



2000 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 that are 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 winterhardy varieties are released and promoted. Annual ryegrass is used primarily for extra fall, winter, and early spring pasture. Winter growth occurs only during mild winters.

Perennial ryegrass can be used as a short-lived hay or pasture plant and has growth characteristics similar to 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.

Important Considerations in Selecting a Ryegrass Variety

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.

Annual ryegrass, also called Italian ryegrass, is planted in the fall and makes most of its growth from late February through June. In years when fall temperatures remain mild and ryegrass is planted in early September, there can also be substantial forage in October and November. Varieties differ in winter hardiness, but this trait is undefined for many of the varieties in this trial. The winter of 1999-2000 was mild, and no varieties in this trial suffered winterkill. These results are no guarantee of future winter productivity or survival.

Perennial ryegrass is more winterhardy and persistent than annual ryegrass (two to three year stand life) but less so than other cool-season grasses like tall fescue or orchardgrass. Hot, dry summers stress perennial ryegrass more than cold winters.

Seed Quality. Buy high-quality seed that is high in germination and purity and free from weed seed. Buy certified seed or proprietary varieties of 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, and the level of germination and other crop and weed seed. Order seed well in advance of planting time to assure that it will be available when needed.

Important: When seeding perennial ryegrasses for horse pasture (of any kind), insist on an endophyte-free variety of perennial ryegrass. 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 (that affects pregnant mares) but is different in its effect on horses. All horses grazing endophyte-infected perennial ryegrass may develop a neurological condition known as ryegrass staggers.

Description of the Tests

Data from two studies are reported. An annual and a perennial ryegrass study were sown at Lexington in 1999. The soil at Lexington is a Maury well-drained silt loam and is well suited for ryegrass production.

Seedings were made at the rate of 20 lb/A into a prepared seedbed with a disk drill. Plots were 5 ft x 15 ft in a randomized complete block design with four replications. Nitrogen was topdressed at 60 lb/A of actual N in March and after each additional cutting. 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 1999-2000 for Lexington are presented in Table 1. In general, temperature and moisture in 2000 were closer to normal than in recent years.

Ratings for maturity and dry matter yields (tons/acre) are reported in Tables 2 and 3. Yields are given by cutting date and as total annual production. Varieties are listed by total yield in descending order. Experimental varieties are listed separately at the bottom of the tables and are not available commercially.

Annual ryegrass varieties were extremely productive during the spring and summer of 2000. In most years, annual ryegrass can be expected to die or become unproductive after mid-June. However, some varieties (Andy, Advance, Hercules, and Zorro) continued to grow until fall. It is unknown if this trend will be repeated for these materials in future years.

The perennial ryegrass test contained a festulolium (Spring Green) that is a cross between tall fescue and ryegrass, having some of the characteristics of both. Unlike annual ryegrasses, perennials should be productive under Kentucky conditions for at least two or more 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. In the tables, varieties not significantly different from the top variety in the column for that characteristic are marked with one asterisk (*). To determine if two varieties are truly different, compare the difference between them to the LSD (Least Significant Difference) at the bottom of the column. If the difference is equal to or greater than the LSD, the varieties are truly different when grown under the conditions at the given locations. The Coefficient of Variation (CV) is a measure of the variability of the data and is included for each column of means. Low variability is desirable, and increased variability within a study results in higher CVs and larger LSDs.

Tables 4 and 5 summarize information about distributors and yield performance for all varieties currently included in tests discussed in this report. Varieties are listed in alphabetical order by species, with the experimental varieties at the bottom.

Remember that experimental varieties are not available for farm use, while commercial varieties can be purchased from agricultural distributors. In Tables 4 and 5, 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 and 3).

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.

Table 1. Temperature and rainfall at Lexington in fall of 1999 and all of 2000.

MON	Lexington							
	Temp		Rainfall		Temp		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN					32	+1	3.48	+0.62
FEB					43	+8	4.97	+1.76
MAR					48	+4	3.47	-0.93
APR					53	-2	4.10	+0.22
MAY					67	+3	2.96	-1.51
JUN					73	+1	3.22	-0.44
JUL					74	-2	3.42	-1.58
AUG					74	-2	3.38	-0.55
SEP					66	-2	5.47	+2.27
OCT	57	0	1.91	-0.66	59	+2	0.92	-1.65
NOV	51	+6	1.70	-1.69	43	-2	1.59	-1.80
DEC	37	+1	2.44	-1.54	25	-11	3.01	-0.97

DEP is departure from the long-term average for that location.

Table 2. Dry matter yields (tons/acre) and vigor, color, and maturity ratings for annual ryegrass varieties sown 28 September 1999 at Lexington, Kentucky.

Variety	Vigor ¹	Vigor ^{1a}	Color ²	Maturity ³	1999	2000 Harvests							Total
	4 Nov 1999	21 Jun 2000	21 Jun 2000	22 May 2000	Dec 9	Apr 7	May 22	Jun 14	Jul 10	Aug 11	Aug 28	Oct 18	
Commercial varieties — available for farm use													
Zorro	4.50 *	4.25 *	4.75 *	57.25	0.47	1.7	3.02 *	1.24 *	1.09 *	0.84 *	0.20 *	0.46 *	8.96
Hercules	5.00*	3.88*	4.25*	57.25	0.66*	1.85*	2.95*	0.96	0.8	0	0	0.24*	7.89
Avance	4.50*	3.8	4.75*	55.25	0.45	1.70*	2.94*	1.17*	0.84	0	0	0.24*	7.77
Andy	4.75*	3.8	4.25*	58	0.57*	1.67*	3	1.11*	0.79	1	0	0.39*	7.74
Rio	4.75*	2.5	3	62.5	0.58*	1.67*	2	0.74	0.45	0	0	0	6.1
Marshall	4.50*	2.3	3	56	0.52	1.7	2	0.82	0.37	0	0	0	6
Big Daddy	3.8	2	3	60.25	0.52	1.6	3	0.7	0.37	0	0	0	6
Spark	5.00*	3	3.5	59	0.63*	1.6	2	0.85	0.41	0	0	0	5.98
Fantastic	4	2	2.5	64.5*	0.45	1.91*	2	0.58	0.22	0	0	0	5.76
Experimental varieties — not available for farm use													
BAR-GS	4.75*	4.25*	4.75*	60	0.43	1.7	2.78*	1.14*	0.96	1	0.14*	0.18	7.8
Florlina	3.8	2.3	2.5	62.75	0.38	1.85*	2	0.75	0.35	0	0	0	5.94
Mean	4.5	3.1	3.7	59.3	0.51	1.7	3	0.91	0.6	0	0	0.14	6.9
CV, %	12	8.6	14	1.79	15.4	10	8	15.2	10.4	26	91	126	6.4
LSD, 0.05	0.7	0.4	0.7	1.53	0.11	0.3	0	0.2	0.1	0	0	0.25	0.64

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

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

^{1a} This vigor rating was taken one week after harvest of 14 June 2000.

² Color score based on scale of 1 to 5, with 5 being the darkest color.

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 shedding.

Table 3. Dry matter yields (tons/acre) and maturity ratings of perennial ryegrass and festulolium (FL) varieties sown on 28 September 1999 at Lexington, Kentucky.

Variety	Maturity 9 May 2000 ¹	2000 Harvests						2000 Total
		May 9	Jun 14	Jul 11	Aug 11	Oct 17	Nov 29	
Commercial varieties — available for farm use								
Spring Green (FL)	48.8	3.79*	2.36*	1.25*	0.88*	1.22*	0.68*	10.18*
Polly II	47.8	3.53*	2.31*	1.34*	0.69	1.12*	0.56	9.55*
Boxer	46.5	3.56*	2.29*	1.28*	0.77	0.99	0.61*	9.49*
Anaconda	52.0	3.13*	2.17*	1.34*	0.85*	1.21*	0.62*	9.32*
Amazon	49.3	3.23*	1.98	1.33*	0.79	1.00	0.61*	8.94*
Sampson	53.5*	2.55	1.76	1.27*	0.90*	1.20*	0.50	8.18
Citadel	48.8	3.20*	1.74	0.83	0.63	0.90	0.48	7.79
Linn	53.3*	3.23*	1.76	0.71	0.56	0.68	0.50	7.44
Yatsyn	55.3*	1.50	1.63	1.18*	0.84*	1.20*	0.61*	6.96
Experimental varieties — not available for farm use								
BAR TP	42.0	2.85*	1.68	1.21*	0.73	1.03	0.58*	8.08
BAR 914	54.8*	2.74	1.62	1.12	0.69	0.80	0.53	7.50
BAR 934	44.3	2.60	1.56	1.08	0.74	0.91	0.53	7.41
ITP 94	53.3*	2.88*	1.85	0.75	0.36	0.46	0.35	6.65
Mean	49.9	2.99	1.90	1.13	0.72	0.98	0.55	8.27
CV, %	4.06	26.87	11.95	10.74	10.25	13.40	13.15	11.19
LSD, 0.05	2.91	1.15	0.33	0.17	0.11	0.19	0.10	1.33

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

¹ Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shedding.

Table 4. Performance of annual ryegrass varieties in 2000.		Lexington
		1999 ¹
Variety	Proprietor/KY Distributor	2000 ²
Commercial varieties — available for farm use		
Andy	DLF-Trifolium	
Avance	DLF-Trifolium	
Big Daddy	FFR/Southern States Cooperative	
Fantastic	Ampac Seed Company/Bunton Seed	
Hercules	Barenbrug USA	
Marshall	public	
Rio		
Spark	DLF-Trifolium	
Zorro	DLF-Trifolium	*
Experimental varieties — not available for farm use		
BAR-GS	Barenbrug USA	
Florlina	Proseeds Marketing, Inc.	
¹ Establishment year. ² Harvest year. * Highest-yielding variety in the test.		

Table 5. Performance of perennial ryegrass and festulolium (FL) varieties in 2000.		Lexington
		1999 ¹
Variety	Proprietor/KY Distributor	2000 ²
Commercial varieties — available for farm use		
Amazon	AgriBioTech	*
Anaconda	Landmark Seed Co./Caudill Seed	*
Boxer	AgriBioTech	*
Citadel	Ag Canada	
Linn	public	
Polly II	FFR/Southern States Cooperative	*
Sampson	International Seeds, Inc./Caudill Seed	
Spring Green (FL)	Turf-Seed, Inc./Bunton Seed Co.	*
Yatsyn	Barenbrug USA	
Experimental varieties — not available for farm use		
BAR TP	Barenbrug USA	
BAR 914	Barenbrug USA	
BAR 934	Barenbrug USA	
ITP 94	Landmark Seed Co.	
¹ Establishment year. ² Harvest year. * Not significantly different from the highest-yielding variety in the test.		

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