PR-875

Agricultural Experiment Station

2025 Annual and Perennial Ryegrass and Festulolium Report

G.L. Olson, S.R. Smith, T.D. Phillips, and C.D. Teutsch, Plant and Soil Sciences

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.

Annual ryegrasses are increasing in use across Kentucky as more winter-hardy varieties are released and promoted. Annual ryegrass is productive for three to five months and is used primarily for late fall and early to late spring pasture. Winter growth occurs only during mild winters in Kentucky. This crop has garnered increased interest for high-quality baleage. There are two main types of annual ryegrasses-Italian and Westerwolds (the most commonly used annual ryegrass in Kentucky). 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. Many varieties also survive Kentucky winters. Italian ryegrass is native to Southern Europe and is not a true annual. Italian ryegrasses provide high yields of quality forage and show quick regrowth. If planted in the spring, little or no 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 than Westerwolds types. As with Westwerwolds types, make sure to only plant proven winter hardy varieties. Both diploid (two sets of chromosomes) and tetraploid (four sets of chromosomes) varieties of annual ryegrass exist.

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 (e.g., tall fescue and orchardgrass). Perennial ryegrass usually survives two to three years in Kentucky. 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*) 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 it typically only survives 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 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 especially those with more tall fescue in their background.

This report provides current yield data on annual and perennial ryegrass varieties in trials in Kentucky as well as guidelines for selecting varieties. Tables 15, 16, and 17 show summaries of all annual and perennial ryegrass and festulolium varieties tested in Kentucky for the last 20 years. The UK Forage Extension website (https://forages.ca.uky.edu) contains electronic versions of all forage variety testing reports from Kentucky and surrounding states, and a large number of other forage publications.

Table 1. Temperature and rainfall at Lexington, Kentucky in 2023, 2024, and 2025.

	2023				2024				2025[2]			
	Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall	
	°F	DEP[1]	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	44	+13	6.28	+3.42	32	+1	5.50	+2.60	27	-4	2.80	-0.06
FEB	47	+12	3.73	+0.52	44	+9	3.90	+0.70	37	+2	6.10	+2.89
MAR	48	+4	4.45	+0.05	49	+5	3.50	-0.90	49	+5	3.90	-0.50
APR	58	+3	2.36	-1.52	58	+3	3.90	0.00	57	+7	10.80	+6.92
MAY	65	+1	2.53	-1.94	67	+3	4.60	+0.10	62	-2	7.30	+2.83
JUN	72	0	6.75	+3.09	74	+2	2.40	-1.30	75	+3	8.20	+4.54
JUL	78	+2	5.32	+0.32	77	+1	2.50	-2.50	79	+3	3.90	-1.10
AUG	76	+1	2.40	-1.53	75	0	3.30	-0.60	73	+2	1.80	-2.13
SEP	71	+3	0.99	-2.21	70	+2	6.20	+3.00	70	+2	2.70	-0.5
OCT	61	+4	2.30	-0.27	58	+1	0.30	-2.30	58	+1	8.10	+6.13
NOV	49	+4	1.7	-1.69	50	+5	3.80	-0.41				
DEC	44	+8	2.41	-1.57	40	+4	3.9	-0.08				
Total			41.22	-3.33			43.80	-0.75			55.60	+18.4

[1] DEP is departure from the long-term average.
[2] 2025 data is for ten months through October.

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 leaf development index (see text).
13	3 leaves unfolded	
•	• • • • •	
19	9 or more leaves unfolded	
	Sheath elongation	
20	No elongated sheath	Denotes first phase of new spring growth after overwintering. This character is used instead of tillering which is difficult to record in established stands.
21	1 elongated sheath	
22	2 elongated sheaths	
23	3 elongated sheaths	
•	• • • • •	
29	9 or more elongated sheaths	
	Tillering (alternative to sheath elongation)	
21	Main shoot only	Applicable to primary growth of seedlings or to single tiller transplants.
22	Main shoot and 1 tiller	
23	Main shoot and 2 tillers	
24	Main shoot and 3 tillers	
•	• • • • •	
29	Main shoot and 9 or more tillers	
	Stem elongation	
31	First node palpable	More precisely an accumulation of nodes. Fertile and sterile tillers distinguishable.
32	Second node palpable	
33	Third node palpable	
34	Fourth node palpable	
35	Fifth node palpable	
37	Flag leaf just visible	
39	Flag leaf ligule/collar just visible	
	Booting	
45	Boot swollen	
	Inflorescence emergence	
50	Upper 1 to 2 cm of inflorescence visible	
52	1/4 of inflorescence emerged	
54	1/2 of inflorescence emerged	
56	3/4 of inflorescence emerged	
58	Base of inflorescence just visible	
	Anthesis	
60	Preanthesis	Inflorescence-bearing internode is visible. No anthers are visible.
62	Beginning of anthesis	First anthers appear.
64	Maximum anthesis	Maximum pollen shedding.
66	End of anthesis	No more pollen shedding.
	Seed ripening	
75	Endosperm milky	Inflorescence green.
85	Endosperm soft doughy	No seeds loosening when inflorescence is hit on palm.
87	Endosperm hard doughy	Inflorescence losing chlorophyll; a few seeds loosening when inflorescence hit on palm
91	Endosperm hard	Inflorescence-bearing internode losing chlorophyll; seeds loosening in quantity when inflorescence hit on palm.
93	Endosperm hard and dry	Final stage of seed development; most seeds shed.

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

Important Selection Considerations

Local adaptation and seasonal yield. The variety should be adapted to Kentucky as indicated by good winter survival and good performance across years and locations in replicated yield trials, such as those presented in this publication. Choose high-yielding varieties, but choose varieties that are productive during the desired season of use.

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

Important: When seeding perennial ryegrasses for horse or cattle pastures (of any kind), insist on an endophyte-free variety. 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 nine studies are reported. Annual ryegrass tests were established in the fall of 2022, 2023, and 2024 at Lexington. Perennial ryegrass tests (2021, 2023, and 2024) and festulolium tests (2022, 2023, and 2024) were established at Lexington. 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 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 11. Yields are given by cutting date for 2025 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.

Table 3. Dry matter yields, seedling vigor, maturity, plant height, and stand persistence of annual ryegrass varieties sown September 9, 2022, at Lexington, Kentucky (see Table 12 and Table 15 for designation of Italian or Westerwolds type and diploid or tetraploid type varieties).

Variety	Seedling Vigor[1] Oct 25, 2022	Maturity[2] 2023				Plant Height (in) 2023			Percent Stand 2022	Percent Stand 2023	Yield (tons/acre) 2023				
		Apr 19	May 19	Jun 14	Jul 7	Apr 19	May 19	Jun 14	Oct 25	Mar 20	Apr 19	May 19	Jun 14	Jul 7	Total
Commercial Varieties-Available for Farm Use															
Nelson	4.0	32.0	51.0	56.8	62.0	20	21	20	100	100	2.73	1.51	0.54	0.17	4.94*
Mantis	4.4	31.8	51.5	56.8	62.0	19	21	18	100	100	2.47	1.43	0.54	0.17	4.61*
Claro	4.4	32.0	51.0	56.3	61.0	19	22	20	100	100	2.16	1.42	0.56	0.27	4.41*
Winterhawk	4.4	32.5	51.0	56.5	61.5	19	18	18	100	100	2.56	1.17	0.44	0.14	4.31
Marshall	3.8	32.0	53.5	56.0	61.0	20	22	18	100	100	2.51	1.27	0.41	0.11	4.30
TetraPrime II	4.3	31.8	52.0	56.0	59.0	17	20	20	100	100	2.09	1.31	0.59	0.22	4.21
Centurion	4.3	32.3	52.0	57.0	62.0	20	20	18	100	100	2.55	0.96	0.42	0.14	4.06
GreenFarm II	4.5	32.0	56.0	57.5	62.0	18	20	18	100	100	2.44	1.08	0.37	0.15	4.04
Hellen	4.6	31.5	52.0	56.0	59.5	17	21	20	100	100	1.98	1.28	0.53	0.23	4.02
Jackson	4.1	32.0	51.5	57.3	61.5	20	20	17	100	100	2.39	1.07	0.36	0.11	3.93
Bruiser	4.6	31.8	53.0	56.8	61.5	19	18	17	100	100	2.34	1.07	0.38	0.13	3.91
Bendix	4.4	31.8	50.5	57.0	61.0	17	20	20	100	100	1.89	1.26	0.51	0.20	3.86
Frostproof	4.8	31.8	53.5	57.5	61.5	20	18	19	100	100	2.36	0.93	0.39	0.16	3.85
Feast II	4.6	31.3	52.5	56.0	58.5	13	20	15	100	100	1.75	1.19	0.45	0.29	3.68
Gulf	4.5	32.0	54.0	57.8	60.5	18	20	18	100	100	1.99	0.99	0.35	0.09	3.41
Experimental Varieties															
WMWL	4.6	33.0	51.0	57.3	61.5	23	21	19	100	100	2.93	1.27	0.49	0.16	4.85*
KYLM1702	4.0	31.8	52.0	56.0	62.0	19	23	21	100	100	2.29	1.57	0.58	0.16	4.60*
ME94	4.1	31.8	50.5	57.0	62.0	20	20	17	100	100	2.75	1.29	0.42	0.13	4.59*
KYLM1701	3.6	32.3	53.5	56.8	62.0	20	24	21	100	100	2.15	1.40	0.52	0.13	4.20
ME4	4.1	32.8	50.5	56.8	62.0	23	20	17	100	100	2.42	1.20	0.42	0.12	4.16
WMWL2	4.6	32.3	51.0	56.3	61.5	22	21	18	100	100	2.52	1.12	0.40	0.12	4.15
KYLM1603	3.9	32.0	54.0	57.5	61.0	17	23	19	100	100	2.30	1.25	0.41	0.12	4.08
Mean	4.3	32.0	52.2	56.8	61.2	19	20	18	100	100	2.34	1.23	0.46	0.16	4.19
CV,%	9.1	1.5	3.2	1.4	1.4	11	8	6	0	0	22.80	11.88	13.59	21.57	10.04
LSD,0.05	0.6	0.7	2.4	1.1	1.2	3	2	2	0	0	0.42	0.21	0.06	0.05	0.59

[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.

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 total yield column are marked with one asterisk (*). To determine if two varieties are truly different, compare the difference between them to the least significant difference (LSD) at the bottom of the column. If the difference is equal to or greater than the LSD, the varieties are truly different when grown under the conditions at the given locations. The coefficient of variation (CV) is a measure of the variability of the data and is included for each column of means. Low variability is desirable; increased variability within a study results in higher CVs and larger LSDs.

Tables 12, 13, and 14 show information about proprietors/distributors for all annual and perennial ryegrass and festulolium varieties 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. 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 11).

How to Interpret the Summary Tables

Tables 15, 16, and 17 are summaries of yield data from 2001 to 2025 of commercial varieties that have been entered in the Kentucky trials. In Table 15, the data are listed as a percentage of Marshall. In other words, the mean for all varieties is expressed as a percent of Marshall, with Marshall set as 100. Varieties with percentages over 100 yielded better than Marshall and those with percentages less than 100 yielded less than Marshall. In tables 16 and 17, 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 tables 15, 16, and 17 summaries, 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 15, 16, and 17 to determine the yearly report that should be referenced.

Table 4. Dry matter yields, seedling vigor, cold injury, maturity, plant height, and stand persistence of annual ryegrass varieties sown September 7, 2023, at Lexington, Kentucky (see Table 12 and Table 15 for designation of Italian or Westerwolds type and diploid or tetraploid type varieties).

Variety	Seedling Vigor[1] Oct 19, 2023	% Leaf Injury from cold[2] Jan 30, 2024	Maturity[3] 2024		Plant Height(in)	Percent Stand 2023	Percent Stand 2024	Yield (tons/acre) 2023	Yield (tons/acre) 2024			Total
			Apr 22	May 23	Apr 22	Oct 19	Mar 14	Dec 7	Apr 22	May 23	Jun 17	
Commercial Varieties-Available for Farm Use												
Koga	3.8	8	46.0	56.0	23	100	100	0.42	3.17	1.13	0.65	5.38*
Nelson	4.4	10	38.0	57.5	28	100	100	0.72	3.14	0.96	0.53	5.35*
Alisca	4.0	14	34.5	56.5	23	100	100	0.57	2.78	1.10	0.69	5.14*
McKinley	4.5	18	37.5	56.5	26	100	100	0.69	2.91	0.98	0.56	5.13*
Dexter	3.5	6	36.0	55.5	24	100	100	0.46	2.94	1.12	0.59	5.11*
Kodiak	4.4	18	47.5	55.5	26	100	100	0.75	2.93	0.95	0.45	5.08*
Marshall	4.1	7	39.3	58.0	29	100	100	0.67	2.86	1.02	0.49	5.04*
Halsey	4.0	11	34.3	57.5	23	100	100	0.59	2.85	1.07	0.53	5.04*
Centurion	4.0	11	37.5	57.0	28	100	100	0.76	2.81	0.91	0.48	4.96*
Winterhawk	3.9	16	40.8	56.5	28	100	100	0.65	2.94	0.90	0.43	4.92*
Jackson	2.4	5	39.3	57.0	29	100	100	0.36	3.26	0.82	0.42	4.85
Frostproof	4.9	30	40.8	56.0	28	100	100	0.86	2.77	0.74	0.38	4.74
Melquatro	4.1	18	34.3	59.5	22	100	100	0.63	2.59	0.95	0.49	4.67
Feast II	3.9	33	32.5	57.0	20	100	100	0.52	2.62	0.93	0.53	4.61
Ed	4.4	23	45.8	58.5	23	100	100	0.66	2.41	0.98	0.46	4.51
Gulf	4.4	43	47.8	59.0	27	100	100	0.64	2.44	0.81	0.41	4.29
Oryx	4.3	16	34.3	58.5	23	100	100	0.49	2.33	1.01	0.44	4.28
Diplomat	4.8	50	35.8	59.5	21	100	100	0.74	2.10	0.88	0.49	4.21
Experimental Varieties												
SELWTWL1	3.9	16	42.0	58.0	26	100	100	0.60	3.09	1.05	0.63	5.37*
WMWL2	4.8	18	42.0	57.0	32	100	100	0.87	3.00	0.95	0.44	5.26*
KYLM1702	2.9	0	39.3	59.0	27	100	100	0.49	3.10	1.10	0.56	5.25*
SELWT19-9	3.4	5	33.5	55.5	24	100	100	0.42	3.00	1.20	0.63	5.25*
WMWL	3.9	9	43.5	56.5	30	100	100	0.57	3.09	0.87	0.49	5.02*
ME94	3.3	4	40.5	56.0	30	100	100	0.52	3.13	0.92	0.43	5.00*
ME4	4.4	6	36.5	56.0	30	100	100	0.82	2.72	0.96	0.45	4.96*
SELWD19-12	4.1	11	38.0	57.5	28	100	100	0.68	2.78	0.90	0.46	4.82
SELWDTSEM1	3.5	29	54.0	60.0	29	100	100	0.49	2.77	0.88	0.46	4.60
KYLM1603	3.3	8	42.0	58.0	26	100	100	0.36	2.85	0.90	0.48	4.58
SELWD19-7	3.8	28	48.5	60.0	27	100	100	0.54	2.56	1.00	0.47	4.58
KYLM1701	2.3	0	43.5	58.5	29	100	100	0.24	2.86	1.00	0.40	4.50
Mean	3.9	16	40.2	57.5	26	100	100	0.59	2.83	0.97	0.50	4.88
CV,%	15.6	48	12.4	2.1	8	0	0	24.57	9.58	14.70	14.50	7.61
LSD,0.05	0.9	10	7.0	1.7	3	0	0	0.20	0.38	0.20	0.10	0.52

[1] Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.
[2] Injury symptons disappeared after 2-3 weeks.
[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 (https://forages.mgcafe.uky.edu).

- Lime and Fertilizer Recommendations (AGR-1)
- Grain, Forage, and Cover 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)

Authors

G.L. Olson is a research specialist, S.R. Smith is an Extension professor and forage specialist, C.D. Teutsch is an Extension associate professor and forage specialist, and T.D. Phillips is an associate professor of tall fescue and grass breeding.

Table 5. Dry matter yields, seedling vigor, winter injury, maturity, and stand persistence of annual ryegrass varieties sown September 5, 2024, at Lexington, Kentucky (see Tables 12 and 15 for designation of Italian or Westerwolds type and diploid or tetraploid type varieties).

Variety	Seedling Vigor[1] Oct 2, 2024	Winter Injury[2] Jan 30, 2025	Maturity[3] 2025		Percent Stand 2024	Percent Stand 2025	Yield (tons/acre) 2024	Yield (tons/acre) 2025			Total
			Apr 24	May 22	Oct 2	Mar 18	Dec 23	Apr 23	May 22	Jun 16	
Commercial Varieties-Available for Farm Use											
Ranahan	4.5	24	44.8	56.8	100	100	0.22	1.66	0.75	0.55	3.18*
Centurion	4.4	18	51.0	53.5	99	100	0.29	1.69	0.76	0.41	3.14*
Marshall	4.8	14	47.5	54.5	100	98	0.28	1.58	0.82	0.46	3.14*
Winterhawk	4.4	24	48.8	54.0	100	100	0.26	1.56	0.73	0.52	3.07*
Jackson	3.9	23	47.3	55.5	94	98	0.14	1.51	0.93	0.48	3.05*
Nelson	4.5	25	46.0	55.5	100	99	0.20	1.46	0.76	0.61	3.03*
Attain	4.0	16	49.3	56.0	100	100	0.24	1.48	0.77	0.49	2.99*
Barmultra II	4.0	29	40.5	56.3	98	98	0.12	1.19	1.01	0.59	2.91*
Tetraprime II	4.4	29	39.0	56.5	100	99	0.12	1.29	0.97	0.52	2.90*
Barneal	4.6	34	40.5	56.5	98	97	0.19	1.30	0.79	0.57	2.85*
Ribeye	4.3	23	47.8	55.0	100	100	0.19	1.54	0.44	0.42	2.58
Frostproof	4.8	18	49.8	53.5	100	100	0.20	1.46	0.42	0.49	2.57
Bill Max	4.1	48	46.0	57.3	100	86	0.15	1.19	0.72	0.45	2.52
Gulf	4.5	35	52.0	57.0	100	86	0.17	1.12	0.69	0.42	2.40
Feast II	4.6	65	39.0	57.0	100	46	0.14	0.47	1.18	0.48	2.26
Zoom	4.4	70	39.0	57.8	100	45	0.07	0.67	0.94	0.51	2.19
Vibe	4.8	68	39.0	43.3	100	55	0.15	0.58	0.78	0.39	1.90
Rampage	4.5	78	39.0	56.0	100	23	0.06	0.33	0.78	0.55	1.72
Experimental Varieties											
WMWL2	4.8	18	46.0	53.5	100	99	0.31	1.73	0.68	0.46	3.17*
ME94	4.4	14	48.0	53.5	100	100	0.26	1.71	0.65	0.49	3.12*
WMWL	4.6	16	43.3	54.0	100	100	0.25	1.73	0.61	0.51	3.10*
ME4	4.9	16	50.0	54.0	100	100	0.27	1.79	0.50	0.50	3.07*
BARLM490-3	4.5	23	48.0	57.5	100	98	0.22	1.21	0.68	0.53	2.64
BARLM490-4	4.5	29	47.3	56.8	100	97	0.17	1.10	0.82	0.44	2.53
Mean	4.5	31	45.4	55.0	99	88	0.19	1.31	0.76	0.49	2.75
CV,%	6.1	29	7.8	9.4	2	12	36.57	13.18	26.41	18.18	11.52
LSD,0.05	0.4	13	5.0	7.3	2	14	0.10	0.24	0.28	0.13	0.44

[1] Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.
[2] Percent of plant leaves affected by the cold.
[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 6. Dry matter yields, seedling vigor, maturity, plant height, and stand persistence of perennial ryegrass varieties sown September 9, 2022, at Lexington, Kentucky (see Tables 13 and 16 for designation of diploid or tetraploid varieties).

Variety	Seedling Vigor[1] Oct 25, 2022	Maturity[2]				Plant Height (in) May 20, 2024	Percent Stand							Yield (tons/acre)						
		2023		2024	2025		2022	2023		2024		2025		2023	2024	2025				3-year Total
		May 17	Jun 28	May 20	May 21		Oct 25	Mar 20	Oct 17	Mar 21	Oct 18	Mar 18	Nov 5	Total	Total	May 21	Jun 23	Aug-Oct[3]	Total	
Commercial Varieties-Available for Farm Use																				
Tetragain SLT	4.3	55.5	52.3	56.0	55.5	23	100	100	100	99	91	87	48	5.01	1.28	0.86	0.31	–	1.17	7.46*
TertraMag	4.8	55.0	53.0	54.0	54.5	17	100	100	100	100	87	63	30	5.06	1.29	0.77	0.33	–	1.10	7.45*
Boost	4.1	57.0	53.0	56.5	56.0	24	100	100	100	100	68	64	39	4.86	1.28	0.92	0.24	–	1.16	7.31*
PayDay	4.4	55.0	29.0	55.0	55.5	17	100	100	100	100	92	90	58	4.79	1.02	0.71	0.29	–	1.00	6.81*
TetraSweet	4.8	56.5	29.0	56.0	56.5	17	100	100	100	100	96	91	55	4.10	0.99	0.97	0.30	–	1.28	6.37
Dexter I	4.3	56.0	29.0	57.0	55.5	21	100	100	100	100	70	70	35	4.14	1.19	0.61	0.26	–	0.87	6.20
Power	4.5	55.5	28.3	56.0	56.0	20	100	100	100	100	97	94	50	3.95	1.16	0.62	0.29	–	0.91	6.02
Linn (certified)	4.8	58.0	58.0	60.0	58.0	29	100	100	100	100	69	52	35	3.73	1.06	0.99	0.20	–	1.19	5.98
Remington	3.5	47.5	54.5	45.0	45.0	11	99	100	100	100	100	99	87	3.94	0.76	0.53	0.45	–	0.99	5.68
Experimental Varieties																				
PPG-LHT111	4.9	56.5	57.5	56.0	56.0	27	100	100	100	96	73	53	20	5.59	1.32	0.97	0.32	–	1.29	8.19*
GPRT14021 AR1[4]	3.8	50.0	52.5	49.3	51.0	13	100	100	100	100	99	94	73	3.91	0.95	0.58	0.40	–	0.97	5.84
PST-2BUL19	4.0	57.5	53.5	56.0	56.0	18	100	100	100	96	24	18	16	4.14	0.85	0.07	0.28	–	0.35	5.34
Mean	4.3	55.0	45.8	54.7	54.6	20	100	100	100	99	80	73	45	4.43	1.10	0.72	0.31		1.02	8.21
CV,%	8.3	2.3	5.0	2.0	1.9	8	1	0	0	1	19	25	40	7.79	14.25	29.52	20.22		22.54	0.77
LSD,0.05	0.5	1.8	3.3	1.6	1.6	2	1	0	0	2	22	26	26	0.50	0.22	0.30	0.09		0.33	

[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] There was no late summer or fall harvest due to below normal precipitation in July, August, and early September, resulting in insufficient regrowth.
[4] GPRT14021 AR1 contains a non-toxic (novel) endophyte.
* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Table 7. Dry matter yields, seedling vigor, maturity, plant height, and stand persistence of perennial ryegrass varieties sown September 6, 2023, at Lexington, Kentucky (see Tables 13 and 16 for designation of diploid or tetraploid varieties).

Variety	Seedling Vigor[1] Oct 24, 2023	Maturity[2]		Plant Height (in) May 16, 2024	Percent Stand					Yield (tons/acre)					
		2024	2025		2023	2024		2025		2024	2025				2-year Total
		May 16	May 21		Oct 24	Mar 14	Oct 18	Mar 18	Nov 5	Total	May 21	Jun 20	Aug-Oct[3]	Total	
Commercial Varieties-Available for Farm Use															
TetraMag	4.9	55.5	52.3	28	100	100	100	45	11	3.16	0.45	0.45	–	0.90	4.06*
TetraGain SLT	4.5	56.0	56.0	30	100	100	99	95	28	2.79	0.80	0.37	–	1.17	3.96*
Dexter I	4.5	55.5	56.0	25	100	100	99	91	10	2.27	0.72	0.30	–	1.03	3.30
Power	4.8	55.5	55.5	24	100	100	99	92	34	2.16	0.61	0.37	–	0.98	3.14
Linn (certified)	5.0	59.5	60.0	34	100	100	98	81	10	2.28	0.55	0.26	–	0.81	3.09
PayDay	4.6	56.0	54.5	24	100	100	100	86	31	2.18	0.45	0.39	–	0.84	3.01
TetraSweet	4.6	55.5	55.5	24	100	100	99	93	29	2.02	0.45	0.35	–	0.80	2.82
Remington NEA2[4]	3.9	46.3	46.3	17	100	100	100	89	76	2.02	0.36	0.33	–	0.69	2.71
Remington	4.6	50.5	45.0	18	100	100	100	93	38	1.99	0.21	0.44	–	0.65	2.65
Delika	5.0	45.0	45.0	14	100	100	91	56	16	1.35	0.11	0.28	–	0.39	1.74
Mean	4.6	53.5	52.6	24	100	100	98	82	28	2.22	0.47	0.35		0.83	3.05
CV,%	6.4	2.3	3.8	8	0	0	1	12	54	12.08	39.14	23.79		23.25	11.88
LSD,0.05	0.4	1.8	2.9	3	0	0	2	14	22	0.39	0.27	0.12		0.28	0.53

[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] There was no late summer or fall harvest due to below normal precipitation in July, August, and early September, resulting in insufficient regrowth.
[4] Remington NEA2 contains a non-toxic (novel) endophyte.
* 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, winter injury, and stand persistence of perennial ryegrass varieties sown September 5, 2024, at Lexington, Kentucky (see tables 13 and 16 for designation of diploid or tetraploid varieties).

Variety	Seedling Vigor[1] Oct 2, 2024	Winter Injury[2] Jan 30, 2025	Maturity[3]	Percent Stand			Yield (tons/acre)			
			2025	2024	2025		2025			
			May 21	Oct 2	Mar 18	Oct 31	May 21	Jun 26	Aug-Oct[4]	Total
Commercial Varieties-Available for Farm Use										
TetraMag	4.9	18	56.0	100	100	83	3.00	0.64	–	3.63*
Power	4.6	25	56.0	100	100	78	2.35	0.37	–	2.72
PayDay	4.8	23	56.0	100	100	86	2.27	0.33	–	2.61
TetraSweet	4.5	19	55.5	100	100	78	2.15	0.36	–	2.51
Remington NEA2[5]	4.1	10	45.0	100	100	98	1.51	0.46	–	1.97
Stampede	4.6	73	55.5	100	74	55	0.76	0.41	–	1.17
Frenzy	5.0	80	55.5	100	10	1	0.54	0.55	–	1.09
Energizer	4.6	80	53.5	100	9	17	0.43	0.55	–	0.98
Mean	4.6	41	54.1	100	74	62	1.63	0.46		2.09
CV,%	4.8	11	1.2	0	8	27	14.51	19.76		12.69
LSD,0.05	0.3	6	1.0	0	8	24	0.35	0.13		0.39

[1] Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.
[2] Percent of plant leaves affected by the cold.
[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.
[4] There was no late summer or fall harvest due to below normal precipitation in July, August, and early September, resulting in insufficient regrowth.
[5] Remington NEA2 contains a non-toxic (novel) endophyte.
* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Table 9. Dry matter yields, seedling vigor, maturity, plant height, and stand persistence of festulolium varieties sown September 9, 2022, at Lexington, Kentucky (see tables 14 and 17 for ryegrass and fescue genetic background of these varieties).

Variety	Seedling Vigor[1] Oct 25, 2022	Maturity[2]				Plant Height (in) May 13, 2024	Percent Stand							Yield (tons/acre)						3-year Total
		2023		2024	2025		2022	2023		2024		2025		2023	2024	2025				
		May 5	Jun 8	May 13	May 13		Oct 25	Mar 20	Oct 17	Mar 21	Oct 18	Mar 18	Nov 5	Total	Total	May 13	Jun 19	Aug-Oct[3]	Total	
Commercial Varieties-Available for Farm Use																				
Mahulena	2.3	56.5	42.5	58.0	58.0	40	100	100	100	100	99	99	99	4.78	2.10	1.21	0.67	–	1.88	8.76*
Perseus	4.5	45.0	56.5	47.5	50.0	14	100	100	100	100	33	30	6	5.74	1.51	0.62	0.81	–	1.43	8.68*
Tatron	4.5	45.0	42.0	49.3	48.8	15	100	100	100	100	65	48	16	5.20	1.67	0.73	0.80	–	1.53	8.40*
Lofa	4.9	45.0	48.8	53.5	52.5	19	100	100	100	100	53	43	9	5.34	1.81	0.39	0.74	–	1.13	8.28*
SpringGreen	4.4	48.5	49.8	53.5	51.5	18	100	100	100	100	64	54	19	5.00	1.48	0.53	0.70	–	1.23	7.70*
Lenor	2.6	46.3	55.0	56.5	56.0	32	100	100	100	100	100	100	100	4.12	1.88	0.95	0.67	–	1.61	7.61*
Sugarcrest	4.0	46.3	48.8	49.3	48.8	14	100	100	100	100	76	58	16	4.92	1.43	0.43	0.61	–	1.04	7.39
Duo	4.8	53.0	49.0	50.8	49.7	14	100	100	80	40	24	15	7	4.89	1.14	0.27	0.46	–	0.73	6.99
Experimental Varieties																				
FPF7	2.9	56.5	29.0	58.0	57.5	33	100	100	100	100	100	100	100	4.50	1.52	0.79	0.63	–	1.43	7.45
FPF8	3.0	52.5	36.3	55.0	56.0	26	100	100	100	100	100	100	100	4.05	1.47	0.96	0.80	–	1.76	7.29
Mean	3.8	49.5	45.8	53.1	52.9	22	100	100	98	94	71	66	48	4.86	1.60	0.70	0.69		1.39	7.88
CV,%	10.7	3.9	27.5	4.2	3.7	9	0	0	3	12	31	37	23	7.98	15.90	34.47	27.01		26.69	9.98
LSD,0.05	0.6	2.8	18.2	3.3	2.9	3	0	0	4	16	32	36	17	0.56	0.37	0.36	0.28		0.55	1.16

[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] There was no late summer or fall harvest due to below normal precipitation in July, August, and early September, resulting in insufficient regrowth.
* 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 6, 2023, at Lexington, Kentucky (see tables 14 and 17 for ryegrass and fescue genetic background of these varieties).

Variety	Seedling Vigor[1] Oct 24, 2023	Maturity[2]		Percent Stand					Yield (tons/acre)					
		2024	2025	2023	2024		2025		2024	2025				2-year Total
		May 8	May 21	Oct 24	Mar 14	Oct 18	Mar 18	Nov 5	Total	May 21	Jun 26	Aug-Oct[3]	Total	
Commercial Varieties-Available for Farm Use														
Perseus	4.5	56.0	55.5	100	100	99	99	52	3.65	1.34	0.34	–	1.68	5.33*
Duo	4.6	60.0	56.5	100	100	90	90	74	3.23	1.33	0.19	–	1.51	4.74
SpringGreen	4.3	57.5	56.0	100	100	100	100	85	3.28	1.22	0.16	–	1.38	4.66
Sugarcrest	4.3	59.0	56.0	100	100	100	100	93	3.28	1.18	0.18	–	1.36	4.63
Mean	4.4	58.1	56.0	100	100	97	97	76	3.36	1.27	0.22		1.48	4.84
CV,%	6.1	2.6	1.2	0	0	3	3	29	10.78	16.90	19.61		15.37	7.58
LSD,0.05	0.4	2.4	1.1	0	0	5	5	35	0.58	0.34	0.07		0.36	0.59

[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] There was no late summer or fall harvest due to below normal precipitation in July, August, and early September, resulting in insufficient regrowth.
* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Table 11. Dry matter yields, seedling vigor, winter injury, maturity, and stand persistence of festulolium varieties sown September 5, 2024 , at Lexington, Kentucky (see tables 14 and 17 for ryegrass and fescue genetic background of these varieties).

Variety	Seedling Vigor[1] Oct 2, 2024	Winter Injury[2] Jan 30, 2025	Maturity[3] 2025 May 9	Percent Stand			Yield (tons/acre)			
				2024	2025		2025			
				Oct 2	Mar 18	Oct 31	May 9	Jun 19	Aug-Oct[4]	Total
Commercial Varieties-Available for Farm Use										
SpringGreen	5.0	24	55.0	100	99	3	2.90	0.69	–	3.60
Duo	4.8	28	56.0	100	100	5	2.59	0.75	–	3.34*
Sugarcrest	4.9	13	53.0	100	100	28	2.72	0.47	–	3.19*
Barrier	4.4	23	52.0	100	98	14	2.14	0.48	–	2.63
Mean	4.8	22	54.0	100	99	12	2.59	0.60		3.19
CV,%	5.0	21	2.9	0	2	153	12.23	25.15		9.69
LSD,0.05	0.4	7	2.5	0	3	30	0.51	0.24		0.49

[1] Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.
[2] Percent of plant leaves affected by the cold.
[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.
[4] There was no late summer or fall harvest due to below normal precipitation in July, August, and early September, resulting in insufficient regrowth.
* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Table 12. Proprietors and type information of annual ryegrass varieties in current trials.

Variety	Type	Proprietor/KY Distributor
Commercial Varieties-Available for Farm Use		
Attain	Westerwold tetraploid	Smith Seed
Barmultra II	Italian tetraploid	Barenbrug USA
Barneal	diploid	Barenbrug USA
Bill Max	Westerwold tetraploid	Gentos SA
Centurion	Westerwold diploid	Mountain View Seeds
Feast II	Italian tetraploid	Ampac Seed
Frostproof	Westerwold diploid	Smith Seed
Gulf	Westerwold diploid	Public
Jackson	Westerwold diploid	The Wax Company
Marshall	Westerwold diploid	The Wax Company
Nelson	Westerwold tetraploid	The Wax Company
Rampage	Westerwold diploid	Allied Seed
Ranahan	Westerwold tetraploid	Mountain View Seeds
Ribeye	diploid	Barenbrug USA
Tetraprime II	Italian tetraploid	Mountain View Seeds
Vibe	Italian diploid	Allied Seed
Winterhawk	Westerwold diploid	Oregro Seeds
Zoom	Westerwold tetraploid	Allied Seed
Experimental Varieties		
BARLM490-3	diploid	Barenbrug USA
BARLM490-4	diploid	Barenbrug USA
ME4	Westerwold diploid	The Wax Company
ME-94	Westerwold diploid	The Wax Company
WMWL	N/A[1]	The Wax Company
WMWL2	N/A[1]	The Wax Company

[1] Type was not provided by the company.

Table 13. Proprietors and type information of perennial ryegrass varieties in current trials.

Variety	Type	Proprietor/KY Distributor
Commercial Varieties-Available for Farm Use		
Boost	tetraploid	Allied Seed
Delika	diploid	Columbia Seeds
Dexter I	tetraploid	DLF Pickseed
Energizer	tetraploid	Allied Seed
Frenzy	tetraploid hybrid	Aallied Seed
Linn (certified)	diploid	Public
PayDay	tetraploid	Mountain View Seeds
Power	tetraploid	Allied Seed
Remington	tetraploid	Barenbrug USA
Remington PLUS NEA2[1]	tetraploid	Barenbrug USA
Stampede	diploid	Allied Seed
TetraGain SLT	tetraploid	Smith Seed
TetraMag	tetraploid	Mountain View Seeds
TetraSweet	tetraploid	Mountain View Seeds
Experimental Varieties		
GPRT14021 AR1[1]	tetraploid	Mountain View Seeds
PPG-FRPT122	tetraploid	Mountain View Seeds
PPG-LHT111	tetraploid	Mountain View Seeds
PST-2BUL19	N/A[2]	Pure Seed Testing

[1] Remington PLUS NEA2 and GPRT14021 AR1 contain a non-toxic (novel) endophyte.
[2] Type was not provided by the company.

Table 14. Proprietors and genetic background of festulolium varieties in current trials.

Variety	Type[1]	Proprietor/KY Distributor
Commercial Varieties-Available for Farm Use		
Barrier	MF x PR	Allied Seed
Duo	MF x PR	Ampac Seed
Lenor	IR x TF	Columbia Seeds
Lofa	(TF x Int) x Int	DLF Pickseed
Mahulena	(TF x IR) x TF	DLF Pickseed
Perseus	MF x IR	DLF Pickseed
Spring Green	MF x PR	Turf Seed
Sugarcrest	MF x PR	Mountain View Seeds
Tatron	IR x TF	Columbia Seeds
Experimental Varieties		
FPF7	(TF x IR) xTF	DLF Pickseed
FPF8	(TF x IR) xTF	DLF Pickseed

[1] MF=meadow fescue, TF=tall fescue, IR=Italian ryegrass, PR=perennial ryegrass, Int=intermediate ryegrass.

Table 15. Summary of Kentucky annual ryegrass yield trials at Lexington from 2006-2025 (yield shown as a percentage of the yield value of Marshall)[1].

Variety	Type	Proprietor	06[2,3]	07	08	09	10	10	11	12	12	13	14	15	16	17	18	19	21	22	23	24	Mean[4] (#trials)
AE110	Westerwold tetraploid	Pickseed USA, Inc.							89	100													95(2)
Alisca	Westerwold tetraploid	Allied Seed																			101		–
Amp	Westerwold tetraploid	Columbia Seeds										75							91				83(2)
Assist	Westerwold diploid	SaddleButte										88											–
Attain	Westerwold tetraploid	Smith Seed Services					111					52	69					92				95	92(4)
Baqeuano	Westerwold tetraploid	Smith Seed Services															77						–
Barmultra II	Italian tetraploid	Barenbrug USA					133				103	95		125	108							93	112(5)
Barneal	diploid	Barenbrug USA																				91	
Bendix	Westerwold tetraploid	Smith Seed Services																	91	90			91(2)
Big Bang	Westerwold tetraploid	Brett Young											67										–
Big Boss	Westerwold tetraploid	Smith Seed Services					98				86	38	73										86(3)
Big Daddy	Westerwold tetraploid	FFR/Sou. St.					86	98	82														89(3)
Bill	Westerwold diploid	Smith Seed Services											62										–
Bill Max	Westerwold tetraploid	Gentos SA																				80	–
Brangus	Italian tetraploid	KB SeedSolutions					94																–
Bruiser	Westerwold diploid	Ampac Seed			65	105	100		104	86		100	105	95	86	113		96	84	91			94(12)
Centurion	Westerwold diploid	Mountain View Seeds								97			132		100	117			96	94	98	100	104(8)
Claro	Westerwold tetraploid	Smith Seed Services																	86	103			95(2)
Dexter	Westerwold tetraploid	Smith Seed Services																	89		101		95(2)
DH-3	Italian tetraploid	Allied Seed		91	27				89														69(3)
Diplomat	Westerwold diploid	Allied Seed																			83		–
Dixie Gold	Westerwold tetraploid	Caudill Seed										19											–
DoubleDiamond	Westerwold tetraploid	Oregro Seeds															84						–
Dyna-Gain	Westerwold diploid	Columbia Seeds										71											–
DynaPlus	Westerwold diploid	Columbia Seeds																	84				–
Ed	Westerwold diploid	Smith Seed Services					96					101	100								89		95(3)
Feast II	Italian tetraploid	Ampac Seed			35	113	109		81	93	71	47	56	88	80	87	65	86	67	86	91	72	80(16)
Fox	Italian diploid	DLF Pickseed					109																–
Fria	Westerwold diploid	Allied Seed					95		87	89		104	81	85	98								89(6)
Frostproof	Westerwold diploid	Smith Seed Services													96			93	80	90	93	82	89(6)
GR-AS10	Italian	Ampac Seed					113																–
Green Farm	Westerwold diploid	Smith Seed Services											85										–
Green Farm 2	Westerwold diploid	Smith Seed Services																	86	94			90(2)
Gulf	Westerwold diploid	Public		67	26	87	78		76	72		27	69	60	87	87	56	80	66	79	84	76	72(16)
Halsey	Intermediate tetraploid	Smith Seed Services																			99		–
Hellen	Westerwold tetraploid	Smith Seed Services																95	83	93			90(3)
Hercules	Westerwold tetraploid	Barenbrug USA									91	68											80(2)
HS-1	Italian diploid	KB SeedSolutions					72																–
Jackson	Westerwold diploid	The Wax Co.	62	103	59	101	99	106	106	91	77	69	100	99	97	105	95	95	87	91	95	97	95(18)
Jumbo	Westerwold tetraploid	Barenbrug USA														88	83						86(2)
KB Royal	Italian diploid	KB SeedSolutions					83																–
Kodiak	Westerwold diploid	DLF Pickseed																			100		–
Koga	Westerwold tetraploid	Smith Seed Services														94	96	101	95		106		98(5)
Kospeed	Westerwold diploid	Smith Seed Services											80	92									86(2)
Kowinearly	Westerwold diploid	Smith Seed Services											95	96									96(2)
LHT-102	Intermediate	Ampac Seed								100													–
Mantis	Westerwold tetraploid	Smith Seed Services																	88	107			98(2)
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	100(18)
Master	Westerwold tetraploid	Smith Seed Services															82						–
Maximo	Intermediate tetraploid	Pickseed USA, Inc.							101														–

(continued on the next page)

Table 15. Summary of Kentucky annual ryegrass yield trials at Lexington from 2006-2025 (continued).

Variety	Type	Proprietor	06[2,3]	07	08	09	10	10	11	12	12	13	14	15	16	17	18	19	21	22	23	24	Mean[4] (#trials)
Maximus	Westerwold tetraploid	Barenbrug USA														63	84						74(2)
McKinley	Westerwold diploid	DLF Pickseed																			101		–
Melquatro	Italian tetraploid	Columbia Seeds												135		72					92		100(3)
Meroa	Westerwold diploid	Smith Seed Services											93	102				108	96				100(4)
MX 108	Westerwold tetraploid	Pickseed USA, Inc.							95	114													105(2)
Nelson	Westerwold tetraploid	The Wax Co.						86			93	65	77	105	97	73	91	104	94	115	105	96	95(12)
Oryx	Italian diploid	Columbia Seeds												100							84		92(2)
Primecut	Westerwold brand	Oregro Seeds							94														–
Rampage	Westerwold diploid	Allied Seed																				55	–
Ranahan	Westerwold tetraploid	Mountain View Seeds																				101	–
Rapido	Westerwold diploid	Smith Seed Services																77					–
Ribeye	diploid	Barenbrug USA																				82	–
TAMTBO	Westerwold tetraploid	Tex. Ag Exp Sta.			47		101		108	95			79				91						87(6)
Tam 90	Italian diploid	Tex. Ag Exp Sta.			49								78										64(2)
TetraPrime	Italian tetraploid	Mountain View Seeds								101			96	104	91	99	90	86	80				93(8)
TetraPrime II	Italian tetraploid	Mountain View Seeds																		98		92	95(2)
TetraPro	Italian tetraploid	Tex. Ag Exp Sta.			40																		–
TillageRootMax	Westerwold diploid	Cover Crop Solutions							82	90													86(2)
Trinova	Westerwold tetraploid	Smith Seed Services															78						–
Ugne	Italian tetraploid	Columbia Seeds													102								–
Verdure	Westerwold tetraploid	Smith Seed Services					86					42	58										72(2)
Vibe	Italian diploid	Allied Seed																				61	–
Winterhawk	Westerwold diploid	Oregro Seeds					104		117	92			119			113	96	91	98	100	97	98	102(11)
Zoom	Westerwold tetraploid	Allied Seed																				70	–

[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 the fall of 2015 was harvested one year, so the final report would be "2016 Annual and Perennial Ryegrass and Festulolium Report" archived in the UK Forage website (https://forages.mgcafe.uky.edu).
[4] Mean only presented when respective variety was included in two or more trials.

Table 16. Summary of Kentucky perennial ryegrass yield trials at Lexington from 2004-2025 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Type	Proprietor	04[1, 2]	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Mean[3,4] (#trials)
			3yr[5]	3yr	2yr	3yr	3yr	3yr	2yr	3yr	3yr	3yr	2yr	2yr	3yr	3yr	3yr	3yr	3yr	3yr	3yr	2yr	
Albion	tetraploid	Grasslands Oregon											105	103									104(2)
Amazon	tetraploid	AgriBioTech	99																				–
Barvitra	diploid	Barenbrug USA												104				109					107(2)
Bastion C-2	tetraploid	Seed Research of OR	91																				–
Best for Plus	hybrid tetraploid	Improved Forages	108	118																			113(2))
BG-34	diploid	Barenbrug USA		83	85				86		87	84	85	81		83							84(8)
Boost	tetraploid	Allied Seed				130	125	120	143	110	103	102						108	112		111		117(10)
Calibra	tetraploid	DLF Pickseed					96	109	81	99	103	96	87	100	98	98	89	95					96(12)
Crave	tetraploid	Ampac Seed									95												–
Delika	diploid	Columbia Seeds																				57	–
Dexter 1	tetraploid	DLF Pickseed																		97	94	108	100(3)
Elena DS	tetraploid	Allied Seed									110				110				110				110(3)
Eurostar	tetraploid	Seed Research of OR				112																	–
Everlast	diploid	Caudill Seed										104											–
Feeder	diploid	Seed Research of OR				76																	–
Grand Daddy	tetraploid	Smith Seed			101	109		76	92	84	86		107										94(7)
Green Gold	tetraploid	Grasslands Oregon			96																		–
Herbal	–[7]	ProSeeds Marketing					77																–
Impressario	tetraploid	DLF Pickseed						107			92												100(2)
Kentaur	tetraploid	DLF Pickseed								106		117											112(2)
Lactal	tetraploid	Brett Young						102															–
LHT-102	tetraploid	Ampac Seed									114												–
Linn (certified)	diploid	Public	102		98	85	84	101	92	93	80	95	83	89	83	74	98	105	102	93	91	101	92(19)
Melpetra	tetraploid	Columbia Seeds													83								–
Orantas	diploid	DLF Pickseed						82															–
Ortet	tetraploid	Oregro Seeds					114																–
PayDay	tetraploid	Mountain View Seeds									101	103	99		87	108	95	93	89	92	103	99	97(11)
Power	tetraploid	Ampac Seed				110	103	102	100	109	104	95	101	107				100	86	90	91	103	100(14)
Polim	tetraploid	DLF Pickseed							106														–
Quartermaster	tetraploid	Radix Research		122																			–
Quartet	tetraploid	Ampac Seed		56		46																	51(2)
RAD-CPS212	hybrid tetraploid	Radix Research		134																			–
RAD-MI125	hybrid tetraploid	Mountain View Seeds			120																		–
Remington	tetraploid	Barenbrug USA											95	117	109	108	105	85	102	117	86	87	101(10)
Remington PLUS NEA2[6]	tetraploid	Barenbrug USA											119	99			105	91	89	101		89	99(7)
Sierra	diploid	Lewis Seed Co.		89																			–
TetraGain SLT	tetraploid	Pure Seed									111									113	113	130	117(4)
TetraMag	tetraploid	Mountain View Seeds									110		136		127	124	121	116	130	99	113	133	121(10)
TetraSweet	tetraploid	Mountain View Seeds													104	105	87	97	80	98	97	92	95(8)
Tonga	tetraploid	Kings AgriSeeds		96				103															100(2)
Verseka	tetraploid	Allied Seed									75												–
Victorian	diploid	Caudill Seed										104	83										94(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 the fall of 2012 was harvested three years, so the final report would be "2015 Annual and Perennial Ryegrass and Festulolium Report" archived in the UK Forage website (https://forages.mgcafe.uky.edu).
[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.
[6] Remington PLUS NEA2 contains a non-toxic (novel) endophyte.
[7] Type was not provided by the company.

Table 17. Summary of Kentucky festulolium yield trials at Lexington from 2001-2025 (yield shown as a percentage of the mean of the commercial varieties in the trial).[1]

Variety	Type[2]	Proprietor	2001[3,4]	2005	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2019	2020	2021	2022	2023	Mean[5] (#trials)
			2yr[6]	3yr	3yr	3yr	3yr	3yr	2yr	3yr	2yr	3yr	3yr	3yr	3yr	3yr	3yr	3yr	2yr	
Agula	MF x IR	Allied Seed					94													–
Barfest	MF x PR	Barenbrug USA					105	101	107	119	91	92	92							101(7)
Bonus	MF x IR	Allied Seed					93	46	32	34										51(4)
Duo	MF x PR	Ampac Seed		89	98	99	95	106	103	96	96	83	83	80	98	97	86	88	98	94(16)
Felina	(TF x IR) x TF	DLF Pickseed	104				132	118	134	114	96									116(6)
Fojtan	(TF x IR) x TF	DLF Pickseed					112	101	124	92	72	94	100	108	86					99(9)
Gain	MF x IR	Allied Seed					103	77	52	75										77(4)
Hostyn	MF xIR	DLF Pickseed							107	110	106		108							108(4)
Hykor	(TF x IR) x TF	DLF Pickseed					133	141	153	131	119	121	112		94	109				124(9)
InaMerlin	MF x IR	Columbia Seeds											88	77						83(2)
Kenfest	MFx AR	KY Agr. Exp Station												97						–
Lenor	IR x TF	Columbia Seeds															104	95		100(2)
Lofa	(TF x Int) x Int	DLF Pickseed					105	107	110	128	112	91	109	108	104	100	108	104		108(12)
Mahulena	(TF x IR) x TF	DLF Pickseed							131	109	107		111	114		106	105	110		112(8)
Meadow Green	MF x PR	Pure Seed Testing							37	34										36(2)
Perseus	MF x IR	DLF Pickseed					132	114	126	123	110	109	105	112	113	105	115	109	110	114(13)
Perun	MF x IR	DLF Pickseed					127	114	107	131	110	102	99	110	105	87				109(10)
Rebab	(TF x IR) xTF	DLF Pickseed								94	77									86(2)
Spring Green	MF x PR	Pure Seed Testing	96	111	114	101	113	112	114	110	103	107	92	94	101	96	92	97	96	103(17)
Sugarcrest	MFxPR	Mountain View Seeds															95	93	96	95(3)
Sweet Tart	MF x IR	ProSeeds Marketing			88		82	63	62											74(4)
Tatron	IR x TF	Columbia Seeds															95	105		100(2)

[1] The festuloliums were in fescue trials from 2001-2005 and in perennial ryegrass trials from 2008-2009.
[2] MF=meadow fescue, TF=tall 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 the fall of 2012 was harvested three years, so the final report would be "2015 Annual and Perennial Ryegrass and Festulolium Report" archived in the UK Forage website (https://forages.mgcafe.uky.edu).
[5] Mean only presented when respective variety was included in two or more trials.
[6] Number of years of data.

Notes

Notes

2025 Annual and Perennial Ryegrass and Festulolium Report

1-2026