, TF	2.25	11.00**	2.53	0.99	0.57	1.09*	5.18
ENFORCER, TF	1.25	11.00**	2.47	0.86	0.55	0.83	4.72
FESTORINA, TF	1.75	11.00**	2.77*	1.09*	0.61	0.99*	5.45*
JOHNSTONE, TF	2.00	11.00**	2.22	0.96	0.78*	0.83	4.78
KY31IN, TF	1.50	11.00**	2.53	1.09*	0.69*	0.90	5.22
STARGRAZER, TF	2.25	11.00**	2.71*	1.19*	0.91*	1.01*	5.82*
BISON, PRG	4.50++	7.00	3.86++	2.00++	0.34++	0.47+	6.67++
GREENSTONE, PRG	4.25+	7.00	3.13	1.09	0.26+	0.33+	4.81
ZERO-NUI, PRG	4.25+	7.00	2.65	0.77	0.19+	0.50++	4.11
EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE							
BAR-FA2HG, TF	1.75	11.00**	1.65	0.82	0.58	0.97*	4.02
BAR-FA4113, TF	2.00	11.00**	2.23	0.98	0.55	0.96*	4.71
GA-178, TF	2.25	11.00**	2.66	0.93	0.64	1.24*	5.47*
GA-199B, TF	2.75	11.00**	3.06*	1.07*	0.81*	1.33**	6.26**
GAJESIMPCL, TF	1.75	11.00**	2.94*	0.76	0.73*	0.60	5.03
GAJESIMPIN, TF	1.25	11.00**	2.90*	0.90	0.53	0.78	5.12
ISI8872, TF	2.00	11.00**	2.73*	1.00	0.95*	1.19*	5.86*
ISI8873, TF	2.00	11.00**	3.10*	0.99	0.82*	1.06*	5.98*
KYTF1, TF	2.00	11.00**	2.90*	1.14*	1.05**	0.78	5.86*
KYTF2, TF	1.50	11.00**	2.25	1.18*	1.01*	0.88	5.33*
KY31CL, TF	2.50	11.00**	3.23**	1.00	0.95*	0.82	5.99*
BG3, PRG	4.00+	11.00++	2.45	1.27	0.20	0.31	4.22
MOY, PRG	4.00+	11.00++	3.61+	0.58	0.12+	0.19+	4.49
MEAN	2.34	10.50	2.69	1.04	0.64	0.86	5.22
CV, %	36.58	0.00	14.61	18.64	42.63	35.70	13.86
LSD, 0.05	1.21	0.00	0.55	0.27	0.38	0.43	1.02

EMERGENCE RATING SCALE: 0=NONE 5=EXCELLENT

MATURITY RATING SCALE:

1=VEGETATIVE	11=FULL HEAD
3=EARLY BOOT	13=EARLY BLOOM
5=MID BOOT	15=FULL BLOOM
7=LATE BOOT	17=SEED (DOUGH)
9=EARLY HEAD	19=MATURE SEED

**HIGHEST NUMERICAL VALUE IN THE COLUMN FOR TALL FESCUE (TF).

*NOT SIGNIFICANTLY DIFFERENT FROM THE HIGHEST NUMERICAL VALUE IN THE COLUMN FOR TALL FESCUE BASED ON THE 5% LSD.

++HIGHEST NUMERICAL VALUE IN THE COLUMN FOR PERENNIAL RYEGRASS (PRG).

+NOT SIGNIFICANTLY DIFFERENT FROM THE HIGHEST NUMERICAL VALUE IN THE COLUMN FOR PERENNIAL RYEGRASS BASED ON THE 5% LSD.

Table 7. Characterization of tall fescue, *Bromus*, and perennial ryegrass varieties and their performance across years and locations.

1995 Kentucky Tall Fescue Variety Tests

L.M. Lauriault, J.C. Henning, T.D. Phillips, G.D. Lacefield, D.C. Ditsch, and E.L. Baker

Variety	Source/KY Distributor	EI[4]	Quicksand 1995[1,2] 95[5]	Surface Mine 1995[2] 95	Lexington 1993[2] 94	Lexington 1993[2] 95	Lexington 1994[3] 95	Princeton 1994[2] 95
COMMERCIAL VARIETIES - AVAILABLE FOR FARM USE								
Advance, TF[6]	Modern Forage Systems/Oldfields Seed	free[7]			*	*		
Barcel, TF	Barenbrug Research/Barenbrug USA	free						
Cajun	International Seeds/Green Seed	free						
Cattle Club, TF	Green Seed	free			*		*	
Desperado (8404), TF	Genesis Turf & Forage/Green Seed	free			*	*		
Enforcer, TF	Forbes Seed & Grain/to be determined	low	*	*				
Fawn	Oregon State University/Public	free					*	
Festorina, TF	Advanta Seeds West/Oldfields Seeds	free						*
Forager	FFR/Southern States	free					*	
ISI 8874, TF	International Seeds/Green Seed	low			*	*		
Johnstone, TF	Willamette Seed (KY Agric. Exp. Sta.)/Public	free		*		*	*	
KY31IN, TF	KY Agric. Exp. Sta./Public	high	**	**	**	*	**	
Phyter	FFR/Southern States	low					*	
PS-B27, TF	ProSeeds Marketing/Dobson-Hicks Co.	free				*		
SC89-3, TF	The Seed Connection	free				*		
Stargrazer, TF	FFR/Southern States	low	*	*	*	*		*
Barton, *Bromus*	Iowa Agric. Exp. Sta.	N/A				**		
Gala, *Bromus*	Cascade Seed Int'l/Modern Forage Systems	N/A				*		
Matua, *Bromus*		N/A			**	*		
Bison, PRG	International Seeds	low	*					**
Greenstone, PRG	Modern Forage Systems/Oldfields Seed	free	**					
Linn	Oregon State University/Public	free					**	
Zero Nui, PRG	Modern Forage Systems/Oldfields Seed	free[7]					*	
EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE								
BAR FA 2HG, TF	Barenbrug Research/Experimental	free						
BAR FA 4113, TF	Barenbrug Research/Experimental	free						
CAS-E18, TF	Cascade Seed International/Experimental	free			*	*		
CAS-E60, TF	Cascade Seed International/Experimental	free			*	**		
GA-178, TF	GA Agric. Exp. Sta./Experimental	free	*	*				*
GAJESIMPCL, TF	GA Agric. Exp. Sta./Experimental	free						
GAJESIMPIN, TF	GA Agric. Exp. Sta./Experimental	high						
GA-199-B, TF	GA Agric. Exp. Sta./Experimental	free	*					**
ISI 8872, TF	International Seeds/Experimental	low	*	*				*
ISI 8873, TF	International Seeds/Experimental	low	*					*
KY31CL, TF	KY Agric. Exp. Sta./Experimental	free	*		*	*	*	*
KYTF1, TF	KY Agric. Exp. Sta./Experimental	free	*	*			*	*
KYTF2, TF	KY Agric. Exp. Sta./Experimental	free	*				*	*
WX9-200-6, TF	Willamette Seed/Experimental	free						
BG3, PRG	Barenbrug Research/Experimental	free						
KYPRG1	KY Agric. Exp. Sta./Experimental	free					*	
Moy, PRG	Modern Forage Systems/Experimental	free[7]						

[1] Establishment year

[2] Tests sown as part of **The Forage Variety Testing Program**

[3] Tests sown as part of the Kentucky Tall Fescue Breeding Program

[3] Endophyte Infection Level

[4] Harvest year

[6] TF=Tall Fescue; PRG= Perennial Ryegrass

[7] Plots were sown with seed containing dead endophyte, stand is endophyte-free

Indicates that the variety was not in the test.

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

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

Table 8. 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
PPA-30	Sampling for the tall fescue endophyte in hay and pasture fields
PPA-9	Collecting plant specimens for disease diagnosis
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 or Kentucky
AGR-1	Lime amd fertilizer recommendations
AGR-103	Fertilization of cool-season grasses
AGR-44	Season of the year affects nutritional value of tall fescue
ASC-16	Beef: Grass tetany in beef cattle

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