

2007 Annual and Perennial Ryegrass 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 there is little regrowth 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 seed heads 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.

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*, Hausska.) is the result of a cross between Italian ryegrass and perennial ryegrass. It is not as winter hardy but is higher yielding than perennial ryegrass and more persistent and winter hardy than Italian ryegrass. Its uses would be similar to perennial ryegrass.

This report provides current yield data on annual and perennial ryegrass varieties in trials in Kentucky as well as guidelines for selecting varieties. Tables 7 and 8 show summaries of all annual and perennial ryegrass varieties tested in Kentucky for the last seven 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 from 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 a listing 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 of perennial ryegrass. 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 four studies are reported. In the fall of 2006, an annual ryegrass test was established at Lexington. Perennial ryegrass tests were established at Lexington in the fall of 2004, 2005 and 2006. The soil at Lexington is a well-drained silt loam (Maury) and is well suited for ryegrass production.

Seedings were made at the rate of 25 lb/A into a prepared seedbed with a disk drill. Plots were 5 by 15 feet in a randomized complete block design with four replications. Nitrogen was topdressed at 60 lb/A of actual N in March, June, 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 establishment, fertility, weed control, and harvest timing were in accordance with University of Kentucky recommendations.

Results and Discussion

Weather data for Lexington are presented in Tables 1.

Ratings for maturity and dry matter yields (tons/A) are reported in Tables 2 through 5. Yields are given by cutting date 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. Severe winter conditions in early 2007 caused significant winterkill in a number of annual ryegrass varieties (Table 7).

The perennial ryegrass tests contained several festuloliums that are hybrids of meadow fescue and perennial ryegrass and have some of the characteristics of both.

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 6 summarizes information about distributors and yield performance for all perennial ryegrass 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 Table 6, 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. 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 2 through 5).

Tables 7 and 8 are summaries of yield data from 1999-2007 of commercial varieties that have been entered in the Kentucky trials. The data is listed as a percentage of the mean of the commercial varieties entered in each specific trial. In other words, the mean for each trial is 100%—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 7 and 8, 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 7 and 8 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 at <www.uky.edu/Ag/Forage>.

AGR-1	<i>Lime and Fertilizer Recommendations</i>
AGR-18	<i>Grain and Forage Crop Guide for Kentucky</i>
AGR-64	<i>Establishing Forage Crops</i>
AGR-179	<i>Annual Ryegrass</i>
ID-142	<i>New Recommendations for Perennial Ryegrass Seedings for Kentucky Horse Farms</i>
ID-147	<i>Establishing and Managing Horse Pastures</i>

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Table 1. Temperature and rainfall at Lexington, Kentucky in 2004, 2005, 2006 and 2007.

	2004				2005				2006				2007 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	30	-1	3.14	+0.28	37	+6	4.35	+1.49	42	+11	4.77	+1.91	37	+6	2.93	+0.07
FEB	36	+1	1.32	-1.89	39	+4	1.68	-1.53	36	+1	2.13	-1.08	27	-8	1.83	-1.38
MAR	47	+3	3.43	-0.97	41	-3	2.79	-1.61	44	0	3.05	-1.35	52	+8	1.97	-2.43
APR	55	0	3.06	-0.82	56	+1	3.30	-0.58	59	+4	3.52	-0.36	53	-2	3.87	-0.01
MAY	68	+4	9.79	+5.32	61	-3	1.78	-2.69	62	-2	2.99	-1.48	68	+4	1.45	-3.02
JUN	72	0	3.13	-0.53	75	+3	1.33	-2.33	70	-2	1.82	-1.84	74	+2	1.77	-1.89
JUL	73	-3	7.65	+2.65	77	+1	3.30	-1.70	76	0	5.13	+0.13	74	-2	6.90	+1.90
AUG	71	-4	2.91	-1.02	78	+3	3.34	-0.59	76	+1	3.23	-0.70	80	+5	2.56	-1.37
SEP	68	0	2.61	-0.59	72	+4	0.59	-2.21	64	-4	9.27	+6.07	72	+4	1.15	-2.05
OCT	58	+1	5.65	+3.08	58	+1	0.92	-1.65	54	-3	4.88	+2.31	63	+6	5.28	+2.71
NOV	49	+4	6.29	+2.90	47	+2	1.54	-1.85	47	+2	1.78	-1.61	46	+1	2.86	-0.53
DEC	36	0	3.20	-0.78	32	-4	2.19	-1.79	42	+6	2.45	-1.53				
Total			52.18	+7.63			27.51	-17.04			45.02	+0.47			32.57	-8.00

¹ DEP is departure from the long-term average.² 2007 data is for eleven months through November.**Table 2. Dry matter yields, seedling vigor, maturity and stand persistence of annual ryegrass varieties sown September 21, 2006 at Lexington, Kentucky.**

Variety	Seedling Vigor ¹ Nov 10, 2006	Maturity ² 2007 May 10	Percent stand		Yield (tons/acre)		
			2006 Nov 10	2007 Mar 26	2007		
					May 10	Jun 11	Total
Commercial Varieties-Available for Farm Use							
Marshall	4.0	50.5	100	100	1.82	1.19	3.00*
Stockaid	4.5	52.0	100	100	1.57	0.88	2.46
Jackson	4.8	51.0	100	95	1.05	0.82	1.87
Fantastic	4.3	54.5	100	73	0.61	0.82	1.43
Flying A	4.0	54.0	100	48	0.50	0.67	1.16
Abundant	3.8	55.0	100	6	0.07	0.28	0.36
T-Rex	3.8	54.5	100	2	0.03	0.32	0.34
Diamond T	3.8	53.3	100	3	0.00	0.25	0.25
Experimental Varieties							
NE/FL2005misc2xLRCT	5.0	52.5	100	100	1.61	1.07	2.69*
NE/FLNewSelect17LRCT	4.3	51.5	100	100	1.59	0.96	2.55
ME4	4.0	50.5	100	98	1.39	1.02	2.41
ME94	4.5	50.0	100	99	1.44	0.93	2.37
FL/NE2006 Misc2xLRCT	5.0	52.0	100	100	1.46	0.89	2.35
WMN97	3.5	51.5	100	97	1.41	0.91	2.32
Florlina	4.3	53.0	100	97	1.20	0.93	2.13
FKx2006PE LRCT	4.5	53.5	100	100	1.28	0.72	2.00
FLx2004(new4)LRCT	3.3	54.0	100	87	0.79	0.93	1.72
KYLM 9801	4.3	55.5	100	38	0.38	0.70	1.08
M/FL2006G4xER	4.0	55.0	100	9	0.07	0.22	0.29
AM-4N-06	4.0	53.3	100	4	0.02	0.26	0.28
Mean	4.2	52.8	100.0	67.6	0.92	0.74	1.65
CV,%	12.0	2.4	0.0	12.9	15.45	31.42	17.75
LSD,0.05	0.7	1.9	0.0	12.4	0.20	0.33	0.42

¹ Vigor score based on scale of 1 to 5 with 5 being the most vigorous seedling growth² 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.

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

Table 3. Dry matter yields, seedling vigor, maturity and stand persistence of perennial ryegrass varieties sown September 13, 2004 at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Nov 8, 2004	Maturity ²		Percent Stand				Yield (tons/acre)					3-yr Total	
		2006 May 12	2007 May 23	2006		2007		2005 Total	2006 Total	2007				Total
				Apr 14	Oct 17	Mar 26	Oct 11			May 23	Jun 21	Aug 14		
Commercial Varieties-Available for Farm Use														
Best for Plus	5.0	52.5	55.5	63	45	9	3	4.06	2.98	0.33	0.05	0.17	0.55	7.59*
Linn	3.3	58.5	55.5	100	96	97	66	3.80	2.65	0.53	0.05	0.19	0.78	7.22*
Amazon	3.0	45.0	50.0	99	98	96	85	3.82	2.36	0.51	0.04	0.24	0.79	6.98*
Bastion C-2	3.0	56.5	55.5	98	88	89	60	3.36	2.35	0.41	0.10	0.17	0.68	6.39*
Mean	3.6	53.1	54.1	89.7	81.6	72.7	53.5	3.76	2.58	0.45	0.06	0.19	0.70	7.04
CV,%	7.0	1.6	1.8	7.1	15.2	9.6	37.8	14.94	15.44	48.41	89.81	24.66	31.46	15.13
LSD,0.05	0.4	1.3	1.5	10.2	19.9	11.1	32.4	0.90	0.64	0.35	0.09	0.08	0.35	1.70

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.

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

Table 4. Dry matter yields, seedling vigor, maturity and stand persistence of perennial ryegrass varieties sown September 12, 2005 at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Nov 7, 2005	Maturity ²		Percent Stand				Yield (tons/acre)					2-yr Total
		2006 May 17	2007 May 11	2006		2007		2006 Total	2007			Total	
				Apr 17	Oct 17	Mar 26	Oct 11		May 11	Jun 22	Aug 14		
Commercial Varieties-Available for Farm Use													
RAD-CPS212	4.8	45.5	35.8	99	93	86	50	6.01	0.49	0.11	0.16	0.76	6.77*
Best for Plus	5.0	56.0	47.5	100	90	58	13	5.96	0.49	0.15	0.07	0.71	6.67*
Quartermaster	4.3	53.0	32.0	99	94	93	61	5.20	0.50	0.12	0.18	0.80	6.00*
Tonga	4.5	56.5	52.5	99	96	94	65	3.70	0.59	0.08	0.13	0.80	4.50
Sierra	3.5	58.0	55.0	98	96	92	66	3.27	0.65	0.05	0.16	0.85	4.13
BG 34	3.5	48.8	29.0	96	96	96	71	3.32	0.34	0.07	0.20	0.61	3.93
Quartet	4.8	34.0	28.3	99	99	18	4	3.09	0.05	0.05	0.05	0.15	3.23
Experimental Varieties													
SW ER3579	4.8	48.8	31.5	100	100	98	90	4.73	0.65	0.14	0.21	1.01	5.73
SW ER3575	3.8	45.0	31.3	99	98	96	84	4.18	0.52	0.03	0.27	0.82	5.00
SW ER3508FRI	3.3	34.0	29.5	98	96	95	85	3.83	0.35	0.05	0.19	0.58	4.42
Mean	4.2	48.0	37.2	98.5	95.8	82.4	58.9	4.33	0.46	0.08	0.16	0.71	5.04
CV,%	13.4	11.6	5.7	2.8	4.6	14.1	24.3	12.26	37.05	51.07	37.31	26.75	12.94
LSD,0.05	0.8	8.1	3.1	3.9	6.4	16.9	20.7	0.77	0.25	0.06	0.09	0.28	0.95

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.

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

Table 5. Dry matter yields, seedling vigor , maturity and stand persistence of perennial ryegrass varieties sown September 7, 2006.

Variety	Seedling Vigor ¹ Oct 25, 2006	Maturity ² 2007 May 9	Percent Stand			Yield (tons/acre)				
			2006 Oct 25	2007		2007				
				Mar 26	Oct 11	May 9	Jun 20	Aug 13	Nov 27	Total
Commercial Varieties-Available for Farm Use										
RAD-MI125	4.5	32.8	100	98	97	1.42	1.11	0.52	0.42	3.46*
Green Gold	3.3	32.3	100	100	98	1.30	0.66	0.67	0.40	3.04
Granddaddy	3.8	32.0	100	100	75	1.46	0.67	0.45	0.32	2.90
BG 34	3.8	32.3	100	100	97	1.17	0.78	0.52	0.36	2.83
Linn	3.8	52.5	100	100	100	1.63	0.32	0.37	0.34	2.67
Experimental Varieties										
ORDET-05	3.8	33.0	100	100	99	1.64	1.05	0.45	0.36	3.51*
KRC-6577	3.3	31.3	100	100	98	1.15	1.05	0.53	0.51	3.24*
KRC-6576	4.8	32.3	100	100	99	1.26	0.79	0.57	0.44	3.05
KRC-6578	4.3	31.8	100	98	98	1.00	0.80	0.72	0.51	3.02
GO-ABE	4.5	52.0	100	96	83	1.37	0.93	0.48	0.18	2.97
KRC-6579	3.3	31.0	100	100	98	0.97	0.81	0.54	0.40	2.72
GO-ABD	4.3	32.3	100	98	97	1.14	0.64	0.51	0.38	2.66
KRC-6554	2.8	31.0	100	100	77	1.05	0.74	0.50	0.31	2.59
GO-ABA	3.5	31.8	100	100	97	1.05	0.70	0.51	0.28	2.54
KRC-6575	4.0	31.3	100	100	97	0.92	0.75	0.38	0.23	2.27
Mean	3.8	34.6	100.0	99.3	93.8	1.24	0.79	0.52	0.36	2.90
CV,%	15.5	1.9	0.0	1.3	17.0	14.55	20.27	26.60	21.10	9.97
LSD,0.05	0.8	1.0	0.0	1.8	22.7	0.26	0.23	0.20	0.11	0.41

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.

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

Table 6. Performance of perennial ryegrass across years.

Variety (ploidy)	Proprietor/KY Distributor	Lexington					
		2004 ¹			2005		2006
		2005 ²	2006	2007	2006	2007	2007
Commercial Varieties-Available for Farm Use							
Amazon (tetraploid)	ProSeeds Marketing	*	*	*			
Bastion C-2 (tetraploid)	SeedResearch of Oregon	*	*	*			
Bestfor Plus (hybrid tetraploid)	Smith Seed Services	*	*	*	*	x ³	
BG 34 (diploid)	Barenbrug USA				x	x	x
Granddaddy (tetraploid)	Smith Seed Services						x
Green Gold (tetraploid)	Grasslands Oregon						x
Linn (diploid)	Public	*	*	*			x
Quartermaster (tetraploid)	Radix Research, Inc.				x	*	
Quartet (tetraploid)	Ampac Seed Company				x	x	
RAD-CPS212 (hybrid tetraploid)	Radix Research, Inc.				*	*	
RAD-MI125 (hybrid tetraploid)	Mountain View Seeds						*
Sierra (diploid)	Lewis Seed Co.				x	*	
Tonga (tetraploid)	Kings AgriSeeds				x	*	
Experimental Varieties							
GO-ABA (diploid)	Grasslands Oregon						x
GO-ABD (diploid)	Grasslands Oregon						x
GO-ABE (tetraploid)	Grasslands Oregon						x
KRC-6554 (tetraploid)	Ag Research USA						x
KRC-6575 (tetraploid)	Ag Research USA						x
KRC-6576 (tetraploid)	Ag Research USA						x
KRC-6577 (tetraploid)	Ag Research USA						*
KRC-6578 (tetraploid)	Ag Research USA						x
KRC-6579 (tetraploid)	Ag Research USA						x
ORDET-05 (tetraploid)	Oregro Seeds, Inc.						*
SW ER3508FRI (tetraploid)	SW Seed Ltd.				x	x	
SW ER3575 (tetraploid)	SW Seed Ltd.				x	*	
SW ER3579 (tetraploid)	SW Seed Ltd.				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 7. Summary of Kentucky Annual Ryegrass Yield Trials 1999-2007 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor	Lexington ¹					Princeton			Bowling Green		Mean ^{4,5} (#trials)
		1999 ^{2,3}	2001	2003	2004	2005	2000	2002	2004	2000	2003	
All trials are 1 year yields												
Andy	DLF International	112	105				99					105(3)
Angus I	DLF International								80			-
Aurelia	Forage Genetics		120						130			125(2)
Avance	DLF International	113					109					111(2)
Barextra	Barenbrug							117				-
Big Daddy	FFR/Sou. St.	87	86				90	85		104		90(5)
Common	Public						85	85		95	87	88(4)
Domino	DLF International								121			-
Fantastic	Ampac Seed	83					90			97		90(3)
Feast	Ampac Seed		90									-
Feast II	Ampac Seed		98						123			111(2)
Graze-N-Gro	Seed Research of OR			105						94	107	102(3)
Gulf	Public		72				81	77	57	86		75(5)
Hercules	Barenbrug	114					110					112(2)
Jackson	The Wax Co.				80	100		87			96	91(4)
Jeanne	DLF International		124									-
Jumbo	Barenbrug			103							104	104(2)
King	Lewis Seed		92									-
Marshall	The Wax Co.	87		92	120	100	102	97		114	106	102(8)
Monarque	Seed Research of OR								117			-
Passerel Plus	Pennington Seed							100				-
Rio		88					100	97		102		97(4)
Spark	DLF International	87								83		85(2)
Tam 90								85				-
Tetrelite II	DLF International								122			-
Winter Star	Ampac Seed		87					96				92(2)
Zorro	DLF International	120	127				135	130		118		126(5)

¹ Due to severe winterkill, the results of the 2006 planting are not shown. See Table 2 for yield and stand data.

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 1 year, so the final report would be "2000 Annual and Perennial Ryegrass 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 In annual ryegrass, low yielding varieties usually result from winterkill.

Table 8. Summary of Kentucky Perennial Ryegrass Yield Trials 1999-2007 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor	Lexington					Princeton		Bowling Green		Mean ^{3,4} (#trials)
		1999 ^{1,2}	2001	2003	2004	2005	2000	2002	2000	2003	
		2yr ⁵	2yr	2yr	3yr	2-yr	2yr	3yr	2yr	2yr	
Aires	Ampac Seed		95					93			94(2)
Amazon	AgriBioTech	108			99			107			104(3)
Anaconda	Caudill Seed	113					95		103		104(3)
Aubisque	Seed Research of OR			144						99	122(2)
Bandit	Grassland West						106		114		110(2)
Bastion C-2	Seed Research of OR				91						-
Bestfor	Improved Forages						113	107	120		113(3)
Bestfor Plus	Improved Forages			116	108	133				136	123(4)
BG-34	Barenbrug					78					-
Bison	International Seeds									140	-
Boxer	AgriBioTech	121					106				114(2)
Calibra	DLF International							112			-
CAS MP64	Cascade International		97								-
Citadel	Ag Canada	101					94	113	103		103(4)
Derby	Public								74		-
Granddaddy	Smith seed		118					111			115(2)
Lasso	DLF International		98								-
Linn	Public	87	98	98	102		87	88	77		91(7)
Manhattan								85			-
Mara	Barenbrug								85		-
Matrix	Cropmark seeds			77						64	-
Maverick Gold	Ampac Seed		97					71			84(2)
Polly II	FFR/Sou. St.	104					110		125		113(3)
Polly Plus	Allied Seed			64						60	62(2)
Quartermaster	Radix Research					119					-
Quartet	Ampac Seed		97			64		113			91(3)
RAD-CPS212	Radix Research					135					-
Sampson	International Seeds	87									-
Sierra	Lewis Seed Co.					82					-
Tonga	Kings AgriSeeds					89					-
Yatsyn	Barenbrug	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



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