

2011 Annual and Perennial Ryegrass and Festulolium Report

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Introduction

Annual ryegrass (*Lolium multiflorum*) and perennial ryegrass (*Lolium perenne*) are high-quality, productive cool-season grasses used in Kentucky. Both have exceptionally high seedling vigor and are highly palatable to livestock.

Annual ryegrasses are increasing in use across Kentucky as more winter-hardy varieties are released and promoted. Annual ryegrass is productive for three to four months and is used primarily for late fall and early to late spring pasture. Winter growth occurs only during mild winters. There is also increased interest in this crop for high quality baleage. There are two main types of annual ryegrasses. The most commonly used type in Kentucky is Italian ryegrass. The other is sometimes referred to as Westerwolds ryegrass. The Westerwolds type is a true annual, in that stands seeded in the spring produce seedheads that summer, and little regrowth occurs after seedheads are produced. Westerwolds ryegrass varieties are commonly used in the lower South (Florida to Texas) because they can be seeded in the fall and will survive the winter. In Kentucky, winter survival can be an issue for Westerwolds varieties, so before planting one of these varieties, review winter survival results for Kentucky.

Italian ryegrass is native to Southern Europe and is not a true annual. In Kentucky most varieties behave as biennials or short-lived perennials, depending on environmental conditions. Italian ryegrasses provide high yields of quality forage and show quick regrowth. If planted in the spring, there will be no or few seedheads that summer (vernalization is required). Spring planting of Italian ryegrass is common in northern states (e.g., Wisconsin, Minnesota, etc.) for summer grazing, but most current varieties

Table 1. Temperature and rainfall at Lexington, Kentucky in 2009, 2010 and 2011.

	2009				2010				2011 ²			
	Temp.		Rainfall		Temp.		Rainfall		Temp.		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	28	-3	2.45	-0.41	29	-2	2.40	-0.46	29	-2	2.10	-0.76
FEB	38	+3	2.86	-0.35	29	-6	1.38	-1.83	39	+4	6.34	+3.13
MAR	48	+4	2.19	-2.21	47	+3	1.05	-3.35	47	+3	4.76	+0.36
APR	55	0	4.48	+0.60	59	+4	2.74	-1.14	58	+3	12.36	+8.48
MAY	64	0	5.05	+0.58	67	+3	7.84	+3.37	64	0	6.72	+2.25
JUN	74	+2	5.41	-1.75	76	+4	4.61	+0.95	74	+2	2.61	-1.05
JUL	71	-5	5.89	+0.89	78	+2	5.49	+0.49	80	+4	6.29	1.29
AUG	73	-2	5.38	+1.45	78	+3	1.54	-2.39	75	0	2.89	-1.04
SEP	68	0	5.37	+2.17	71	+3	1.14	-2.06	66	-2	5.52	+2.32
OCT	54	-3	4.83	+2.26	59	+2	1.22	-1.35	55	-2	4.10	+1.53
NOV	49	+4	0.94	-2.45	47	+2	4.58	+1.19				
DEC	36	0	3.86	-0.12	28	-8	2.15	-1.93				
Total			48.71	+4.16			36.14	-8.41			53.69	+16.51

¹ DEP is departure from the long-term average.
² 2011 data is for the ten months through October

do not dependably survive Kentucky summers. Italian ryegrasses are almost always planted late summer to early fall in Kentucky and typically provide forage production into early summer.

Both forage and turf types of annual ryegrasses are available. Turf types are low growing and have poor yield. Turf types are also infected with a fungal endophyte that lives inside the plant, protecting it from insect attack but producing a toxin that reduces performance of grazing animals. All turf types are infected. Plant only forage-type varieties for grazing, hay, or silage.

Perennial ryegrass can be used as a short-lived hay or pasture plant and has growth characteristics similar to tall fescue. It is more persistent than Italian ryegrass but less persistent than other cool-season grass species. It tillers more profusely but is lower growing than Italian ryegrass and will not form a seedhead in the seeding year. There are both diploid (two sets of chromosomes) and tetraploid (four sets of chromosomes) varieties of perennial ryegrass. Tetraploids have larger tillers and seedheads and wider leaves. Tetraploid types tend to be taller

and less dense than diploid types even in early stages of regrowth. Diploid types produce more tillers, have better stand persistence, and are more tolerant to heavy grazing.

Intermediate or hybrid ryegrass (*Lolium hybridum*, *Hauska*) is the result of a cross between Italian ryegrass and perennial ryegrass. It is not as winter hardy as perennial ryegrass, but it is higher yielding. It is also more persistent and winter hardy than Italian ryegrass. Its uses would be similar to those of perennial ryegrass.

Festuloliums are hybrids between various fescues and ryegrasses with higher quality than tall fescue and improved stand survival over perennial ryegrass. Their use in Kentucky is still limited since they do not survive as long as tall fescue.

This report provides current yield data on annual and perennial ryegrass varieties in trials in Kentucky as well as guidelines for selecting varieties. Tables 14, 15, and 16 show summaries of all annual and perennial ryegrass and festulolium varieties tested in Kentucky for the last 10-plus 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. The variety should be adapted to Kentucky as indicated by good winter survival and 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.

Seed Quality. Buy premium-quality seed that is high in germination, high in purity, and free from weed seed. Buy certified seed or proprietary seed of an improved variety. An improved variety is one that has performed well in independent trials. Other information on the label will include the test date (which must be within the previous nine months), the level of germination, and percentage of other crop and weed seed. Order seed well in advance of planting time to assure that it will be available when needed.

Important: When seeding perennial ryegrasses for horse pasture (of any kind), insist on an endophyte-free variety. The endophyte level will be stated on a green tag on every bag of seed. Most forage types of perennial ryegrass are endophyte free, and most new turf types are infected. This endophyte is similar to the endophyte of tall fescue and produces alkaloids that are toxic to cattle and horses.

Description of the Tests

Data from eight studies are reported. Annual ryegrass tests were established in the fall of 2008, 2009, and 2010 at Lexington. Perennial ryegrass (with festulolium) tests were established at Lexington in the fall of 2008 and 2009. Perennial ryegrass and festulolium varieties were established in separate tests at Lexington in the fall of 2010. The soil at Lexington is a well-drained silt loam (Maury) and is well suited for ryegrass production.

Seedlings were made at the rate of 25 lb/A into a prepared seedbed with a disk drill. Plots were 5 by 20 feet in a randomized complete block design with four replications with a harvested plot area

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 leaf development index (see text).
13	3 leaves unfolded	
.	.	
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.

Table 3. Dry matter yields, seedling vigor, maturity and stand persistence of annual ryegrass varieties sown September 11, 2008 at Lexington, Kentucky.

Variety	Type	Seedling Vigor ¹ Oct 21, 2008	Maturity ² 2009		Percent Stand			Yield (tons/acre)				
			May 10	Jun 5	2008	2009 ³	2008	2009				Total
Commercial Varieties-Available for Farm Use												
Acrobat	–	3.0	49.8	53.0	100	98	0.06	1.96	1.02	1.02	0.88	4.94*
Marshall	Westerwold diploid	4.3	54.0	55.0	98	99	0.21	2.01	0.96	0.15	0.09	3.42
Bruiser	Westerwold diploid	4.8	54.7	54.7	98	73	0.25	1.25	0.58	0.12	0.05	2.24
Jackson	Westerwold diploid	4.3	54.7	55.3	98	74	0.14	1.33	0.44	0.07	0.05	2.02
Flying A	Westerwold diploid	4.1	54.0	59.0	98	49	0.19	1.03	0.61	0.13	0.06	2.02
Tam 90	Italian diploid	3.3	54.5	56.5	100	49	0.07	1.05	0.32	0.06	0.15	1.66
TAMTBO	Italian tetraploid	3.5	54.0	57.0	97	21	0.20	0.85	0.39	0.12	0.05	1.61
TetraPro	Italian tetraploid	4.0	56.0	56.0	97	14	0.14	0.61	0.34	0.09	0.19	1.36
Feast II	Italian tetraploid	3.5	45.0	56.0	99	2	0.04	0.24	0.20	0.20	0.51	1.19
DH-3	Westerwold diploid	4.3	55.5	60.7	100	13	0.14	0.47	0.26	0.01	0.04	0.92
Gulf	Westerwold diploid	3.8	56.0	60.0	100	9	0.25	0.29	0.19	0.01	0.14	0.89
Experimental Varieties												
IS-LMT 6	Italian tetraploid	3.3	47.5	52.8	97	87	0.13	2.02	1.12	1.11	0.86	5.24*
IS-LMT 5	Italian tetraploid	3.6	45.0	55.0	98	95	0.07	2.14	0.84	0.90	0.74	4.68*
IS-LMD 7	Italian diploid	3.5	45.0	51.5	100	100	0.07	1.84	0.75	0.68	0.88	4.23*
FL/NE2006 (misc2X)LRLT	Westerwold diploid	2.8	52.5	54.0	98	98	0.11	2.14	0.78	0.15	0.09	3.27
ME 4	Westerwold diploid	3.5	53.0	55.5	99	100	0.13	1.69	0.91	0.13	0.10	2.97
PSG 29 BF06	Italian tetraploid	2.5	45.0	52.0	96	61	0.05	1.26	0.46	0.59	0.45	2.81
ME 94	Westerwold diploid	3.0	52.5	55.5	98	98	0.05	1.77	0.84	0.11	0.04	2.81
07-WW	Westerwold diploid	4.0	54.0	55.0	99	85	0.12	1.67	0.55	0.18	0.14	2.66
AM-4N-06	Westerwold tetraploid	4.0	55.3	57.3	96	5	0.17	0.39	0.27	0.09	0.15	1.07
TXR 2006-T22	Italian tetraploid	3.0	50.3	60.0	96	1	0.07	0.19	0.30	0.05	0.04	0.64
Mean		3.6	51.7	55.5	98.1	58.4	0.13	1.25	0.58	0.28	0.27	2.51
CV,%		21.1	3.5	3.9	2.7	35.7	94.59	36.58	42.24	50.31	65.82	30.49
LSD,0.05		1.1	2.8	3.5	3.7	29.5	0.17	0.64	0.35	0.20	0.25	1.08

¹ Vigor score based on 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 2 for complete scale.

³ Severe winterkill significantly reduced percent stand and spring yield.

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

of 5 by 15 feet. Nitrogen was top-dressed at 60 lb/A of actual N in March, May, and August. The tests were harvested using a sickle-type forage plot harvester. The first cutting was harvested at each location

when all ryegrass 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 es-

tablishment, fertility, weed control, and harvest timing were in accordance with University of Kentucky recommendations.

Table 4. Dry matter yields, seedling vigor, maturity and stand persistence of annual ryegrass varieties sown September 30, 2009 at Lexington, Kentucky.

Variety	Type	Seedling Vigor ¹ Oct 30, 2009	Maturity ² 2010		Percent Stand 2010			Yield (tons/acre) 2010				
			Apr 20	May 24	Oct 30	Apr 13	Jul 20	Apr 20	May 24	Jun 22	Jul 20	Total
Commercial Varieties-Available for Farm Use												
Feast II	Italian tetraploid	3.5	33.0	54.0	95	100	97	1.58	1.76	1.13	0.22	4.69*
Bruiser	Westerwold diploid	4.8	36.5	54.5	100	100	2	2.07	1.54	0.74	0.00	4.35*
Jackson	Westerwold diploid	4.0	36.0	55.5	99	100	2	1.89	1.58	0.71	0.00	4.18
Marshall	Westerwold diploid	4.8	34.3	55.5	100	100	2	1.89	1.55	0.72	0.00	4.15
Gulf	Westerwold diploid	5.0	39.3	56.5	100	100	0	1.85	1.41	0.38	0.00	3.63
Experimental Varieties												
ME4	Westerwold diploid	3.8	33.3	54.0	96	100	4	1.72	1.67	0.83	0.00	4.21
ME-94	Westerwold diploid	4.8	33.5	55.0	99	100	4	1.83	1.57	0.73	0.00	4.14
FLx2003(New3)LRCT	–	4.4	33.3	56.0	100	100	3	1.79	1.61	0.70	0.00	4.10
Mean		4.4	34.9	55.1	98.6	100.0	14.3	1.83	1.58	0.74	0.03	4.18
CV,%		11.9	10.9	2.2	1.6	0.0	18.6	9.55	9.70	15.95	33.96	7.04
LSD,0.05		0.8	5.6	1.7	2.4	0.0	3.9	0.26	0.23	0.17	0.02	0.43

¹ Vigor score based on 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 2 for complete scale.

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

Variety	Type	Seeding Vigor ¹ Oct 14, 2010	Maturity ²				Percent Stand					Yield (tons/acre)						
			2011				2011					2011						
			Apr 21	May 19	Jun 7	Jun 28	2010 Oct 14	Jan 5	Mar 16	Jul 13	Aug 23	Jan 5	Apr 21	May 19	Jun 7	Jun 28	Jul 22	Total
Commercial Varieties-Available for Farm Use																		
Barmultra II	Italian	3.0	33.3	41.8	53.5	62.0	99	100	100	100	83	0.16	1.99	1.36	1.01	0.38	0.13	5.03*
GR-AS10	Italian	4.0	32.5	39.0	52.0	62.0	100	100	100	58	0.20	1.76	1.12	0.80	0.25	0.11	4.25	
Attain	Westerwold diploid	3.6	33.0	49.8	59.0	62.0	100	100	100	99	0	0.36	1.95	1.07	0.63	0.17	0.00	4.18
Feast II	Westerwold tetraploid	4.8	32.0	39.0	52.0	62.0	100	100	98	91	0.20	1.49	1.12	0.86	0.31	0.14	4.11	
Fox	Italian diploid	4.3	32.8	43.8	53.5	62.0	100	100	99	71	0.18	1.66	0.99	0.81	0.31	0.12	4.07	
Winterhawk	Westerwold diploid	3.4	33.3	49.8	57.5	62.0	100	100	100	0	0.28	1.91	0.96	0.56	0.22	0.01	3.93	
TAMTBO	Italian tetraploid	3.8	33.0	47.0	58.0	62.0	100	100	100	0	0.22	1.88	0.90	0.65	0.16	0.01	3.82	
Marshall	Westerwold diploid	4.3	33.0	51.3	56.5	62.0	100	100	100	0	0.39	1.64	0.99	0.58	0.17	0.00	3.77	
Bruiser	Westerwold diploid	4.3	33.5	48.8	60.5	62.0	100	100	100	3	0.40	1.85	0.87	0.49	0.14	0.00	3.76	
Jackson	Westerwold diploid	3.3	33.3	46.5	58.0	62.0	100	100	100	0	0.42	1.91	0.80	0.49	0.11	0.01	3.74	
Big Boss	Westerwold tetraploid	3.8	33.8	55.0	62.0	62.0	99	100	99	0	0.29	1.61	0.98	0.68	0.12	0.00	3.68	
Ed	Westerwold diploid	2.5	33.8	50.3	61.0	62.0	99	100	100	0	0.22	1.92	0.87	0.50	0.12	0.00	3.62	
Fria	Westerwold diploid	3.1	33.0	46.0	59.0	62.0	100	100	100	5	0.31	1.85	0.84	0.46	0.12	0.00	3.58	
Brangus	Italian diploid	4.0	32.3	55.5	60.5	62.0	100	100	99	0	0.29	1.42	1.02	0.57	0.24	0.01	3.56	
Big Daddy	Westerwold tetraploid	3.5	33.0	56.0	61.0	62.0	100	100	98	0	0.23	1.32	0.99	0.56	0.14	0.02	3.25	
Verdure	Westerwold tetraploid	4.3	32.5	56.0	62.0	62.0	100	100	99	1	0.32	1.31	0.93	0.54	0.12	0.01	3.23	
KB Royal	Italian diploid	4.3	32.8	54.0	59.0	62.0	100	100	100	1	0.35	1.31	0.86	0.47	0.12	0.01	3.12	
Gulf	Westerwold diploid	4.1	32.8	55.5	61.0	62.0	100	100	99	0	0.31	1.34	0.83	0.34	0.10	0.00	2.93	
HS-1	Italian diploid	4.6	32.0	56.0	60.0	62.0	100	100	97	0	0.25	1.13	0.86	0.41	0.07	0.00	2.72	
Experimental Varieties																		
BAR LMF9881	-	3.0	33.5	41.8	54.0	62.0	100	100	100	48	0.20	2.17	1.20	0.92	0.31	0.12	4.91*	
BAR LMF9876	-	2.6	33.0	43.8	56.0	62.0	98	100	100	13	0.16	2.05	1.09	0.75	0.26	0.08	4.39	
PPG-LMT103	Italian tetraploid	1.6	31.8	41.8	52.0	62.0	99	100	100	100	0.19	1.54	1.32	0.79	0.33	0.12	4.28	
BAR LMF9740	-	3.4	33.5	43.5	56.0	62.0	100	100	98	6	0.20	1.75	1.13	0.81	0.25	0.02	4.16	
B-7.1366	Italian diploid	3.5	33.0	42.0	57.0	62.0	100	100	99	0	0.25	2.03	0.91	0.68	0.15	0.02	4.04	
PPG-LMT102	Italian diploid	2.0	33.8	49.3	56.0	62.0	98	100	100	0	0.17	1.70	0.89	0.58	0.17	0.01	3.51	
Mean		3.6	33.0	48.1	57.5	62.0	99.5	100.0	99.4	99.2	19.1	0.26	1.70	1.00	0.64	0.19	0.04	3.83
CV%		22.1	1.8	8.8	3.3	0.0	0.9	0.0	1.2	49.3	42.91	14.16	11.56	14.01	26.30	60.61	9.01	
LSD0.05		1.1	0.8	6.0	2.7	0.0	1.3	0.0	1.8	12.5	0.16	0.34	0.16	0.13	0.07	0.03	0.49	

¹ Vigor score based on 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 2 for complete scale.

* 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 annual ryegrass varieties sown September 24, 2010 at Lexington, Kentucky.

Variety	Type	Seedling Vigor ¹ Oct 27, 2010	Maturity ²			Percent Stand			Yield (tons/acre)			
			2011			2010 Oct 27	2011		2011			
			May 4	Jun 3	Jun 22		Mar 16	Jul 13	May 5	Jun 3	Jun 22	Total
Commercial Varieties-Available for Farm Use												
Jackson	Westerwold diploid	3.8	54.0	56.3	60.0	100	100	100	1.53	0.78	0.16	2.47*
Marshall	Westerwold diploid	3.8	45.0	57.8	60.0	100	100	100	1.37	0.89	0.18	2.45*
Big Daddy	Westerwold tetraploid	4.0	54.0	59.5	60.0	100	100	100	1.52	0.77	0.12	2.41*
Nelson	Westerwold tetraploid	2.8	49.0	57.8	60.0	100	100	100	1.15	0.78	0.17	2.10
Experimental Varieties												
ME4	Westerwold diploid	2.5	46.8	57.0	60.0	100	100	100	1.56	0.90	0.16	2.63*
ME-94	Westerwold diploid	3.0	53.5	57.3	60.0	100	100	100	1.35	0.78	0.15	2.28*
Mean		3.3	50.4	57.6	60.0	100.0	100.0	100.0	1.41	0.82	0.16	2.39
CV,%		20.4	5.3	1.9	0.0	0.0	0.0	0.0	19.15	9.20	24.74	13.50
LSD,0.05		1.0	4.0	1.6	0.0	0.0	0.0	0.0	0.41	0.11	0.06	0.49

¹ Vigor score based on 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 2 for complete scale.
* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Results and Discussion

Weather data for Lexington are presented in Table 1.

Ratings for maturity (see Table 2 for maturity scale) and dry matter yields (tons/A) are reported in Tables 3 through 10. Yields are given by cutting date for 2011 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, listed separately at the bottom of the tables, are not available commercially.

In most years, annual ryegrasses can be expected to die or become unproductive after mid-June in their first summer. Unlike annual ryegrasses, perennials

should be productive under Kentucky conditions for an average of two to three growing seasons.

The perennial ryegrass tests contained several festuloliums that are hybrids of meadow fescue and perennial ryegrass and have some of the characteristics of both. The festuloliums were in fescue trials from 1999 to 2005.

Table 7. Dry matter yields, seedling vigor, maturity and stand persistence of perennial ryegrass, festulolium (FL) and tall fescue (TF) varieties sown September 11, 2008 at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct 21, 2008	Maturity ²			2008 Oct 21	Percent Stand						Yield (tons/acre)					3-year Total	
		2009 May 21	2010 May 12	2011 May 17		2009		2010		2011		2009 Total	2010 Total	2011				
						Apr 7	Oct 30	Apr 13	Oct 15	Apr 14	Oct 27			May 17	Jun 8	Oct 21		Total
Commercial Varieties-Available for Farm Use																		
Spring Green (FL)	4.3	57.0	52.0	50.8	100	100	98	99	99	99	96	5.78	2.36	0.82	0.27	0.49	1.57	9.71*
Boost	3.5	55.5	53.5	43.3	99	100	99	100	99	98	95	5.37	2.70	0.73	0.32	0.43	1.48	9.55*
Ortet	3.9	56.0	52.5	50.3	97	100	98	98	98	93	93	5.05	2.37	0.68	0.16	0.43	1.27	8.68*
Duo (FL)	5.0	59.0	53.0	48.8	100	100	89	87	86	83	75	4.99	2.38	0.56	0.16	0.28	1.00	8.37
Power	3.8	55.0	51.5	40.0	100	100	100	100	100	96	96	4.36	2.05	0.46	0.27	0.73	1.46	7.87
Sweet Tart (FL)	4.8	57.0	54.5	53.5	100	100	98	98	98	89	90	4.41	1.91	0.51	0.18	0.44	1.13	7.46
Calibra	3.8	52.8	50.5	34.3	100	100	100	100	100	100	97	4.07	1.98	0.56	0.30	0.42	1.28	7.33
Linn	3.5	58.5	57.5	57.5	99	100	100	100	100	96	85	3.38	2.11	0.45	0.14	0.31	0.91	6.40
Herbal	3.1	47.8	33.0	32.0	100	100	100	98	98	98	99	3.42	1.25	0.42	0.21	0.59	1.21	5.89
Experimental Varieties																		
RAD-CPS211	3.8	55.5	50.0	41.3	99	100	98	98	98	87	86	5.63	2.43	0.48	0.35	0.44	1.28	9.34*
AGRFA 174 (TF)	1.8	58.0	58.0	58.0	98	99	100	100	100	100	100	4.10	2.79	1.22	0.32	0.83	2.37	9.26*
PSG 47 MOL	4.0	56.0	51.5	43.8	78	100	98	100	100	71	79	5.03	2.34	0.34	0.30	0.48	1.13	8.50
PSG AM 108	4.0	56.0	54.5	43.3	100	100	99	100	100	100	99	4.85	2.25	0.56	0.21	0.42	1.20	8.30
KFA 605 (TF)	1.8	57.0	56.0	56.5	98	99	100	99	100	100	100	3.69	2.11	1.01	0.25	0.89	2.15	7.95
WFLS (FL)	5.0	57.0	55.0	52.0	100	73	26	54	39	44	19	3.97	1.93	0.13	0.17	0.07	0.38	6.28
Mean	3.7	55.9	52.2	46.7	97.7	98.0	93.4	95.2	94.3	90.1	87.1	4.54	2.20	0.60	0.24	0.48	1.32	8.06
CV,%	12.8	4.5	2.0	11.6	12.1	7.2	3.9	5.5	11.6	14.2	8.1	12.71	13.73	25.40	26.75	23.06	15.85	9.93
LSD,0.05	0.7	3.6	1.5	8.5	16.8	10.1	5.2	7.5	15.6	18.2	10.0	0.82	0.43	0.22	0.09	0.16	0.30	1.14

¹ Vigor score based on 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 2 for complete scale.

* 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 perennial ryegrass and festulolium (FL) varieties sown September 11, 2009 at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct 13, 2009	Maturity ²		Percent Stand				Yield (tons/acre)					2-year Total	
		2010 May 5	2011 May 17	2009 Oct 13	2010		2011		2010 Total	2011				
					Apr 13	Oct 18	Mar 29	Oct 27		May 19	Jun 17	Oct 21		Total
Commercial Varieties-Available for Farm Use														
Spring Green (FL)	3.4	54.5	55.0	99	100	99	77	99	3.14	1.75	0.39	0.65	2.79	5.94*
Duo (FL)	4.5	58.0	55.0	100	100	94	94	83	3.54	1.45	0.42	0.41	2.28	5.82*
Boost	3.1	49.0	48.5	99	100	100	100	100	2.96	1.59	0.39	0.63	2.61	5.57*
Impressario	2.5	50.5	55.0	97	100	100	99	98	2.54	1.55	0.34	0.69	2.58	5.12*
Calibra	3.1	39.0	38.3	100	100	100	99	97	2.34	1.53	0.49	0.69	2.70	5.04
Power	3.3	46.5	53.0	100	100	100	100	100	2.31	1.56	0.33	0.62	2.51	4.83
Tonga	3.5	55.0	55.5	99	100	100	98	96	2.62	1.42	0.26	0.51	2.19	4.80
Lactal	2.6	42.0	43.0	100	100	99	98	97	2.21	1.35	0.49	0.68	2.52	4.72
Linn	2.8	56.0	58.0	99	100	99	98	78	2.60	1.47	0.17	0.29	1.93	4.54
Orantas	2.6	39.0	33.8	100	100	100	100	84	1.97	0.97	0.38	0.45	1.80	3.77
Granddaddy	2.8	53.5	54.5	100	100	100	100	98	2.37	0.80	0.13	0.11	1.04	3.41
Experimental Varieties														
RAD-ERP214	2.3	55.0	58.0	98	100	100	100	91	2.43	1.71	0.13	0.37	2.22	4.64
Mean	3.0	49.8	50.6	99.1	100.0	99.1	96.8	93.2	2.59	1.43	0.33	0.51	2.27	4.85
CV,%	20.2	5.6	8.3	1.8	0.0	1.0	13.3	13.5	11.20	23.84	24.90	20.81	18.63	12.79
LSD,0.05	0.9	4.0	6.1	2.6	0.0	1.4	18.5	18.1	0.42	0.49	0.12	0.15	0.61	0.89

¹ Vigor score based on 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 2 for complete scale.

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

Statistical analyses were performed on all data (including experimentals) to determine if the apparent differences are truly due to varietal differences or just due to chance. Varieties not significantly different from the top variety in the column are marked with one asterisk (*). To determine if two varieties are truly different, compare the difference between them to the Least Significant Difference (LSD) 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; increased variability within a study results in higher CVs and larger LSDs.

Tables 11, 12, and 13 summarize information about distributors and yield performance for all annual and perennial ryegrass and festulolium 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

Table 9. Dry matter yields, seedling vigor, maturity and stand persistence of perennial ryegrass varieties sown September 7, 2010 at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct 14, 2010	Maturity ² 2011 May 12	Percent Stand		Yield (tons/acre)				
			2010 Oct 14	2011		2011			Total
				Mar 16	Nov 7	May 12	Jun 17	Nov 1	
Commercial Varieties-Available for Farm Use									
Boost	4.0	57.0	100	99	99	2.31	1.07	0.89	4.27*
Polim	3.6	37.8	100	100	100	1.30	1.12	0.93	3.35*
Power	2.4	53.0	99	99	100	1.24	0.89	0.93	3.06
Granddaddy	1.9	54.5	95	98	99	1.48	0.66	0.77	2.91
Linn	2.1	58.0	99	100	100	1.71	0.55	0.58	2.85
BG34	2.5	43.5	100	100	100	1.17	0.85	0.69	2.71
Calibra	2.2	37.2	97	95	99	0.97	0.86	0.52	2.35
Experimental Varieties									
PPG-LHT104	2.1	37.5	98	100	100	1.77	1.17	0.99	3.93*
IS-FLPT3	2.1	43.3	98	100	100	1.37	1.04	0.97	3.38*
AGRLP 138	3.3	54.7	100	99	100	1.83	0.66	0.72	3.20
KRC 6576	3.3	50.8	98	93	98	1.18	1.08	0.78	3.04
AGRLP 136	3.4	39.0	100	98	100	1.02	0.82	1.14	2.99
AGRLP 137	3.0	56.7	99	100	100	1.51	0.55	0.70	2.77
AGRLP 135	3.8	34.8	100	95	100	0.86	1.01	0.87	2.74
AGRLP 140	3.0	39.3	99	100	100	1.18	0.75	0.63	2.56
PPG-FPRT103	1.9	40.8	97	100	100	1.00	0.80	0.69	2.49
AGRLP 141	1.7	43.0	99	100	100	0.98	0.77	0.56	2.30
IS-FLPD4	2.0	47.0	98	100	99	1.21	0.65	0.41	2.28
Mean	2.7	45.6	98.5	98.4	99.5	1.33	0.86	0.76	2.94
CV,%	35.9	12.1	1.5	5.2	1.0	27.11	17.07	41.10	21.76
LSD,0.05	1.4	8.3	2.2	7.6	1.5	0.54	0.22	0.47	0.96

¹ Vigor score based on 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 2 for complete scale.

* 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 festulolium varieties sown September 7, 2010 at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct 14, 2010	Maturity ² 2010		Percent Stand			Height (in) 2011 May 5	Yield (tons/acre) 2011				
		May 5	Jun 7	2010 Oct 14	2011			May 5	Jun 7	Jul 14	Oct 31	Total
					Mar 11	Nov 7						
Commercial Varieties-Available for Farm Use												
Perseus	4.0	43.0	54.0	98	75	99	24	2.40	1.55	0.47	1.05	5.46*
Perun	3.0	47.5	56.5	97	100	95	23	2.35	1.49	0.50	0.78	5.13*
Lofa	2.8	37.0	54.5	97	100	97	23	2.23	1.43	0.42	0.88	4.76
Spring Green	2.8	52.0	58.5	99	100	98	22	2.03	1.28	0.35	0.91	4.57
Felopa	2.8	45.0	57.5	95	99	96	23	1.95	1.23	0.45	0.77	4.40
Agula	2.1	46.3	60.0	92	99	97	23	1.98	1.22	0.36	0.62	4.18
Barfest	2.4	38.3	48.8	96	100	100	20	1.84	1.07	0.34	0.77	4.02
Hykor	1.8	56.0	29.5	95	97	97	32	1.43	0.93	0.53	1.11	4.00
Felina	1.4	55.5	29.5	95	98	99	30	1.51	1.00	0.60	0.75	3.86
Duo	4.6	53.5	62.0	100	100	92	30	1.76	1.21	0.19	0.79	3.80
Sweet Tart	3.4	42.5	43.3	99	100	100	20	1.67	0.85	0.35	0.86	3.73
Sulina	2.3	46.0	59.0	97	100	82	21	1.83	1.27	0.40	0.51	3.69
Fojtan	1.0	52.5	29.0	91	96	99	20	0.88	0.92	0.46	0.91	3.17
Experimental Varieties												
KYFA9819/E1	1.8	33.0	59.0	95	97	97	19	1.66	1.20	0.37	0.72	3.96
KYFA9819/EF	2.1	33.0	58.5	95	99	97	21	1.75	1.00	0.36	0.74	3.85
KYFA9819/E2	2.0	35.0	56.0	92	96	96	19	1.55	1.03	0.40	0.80	3.78
KYFA9819/E3	1.3	34.0	58.5	92	97	98	19	1.48	1.13	0.30	0.78	3.69
Mean	2.4	44.1	51.4	95.5	97.1	96.6	22.7	1.78	1.17	0.40	0.81	4.12
CV,%	22.7	9.5	11.5	3.1	12.6	4.8	9.3	11.18	12.39	12.40	21.95	9.29
LSD,0.05	0.8	5.9	8.4	4.2	17.4	6.8	3.0	0.28	0.21	0.07	0.26	0.56

¹ Vigor score based on 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 2 for complete scale.

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

purchased from agricultural distributors. In Tables 11, 12, 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 ryegrass varieties (Tables 3 through 10).

Tables 14, 15, and 16 are summaries of yield data from 1999 to 2011 of commercial varieties that have been entered in the Kentucky trials. The data are 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 percent-

ages less than 100 yielded lower than average. Direct, statistical comparisons of varieties cannot be made using the summary Tables 14, 15, and 16, 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; 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 footnotes in Tables 14, 15, and 16 to determine which yearly report to refer to.

Summary

Selecting a good variety of annual or perennial ryegrass 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 ryegrass management.

They are 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)
- *Establishing Forage Crops* (AGR-64)
- *Forage Identification and Use Guide* (AGR-175)
- *Annual Ryegrass* (AGR-179)
- *New Recommendations for Perennial Ryegrass Seedings for Kentucky Horse Farms* (ID-142)
- *Rotational Grazing* (ID-143)
- *Establishing and Managing Horse Pastures* (ID-147)

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Table 11. Performance of annual ryegrass varieties sown in 2010 at Lexington.¹				
Variety	Type	Proprietor/KY Distributor	Lexington	
			2010²	2010
			2011³	2011
Commercial Varieties-Available for Farm Use				
Attain	Westerwold diploid	Smith Seed Services	x ⁴	
Barmultra II	Italian	Barenbrug USA	*	
Big Boss	Westerwold tetraploid	Smith Seed Services	x	
Big Daddy	Westerwold tetraploid	Smith Seed Services	x	*
Brangus	Italian diploid	KB Seed Solutions	x	
Bruiser	Westerwold diploid	Ampac Seed	x	
Ed	Westerwold diploid	Smith Seed Services	x	
Feast II	Italian tetraploid	Ampac Seed	x	
Fox	Italian diploid	DLF International	x	
Fria	Westerwold diploid	Allied Seed	x	
Gulf	Westerwold diploid	Public	x	
GR-AS10	Italian	Ampac Seed	x	
HS-1	Italian diploid	KB Seed Solutions	x	
Jackson	Westerwold diploid	The Wax Company	x	*
KB Royal	Italian diploid	KB Seed Solutions	x	
Marshall	Westerwold diploid	The Wax Company	x	*
Nelson	Westerwold tetraploid	The Wax Company		x
TAMTBO	Italian tetraploid	Texas Ag Exp Sta	x	
Verdure	Westerwold tetraploid	Smith Seed Services	x	
Winterhawk	Westerwold diploid	Oregro Seeds	x	
Experimental Varieties				
BAR LMF9740		Barenbrug USA	x	
BAR LMF 9876		Barenbrug USA	x	
BARL MF9881		Barenbrug USA	*	
B-7.1366	Italian diploid	KB Seed Solutions	x	
ME4	Westerwold diploid	The Wax Company		*
ME-94	Westerwold diploid	The Wax Company		*
PPG-LMT 102	Italian diploid	Mountain View	x	
PPG-LMT 103	Italian tetraploid	Mountain View	x	
¹ See Table 14 for summary of yield data on named varieties from 1999-2011. ² Establishment year. ³ Harvest year. ⁴ x in the box indicates the variety was in the test but yielded significantly less than the top yielding variety. Open boxes indicate the variety was not in the test. * Not significantly different from the highest yielding variety in the test.				

Variety	Type	Proprietor/KY Distributor	Lexington					
			2008 ¹			2009		2010
			2009 ²	2010	2011	2010	2011	2011
Commercial Varieties-Available for Farm Use								
BG34	diploid	Barenbrug USA						x ³
Boost	tetraploid	Allied Seed	*	*	*	*	*	*
Calibra	tetraploid	DLF International	x	x	*	x	*	x
Granddaddy	tetraploid	Smith Seed Services				x	x	x
Herbal	–	ProSeeds Marketing	x	x	x			
Impressario	tetraploid	DLF International				*	*	
Lactal	tetraploid	Brett Young				x	*	
Linn	diploid	Public	x	*	x	*	x	x
Orantas	diploid	DLF International				x	x	
Ortet	tetraploid	Oregro Seeds, Inc.	*	*	*			
Polim	tetraploid	DLF International						*
Power	tetraploid	Ampac Seed Company	x	*	*	x	*	x
Tonga	tetraploid	Kings AgriSeeds				*	*	
Experimental Varieties								
AGRLP 135	diploid	AgResearch						x
AGRLP 136	diploid	AgResearch						x
AGRLP 137	diploid	AgResearch						x
AGRLP 138	diploid	AgResearch						x
AGRLP 140	diploid	AgResearch						x
AGRLP 141	diploid	AgResearch						x
IS-FLPD4	diploid	DLF International						x
IS-FLPT3	tetraploid	DLF International						*
KRC 6576	tetraploid	AgResearch						x
PPG-FPRT 103	tetraploid	Mountain View						x
PPG-LHT 104	tetraploid	Mountain View						*
PSG AM 108	tetraploid	Pickseed West	x	*	x			
PSG 47 MOL	tetraploid	Pickseed West	*	*	x			
RAD-CPS211	tetraploid	Radix Research	*	*	*			
RAD-ERF214	diploid	Radix Research				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. Open boxes indicate the variety was not in the test.
* Not significantly different from the highest yielding variety in the test.

Variety	Type ²	Proprietor/KY Distributor	Lexington					
			2008 ¹			2009		2010
			2009 ³	2010	2011	2010	2011	2011
Commercial Varieties-Available for Farm Use								
Agula	MF x IR	Allied Seed						x ⁴
Barfest	MF x PR	Barenbrug USA						x
Duo	MF x PR	Ampac Seed	*	*	x	*	*	x
Felina	TF x IR	DLF International						x
Felopa	MF x IR	Allied Seed						x
Fojtan	TF x IR	DLF International						x
Hykor	TF x IR	DLF International						x
Lofa	MF x IR	DLF International						x
Perseus	MF x IR	DLF International						*
Perun	MF x IR	DLF International						*
Spring Green	MF x PR	Turf Seed	*	*	*	*	*	x
Sulina	MF x IR	Allied Seed						x
Sweet Tart	MF x IR	ProSeeds Marketing	x	x	x			x
Experimental Varieties								
KYFA 9819EF	MF x IR	KY Agric. Exp. Station						x
KYFA 9819E1	MF x IR	KY Agric. Exp. Station						x
KYFA 9819E2	MF x IR	KY Agric. Exp. Station						x
KYFA 9819E3	MF x IR	KY Agric. Exp. Station						x
WFLS		Rose AgriSeed	x	x	x			

¹ Establishment year.
² MF=meadow fescue, TF=tall fescue, IR=Italian ryegrass, PR=perennial ryegrass.
³ Harvest year.
⁴ x in the box indicates the variety was in the test but yielded significantly less than the top yielding variety. Open boxes indicate the variety was not in the test.
* Not significantly different from the highest yielding variety in the test.

Table 15. Summary of Kentucky Perennial Ryegrass Yield Trials 1999-2011 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Type	Proprietor	Lexington										Princeton		Bowling Green		Mean ^{3,4} (#trials)
			99 ^{1,2}	01	03	04	05	06	07	08	09	00	02	00	03		
			2yr ⁵	2yr	2yr	3yr	3yr	2yr	3yr	3yr	2yr	2yr	3yr	2yr	2yr		
Aires	diploid	Ampac Seed		95										93			94(2)
Amazon	tetraploid	AgriBioTech	108			99								107			104(3)
Anaconda	tetraploid	Caudill Seed	113										95		103		104(3)
Aubisque	tetraploid	Seed Research of OR			144											99	122(2)
Bandit	tetraploid	Grassland West											106		114		110(2)
Bastion C-2	tetraploid	Seed Research of OR				91											-
Bestfor	tetraploid	Improved Forages											113	107	120		113(3)
Best for Plus	hybrid tetraploid	Improved Forages			116	108	118									136	120(4)
BG-34	diploid	Barenbrug USA					83	85									84(2)
Bison	hybrid tetraploid	International Seeds														140	-
Boost	tetraploid	Allied Seed							130	125	120						125(3)
Boxer	tetraploid	AgriBioTech	121										106				114(2)
Calibra	tetraploid	DLF International								96	109			112			106(3)
CAS MP64	diploid	Cascade International		97													-
Citadel	tetraploid	Ag Canada	101										94	113	103		103(4)
Derby		Public														74	-
Eurostar	tetraploid	Seed Research of OR							112								-
Feeder	diploid	Seed Research of OR							76								-
Granddaddy	tetraploid	Smith Seed		118				101	109		73			111			102(5)
Green Gold	tetraploid	Grasslands Oregon						96									-
Herbal		ProSeeds Marketing								77							-
Impressario	tetraploid	DLF International										110					-
Lactal	tetraploid	Brett Young										102					-
Lasso	diploid	DLF International		98													-
Linn	diploid	Public	87	98	98	102		98	85	84	98	87	88	77			91(11)
Manhatten	diploid												85				-
Mara	diploid	Barenbrug USA													85		-
Matrix	diploid	Cropmark seeds			77											64	-
Maverick Gold	hybrid tetraploid	Ampac Seed		97									71				84(2)
Orantas	diploid	DLF International									81						-
Ortet	tetraploid	Oregro Seeds								114							-
Polly II	tetraploid	FFR/Sou. St.	104									110		125			113(3)
Polly Plus	hybrid tetraploid	Allied Seed			64										60		62(2)
Power	tetraploid	Ampac Seed							110	103	104						106(3)
Quartermaster	tetraploid	Radix Research					122										-
Quartet	tetraploid	Ampac Seed		97			56		46					113			78(4)
RAD-CPS212	hybrid tetraploid	Radix Research					134										-
RAD-MI125	hybrid tetraploid	Mountain View Seeds						120									-
Sampson	diploid	International Seeds	87														-
Sierra	diploid	Lewis Seed Co.					89										-
Tonga	tetraploid	Kings AgriSeeds					96					103					100(2)
Yatsyn	diploid	Barenbrug USA	80										89				85(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 1999 was harvested 2 years, so the final report would be "2001 Annual and Perennial Ryegrass 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 In perennial ryegrass, low yielding varieties usually result from winterkill or summer mortality.

⁵ Number of years of data

Table 16. Summary of Kentucky Festulolium Yield Trials 1999-2011 (yield shown as a percentage of the mean of the commercial varieties in the trial).¹

Variety	Proprietor	Lexington							Princeton	Quicksand		Mean ⁴ (#trials)
		1999 ^{2,3} 2-yr ⁵	2001 3-yr	2003 2-yr	2005 3-yr	2007 3yr	2008 3yr	2009 2yr	2000 2-yr	2001 2-yr	2003 2-yr	
Duo	Ampac Seed	104			84		103	99				98(4)
Felina	DLF International		101									-
Hykor	DLF International			98							98	98(2)
Spring Green	Turf-Seed		88		105	100	114	101		97		101(6)
Sweet Tart	ProSeeds Marketing						88					-
Vorage	Improved Forages								99			-

¹ The festuloliums were in fescue trials from 1999-2005.

² Year trial was established.

³ 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 2 years, so the final report would be "2001 Tall Fescue Report" archived in the KY Forage website at <www.uky.edu/Ag/Forage>.

⁴ Mean only presented when respective variety was included in two or more trials.

⁵ Number of years of data



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