

2015 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. In Kentucky, winter survival can be an issue for many annual ryegrass varieties, so before planting, review winter survival results in this publication. The severe winter of 2013-2014 showed those varieties that are not adapted to Kentucky.

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. This crop has garnered increased interest for high-quality baleage. Two main types of annual ryegrasses are used. 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. 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, no or few seedheads will grow 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 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, often one to two months later Westerwolds types.

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. Both diploid (two sets of chromosomes) and tetraploid (four sets of chromosomes) varieties of perennial ryegrass exist. 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*, Hausska) 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 are similar to those of perennial ryegrass but typically only survive two years or less in Kentucky.

Both forage and turf types of annual and perennial ryegrasses are available. Turf types are low growing and have

Table 1. Temperature and rainfall at Lexington, Kentucky, in 2012, 2013, 2014, and 2015.

	2012				2013				2014				2015 ²			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	38	+7	4.80	+1.94	38	+7	4.50	+1.64	25	-6	2.28	-.58	32	+1	2.17	-0.69
FEB	40	+5	5.39	+2.18	36	+1	1.78	-1.43	30	-5	5.47	+2.26	26	14	3.08	-0.13
MAR	56	+12	5.64	+1.24	39	-5	5.47	+1.07	39	-5	3.08	-1.32	45	+1	7.34	+2.94
APR	56	+1	3.26	-0.62	55	0	4.46	+0.58	58	+3	5.27	-1.89	57	+2	13.19	+9.31
MAY	69	+5	4.02	-0.45	65	+1	5.23	+0.76	66	+2	5.72	+1.25	69	+5	3.02	-1.45
JUN	73	+1	2.42	-1.24	72	0	7.32	+3.66	75	+3	2.93	-0.73	75	+3	8.20	+4.54
JUL	81	+5	2.50	-2.50	72	-4	9.33	+4.33	74	-2	3.18	-1.82	77	+1	10.22	+5.22
AUG	75	0	1.68	-2.25	72	-3	3.68	-0.25	76	+1	6.53	+2.60	74	-1	3.49	-0.44
SEP	67	-1	6.40	+3.20	67	-1	2.21	-0.99	69	+1	3.63	+4.3	72	+4	3.49	+0.29
OCT	55	-2	2.00	-0.57	55	-2	7.02	+4.45	57	0	5.55	+2.98	59	+2	2.78	+0.21
NOV	43	-2	1.81	-0.65	41	-4	3.06	-0.33	41	-4	2.79	-0.60				
DEC	42	+6	9.57	+4.94	36	0	4.19	+0.21	40	+4	2.47	-1.51				
Total			49.49	+4.94			58.25	+13.70			49.4	+4.85			56.98	+19.80

¹ DEP is departure from the long-term average.

² 2015 data is for the ten months through October.

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.

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 but some of the newer varieties are more adapted to Kentucky environmental conditions.

This report provides current yield data on annual and perennial ryegrass varieties in trials in Kentucky as well as guidelines for selecting varieties. Tables 16, 17, and 18 show summaries of all annual and perennial ryegrass and festulolium varieties tested in Kentucky for the last 15 years. The UK Forage Extension website 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.

Table 2. Descriptive scheme for the stages of development in perennial forage grasses.

Code	Description	Remarks
Leaf development		
11	First leaf unfolded	Applicable to regrowth of established (plants) and to primary growth of seedlings.
12	2 leaves unfolded	Further subdivision by means of leafdevelopment index (see text).
13	3 leaves unfolded	
•	•••••	
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.

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

Important: When seeding perennial ryegrasses for horse or cattle pastures (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 eleven studies are reported. Annual ryegrass tests were established in the fall of 2011, 2012, 2013, and 2014 at Lexington. Perennial ryegrass tests and festulolium tests were established in 2012, 2013, and 2014 at Lexington. The soil at Lexington is a well-drained silt loam (Maury) and is well suited for ryegrass production.

Table 3. Dry-matter yields, seedling vigor, plant height, maturity, and stand persistence of annual ryegrass varieties sown September 14, 2011, at Lexington, Kentucky (see Table 16 for designation of Italian or Westerwolds type commercial varieties).

Variety	Seedling Vigor ¹ Oct 11, 2011	Percent Stand			Height (inches)			Maturity ²			Yield (tons/acre)					
		2011		2012	2011		2012		2012			2011		2012		
		Oct 11	Mar 21	Jun 4	Dec 2	Apr 5	May 10	Apr 5	May 10	Jun 4	Dec 2	Apr 6	May 10	Jun 4	Total	
Commercial Varieties-Available for Farm Use																
Winterhawk	5.0	100	100	100	10	23	15	34	52	58	1.06	1.61	0.62	0.44	3.72*	
TAMTBO	2.8	100	100	100	10	20	18	34	54	59	0.92	1.45	0.68	0.41	3.46*	
Jackson	4.0	100	100	100	10	23	15	34	53	61	0.94	1.53	0.54	0.38	3.39*	
MX 108	3.5	100	100	100	9	19	16	33	48	56	0.75	1.44	0.72	0.44	3.35*	
Bruiser	4.5	100	100	100	10	24	16	34	54	59	0.98	1.47	0.54	0.33	3.32*	
Maximo	3.5	100	100	100	9	19	15	33	45	57	0.63	1.52	0.66	0.42	3.23	
Marshall	4.0	100	100	100	10	24	18	34	50	59	0.76	1.48	0.62	0.32	3.19	
Primecut	3.0	100	100	100	10	22	14	34	53	60	0.78	1.42	0.50	0.29	2.99	
TillageMax-Bristol ³	3.3	100	100	100	9	20	14	33	51	58	0.67	1.26	0.61	0.34	2.87	
TillageMax-INDY ³	3.3	100	100	100	10	22	15	33	50	60	0.63	1.37	0.48	0.38	2.85	
DH3	4.3	100	100	100	10	20	18	34	56	59	0.77	1.17	0.55	0.35	2.85	
AE110	2.6	100	100	100	9	21	17	33	48	58	0.56	1.38	0.61	0.29	2.84	
Fria	3.3	100	100	100	10	25	15	34	54	60	0.64	1.43	0.43	0.29	2.79	
Big Daddy	3.5	100	100	100	9	19	18	33	56	61	0.68	1.10	0.55	0.29	2.62	
TillageRootMax	3.8	100	100	100	10	19	14	33	49	58	0.74	1.01	0.54	0.32	2.61	
Feast II	2.0	100	100	100	8	15	13	33	46	59	0.44	1.10	0.55	0.48	2.57	
Gulf	3.8	100	100	100	10	22	16	34	56	59	0.63	1.17	0.41	0.22	2.43	
Experimental Varieties																
07-2 AR	3.5	100	100	100	10	22	15	33	46	61	0.79	1.76	0.72	0.49	3.76*	
PS-AR-09-1	3.0	100	100	100	9	20	16	33	45	61	0.74	1.39	0.70	0.48	3.32*	
PS-Lm-09-2	3.5	100	100	100	11	21	15	33	48	59	0.77	1.46	0.60	0.45	3.27*	
XLFLOLHY	4.3	100	100	100	10	18	17	34	52	58	0.91	1.27	0.69	0.37	3.23	
XLFDARG	2.0	100	100	100	6	20	12	33	51	60	0.28	1.47	0.52	0.43	2.70	
Mean	3.5	0	0	0	9.4	20.6	15.2	33.3	50.6	59.0	0.73	1.38	0.58	0.37	3.06	
CV,%	18.3	0	0	0	9.0	7.6	11.6	2.2	4.7	3.3	21.47	14.25	18.11	26.67	11.51	
LSD,0.05	0.9	0	0	0	1.2	2.2	2.5	1.1	3.4	2.8	0.22	0.28	0.15	0.14	0.50	

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 These are mixtures that included crimson clover and/or tillage radish.

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

Seedlings were made at the rate of 25 pounds per acre into a prepared seedbed with a disk drill. Plots were 5 feet by 20 feet in a randomized complete block design with four replications with a harvested plot area of 5 feet by 15 feet. For the perennial tests nitrogen was top-dressed at 60 pounds per acre of actual nitrogen in March, May, and August. For the annual tests nitrogen was top-dressed at 60 pounds per acre in March and 60 pounds after the first spring harvest. 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 establishment, fertility (P, K, and lime are based on regular soil tests), weed control, and harvest timing were in accordance with University of Kentucky recommendations.

Results and Discussion

Weather data for Lexington 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 12. Yields are given by cutting date for 2015 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.

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.

Table 4. Dry-matter yields, seedling vigor, plant height, maturity, and stand persistence of annual ryegrass varieties sown August 31, 2012, at Lexington, Kentucky (see Table 16 for designation of Italian or Westerwolds type commercial varieties).

Variety	Seedling Vigor ¹ Oct 11, 2012	Maturity ² 2013					Percent Stand 2013					Height (inches) 2013					Yield (tons/acre) 2013							
		Apr 22	May 21	Jun 11	Jun 25	Aug 21	Mar 20	Jul 22	Aug 21	Dec 14	Dec 14	Apr 22	May 21	Jun 11	Jun 25	Jun 25	Apr 23	May 21	Jun 11	Jun 25	Jul 23	Total		
		Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	
Commercial Varieties-Available for Farm Use																								
MX108(Max)	4.6	32.0	47.3	56.0	56.5	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
TetraPrime	3.5	31.8	46.8	57.0	57.0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
LHT-102	4.0	31.5	49.3	53.0	56.0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Marshall	4.6	32.8	50.8	59.5	62.0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
AE110	3.4	32.5	50.8	56.5	61.0	100	94	89	56	8	8	8	15	21	16	12	12	12	12	12	12	12	12	12
Centurion	4.0	33.3	46.3	60.0	62.0	100	100	100	30	8	9	17	17	17	17	9	9	9	9	9	9	9	9	9
TAMTBO	4.1	32.8	55.5	57.5	62.0	100	93	25	7	7	7	14	22	13	7	7	7	7	7	7	7	7	7	7
Feast II	4.9	31.3	53.5	55.0	56.0	100	70	93	92	8	8	9	24	13	13	13	13	13	13	13	13	13	13	13
Winterhawk	4.8	32.5	49.3	62.0	62.0	100	100	24	10	9	17	16	16	16	7	7	7	7	7	7	7	7	7	7
Jackson	4.1	32.8	52.0	62.0	62.0	100	100	13	4	4	10	16	20	14	8	8	8	8	8	8	8	8	8	8
TillageMaxBristol ³	2.3	32.3	54.0	57.5	62.0	89	87	18	4	7	14	21	12	9	12	9	9	9	9	9	9	9	9	9
TillageMaxINDY ³	2.1	32.3	51.3	59.5	62.0	91	90	14	3	6	15	21	14	10	14	10	10	10	10	10	10	10	10	10
TillageRootMax	2.3	33.0	48.8	60.0	62.0	98	100	13	1	7	17	19	15	9	9	9	9	9	9	9	9	9	9	9
Fria	4.9	33.3	50.8	62.0	62.0	100	100	20	1	9	16	17	15	8	8	8	8	8	8	8	8	8	8	8
Bruiser	5.0	32.5	51.3	61.0	62.0	100	100	23	5	9	15	17	14	8	8	8	8	8	8	8	8	8	8	8
Gulf	4.8	31.3	62.0	59.0	62.0	100	63	6	1	8	9	28	9	7	7	7	7	7	7	7	7	7	7	7
Experimental Varieties																								
PS-Lm-09-2	4.6	33.3	49.3	57.0	56.5	100	100	100	97	8	17	18	18	11	11	11	11	11	11	11	11	11	11	11
Lh 4x-1PS	3.8	32.3	53.5	57.0	59.0	100	100	94	91	8	14	20	17	13	13	13	13	13	13	13	13	13	13	13
Amp	3.1	33.0	56.0	60.0	62.0	99	98	30	11	7	17	21	15	8	8	8	8	8	8	8	8	8	8	8
IS-LWT 12	4.0	32.5	57.0	59.5	62.0	100	85	31	18	8	14	24	14	8	8	8	8	8	8	8	8	8	8	8
IS-LWT 14	3.6	32.0	55.5	58.5	62.0	100	99	36	16	8	14	21	15	8	8	8	8	8	8	8	8	8	8	8
IS-LWT 13	3.8	32.8	56.0	57.0	62.0	93	84	35	14	7	13	23	15	8	8	8	8	8	8	8	8	8	8	8
Mean	3.9	32.4	52.1	58.5	60.5	99	94	46	34	8	14	20	14	9	9	9	9	9	9	9	9	9	9	9
CV/%	15.2	2.1	5.6	3.5	1.4	4	12	20	23	13	10	10	10	13	13	13	13	13	13	13	13	13	13	13
LSD,0.05	0.9	0.9	4.1	2.9	1.2	5	16	13	11	1	2	3	3	2	2	2	2	2	2	2	2	2	2	2

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

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

³ These are mixtures that included crimson clover and/or tillage radish.

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

Table 5. Dry-matter yields, seedling vigor winter injury, plant height, maturity, and plant persistence of annual ryegrass varieties sown September 5, 2013, at Lexington, Kentucky (see Table 16 for designation of Italian or Westerwolds type commercial varieties).

Variety	Seedling Vigor ¹ Oct 14, 2013	Percent Stand		Winter Injury ² Jan 27	Plant Height (in) May 1	Maturity ³ 2014			Yield (tons/acre)					
		2013	2014			2014			2014					
		Oct 14	Apr 2			May 1	May 22	Jun 10	May 2	May 23	Jun 10	Jun 27	Jul 23	Total
Commercial Varieties-Available for Farm Use														
Fria	4.3	96	97	1.5	19	37	50	60	2.01	0.89	0.49	0.09	0.04	3.51*
Ed	4.1	97	96	2.8	19	41	51	59	1.77	0.93	0.55	0.11	0.11	3.47*
Bruiser	4.8	97	96	2.5	19	42	53	58	1.80	0.88	0.55	0.12	0.08	3.42*
Marshall	3.8	93	95	1.3	22	36	48	59	1.94	0.82	0.47	0.10	0.08	3.41*
Barmultra II	3.4	89	70	3.5	15	33	52	56	1.20	1.05	0.72	0.18	0.21	3.36*
Assist	3.5	93	93	3.0	18	39	49	60	1.57	0.79	0.50	0.07	0.14	3.06*
Amp	3.4	89	46	3.5	17	43	54	59	1.09	0.75	0.54	0.11	0.09	2.58
Hercules	4.3	92	44	5.8	14	34	52	59	0.88	0.71	0.52	0.17	0.21	2.49
Dyna-Gain	3.8	93	83	3.5	19	39	51	59	1.13	0.66	0.46	0.10	0.11	2.46
Jackson	4.0	95	78	5.3	16	49	54	61	1.10	0.68	0.43	0.10	0.10	2.40
Nelson	3.3	90	51	4.8	15	34	53	60	0.91	0.64	0.51	0.10	0.08	2.23
Feast II	3.3	88	12	8.3	10	32	54	59	0.40	0.42	0.53	0.23	0.24	1.82
Attain	3.6	92	31	4.5	14	33	53	61	0.71	0.58	0.36	0.09	0.06	1.80
Verdure	4.0	92	23	7.5	12	32	53	60	0.51	0.46	0.38	0.06	0.07	1.48
Big Boss	3.3	90	13	7.3	12	34	56	60	0.43	0.39	0.38	0.07	0.04	1.31
Gulf	4.0	93	14	7.3	11	38	56	60	0.33	0.28	0.25	0.04	0.03	0.93
Dixie Gold	2.8	80	2	8.0	11	33	55	60	0.18	0.17	0.23	0.05	0.03	0.68
Experimental Varieties														
M2CVS	3.4	93	97	1.5	20	39	50	59	1.99	0.81	0.46	0.14	0.09	3.49*
ME4	3.3	88	89	1.3	23	37	48	58	1.98	0.83	0.52	0.04	0.09	3.47*
ME-94	3.9	92	95	2.0	20	42	50	58	1.75	0.86	0.49	0.10	0.08	3.28*
LMT-15M3	3.4	80	75	3.3	16	34	51	57	1.30	0.92	0.65	0.14	0.17	3.18*
B-13.0171	2.8	84	21	5.0	15	34	50	61	0.78	0.54	0.60	0.12	0.12	2.16
FL4XMep	2.8	80	20	4.8	14	46	55	62	0.64	0.55	0.38	0.10	0.08	1.75
FL4XMarmi	2.6	70	27	5.3	15	44	56	61	0.50	0.34	0.32	0.11	0.00	1.26
FL4XMaron	2.8	84	9	4.8	12	47	56	62	0.38	0.23	0.31	0.07	0.01	1.00
Mean	3.5	89	55	4.3	16	38	52	59	1.09	0.65	0.46	0.10	0.09	2.40
CV,%	15.9	11	26	25.8	10	13	5	3	23.00	24.17	24.22	49.33	72.39	20.09
LSD,0.05	0.8	14	21	1.6	2	7	4	3	0.35	0.24	0.16	0.07	0.10	0.68

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

² Winter injury score based on a scale of 1 to 9 with 9 being the greatest amount of injury.

³ 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.

Tables 13, 14, and 15 summarize information about distributors and yield performance for all annual and perennial ryegrass and festulium varieties currently included in tests discussed in this report. Varieties are listed in alphabetical order by species, with the experimental varieties at the bottom. Remember that experimental varieties are not available for farm use; commercial varieties can be purchased from agricultural distributors. In tables 13, 14, and 15, 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 12).

Tables 16, 17, and 18 are summaries of yield data from 1999 to 2015 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 percentages less than 100 yielded lower than average. Direct, statistical comparisons of varieties cannot be made using the summary tables 16, 17, and 18, 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 stable performance; others may have performed well in wet years or on particular soil types. These details may influence variety choice and the information can be found in the yearly reports. See the footnotes in tables 16, 17, and 18 to determine to which yearly report to refer.

Table 6. Dry-matter yields, seedling vigor, and stand persistence of annual ryegrass varieties sown September 5, 2014, at Lexington, Kentucky (see Table 16 for designation of Italian or Westerwolds type commercial varieties).

Variety	Seedling Vigor ¹ Oct 9, 2014	Percent Stand		Winter Injury ² Jan 19, 2015	Maturity ³ 2015		Plant Height (in) Apr 23	Yield (tons/acre)				
		2014	2015		2014			2015			Total	
		Oct 9	Apr 3		Dec 15	Apr 24		May 19	Jun 15			
Commercial Varieties-Available for Farm Use												
Centurion	4.1	99	95	0.5	32.3	50.5	18	0.53	1.51	1.22	0.48	3.74*
Winterhawk	4.1	99	92	1.5	35.8	54.5	18	0.74	1.29	1.05	0.31	3.39*
Bruiser	4.4	99	80	2.5	32.5	55.5	17	0.74	0.98	0.90	0.36	2.98
Ed	3.3	94	70	2.0	31.5	55.5	13	0.45	0.88	1.13	0.39	2.85
Marshall	4.0	98	81	0.5	32.5	54.0	17	0.51	1.14	0.91	0.28	2.84
Jackson	3.8	98	88	1.0	32.5	55.5	16	0.57	1.18	0.81	0.29	2.84
TetraPrime	3.0	98	98	0.5	31.0	46.3	12	0.34	1.17	0.99	0.22	2.72
Kowinearly	3.1	97	91	1.8	41.3	59.0	17	0.30	1.14	0.95	0.31	2.70
Meroa	3.0	78	64	2.8	36.3	55.0	13	0.28	0.96	0.93	0.48	2.65
Green Farm	4.0	100	66	2.8	46.0	59.5	21	0.52	0.87	0.71	0.29	2.40
Fria	4.0	99	58	3.3	32.0	57.0	13	0.44	0.58	0.96	0.32	2.30
Kospeed	4.4	99	63	1.8	41.0	59.0	16	0.58	0.72	0.78	0.19	2.26
TAMTBO	2.9	78	43	1.8	31.5	57.5	13	0.30	0.63	1.04	0.26	2.23
Tam 90	3.8	100	26	5.0	30.0	58.0	10	0.64	0.34	0.92	0.32	2.22
Nelson	2.1	65	48	1.8	31.0	56.5	12	0.34	0.70	0.90	0.26	2.20
Big Boss	2.5	68	6	5.8	30.3	58.0	11	0.48	0.21	0.86	0.52	2.07
Attain	2.1	63	16	2.3	30.5	58.0	11	0.38	0.32	0.92	0.32	1.95
Gulf	4.0	100	26	6.3	30.8	59.0	10	0.53	0.31	0.76	0.34	1.95
Big Bang	3.4	86	25	4.3	30.0	55.5	9	0.28	0.30	0.92	0.41	1.91
Bill	3.6	88	11	5.0	30.3	59.0	9	0.43	0.26	0.76	0.29	1.75
Verdure	3.4	87	4	6.0	29.5	59.5	9	0.51	0.18	0.72	0.26	1.66
Feast II	3.0	88	13	7.3	35.0	54.0	9	0.35	0.24	0.73	0.26	1.58
Experimental Varieties												
ME94	3.9	92	88	0.5	36.8	54.0	18	0.60	1.33	1.09	0.54	3.57*
ME4	2.9	96	94	0.0	32.3	53.0	19	0.43	1.40	0.91	0.41	3.14*
M2CVS	3.9	99	92	0.5	31.5	54.0	14	0.50	1.31	0.95	0.35	3.12*
GO-ITT12	3.0	94	89	1.8	32.5	55.0	15	0.28	0.93	1.28	0.29	2.79
GO-FLN2	3.3	97	49	3.3	30.5	57.0	10	0.50	0.49	1.08	0.32	2.40
GO-IT213	2.3	78	11	5.3	30.8	59.5	13	0.27	0.23	0.74	0.36	1.60
Mean	3.4	90	57	2.8	33.0	56.0	14	0.46	0.77	0.93	0.34	2.49
CV,%	20.9	9	36	33.2	14.0	3.0	18	30.34	32.57	24.47	47.53	17.71
LSD,0.05	1.0	12	21	1.3	7.0	2.0	4	0.20	0.35	0.32	0.23	0.62

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

² Winter injury score based on a scale of 1 to 9 with 9 being the greatest amount of injury.

³ 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.

Summary

Selecting a good variety of annual or perennial ryegrass or festulolium 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 website, 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)
- Festulolium Hybrid Grass (see the UK Forage website under publications and grasses)

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Table 7. Dry-matter yields, seedling vigor, maturity, and stand persistence of perennial ryegrass and festulolium (FL) varieties sown September 7, 2012, at Lexington, Kentucky (see Table 17 for designation of diploid or tetraploid type commercial varieties).

Variety	Seedling Vigor ¹		Maturity ²												Percent Stand												Yield (tons/acre)					3-year Total
			2013			2014			2015			2012			2013			2014			2015			2014			2015					
			Oct 15, 2012	May 20	May 13	May 13	Jun 13	May 14	May 14	Oct 15	Mar 20	Oct 22	Apr 9	Oct 27	Oct 27	Apr 6	Oct 29	2013 Total	2014 Total	2015 Total	May 14	Jun 16	Aug 5	2014 Total	2015 Total	2014 Total	2015 Total					
Commercial Varieties-Available for Farm Use																																
Perseus (FL)	4.3	54.5	41.0	62.0	43.5	100	100	98	29	45	18	18	18	18	18	6.21	2.63	2.63	0.49	0.39	0.16	1.07	9.89*									
LHT-102	4.8	54.0	37.8	62.0	41.8	100	100	100	33	69	30	40	40	40	40	5.89	2.12	2.12	0.41	0.51	0.27	1.19	9.20*									
TetraGain	3.0	56.0	48.0	62.0	42.0	97	98	98	69	88	54	54	54	54	54	5.16	2.50	2.50	0.49	0.42	0.33	1.24	8.90*									
TetraMag	4.6	52.5	37.8	62.0	41.0	100	100	100	21	55	18	20	20	20	20	5.69	1.80	1.80	0.31	0.33	0.07	0.78	8.89*									
Elena DS	3.3	54.5	35.8	62.0	43.5	98	98	98	80	84	63	45	45	45	45	5.24	2.19	2.19	0.52	0.62	0.25	1.40	8.85*									
Hostyn (FL)	3.0	58.5	47.0	61.5	44.8	99	100	100	23	48	33	33	33	33	33	5.72	1.77	1.77	0.35	0.35	0.42	1.12	8.61*									
Power	3.8	54.5	42.3	62.0	42.0	100	100	100	84	63	30	70	70	70	70	4.57	1.96	1.96	0.41	0.25	0.50	1.28	8.39*									
Boost	3.0	56.0	44.3	62.0	43.5	91	99	95	91	93	69	65	65	65	65	4.87	2.13	2.13	0.62	0.41	0.24	1.27	8.27*									
Calibra	4.0	54.0	34.5	61.5	41.8	100	100	100	96	93	88	69	69	69	69	4.53	2.44	2.44	0.69	0.33	0.26	1.28	8.25*									
Payday	2.9	53.5	37.8	61.0	40.5	100	100	100	90	95	73	71	71	71	71	4.72	2.22	2.22	0.32	0.40	0.44	1.16	8.10*									
Crave	3.3	53.0	39.5	60.5	39.0	100	100	100	78	90	73	71	71	71	71	4.70	2.03	2.03	0.44	0.29	0.17	0.90	7.63									
Impressario	4.1	55.5	50.0	61.5	43.0	100	100	100	33	64	58	47	47	47	47	4.51	1.48	1.48	0.24	0.25	0.50	1.11	7.43									
BG34	4.4	50.3	32.0	59.0	39.0	100	100	100	65	65	40	50	50	50	50	4.00	1.86	1.86	0.55	0.31	0.19	1.16	7.04									
Grand Daddy	3.3	56.5	50.3	61.5	51.3	99	99	100	81	79	68	34	34	34	34	4.33	1.70	1.70	0.28	0.26	0.32	0.86	6.89									
Linn (certified)	3.3	58.5	55.5	61.0	55.3	100	100	100	80	55	40	25	25	25	25	3.62	1.98	1.98	0.69	0.20	0.03	0.93	6.42									
Verseka	3.6	55.0	35.8	61.5	39.0	100	100	100	72	63	57	27	27	27	27	4.35	1.66	1.66	0.33	0.36	0.15	0.68	6.03									
Experimental Varieties																																
IS-FLPT5	3.4	53.0	32.0	61.0	43.5	100	100	100	79	76	68	63	63	63	63	4.71	2.24	2.24	0.53	0.29	0.41	1.23	8.18*									
PPG-FPRD104	3.9	57.0	48.3	60.5	46.0	100	100	100	71	69	58	30	30	30	30	4.25	2.15	2.15	0.46	0.96	0.19	1.61	8.01									
IS-FLPT6	3.0	52.5	33.3	61.5	40.5	100	100	100	89	81	53	55	55	55	55	4.43	2.08	2.08	0.41	0.27	0.31	0.99	7.51									
IS-FLPD6	3.6	55.0	42.8	60.0	44.8	100	100	99	78	63	55	39	39	39	39	3.66	1.53	1.53	0.59	0.32	0.16	1.06	6.24									
Mean	3.6	54.7	41.0	61.3	43.2	99	100	99	67	72	52	46	46	46	46	4.76	2.02	2.02	0.46	0.38	0.26	1.13	8.00									
CV,%	19.9	3.2	12.4	1.6	9.1	3	1	2	25	36	46	55	55	55	55	11.48	25.07	25.07	47.50	91.01	95.08	49.95	14.52									
LSD _{0.05}	1.0	2.4	7.3	1.4	6.0	5	1	3	24	36	36	38	38	38	38	0.77	0.72	0.72	0.33	0.49	0.38	0.88	1.81									

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

² Maturity rating scale: 37=flag leaf emergence, 45=boot swollen, 50=beginning of inflorescence emergence, 58=complete emergence of inflorescence, 62=beginning of pollen shed. See Table 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 varieties sown September 5, 2013, at Lexington, Kentucky (see Table 17 for designation of diploid or tetraploid type commercial varieties).

Variety	Seedling Vigor ¹ Oct 14, 2013	Maturity ²			Percent Stand					Yield (tons/acre)					2-year Total
		2014		2015	2013	2014		2015		2014	2015				
		May 7	Jun 12	May 13	Oct 14	Apr 2	Oct 27	Apr 3	Oct 29	Total	May 13	Jun 16	Aug 5	Total	
Commercial Varieties-Available for Farm Use															
Kentaur	3.8	32.8	62.0	40.5	97	99	99	97	98	3.80	0.55	0.27	0.29	1.11	4.91*
Boost	2.3	46.3	61.5	43.5	88	88	93	94	85	3.49	0.84	0.25	0.25	1.35	4.84*
PayDay	3.0	34.5	62.0	43.5	98	98	100	99	99	3.41	0.68	0.24	0.39	1.31	4.72*
Power	3.8	35.8	61.5	40.5	98	99	100	97	98	3.36	0.66	0.19	0.34	1.20	4.56*
Victorian	4.4	56.0	29.0	57.5	99	100	100	98	98	3.02	1.16	0.03	0.24	1.43	4.45*
Everlast	4.8	56.0	52.8	58.0	100	93	98	91	97	2.87	1.00	0.13	0.44	1.57	4.44*
Calibra	3.5	38.0	62.0	40.5	98	98	98	99	98	3.05	0.77	0.19	0.23	1.19	4.24
BG34	3.8	32.3	53.8	39.0	99	100	100	88	91	3.11	0.52	0.17	0.22	0.91	4.02
Linn (certified)	3.9	52.0	29.0	55.5	99	99	98	97	96	2.53	1.04	0.17	0.17	1.39	3.91
Experimental Varieties															
RAD-MFP141	2.9	32.8	61.5	39.0	97	97	99	97	98	3.63	0.83	0.27	0.32	1.41	5.05*
RAD-MFP145	2.9	33.8	53.8	43.5	97	97	98	99	97	3.43	0.89	0.43	0.24	1.56	4.99*
Mean	3.5	40.9	53.5	45.5	97	97	98	96	96	3.25	0.81	0.21	0.29	1.31	4.56
CV,%	13.0	9.4	16.5	4.7	3	3	2	3	6	10.27	23.06	45.03	41.47	19.88	9.90
LSD,0.05	0.7	5.6	12.7	3.1	4	4	3	5	8	0.48	0.27	0.14	0.17	0.38	0.65

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

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

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

Table 9. Dry-matter yields, seedling vigor, winter injury, maturity, and stand persistence of perennial ryegrass varieties sown September 5, 2014, at Lexington, Kentucky (see Table 17 for designation of diploid or tetraploid type commercial varieties).

Variety	Seedling Vigor ¹ Oct 9, 2014	Winter Injury ² Jan 22, 2015	Maturity ³ 2015 May 11	Percent Stand			Yield (tons/acre)			
				2014		2015	2015			Total
				Oct 9	Apr 3	Oct 29	May 11	Jun 15	Aug 11	
Commercial Varieties-Available for Farm Use										
TetraMag	4.6	6.8	47.5	96	94	95	3.08	1.12	1.26	5.45*
LPTNEAROM	3.8	3.0	45.0	98	99	99	2.79	0.95	0.85	4.60
Grand Daddy	2.6	2.0	56.0	95	96	96	3.35	0.58	0.58	4.52
Albion	2.3	3.0	46.3	94	98	97	3.04	0.75	0.61	4.40
Power	4.0	5.5	49.3	95	96	97	3.11	0.46	0.52	4.09
PayDay	3.3	3.5	46.3	96	97	98	2.85	0.57	0.65	4.08
Remington	2.6	1.3	46.3	94	97	97	2.68	0.71	0.58	3.97
Calibra	4.3	3.3	46.3	94	95	97	2.57	0.68	0.34	3.59
Victorian	3.8	8.5	56.0	100	97	97	2.59	0.38	0.56	3.52
Linn	3.5	5.5	56.0	98	98	98	2.84	0.22	0.43	3.49
BG34	3.8	2.3	47.5	99	99	99	2.51	0.56	0.37	3.44
Experimental Varieties										
GO-AX11	3.8	6.0	47.5	95	91	93	3.17	0.86	0.51	4.55
13PI2B1	3.6	4.3	50.8	100	100	98	3.21	0.59	0.63	4.43
GO-13ALF	2.6	3.0	46.3	96	99	99	2.91	0.79	0.58	4.28
13BSTYW	3.6	2.8	47.5	95	97	90	3.21	0.58	0.40	4.19
13BSTRD	3.3	2.5	49.8	95	96	96	3.28	0.55	0.34	4.16
AGRLP-156AR1	3.9	3.8	53.5	98	99	99	2.98	0.51	0.46	3.95
13PI3B	3.9	2.3	51.5	100	100	100	2.99	0.46	0.44	3.89
13PI2B2	3.8	2.3	49.0	100	100	99	3.04	0.49	0.24	3.77
GO-13ABFR	2.9	2.8	45.0	96	97	97	2.52	0.77	0.42	3.70
GO-13AXT	3.1	2.3	49.3	97	99	97	2.45	0.56	0.69	3.70
AGRLP-157AR1	4.0	2.3	45.0	100	100	100	2.71	0.48	0.31	3.50
Mean	3.5	3.6	49.0	97	97	97	2.90	0.62	0.53	4.06
CV,%	18.3	36.6	4.8	3	2	3	12.44	28.06	50.48	11.51
LSD,0.05	0.9	1.8	3.3	4	3	5	0.51	0.25	0.38	0.66

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

² Winter injury score based on a scale of 1 to 9 with 9 being the greatest amount of injury.

³ 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, 2012, at Lexington, Kentucky.

Variety	Seedling Vigor ¹			Maturity ²				Percent Stand						Yield (tons/acre)					3-year Total				
	Oct 15, 2012		May 20	2014		2015		2013		2014		2015		2013		2014		2015					
	Oct 15	May 20	May 20	May 13	Jun 12	May 13	Oct 15	Mar 20	Oct 22	Apr 9	Oct 27	Apr 6	Oct 29	May 13	Jun 16	Aug 5	Total						
Commercial Varieties-Available for Farm Use																							
Hykor	2.5	60.0	60.0	57.0	29.0	57.0	98	98	100	100	100	100	100	100	100	100	7.31	3.82	1.53	0.42	1.38	3.33	14.46*
Felina	1.3	60.0	60.0	56.5	29.0	56.5	95	96	99	99	100	100	100	100	100	100	6.61	3.28	1.43	0.27	1.04	2.74	12.64
Mahulena	1.4	60.0	60.0	58.5	29.0	58.0	92	93	95	99	99	99	99	99	99	99	5.96	3.51	1.62	0.29	0.93	2.84	12.31
Perseus	4.0	55.0	55.0	40.0	59.0	46.3	99	100	96	29	58	48	43	43	43	43	7.01	3.18	0.61	0.59	0.29	1.49	11.88
Fojtan	2.0	57.5	55.5	55.5	29.0	55.5	97	97	100	100	100	100	100	100	100	100	5.80	3.30	1.31	0.45	0.88	2.64	11.74
Spring Green	4.1	57.5	47.3	58.5	58.5	45.0	100	100	100	83	93	86	81	81	81	81	6.03	3.14	0.88	0.50	0.17	1.55	10.72
Lofa	4.5	54.5	45.0	59.5	59.5	45.0	100	100	86	31	63	43	31	31	31	31	6.41	2.45	0.72	0.66	0.16	1.54	10.41
Perun	3.3	55.5	41.3	59.3	59.3	45.0	100	100	98	20	53	40	33	33	33	33	6.64	2.09	0.73	0.51	0.16	1.40	10.13
Hostyn	3.0	59.0	50.3	60.0	60.0	50.8	99	100	99	38	41	36	31	31	31	31	6.79	1.91	0.68	0.43	0.30	1.41	10.11
Barfest	3.8	55.5	43.5	58.0	58.0	45.0	100	100	100	76	82	76	73	73	73	73	5.57	2.86	0.77	0.63	0.24	1.64	10.08
Duo	3.9	60.0	51.0	58.5	58.5	47.5	100	100	100	80	81	75	71	71	71	71	5.62	2.61	0.96	0.35	0.15	1.47	9.70
Sweet Tart	4.6	56.5	51.0	58.7	58.7	—	100	85	93	16	13	8	2	2	2	2	4.44	1.20	0.01	0.19	0.03	0.24	5.88
Gain	4.9	61.5	37.3	60.0	60.0	45.0	100	78	18	6	14	6	4	4	4	4	3.94	0.48	0.15	0.34	0.00	0.48	4.90
Meadow Green	4.8	56.0	—	—	—	—	100	66	0	0	0	0	0	0	0	0	3.53	0.00	0.00	0.00	0.00	0.00	3.53
Bonus	5.0	60.0	—	—	—	—	100	38	2	1	1	1	1	1	1	1	2.86	0.02	0.00	0.10	0.02	0.13	3.00
Experimental Varieties																							
Amp1427	2.4	56.0	46.3	51.8	51.8	45.0	96	99	100	88	91	84	81	81	81	81	6.14	3.31	0.94	0.72	0.33	1.99	11.44
KYFA1016	3.1	55.5	42.3	58.0	58.0	47.5	100	100	100	97	97	93	88	88	88	88	6.38	2.80	1.00	0.44	0.26	1.70	10.88
KYFA1015	3.0	55.5	43.0	58.5	58.5	45.0	100	100	100	83	92	81	48	48	48	48	5.86	2.86	0.75	0.92	0.20	1.87	10.59
KYFA9819	3.0	55.5	44.3	59.0	59.0	45.0	98	99	99	78	80	68	39	39	39	39	5.69	2.66	0.43	0.48	0.08	0.99	9.35
XLFFL	4.9	59.5	—	—	—	—	100	89	0	0	0	0	0	0	0	0	3.51	0.00	0.00	0.00	0.00	0.00	3.52
Mean	3.5	57.5	47.9	51.0	51.0	48.9	99	92	79	56	63	57	51	51	51	51	5.61	2.26	0.73	0.42	0.33	1.48	9.33
CV%	13.6	2.3	12.2	7.9	7.9	3.1	2	10	8	24	25	28	30	30	30	30	9.57	23.50	27.73	38.05	65.69	27.93	11.34
LSD _{0.05}	0.7	1.9	8.7	6.0	6.0	2.3	2	12	9	22	22	23	22	22	22	22	0.76	0.76	0.29	0.23	0.31	0.48	1.50

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

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

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

Table 11. Dry-matter yields, seedling vigor, maturity, and stand persistence of festulolium varieties sown September 5, 2013, at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct 14, 2013	Maturity ²			Percent Stand					Yield (tons/acre)					2-year Total
		2014		2015	2013	2014		2015		2014	2015				
		May 8	Jun 12	May 11	Oct 14	Apr 2	Oct 28	Apr 3	Oct 29	Total	May 11	Jun 16	Aug 7	Total	
Commercial Varieties-Available for Farm Use															
Perseus	3.9	42.3	62.0	45.0	100	99	99	86	88	5.02	0.75	0.52	0.38	1.65	6.68*
Hykor	2.9	54.5	29.0	57.0	100	93	99	99	98	4.00	1.41	0.30	0.96	2.67	6.67*
Lofa	4.1	41.0	62.0	45.0	99	99	99	91	89	4.99	0.73	0.65	0.29	1.66	6.65*
Perun	4.0	41.0	62.0	45.0	99	99	98	85	84	5.36	0.46	0.46	0.32	1.24	6.60*
Barfest	3.3	43.0	62.0	45.0	99	98	99	98	95	4.52	0.76	0.48	0.33	1.56	6.08*
Hostyn	3.0	47.3	62.0	45.0	96	94	95	84	69	4.73	0.50	0.34	0.40	1.24	5.97*
Spring Green	3.5	42.3	62.0	45.0	100	100	100	99	97	4.34	0.69	0.45	0.28	1.43	5.77
Felina	2.4	54.0	29.0	56.5	97	89	98	97	96	3.58	1.35	0.22	0.56	2.13	5.71
Mahulena	1.8	56.0	29.0	58.0	98	84	95	97	95	3.21	1.50	0.05	0.52	2.07	5.28
Duo	3.5	46.8	62.0	45.0	100	100	100	99	96	3.88	0.64	0.41	0.18	1.23	5.11
Rebab	2.3	50.3	43.5	54.5	97	92	97	97	97	3.01	1.25	0.23	0.60	2.07	5.08
Fojtan	2.0	48.5	50.8	54.5	98	85	96	97	95	3.00	1.16	0.32	0.41	1.88	4.88
Gain	4.8	53.5	61.0	45.0	100	76	80	64	53	3.73	0.46	0.39	0.25	1.10	4.83
Bonus	4.8	51.5	62.0	48.7	100	6	4	4	4	1.94	0.25	0.14	0.05	0.45	2.39
Meadow Green	5.0	47.5	61.5	52.0	100	18	4	1	1	2.18	0.04	0.12	0.02	0.18	2.35
Experimental Varieties															
KYFA9819	2.6	40.3	62.0	47.8	100	97	97	92	90	4.06	0.63	0.63	0.20	1.46	5.52
Amp1427	2.3	34.5	62.0	45.0	99	95	97	97	95	3.92	0.79	0.37	0.21	1.37	5.29
XLFFL	4.3	52.5	61.5	54.0	100	71	13	4	3	3.22	0.11	0.07	0.04	0.21	3.43
Mean	3.3	47.0	54.7	49.1	99	83	82	77	75	3.82	0.75	0.34	0.33	1.42	5.24
CV,%	17.4	8.9	9.5	3.7	2	9	2	5	8	11.32	22.10	30.63	47.14	18.40	11.70
LSD,0.05	0.8	6.0	7.3	2.9	2	11	3	6	9	0.61	0.24	0.15	0.22	0.22	0.87

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

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

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

Table 12. Dry-matter yields, seedling vigor, maturity, and stand persistence of festulolium varieties sown September 5, 2014, at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct 9, 2014	Maturity ² 2015 May 6	Percent Stand			Yield (tons/acre)			
			2014		2015	2015			
			Oct 9	Apr 2	Oct 29	May 6	Jun 15	Aug 10	Total
Commercial Varieties-Available for Farm Use									
Hykor	3.5	52.0	98	97	98	1.38	0.67	1.60	3.65*
Perun	3.9	32.8	99	100	99	2.17	0.82	0.63	3.63*
Lofa	5.0	33.0	100	100	98	2.36	0.79	0.46	3.61*
Perseus	4.8	32.8	100	100	100	2.10	0.92	0.55	3.57*
Hostyn	4.0	32.8	96	97	97	1.98	0.79	0.63	3.40*
Spring Green	4.3	40.5	98	99	99	2.09	0.75	0.43	3.27*
Duo	3.8	49.3	96	98	98	2.33	0.62	0.27	3.22*
Mahulena	2.0	56.0	70	87	90	1.29	0.45	1.42	3.16*
Barfest	4.5	33.8	98	99	99	1.88	0.78	0.43	3.09*
Felina	2.3	47.5	89	94	96	1.02	0.60	1.09	2.71
Rebab	2.3	40.5	89	92	93	0.87	0.62	0.84	2.33
Fojtan	2.0	39.0	85	94	95	0.50	0.53	0.87	1.90
Experimental Varieties									
KYFA9819	4.3	32.5	98	97	98	1.67	0.81	0.53	3.01*
PPG-FEST 102	3.4	39.0	93	96	96	1.77	0.87	0.26	2.89*
Mean	3.6	40.1	93	96	97	1.67	0.72	0.71	3.10
CV,%	15.1	6.5	6	5	2	18.08	18.73	38.84	17.54
LSD,0.05	0.8	3.7	8	3	2	0.43	0.19	0.40	0.78

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

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

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

Table 13. Performance of annual ryegrass varieties sown in 2014 at Lexington.¹

Variety	Type	Proprietor/KY Distributor	2014 ² 2015 ³
Attain	Westerwold tetraploid	Smith Seed Services	x ⁴
Big Bang	—	Brett Young	x
Big Boss	Westerwold tetraploid	Smith Seed Services	x
Bill	Westerwold diploid	Smith Seed Services	x
Bruiser	Westerwold diploid	Ampac Seed	x
Centurion	Westerwold diploid	Mountain View Seeds	*
Ed	Westerwold diploid	Smith Seed Services	x
Feast II	Italian tetraploid	Ampac Seed	x
Fria	Westerwold diploid	Allied Seed	x
Green Farm	Westerwold diploid	Smith Seed Services	x
Gulf	Westerwold diploid	Public	x
Jackson	Westerwold diploid	The Wax Company	x
Kospeed	Westerwold diploid	Smith Seed Services	x
Kowinearly	Westerwold diploid	Smith Seed Services	x
Marshall	Westerwold diploid	The Wax Company	x
Meroa	Westerwold diploid	Smith Seed Services	x
Nelson	Westerwold tetraploid	The Wax Company	x
TAMTBO	Italian tetraploid	Tex. Ag. Exp.Sta.	x
Tam 90	Italian diploid	Tex. Ag. Exp.Sta.	x
TetraPrime	Italian tetraploid	Mountain View Seeds	x
Verdure	Westerwold tetraploid	Smith Seed Services	x
Winterhawk	Westerwold diploid	Oregro Seeds	*
Experimental Varieties			
GO-FLN2	Westerwold diploid	Grassland Oregon	x
GO-IT213	Westerwold diploid	Grassland Oregon	x
GO-ITT12	Westerwold diploid	Grassland Oregon	x
ME4	Westerwold diploid	The Wax Company	*
ME-94	Westerwold diploid	The Wax Company	*
M2CVS	Westerwold diploid	The Wax Company	*

¹ See Table 16 for summary of yield data on named varieties from 2000-2015.

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.

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

Table 14. Performance of perennial ryegrass across years at Lexington.

Variety	Type	Proprietor/KY Distributor	2012 ¹			2013		2014
			2013 ²	2014	2015	2014	2015	2015
Commercial Varieties-Available for Farm Use								
Albion	tetraploid	Grassland Oregon						x
BG34	diploid	Barenbrug USA	x ³	x	*	x	x	x
Boost	tetraploid	Allied Seed	x	*	*	*	*	
Calibra	tetraploid	DLF International	x	*	*	x	*	x
Crave	tetraploid	Ampac Seed Company	x	*	*			
Elena DS	tetraploid	Allied Seed	x	*	*			
Everlast	diploid	Caudill Seed				x	*	
Grand Daddy	tetraploid	Smith Seed Services	x	x	*	x	*	x
Impressario	tetraploid	DLF International	x	x	*			
Kentaur	tetraploid	DLF International				*	x	
LHT-102	tetraploid	Ampac Seed Company	*	*	*			
Linn	diploid	Public	x	*	*	x	*	x
LPTNEAROM	—	Barenbrug USA						x
PayDay	tetraploid	Mountain View Seeds	x	*	*	*	*	x
Power	tetraploid	Ampac Seed Company	x	*	*	*	*	x
Remington	tetraploid	Barenbrug USA						x
TetraGain	tetraploid	Pure Seed	x	*	*			
TetraMag	tetraploid	Mountain View Seeds	*	x	*			*
Verseka	tetraploid	Allied Seed	x	x	x			
Victorian	diploid	Caudill Seed				x	*	x
Experimental Varieties								
AGRLP-156AR1	—	Ag. Research						x
AGRLP-157AR1	—	Ag. Research						x
GO-AX11	intermediate	Grassland Oregon						x
GO-13ABFR	tetraploid	Grassland Oregon						x
GO-13ALF	tetraploid	Grassland Oregon						x
GO-13AXT	tetraploid	Grassland Oregon						x
IS-FLPD6	diploid	DLF International	x	x	*			
IS-FLPT5	tetraploid	DLF International	x	*	*			
IS-FLPT6	tetraploid	DLF International	x	*	*			
PPG-FPRD 104	diploid	Mountain View Seeds	x	*	*			
RAD-MFP141	tetraploid	Radix Research				*	*	
RAD-MFP145	tetraploid	Radix Research				*	*	
13BSTRD	—	Oregro Seeds						x
13BSTYW	—	Oregro Seeds						x
13P12B1	—	Oregro Seeds						x
13P12B2	—	Oregro Seeds						x
13P13B	—	Oregro Seeds						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.

Table 15. Performance of festulolium varieties across years at Lexington.

Variety	Type ²	Proprietor/KY Distributor	2012 ¹			2013		2014
			2013 ³	2014	2015	2014	2015	2015
Commercial Varieties-Available for Farm Use								
Barfest	MF x PR	Barenbrug USA	x ⁴	x	x	x	x	*
Duo	MF x PR	Ampac Seed	x	x	x	x	x	*
Felina	(TF x IR) x TF	DLF International	*	*	x	x	x	x
Gain	MF x IR	Allied Seed	x	x	x	x	x	
Fojtan	(TF x IR) x TF	DLF International	x	*	x	x	x	x
Hostyn	MF x IR	DLF International	*	x	x	x	x	*
Hykor	(TF x IR) x TF	DLF International	*	*	*	x	*	*
Lofa	(TF x Int) x Int	DLF International	x	x	x	*	x	*
Mahulena	(TF x IR) x TF	DLF International	x	*	x	x	x	*
Meadow Green	—	Pure Seed	x	x	x	x	x	
Perseus	MF x IR	DLF International	*	*	x	*	x	*
Perun	MF x IR	DLF International	*	x	x	*	x	*
Rebab	(TF x IR) x TF	DLF International				x	x	x
Spring Green	MF x PR	Turf Seed	x	*	x	x	x	*
Bonus	MF x IR	Allied Seed	x	x	x	x	x	
Sweet Tart	MF x IR	ProSeeds Marketing	x	x	x			
Experimental Varieties								
Amp1427	—	Ampac Seed	x	*	x	x	x	
KYFA1015	MF x IR	KY Agric. Exp. Station	x	x	x			
KYFA1016	MF x IR	KY Agric. Exp. Station	x	x	x			
KYFA9819EF	MF x IR	KY Agric. Exp. Station	x	x	x	x	x	*
PPG-FEST-102	PR x MF	Mountain View Seeds						*
XLF FL	—	ProSeeds Marketing	x	x	x	x	x	

¹ Establishment year.

² MF=meadow fescue, TF=tall fescue, IR=Italian ryegrass, PR=perennial ryegrass, Int=intermediate 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 16. Summary of Kentucky perennial ryegrass yield trials 1999-2015 (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	10	11	12	13	00	02	00	03	
			2yr ⁵	2yr	2yr	3yr	3yr	2yr	3yr	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					86		87	90				86(5)
Bison	hybrid tetraploid	International Seeds																	140	-
Boost	tetraploid	Allied Seed							130	125	120	143	110	103	109					120(7)
Boxer	tetraploid	AgriBioTech	121													106				114(2)
Calibra	tetraploid	DLF International								96	109	81	99	103	95		112			101(7)
CAS MP64	diploid	Cascade International		97																-
Citadel	tetraploid	Ag Canada	101													94	113	103		103(4)
Crave	tetraploid	Ampac Seed												95						-
Derby	-	Public																74		-
Elena DS	tetraploid	Allied Seed												110						-
Eurostar	tetraploid	Seed Research of OR							112											-
Everlast	diploid	Caudill Seed													100					-
Feeder	diploid	Seed Research of OR							76											-
Grand Daddy	tetraploid	Smith Seed		118				101	109		76	92	84	86			111			97(8)
Green Gold	tetraploid	Grasslands Oregon						96												-
Herbal	-	ProSeeds Marketing								77										-
Impressario	tetraploid	DLF International									107			92						100(2)
Kentaur	tetraploid	DLF International											106		110					108(2)
Lactal	tetraploid	Brett Young									102									-
Lasso	diploid	DLF International		98																-
LHT-102	tetraploid	Ampac Seed												114						-
Linn	diploid	Public	87	98	98	102		98	85	84	101	92	93	80	88	87	88	77		91(15)
Manhattan	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									82									-
Ortet	tetraploid	Oregro Seeds								114										-
PayDay	tetraploid	Mountain View Seeds												101	106					104(2)
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	102	100	109	104						105(6)
Polim	tetraploid	DLF International										106								-
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													-
TetraGain	tetraploid	Pure Seed												111						-
TetraMag	tetraploid	Mountain View Seeds												110						-
Tonga	tetraploid	Kings AgriSeeds					96			103										100(2)
Verseka	tetraploid	Allied Seed												75						-
Victorian	diploid	Caudill Seed												100						-
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 2012 was harvested three years, so the final report would be "2015 Annual and Perennial Ryegrass and Festulolium 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 17. Summary of Kentucky annual ryegrass yield trials 2000-2015 (yield shown as a percentage of the yield value of Marshall).

Variety	Type	Proprietor	Lexington ¹																Princeton			Bowling Green	Mean ⁴ (#trials)										
			03	04	05	06	07	08	09	10	10	10	11	11	12	12	13	14	00	02	03												
			03/2	04	05	06	07	08	09	10	10	10	11	11	12	12	13	14	00	02	03												
Abundant	tetraploid	Ampac Seed			12																												
Acrobat		Proseeds Marketing																															
AE110	Westerworld tetraploid	Pickseed USA, Inc.					144			89																	95(2)						
Amp	Westerworld tetraploid	Columbia Seeds																				76											
Andy	Westerworld tetraploid	DLF International																				97											
Assist	Westerworld diploid	SaddleButte																				90											
Attain	Westerworld tetraploid	Smith Seed Services									111											53	69	107				90(2)					
Advance	Westerworld diploid	DLF International																															
Barextra	Italian tetraploid	Barenbrug USA																															
Barmultra II	Italian tetraploid	Barenbrug USA									133											103	99						118(2)				
Big Bang		Brett Young																															
Big Boss	Westerworld tetraploid	Smith Seed Services																					67										
Big Daddy	Westerworld tetraploid	FFR/Sou. St.									98											86	38	73						86(3)			
Bill	Westerworld diploid	Smith Seed Services									86	98	82																	89(6)			
Brangus	Italian diploid	KB Seed Solutions									94																						
Bruiser	Westerworld diploid	Ampac Seed									65	105	100	104								86	100	105						94(6)			
Common		Public																															
Centurion	Westerworld diploid	Mountain View Seeds																													84(4)		
DH-3	Italian tetraploid	Allied Seed												91	27							97								115(2)			
Diamond T	Italian tetraploid	Oregro Seeds							8																						69(3)		
Dixie Gold	Westerworld tetraploid	Caudill Seed																															
Domino	Italian tetraploid	DLF International																															
Dyna-Gain	Westerworld diploid	Columbia Seeds																															
Ed	Westerworld diploid	Smith Seed Services									96											102	100								98(2)		
Fantastic	Westerworld diploid	Ampac Seed									48	84																			86(3)		
Feast II	Italian tetraploid	Ampac Seed												35	113	109	81					93	71	53	56						86(8)		
Flying A	Westerworld diploid	Oregro Seeds												59																			
Fox	Italian diploid	DLF International																															
Fria	Westerworld diploid	Allied Seed																															
GR-AS10	Italian	Ampac Seed																				103	81								88(4)		
Graze-N-Gro	Westerworld diploid	Seed Research of OR																															
Green Farm	Westerworld diploid	Smith Seed Services																														94(3)	
Gulf	Westerworld diploid	Public																															
Hercules	Westerworld tetraploid	Barenbrug USA																															
H5-1	Italian diploid	KB Seed Solutions																															
Jackson	Westerworld diploid	The Wax Co.																															
Jumbo	Westerworld tetraploid	Barenbrug USA																															
KB Royal	Italian diploid	KB Seed Solutions											83																				
Kospeed	Westerworld diploid	Smith Seed Services																															
Kowinearly	Westerworld diploid	Smith Seed Services																															
LHT-102	Intermediate	Ampac Seed																				100											

continued

Table 17. continued

Variety	Type	Proprietor	Lexington ¹																	Mean ⁴ (#trials)		
			03 ^{2,3}	04	05	06	07	08	09	10	10	11	11	12	12	13	14	Princeton 00	02		Bowling Green 00	03
Marshall	Westerwold diploid	The Wax Co.	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100(17)
Maximo	Intermediate tetraploid	Pickseed USA, Inc.										101										-
Merona	Westerwold diploid	Smith Seed Services													93							-
MX 108	Westerwold tetraploid	Pickseed USA, Inc.									95		114									105(2)
Nelson	Westerwold tetraploid	The Wax Co.								86		88		93	65	77						86(4)
Passerel Plus	Westerwold diploid	Pennington Seed															103					-
Primecut	Westerwold brand	Oregro Seeds									94											-
Rio	Westerwold diploid	-															98	99	90			96(3)
Spark	tetraploid	DLF International																		73		-
Stockaid	diploid	-				82																-
Striker	Westerwold tetraploid	Seed Research of OR					90															-
TAMTBO	Italian tetraploid	Tex. Ag Exp Sta.					47		101		108		95		79							86(5)
Tam 90	Italian diploid	Tex. Ag Exp Sta.					49							78		88						72(3)
TetraPrime	Italian tetraploid	Mountain View Seeds											101		96							99(2)
TetraPro	Italian tetraploid	Tex. Ag Exp Sta.					40															-
TillageRootMax	Westerwold diploid	Cover Crop Solutions									82		90									86(2)
TillageMax-Bristol ⁵	Westerwold diploid	Cover Crop Solutions									90		91									91(2)
TillageMax-INDY ⁵	Westerwold diploid	Cover Crop Solutions									89		90									90(2)
T-Rex	Westerwold tetraploid	SaddleButte				11																-
Verdure	Westerwold tetraploid	Smith Seed Services							86					43	58							72(2)
Winterhawk	Westerwold diploid	Oregro Seeds							104		117		92		119							108(4)
Winter Star	Italian tetraploid	Ampac Seed															132	134	104			-
Zorro	Italian tetraploid	DLF International																				123(3)

1 In annual ryegrass, low yielding varieties usually result from winterkill. Note: Due to severe winterkill, yield results from the 2006 and 2013 plantings were not included in the overall mean.

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 2014 was harvested one year, so the final report would be "2015 Annual and Perennial Ryegrass and Festulolium 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 These are TillageRootMax that included crimson clover and/or tillage radish.

Table 18. Summary of Kentucky festulolium yield trials 1999-2015 (yield shown as a percentage of the mean of the commercial varieties in the trial).¹

Variety	Type ²	Proprietor	Lexington										Princeton		Quicksand		Mean ⁵ (#trials)		
			1999 ^{3,4} 2yr ⁶	2001 3yr	2003 2yr	2005 3yr	2007 3yr	2008 3yr	2009 3yr	2010 3yr	2011 3yr	2012 2yr	2013 2yr	2000 2yr	2001 2yr				
Agula	MF x IR	Allied Seed							94										
Barfest	MF x PR	Barenbrug USA							105	101	107	114							107(4)
Bonus	MF x IR	Allied Seed							93	46	32	45							54(4)
Duo	MF x PR	Ampac Seed	104			84		103	99	106	103	96							99(8)
Felina	(TF x IR) x TF	DLF International		101						132	118	134	107						123(4)
Fojtan	(TF x IR) x TF	DLF International								112	101	124	91						107(4)
Gain	MF x IR	Allied Seed							103	77	52	91							81(4)
Hostyn	MF x IR	DLF International									107	112							110(2)
Hykor	(TF x IR) x TF	DLF International			98					133	141	153	125						125(6)
Lofa	(TF x Int) x Int	DLF International								105	107	110	125						112(4)
Mahulena	(TF x IR) x TF	DLF International										131	99						115(2)
Meadow Green	-	Pure Seed										37	44						41(2)
Perseus	MF x IR	DLF International										132	114	126	125				124(4)
Perun	MF x IR	DLF International										127	114	107	124				118(4)
Rebab	(TF x IR) x TF	DLF International																	-
Spring Green	MF x PR	Turf-Seed																	-
Sweet Tart	MF x IR	ProSeeds Marketing		88		105	100	114	101	112	114	108				97			105(10)
Vorage	-	Improved Forages														99			-

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

² MF=meadow fescue, TF=tail fescue, IR=italian ryegrass, PR=perennial ryegrass, Int=intermediate ryegrass.

³ Year trial was established.

⁴ 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 2012 was harvested three years, so the final report would be "2015 Annual and Perennial Ryegrass and Festulolium Report" archived in the KY Forage website at www.uky.edu/Ag/Forage.

⁵ Mean only presented when respective variety was included in two or more trials.

⁶ Number of years of data.



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