



2020 Long-Term Summary of Kentucky Forage Variety Trials

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Introduction

Forage crops occupy approximately 7 million acres in Kentucky. Forages provide a majority of the nutrition for beef, dairy, horse, goat, sheep, and wildlife in the state. In addition, forage crops play a positive environmental role in soil conservation, water quality, and air quality. There are more than 60 forage species adapted to the climate and soil conditions of Kentucky. Only 10 to 12 of these species occupy the majority of the acreage, but within these species there is a tremendous variation in varieties.

This publication was developed to provide a user-friendly guide to choosing the best variety for producers based on a summary of forage yield and grazing tolerance trials conducted in Kentucky over the past twenty years. Detailed variety reports and forage management publications are available from your county Extension agent or at the University of Kentucky forage website (<https://forages.ca.uky.edu>) by clicking on the "Forage Variety Trial" link.

Species in this Report

Red clover (*Trifolium pratense*) is a high-quality, short-lived, perennial legume that is used in mixed or pure stands for pasture, hay, silage, green chop, soil improvement, and wildlife habitat. This species is adapted to a wide range of climatic and soil conditions and therefore is versatile as a forage crop. Stands of improved varieties are generally productive for two to three years, with the highest yields occurring in the year following establishment. Red clover is used primarily as a renovation legume for grass pastures. It is a dominant forage legume in Kentucky because it is relatively easy to establish and has high forage quality and high yield.

White clover (*Trifolium repens*) is a low-growing, perennial pasture legume with white flowers. It differs from red clover in that the stems (stolons) grow along the surface of the soil and can form adventitious roots that may lead to the

development of new plants. White clover is classified into ladino, Dutch, and intermediate types. The intermediate types combine the higher yield of ladino with the grazing tolerance of the Dutch types.

Alfalfa (*Medicago sativa*) has historically been the highest yielding, highest quality forage legume grown in Kentucky. It forms the basis of Kentucky's cash hay enterprise and is an important component in dairy, horse, beef, and sheep diets and wildlife habitat. Choosing a good alfalfa variety is a key step in establishing a stand of alfalfa. The choice of variety can impact yield, stand persistence, insect and disease resistance, and grazing tolerance.

Orchardgrass (*Dactylis glomerata*) is a high-quality, productive, cool-season grass that is well adapted to Kentucky conditions. This grass is used for pasture, hay, green chop, and silage, but it requires better management than tall fescue for higher yields, quality, and long stand life. It produces an open, bunch-type sod, making it very compatible with alfalfa or red clover as a pasture and hay crop or as habitat for wildlife.

Tall fescue (*Festuca arundinacea*) is a productive, well-adapted, persistent, soil-conserving, cool-season grass that is grown on approximately 5.5 million acres in Kentucky. Tall fescue is the forage base for most of Kentucky's livestock enterprises, particularly beef cattle, and is used for both hay and pasture. The predominant variety, KY31, was developed in Kentucky for long-term persistence but contains a fungal endophyte that produces alkaloids detrimental to livestock production and reproductive health. Endophyte-free tall fescue varieties produce no detrimental alkaloids, but UK research shows that they are less persistent than KY31. New novel endophyte tall fescue varieties contain safe endophytes, which enhance stand persistence but cause no detrimental animal symptoms.

Annual ryegrass (*Lolium multiflorum*) and **perennial ryegrass** (*Lolium perenne*) are high-quality, productive, cool-season

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grasses used in Kentucky. Both have exceptionally high seedling vigor and are highly palatable to livestock. Annual ryegrasses (both Italian and Westerwolds types) are increasingly in use across Kentucky as more winter-hardy varieties are released and promoted. Annual ryegrass is productive for six to eight months when planted early fall (late August/September) and is used primarily for late fall and early to late spring pasture. Perennial ryegrass can be used as a short-lived hay or pasture plant and has growth characteristics similar to tall fescue. It is less persistent than other cool-season grass species. 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 typically more tolerant to heavy grazing.

Timothy (*Phleum pratense*) is the fourth most widely sown cool-season perennial forage grass used in Kentucky after tall fescue, orchardgrass, and Kentucky bluegrass. Timothy is primarily harvested as

Table 3. continued

Variety	Variety Characteristics ¹										Lexington										Princeton					Mean ⁵ (# trials)
	Disease Resistance ²										04 ^{3,4}	06	08	11	12	15	16	17	18	05	08	09	11	13		
	FD	Bw	Fw	An	PRR	APH	HR	HR	HR	HR	HR	5yr ⁶	7yr	6yr	6yr	5yr	5yr	4yr	3yr	5yr	5yr	6yr	4yr	3yr		
Proprietor	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
Rebound 5.0	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
Rebound 6.0	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
Rebound 6XT	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
Reward II	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
Saranac AR (certified)	4	MR	R	HR	LR	-	77	85	86	91	97	92	90	92	90	104				103	88	92	82	97	90(14)	
TripleTrust 450	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
TripleTrust 500	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
USG 681HY	6	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
Vernal	2	R	MR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95	100	87	-	95(5)		
Withstand	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
WL 343HQ	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
WL 354HQ	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
WL 357HQ	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
WL 363HQ	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
WL 365HQ	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
4030	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
53H92	3	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
54Q32	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
55V48	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
55V50	5	HR	R	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
6400HT	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
6415	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
6417	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
6422Q	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	
6552	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	

¹ Variety characteristics: FD = fall dormancy, Bw = bacterial wilt, Fw = fusarium wilt, An = anthracnose, PRR = phytophthora root rot, APH = aphanomyces root rot. Information provided by seed companies.

² Disease resistance: S = susceptible, LR = low resistance, MR = moderate resistance, R = resistance, HR = high resistance. (more detailed disease and insect resistance ratings at www.alfalfa.org/pdf/2019_Alfalfa_Variety_Leaflet.pdf)

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 test. For example, the Lexington trial planted in 2008 was harvested for 6 years, so the final yield report would be "2013 Alfalfa Report" archived in the UK Forage website (<https://forages.ca.uky.edu/>).

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

⁶ Number of years of data

all. Meadow bromegrass is densely tufted and has a similar growth habit to tall fescue. Hybrid bromegrasses are a cross between smooth and meadow bromegrasses. Alaska bromegrass (*Bromus sitchensis*), also called Sitka bromegrass, is a long-lived perennial bunchgrass that will actively grow at moderate rates dur-

ing the spring and summer season. It does not spread by rhizomes and is more suited to environments with harsh winters. Prairie bromegrass (*Bromus willdenowii*) is a tall, cool-season, leafy short-lived, perennial, deep-rooted bunchgrass. It was introduced from South America. Seedheads are produced throughout the

growing season. Prairie bromegrass can maintain productive stands for several years if at least one growth cycle each year is allowed to go to seed. Some prairie bromegrasses are susceptible to winterkill. Mountain bromegrass (*Bromus marginatus*) is native to North America from Alaska to northern Mexico, where it can be found in many types of habitat. It is a short-lived, perennial, cool-season, sod-forming grass.

Sudangrass (*Sorghum bicolor* ssp. *drummondii*) is a rapidly growing annual grass in the sorghum family. It is medium yielding and well suited for grazing or hay because of its smaller stem size compared to other sorghum species. Sudangrass regrows quickly after harvest and can be harvested several times during summer and early fall.

Sorghum-sudangrass hybrids are more vigorous and slightly higher yielding than sudangrass. A larger stem size makes these hybrids less useful for hay; therefore, they are commonly used for baleage and grazing.

Forage sorghum is used primarily as silage for livestock and is typically a one cut crop. It grows 6 to 12 feet tall and is typically harvested when the seed is in the milk to soft dough stage.

Pearl millet (*Pennisetum glaucum*) is the most widely grown type of millet. It is well adapted to production systems characterized by drought, low soil fertility, and high temperature. It is higher yielding than foxtail millet and regrows rapidly after harvest if an 8- to 10-inch stubble height is left. Dwarf varieties are available which are leafier and better suited for grazing.

The brown midrib or BMR trait is an outward expression of a naturally occurring genetic mutation in forage sorghum, sorghum-sudangrass, sudangrass, and pearl millet. In most cases, plants possessing the BMR trait contain less or altered lignin, making the plant more digestible and desirable for animal production. Therefore, it is advisable to seed summer annuals that have the BMR trait in addition to other desirable characteristics like high yield. With BMR varieties, the midrib of the leaf appears brown or tan-nish in color.

Teff, also referred to as summer love-grass (*Eragrostis tef*), is a warm-season

Seed quality. Buy premium-quality seed that is high in germination and 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 past nine months), the level of germination, and the amount of other crop and weed seed. Order seed well in advance of planting time to assure that it will be available when needed.

Description of the Tests

Yield trials. Plots were seeded at the recommended seeding rate per acre and were planted into a prepared seedbed with a disk drill. Plots were 5 feet by 15 feet in a randomized complete block design with four replications. Cool season perennial grass plots were typically fertilized with 60 pounds of actual N per acre in March, after the first cutting, and again in late summer for a total of up to 180 pounds per acre per season. No nitrogen was applied to the legume trials. Other fertilizers (lime, P, and K) were applied as needed according to the University of Kentucky soil test recommendations. The tests were harvested using a sickle-type forage plot harvester at timings appropriate for the specific crop. Fresh weight samples were taken at each harvest to calculate percent dry matter production. Management practices for establishment, fertility, weed control, and harvest timing were in accordance with University of Kentucky recommendations.

Grazing trials. Plots were 5 feet by 15 feet in a randomized complete block design, with each variety replicated six times. Plots were seeded at the recommended seeding rate per acre and were planted into a prepared seedbed using a disk drill. Grazing was continuous from April to October.

Plots were grazed down to below 4 inches quickly and were maintained at 2 to 4 inches (sometimes less) for the remainder of the grazing season. Supplemental hay was fed during periods of slowest growth. Visual ratings of percent stand were made in the fall several weeks after the cattle were removed to determine stand persistence after the grazing season and in the spring prior to grazing to check on winter survival and spring growth. Because trials were seeded in rows, persistence ratings were based on density within a row and not total ground cover. Grass plots were fertilized with 60 pounds of actual N per acre in the spring and 30 to 40 pounds of actual N in early November after cattle or horses were removed from the pasture. Other fertilizers (lime, P, and K) were applied as needed according to the University of Kentucky soil test recommendations. Management practices for establishment, fertility, and weed control were in accordance with University of Kentucky recommendations.

Table 6. Summary of Kentucky orchardgrass yield trials 2003-2020 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor	Lexington												Princeton						Quicksand				Mean ³ (#trials)			
		2006 ^{1,2} 4yr ⁴	2007 3yr	2009 3yr	2011 3yr	2012 3yr	2013 3yr	2014 3yr	2015 3yr	2016 3yr	2017 3yr	2019 2yr	2019 114	2004 3yr	2006 3yr	2008 3yr	2010 3yr	2012 3yr	2015 2yr	2015 3yr	2003 3yr	2005 4yr	2010 3yr		2013 3yr	2016 3yr	2018 2yr
Albert	Oregro Seeds								99	99	114														98		104(3)
Aldebaran	DLF Pickseed								106																		
Alpine II	Mountain View Seeds																										
Ambassador	DLF Pickseed												95														
Ambrosia	American Grass Seed Prod.													90													
Barlegro	Barenbrug USA																										
Benchmark Plus	Southern States	100	108	105	106	97	104																			94	96(2)
Berta	Mountain View Seeds																										
Bounty	Allied Seed	101																									
Century	Seed Research of Oregon	98																									100(2)
Checkmate	Seed Research of Oregon	102				117																					101(2)
Christoss	Proseeds Marketing		92																								108(3)
Command	Seed Research of Oregon																										
Crown	Donley Seed			97																							
Crown Royale Plus	Donley Seed																										101(2)
Devour	Mountain View Seeds																										
Echelon	DLF Pickseed								98																		
Elise	Rose-AgriSeed								99																113		106(2)
Endurance	DLF Pickseed									86																	94(3)
Extend	Allied Seed																										96(3)
Hallmark	James VanLeeuwen																										105(4)
Harvester	Columbia Seeds	91	97																								97(2)
Haymaster	Southern States	94																									100(6)
Haymate	Southern States																										98(3)
Icon	Seed Research of Oregon	105																									
Inavale	DLF Pickseed																									106	102(2)
																											99(4)

continued

Table 6. continued

Variety	Proprietor	Lexington						Princeton						Quicksand						Mean ³ (#trials)						
		2006 ^{1,2} 4yr ⁴	2007 3yr	2009 3yr	2011 3yr	2012 3yr	2013 3yr	2014 3yr	2015 3yr	2016 3yr	2017 3yr	2019 2yr	2004 3yr	2006 3yr	2008 3yr	2010 3yr	2012 3yr	2015 2yr	2003 3yr		2005 4yr	2010 3yr	2013 3yr	2016 3yr	2018 2yr	
Intensiv	Barenbrug USA																								93	95(2)
Lazuly	Proseeds Marketing																									-
LG-31	DLF Pickseed																									-
Lyra	Hood River Seed																									89(3)
Megabite	Turf-Seed																									-
Olathe	DLF Pickseed																									104(4)
Paiute	DLF Pickseed																									-
Persist	Smith Seed	105	106	107	112	106	100	103	111	98	111	100	101	105	102	101	108	101	108	101	102	103	107	126	105(21)	
Potomac	Public																									102(16)
Prairie	Turner Seed	107	101	109	106	113	123	108	103	111	111	105	100	104	99	104	105	107	105	107	120	102	105	107	107(22)	
Prodigy	Caudill Seed																									99(7)
Proft	Ampac Seed																									100(13)
RAD-LCF 25	Radix Research																									101(2)
Rushmore II	Mountain View seeds																									103(3)
Shawnee	Rose-AgriSeed																									-
Shiloh II	Proseeds Marketing																									-
SS07080GDT	Southern States																									102(8)
Swante	Smith Seed																									83(2)
Tekena II	Smith Seed	102																								105(4)
Tekapo	Ampac Seed	91	81	82	78	82	76	80																		86(15)
Treposno	Hood River Seed																									97(3)
Tucker	Oregro Seeds																									100
Udder	Improved Forages																									95(7)
Vaillant	Proseeds Marketing	107																								104(3)

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 3 years, so the final report would be "2015 Orchardgrass Report" archived in the UK Forage website (<https://forages.ca.uky.edu>).

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

4 Number of years of data.

Results and Discussion

These tables summarize long-term yield and stand persistence data of commercial varieties that have been entered in the University of Kentucky trials. Except for the alfalfa and tall fescue grazing tolerance 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. For the alfalfa and tall fescue grazing tolerance trials using cattle, data are listed as a percentage of the grazing tolerant varieties Alfagraze and KY31+, respectively. In the horse grazing trials, the data for fescue varieties were expressed as a percentage of KY31- instead of the mean of all the commercial varieties. Direct, statistical comparisons of varieties cannot be made using the summary tables, but these data 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 more information can be found in the yearly reports. See the footnote in each table to determine which yearly report should be referenced.

Summary

Selecting a good forage variety is an important first step in establishing a productive stand of forage. 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. For more detailed information on yield and grazing tolerance within species, go to individual 2020 reports on the forage website (<https://forages.ca.uky.edu>). See below for specific reports. Reports from 2001 to 2019 can be found in the archive website (<https://forages.ca.uky.edu/content/archived-research-reports>).

Table 7. Summary of Kentucky timothy yield trials 2000-2020 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/KY Distributor	Lexington												Quicksand				Princeton		Mean ³ (#trials)
		00 ^{1,2} 2yr ⁴	01 3yr	02 4yr	06 3yr	07 3yr	08 3yr	09 3yr	11 3yr	12 3yr	13 3yr	14 3yr	15 3yr	16 3yr	17 3yr	99 2yr	01 2yr	00 3yr	04 2yr	
Alma	Newfield Seeds Co/Caudill Seed Co.																		81	-
Anjo	Hood River Seed												81							-
Aurora	General Feed and Grain	100													98					99(2)
Barfleo	Barenbrug USA							95	91	101										95(7)
Barpenta	Barenbrug USA				74				82	82										84(4)
Clair	Ky Agric. Exp. Station		104	113	107	95	107	104	112	99	97	111	107	88	90	106				104(15)
Classic	Cebeco International Seeds	100		86											86					91(3)
Climax	Canada Agr. Res. Station				79	102	104	98	102	100	82	96	90	102	94					95(11)
Colt	FS Growmark	105		100	90										112					101(5)
Common	Public		95																	-
Comtral	Caudill Seed									92	92									92(2)
Dawn	Hood River Seed													106						-
Derby	Southern States				112	111		106	112	108	112	119	123	112						124
Dollina	DLF Pickseed	99		90																113(10)
Express	Seed Research of Oregon			95		91		97	95											95(2)
Hokusei	Snow Brand Seed	103																		95(4)
Hokusei	Snow Brand Seed	96													99					98(2)
Joliette	Newfield Seeds Co/Caudill Seed Co.							86	89										90	88(3)
Jonaton	Newfield Seeds Co/Caudill Seed Co.																		84	-
KY Early	Smith Seed/Central Farm Supply	102	103	115				102			119				104	103		107		108(8)
Outlaw	Grassland West Company														103					-
Richmond	Pickseed Canada Inc.	100																		102(2)
Summergraze	Brett Young										96									-
Summit	Allied Seed, L.L.C.			112																-
Talon	Seed Research of Oregon				110	112		108	106	109										109(5)
Tenho	Barenbrug USA											84								-
Treasure	Seed Research of Oregon				103	115		103	101	108										106(5)
Tundra	DLF Pickseed	95																		-
Tuukka	Ampac Seed Company		94	88														91	93	92(4)
Varis	Mountain View Seeds											83								-
Zenyatta	DLF Pickseed										103			119						111(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 3 years, so the final report would be "2015 Timothy and Kentucky Bluegrass Report" archived in the UK Forage website (<https://forages.ca.uky.edu>).

³ Mean only presented when respective variety was included in two or more trials.

⁴ Number of years of data.

Table 8. Summary of Kentucky bluegrass yield trials at Lexington 2004-2020 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/KY Distributor	04 ^{1,2} 3yr ⁴	06 4yr	07 3yr	08 3yr	09 3yr	10 3yr	11 3yr	12 3yr	13 3yr	14 3yr	16 3yr	17 3yr	Mean ³ (#trials)
Adam 1	Radix Research	98												–
Balin	Pure Seed												91	–
Barderby	Barenbrug USA			94		101	91	98	87	103	101	103	128	101(9)
Big Blue	Rose-AgriSeed					82			95					89(2)
Common	Public		71	66	68									68(3)
Ginger	ProSeeds Marketing		118	119	114	118	112	107	110	107	95	101	119	111(11)
Kenblue	Public	102	133				96	95	118	95	100			106(7)
Lato	Turf Seed Inc.			122										–
Park (certified)	Public								90	95	104	117	88	99(5)
RAD-5	Radix Research		103											–
RAD-339	Radix Research		101											–
RAD-643	Radix Research		94											–
RAD-731zx	Radix Research		87											–
RAD-762	Radix Research		94											–
RAD-1039	Radix Research				118									–
Tirem	DLF Pickseed											79	74	77(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 3 years, so the final report would be “2015 Timothy and Kentucky Bluegrass Report” archived in the UK Forage website (<https://forages.ca.uky.edu>).

³ Mean only presented when respective variety was included in two or more trials.

⁴ Number of years of data

Yield and Grazing Tolerance Reports

Individual forage species reports can be found at https://forages.ca.uky.edu/variety_trials.

- 2020 Alfalfa Report (PR-781)
- 2020 Red and White Clover Report (PR-782)
- 2020 Orchardgrass Report (PR-783)
- 2020 Tall Fescue and Bromegrass Report (PR-784)
- 2020 Timothy and Kentucky Bluegrass Report (PR-785)
- 2020 Annual and Perennial Ryegrass and Festulolium Report (PR-786)
- 2020 Alfalfa Grazing Tolerance Report (PR-787)
- 2020 Red and White Clover Grazing Tolerance Report (PR-788)
- 2020 Cool-Season Grass Grazing Tolerance Report (PR-789)
- 2020 Cool-Season Grass Horse Grazing Report (PR-790)
- 2020 Annual Grass Report: Warm Season and Cool Season (Cereals) (PR-791)
- 2020 Long-Term Summary of Kentucky Forage Variety Trials (PR-792)

For more information

The following comprehensive bulletins may be especially useful:

- Grain and Forage Crop Guide for Kentucky (AGR-18)
- Establishing Forage Crops (AGR-64)
- Rotational Grazing (ID-143)
- Extending Grazing and Reducing Stored Feed Needs (AGR-199)
- Forage Identification and Use Guide (AGR-175)
- Lime and Fertilizer Recommendations (AGR-1)
- Sudangrass and Sorghum-Sudangrass Hybrids (AGR-234)
- Pearl Millet (AGR-231)
- Forage Sorghum (AGR-230)
- Crabgrass (AGR-232)

About the Authors

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Table 9. continued

Variety	Type	Proprietor	Lexington ¹																	Mean ⁴ (#trials)	
			03 ^{2,3}	04	05	06	07	08	09	10	10	11	12	13	14	15	16	17	18		19
Meroa	Westerwold diploid	Smith Seed Services																		108	101(3)
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	91(8)
Oryx	Italian diploid	Hood River Seed														100					-
Primecut	Westerwold brand	Oregro Seeds									94										-
Rapido	Westerwold diploid	Smith Seed Services																		77	-
Spark	tetraploid	DLF Pickseed																			-
Stockaid	diploid	-			82																-
Striker	Westerwold tetraploid	Seed Research of OR				90															-
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		95(7)
TetraPro	Italian tetraploid	Tex. Ag Exp Sta.					40														-
TillageRootMax	Westerwold diploid	Cover Crop Solutions									82	90									86(2)
T-Rex	Westerwold tetraploid	SaddleButte			11																-
Trinova	Westerwold tetraploid	Smith Seed Services																	78		-
Ugne	Italian tetraploid	Hood River Seed														102					-
Verdure	Westerwold tetraploid	Smith Seed Services							86												72(2)
Winterhawk	Westerwold diploid	Oregro Seeds							104		117	92			119			113	96	91	105(7)

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 2015 was harvested 1 year, so the final report would be "2016 Annual and Perennial Ryegrass and Festulolium Report" archived in the UK Forage website (<https://forages.ca.uky.edu>).

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

⁵ Type was not provided by the company.

Table 10. Summary of Kentucky perennial ryegrass yield trials 2000-2020 (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)
			01 ^{1,2}	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	00	02	03	00	03		
			2yr ⁵	2yr	3yr	3yr	2yr	3yr	3yr	3yr	2yr	3yr	3yr	3yr	2yr	3yr	2yr	3yr	2yr	3yr	2yr	3yr	2yr	3yr	2yr	
Aires	diploid	Ampac Seed	95																					94(2)		
Albion	tetraploid	Grasslands Oregon											105	103										104(2)		
Amazon	tetraploid	AgriBioTech		99																		107		103(2)		
Anaconda	tetraploid	Caudill Seed																	95			103		99(2)		
Aubisque	tetraploid	Seed Research of OR	144																				99	122(2)		
Bandit	tetraploid	Grassland West																					114	110(2)		
Barvitra	diploid	Barenbrug USA												104										-		
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	84	85	81	83								84(8)		
Bison	hybrid tetraploid	International Seeds																					140	-		
Boost	tetraploid	Allied Seed					130	125	120	143	110	103	102						106					119(7)		
Boxer	tetraploid	AgriBioTech																						-		
Calibra	tetraploid	DLF Pickseed						96	109	81	99	103	96	87	100	98	98				112			96(12)		
CAS MP64	diploid	Cascade International	97																					-		
Citadel	tetraploid	Ag Canada																	94	113	103			103(3)		
Crave	tetraploid	Ampac Seed										95												-		
Derby	-7	Public																				74		-		
Elena DS	tetraploid	Allied Seed									110													110(2)		
Eurostar	tetraploid	Seed Research of OR					112																	-		
Everlast	diploid	Caudill Seed										104												-		
Feeder	diploid	Seed Research of OR					76																	-		
Grand Daddy	tetraploid	Smith Seed	118						76	92	84	86		107								111		98(9)		
Green Gold	tetraploid	Grasslands Oregon				96																		-		
Herbal	-	ProSeeds Marketing					77																	-		
Impressario	tetraploid	DLF Pickseed						107				92												100(2)		
Kentaur	tetraploid	DLF Pickseed								106			117											112(2)		
Lactal	tetraploid	Brett Young						102																-		
Lasso	diploid	DLF Pickseed	98																					-		
LHT-102	tetraploid	Ampac Seed										114												-		
Linn (certified)	diploid	Public	98	98	102	98	85	84	101	92	93	80	95	83	89	83	74	103	87	88	77			90(19)		
Manhattan	diploid	-																			85			-		
Marra	diploid	Barenbrug USA																			85			-		
Matrix	diploid	Cropmark seeds		77																		64		-		
Maverick Gold	hybrid tetraploid	Ampac Seed	97																			71		84(2)		
Melpetra	tetraploid	Hood River Seed													83									-		
Orantas	diploid	DLF Pickseed							82															-		
Ortet	tetraploid	Oregro Seeds						114																-		
PayDay	tetraploid	Mountain View Seeds										101	103	99	87	108	97							99(6)		
Polly II	tetraploid	FS Growmark																110				125		118(2)		
Polly Plus	hybrid tetraploid	Allied Seed	64																				60	62(2)		
Power	tetraploid	Ampac Seed					110	103	102	100	109	104	95	101	107									104(9)		
Polim	tetraploid	DLF Pickseed								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																		-		

continued

Table 11. Summary of Kentucky festulolium yield trials 2001-2020 (yield shown as a percentage of the mean of the commercial varieties in the trial),¹

Variety	Type ²	Proprietor	Lexington													Mean ⁵ (#trials)		
			2001 ^{3,4}	2005	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017				
			2yr ⁶	3yr	3yr	3yr	3yr	3yr	2yr	3yr	2yr	3yr	3yr	3yr				
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				93(11)
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				100(8)
Gain	MF x IR	Allied Seed					103	77	52	75								77(4)
Hostyn	MF x IR	DLF Pickseed								107	110	106		108				108(4)
Hykor	(TF x IR) x TF	DLF Pickseed					133	141	153	131	119	121	112					130(7)
InaMerlin	MF x IR	Hood River Seed												88	77			83(2)
Kenfest	MF x AR	KY Agr. Exp Station														97		–
Lofa	(TF x Int) x Int	DLF Pickseed					105	107	110	128	112	91	109	108				109(8)
Mahulena	(TF x IR) x TF	DLF Pickseed								131	109	107		111	114			114(5)
Meadow Green	– ⁷	Pure Seed								37	34							36(2)
Perseus	MF x IR	DLF Pickseed					132	114	126	123	110	109	105	112				116(8)
Perun	MF x IR	DLF Pickseed					127	114	107	131	110	102	99	110				113(8)
Rebab	(TF x IR) x TF	DLF Pickseed								94	77							86(2)
Spring Green	MF x PR	Turf-Seed	96	111	114	101	113	112	114	110	103	107	92	94				106(12)
Sweet Tart	MF x IR	ProSeeds Marketing			88		82	63	62									74(4)

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 2012 was harvested 3 years, so the final report would be “2015 Annual and Perennial Ryegrass and Festulolium Report” archived in the UK Forage website (<https://forages.ca.uky.edu>).

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

⁶ Number of years of data

⁷ Type was not provided by the company.

Table 12. Summary of Kentucky brome grass yield trials at Lexington 2006-2020 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Type	Proprietor/KY Distributor	2006 ^{1,2}	2008	2010	2012	2014	2015	2016	2017	2018	Mean ³ (#trials)
			4yr ⁴	3yr	3yr	3yr	3yr	3yr	4yr	3yr	2yr	
AC Knowles	hybrid	Agriculture Canada	85		82	102	89					89(4)
Admiral	meadow	Cisco Seeds							107	106	105	106(3)
Arid	meadow	Mountain View Seeds							94	93		94(2)
Arsenal	meadow	Barenbrug USA									109	–
Artillery	smooth	Barenbrug USA									99	–
Bigfoot	hybrid	Grassland Oregon	108	116	105							110(3)
Canterbury	mountain	Barenbrug USA		79								–
Carlton	smooth	Pickseed USA				82	95				77	85(3)
Doina	smooth	Barenbrug USA		114	108							111(2)
Fleet	meadow	Agriculture Canada	110			109						110(2)
Hakari	Alaska	Barenbrug USA		85	85							85(2)
MacBeth	meadow	Cisco Seeds		136	119	107	116	107	103	123	102	114(8)
Olga	smooth	Barenbrug USA		116	101							109(2)
Peak	smooth	Allied Seed		97		100		93	95	88	102	96(6)
Persister	prairie	DLF Pickseed		72								–
RAD-BI29	smooth	Columbia Seeds	96	86								91(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 3 years, so the final report would be “2015 Tall Fescue and Brome Report” archived in the UK Forage website (<https://forages.ca.uky.edu>).

³ Mean only presented when respective variety was included in two or more trials.

⁴ Number of years of data

Table 15. Summary of Kentucky pearl millet yield trials 2013-2020 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/ KY Distributor	Lexington								Princeton				Mean ³ (#trials)
		2013 ^{1,2}	2014	2015	2016	2017	2018	2019	2020	2017	2018	2019	2020	
All trials are 1 year yields														
Epic BMR	Coffey Seed							97	93			99	96	96(4)
Exceed BMR	Coffey Seed							89	103			102	90	96(4)
FSG 300 Hybrid	Farm Science Genetics			109	99	109				117				109(4)
FSG 315 BMR ⁴ (Dwarf)	Farm Science Genetics			101	102	81				97				95(4)
Leafy22 Hybrid	Turner Seed				105	124	108	108	113	115	100	116	111	111(9)
Millex32	S&W Seed Company								110				111	111(2)
PearlMil	Dyna-Gro Seed							103	113			110	100	107(4)
Pennleaf Hybrid	Pennington Seed	93	91	94	96	87	98	100	95	84	93		90	93(11)
PP102M Hybrid	Cisco Seeds	93	93	90	79	90	91	97	92	77	104	95		91(11)
Prime360	Byron Seed							91	90			103	96	95(4)
SS1562M BMR	Southern States							103	94			95	95	97(4)
SS501	Southern States	90	99	96	86	94	94			89	96			93(8)
SS635	Southern States	108	112	101	116	94	110	108	105	107	115	105	110	108(12)
Sweet Summer	Cisco Seeds						86	95	97		85	104	91	93(6)
Tifleaf III Hybrid	Gayland Ward Seed	116	106	108	116	120	113	119	95	114	112	111	101	111(12)
Wonderleaf	Advanta Seed/Ramer Seed							98	100		100	107	109	103(5)

¹ Establishment year.

² Use this summary table as a guide in making variety decisions, but refer to specific tables in this report to determine statistical differences in forage yield between varieties.

³ Mean only presented when respective variety was included in two or more trials.

⁴ BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

Table 16. Summary of Kentucky forage sorghum yield trials 2013-2020 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/KY Distributor	Lexington								Princeton			Mean ³ (#trials)	
		2013 ^{1,2}	2014	2015	2016	2017	2018	2019	2020	2017	2019 ⁴	2019		
All Trials are 1 year yields														
ADVF7232 BMR ⁵	Advanta Seed/Ramer Seed								88	92		93	84	88(3)
AF7201 BMR	Advanta Seed/Ramer Seed	89	81	101	89				94	84		74	83	89(7)
AF7203 BMR (Brachytic Dwarf)	Advanta Seed/Ramer Seed								48		70			59(2)
AF7401 BMR (Brachytic Dwarf)	Advanta Seed/Ramer Seed	76	94	90	83	86	72		85	77	116	87	100	88(10)
AF8301	Advanta Seed/Ramer Seed								98	103		124	85	95(3)
Ensilemaster	Caudill Seed	125	90	101	106	111	129	118	129	171	77	85		117(10)
FSG114 BMR	Farm Science Genetics		94	128	93	125	91	76	91	71	89	79		94(9)
FSG115 BMR (Brachytic Dwarf)	Farm Science Genetics		51	31	72	81	74	67	77	72	60	74		66(9)
F74FS23 BMR	Dyna-Gro Seed								125	94		77	76	98(3)
F74FS72 BMR	Dyna-Gro Seed								93	87		59	117	99(3)
F75FS13	Dyna-Gro Seed								107	94		109	84	95(3)
GW2120	Gayland Ward Seed	117	89	113	84	107	88	102	91	85	98	115		99(10)
GW400 BMR	Gayland Ward Seed	93	79	128	78	91	88	83	85	42				85(9)
GW475 BMR	Gayland Ward Seed						80	99	84					88(3)
GW600 BMR	Gayland Ward Seed		107	111	90		90	100	84					97(6)
KFFiber-Pro70FS	Byron Seed					65	53				70			63(3)
NK300	S&W SeedCompany		126	110	101	116	135	84	104	119				112(8)
SD1741 BMR	S&W SeedCompany		133	92	103	81	84	95		94				97(7)
SilageKing BMR (Dwarf)	Gayland Ward Seed		48											-
SiloPro BMR (Dwarf)	Gayland Ward Seed			24	74		63							54(3)
SP1615	S&W SeedCompany								125		164	170		148(2)
SP3904 BMR (Brachytic Dwarf)	S&W SeedCompany								88					-
SP3905 BMR (Brachytic Dwarf)	S&W SeedCompany								81					-
SS1515	Southern States								125	105		97	75	102(3)
SS304	S&W SeedCompany								121					-
SS405	Chromatin		188	183	207	138	202	139	143	160	142	171		170(9)
Super Sile 20	Dyna-Gro Seed								107	120		106	124	120(3)
Super Sile 30	Dyna-Gro Seed								121	115		129	104	113(3)
TopTon	Dyna-Gro Seed								131	130		84	73	111(3)
XF7203 BMR (Brachytic Dwarf)	Advanta Seed/Ramer Seed					74	73							74(2)
1990	S&W SeedCompany		121	89	118	125	177	113			131			125(7)

¹ Establishment year.

² Use this summary table as a guide in making variety decisions, but refer to specific tables in this report to determine statistical differences in forage yield between varieties.

³ Mean only presented when respective variety was included in two or more trials.

⁴ This trial was sprayed with an aphicide and the results are not included in the overall mean.

⁵ BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

Table 17. Summary of Kentucky teff yield trials 2008-2020 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Lexington										Princeton				Mean ³ (#trials)	
	2008 ^{1,2}	2009	2010	2011	2012	2013	2014	2015	2016	2019	2020	2008	2009	2019		2020
	All Trials are 1 year yields															
Corvallis	81	101	91	101	96	100	110	96	102	110	116	94	112	99	112	101(15)
CW0604										101	100			97	103	100(4)
Dessie	99	92	96	94	95	97	101	104	105	89	109	102	87	101	98	98(15)
Excaliber	109	104	125	108	106	103						109	111			109(8)
Highveld	100	121	106	101	109	103	102					111	115			108(9)
HorseCandi	99	105	89	108	94	97	80	104	82	86	95	91	84	103	104	95(15)
Moxie						94	96	105	107	110	105			95	101	102(8)
Pharaoh	105	85	106	106	97	101	93	97	94	102	90	95	101	107	104	99(15)
Rooiberg	112	109	113	108	115	102	88					102	107			106(9)
Summer Delight		91	96	88	93	100	119	101	104	91	90		90	99	90	97(13)
Tiffany	102	93	82	93	102	98	104	97	105	110	101	102	106	104	98	100(15)
VA T1 Brown		99	87	91	94	98	104	97	101	100	97		89		93	96(12)
Velvet		100	97	98	95	103	95	99	100	101	98		94	96	98	98(13)
Witkope	93	101	115	103	101	104	107					94	100			102(9)

¹ Establishment year.

² Use this summary table as a guide in making variety decisions, but refer to specific tables in this report to determine statistical differences in forage yield between varieties.

³ Mean only presented when respective variety was included in two or more trials.

Table 18. Summary of Kentucky crabgrass yield trials 2016-2020 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/ KY Distributor	Lexington				Princeton		Mean ³ (#trials)
		2016 ^{1,2}	2018	2019	2020	2019	2020	
		All trials are 1 year yields						
Impact	Barenbrug USA	107	107	108	108	105	100	106(6)
Mojo	Barenbrug USA				98		97	98(2)
Quick-N-Big	Noble foundation	89	85	81	95	99	101	92(6)
Red River	Noble foundation	104	108	110	99	96	102	103(6)

¹ Establishment year.

² Use this summary table as a guide in making variety decisions, but refer to specific tables in this report to determine statistical differences in forage yield between varieties.

³ Mean only presented when respective variety was included in two or more trials.

Table 19. Summary of Kentucky spring oats yield trials 2015-2020 (planted mid March to early April) [yield shown as a percentage of the mean of the commercial varieties in the trial].

Variety	Proprietor/ Distributor	2015 ^{1,2}	2016	2017	2018	2019	2020	Mean ³ (#trials)
		All trials are 1 year yields						
BCO18006	Seed-Link Inc.						90	
BCO18007	Seed-Link Inc.						82	
CCSO-102	Caldbeck Consulting				95	102	104	100(3)
CCSO-120 (black hulled)	Caldbeck Consulting				106	106	91	101(3)
Common	Central Farm Supply	89						
Excel	Ag. Alumni Seed, IN	120	101	111	107	115	125	113(6)
Haywire	Cisco Seeds					81	98	90(2)
Jery	Caudill Seed	107	93	103	99	95	119	103(6)
Persik (black hulled)	Caldbeck Consulting		112	114	127	106	101	112(5)
PST-241	Caldbeck Consulting	91	86	86	86			87(4)
PST50200	Caldbeck Consulting	102	90	87	79			90(4)
PST50-288C	Caldbeck Consulting	91	102	88	97			95(4)
Reins	Ag. Alumni Seed, IN	94			102		98	98(3)
Robust	Ag. Alumni Seed, IN	104	111	117	102	94		106(5)
Saber	Ag. Alumni Seed, IN	104			100	97		100(3)
VNK	Public		97	107	101	94	92	98(5)
021A17815	Ag. Alumni Seed, IN	97	108	87				97(3)

¹ Establishment year.

² Use this summary table as a guide in making variety decisions, but refer to specific tables in this report to determine statistical differences in forage yield between varieties.

³ Mean only presented when respective variety was included in two or more trials.

Table 22. Summary of 2000-2020 Kentucky tall fescue grazing tolerance trials in Lexington (stand persistence shown as a percent of the stand rating of KY 31+).

Variety	Endophyte Status ¹	Proprietor	2000- ^{2,3}	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Mean ⁴	
			4yr ⁵	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	3yr	(#trials)
Advance MaxQ	novel	Pennington Seed							94													
Baguala	free	Allied Seed																99				
Bariane	free	Barenbrug USA				89		75	47	29												60(4)
BarElite	free	Barenbrug USA								96												
Barolex	free	Barenbrug USA						78	101	86												88(3)
BarOptima PLUS E34	novel	Barenbrug USA						100		97			98	100	98	100	100	100	100	96		99(10)
Bronson	free	Ampac Seed										98	98						100	98		99(3)
Bull	free	Caudill Seed														96						98(3)
Cajun II	free	Smith Seed Services											98				97	100	100	99		99(5)
Cattle Club	free	Green Seed	93	91																		92(2)
Carmine	free	DLF-Jenks		90																		
Cowgirl	free	Rose Agri-Seed					99								99							99(2)
Dominate	free	Allied Seed																				
Drover	free	Barenbrug USA																				
Festival	free	Pickseed West		100	101																	
FSG 402TF	free	Farm Service Genetics																				97(3)
Flourish	free	Allied Seed													98							
Goliath	free	Ampac Seed											98						100			99(2)
Hoedown	free	DLF-Jenks	88																			
HyMark	free	Fraser Seeds									95			100								98(2)
Jesup MaxQ	novel	Pennington Seed			103	97		68	102	97	97	99	98	100	99	99	99	100	100	100		97(15)
Johnstone	free	Proseeds		92																		
KY31+	toxic	KY Agri. Exp Sta.	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		100(18)
KY31-	free	KY Agri. Exp Sta.		98	103	98	100	83	101	100	98	99	99	100	100	99	100	100	100	99		99(17)
Kokanee	free	Ampac Seed	43																			
Lacefield MaxQ II	novel	Pennington Seed						82	102	99	98	98	97			100	99	100	100	99		97(11)
Maximize	free	Rose Agri-Seed		99																		
Nanryo	free	Japanese Grassland For.Seed								100												
Orygun	free	-																				
Ranchero	free	Smith Seed Services			99																	
Resolute	free	Ampac Seed																				98
Select	free	Southern States	107	101	100	100		67	100	93	95	97	100	100	99	99	99	101	100	99		97(16)
SS0705TFLS	free	Southern States															100	100	100	99		100(4)
Stargazer	free	Southern States																				88(2)
Stockman	free	Seed Res. of OR					102															
Texoma MaxQ II	novel	Pennington Seed						88	100	98												95(3)
Tuscany II	free	Seed Res. of OR							101													
Verdant	free	Am.Grass Seed							97													

¹ Free-varieties that do not contain an endophyte. Toxic-KY31+ contains a toxic endophyte. Novel-varieties that contain an endophyte that aids persistence but is not toxic to cattle.

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 stand persistence between varieties. To find actual persistence ratings, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2010 was grazed 4 years so the final report would be "2014 Cool-Season Grass Grazing Tolerance Report" archived in the UK Forage website (<https://forages.ca.uky.edu>).

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

⁵ Number of years of data

Table 23. Summary of 2000-2020 Kentucky orchardgrass grazing tolerance trials in Lexington (stand persistence shown as a percent of the mean of the commercial varieties in the trial).

Variety	Proprietor	2000 ^{1,2}		2001		2002		2003		2004		2005 ³		2007		2009		2010		2011		2012		2013		2014		2015		2016		2017		Mean ⁴ (#trials)				
		4yr ⁵	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr						
Abertop	Pennington Seed			38																																		
Albert	Univ. of Wisconsin		115																																			
Amba	DLF-Jenks		71																																			
Ambrosia	Pennington Seed											94																										
Athos	DLF-Jenks		93								60																											
Benchmark	Southern States		118	123	114																																118(3)	
Benchmark Plus	Southern States			120	120							152	135	106	106	106	108	115	146	154																	121(7)	
Boone	Public		102																																			
Command	Seed Research of OR									81																												
Crown Royale	Donley Seed		100																																			
Crown Royale Plus	Donley Seed					124																																
Devour	Mountain View Seeds																																					
Elise	Pure Seed																																					80(2)
Hallmark	James VanLeeuwen		115					113																													114(2)	
Harvestar	Columbia Seeds																																				70(5)	
Haymate	Southern States		53	115	100	118									75	89	94																				97(4)	
Intensiv	Barenbrug USA					51																																
Mammoth	DLF-Jenks		115																																			
Megabite	Turf Seed		77																																			
Niva	DLF-Jenks																																					
Persist	Smith Seed																																					
Potomac (certified)	Public																																					
Prairie	Turner Seed		127	121																																		
Prodigy	Caudill Seed																																					
Profile	Scott Seed																																					
Profit	Ampac Seed																																					
Tekapo	Ampac Seed		55	74	118																																	
Takena	Smith Seed		99																																			
Seco	Southern States																																					
SS07080GDT	Southern States																																					

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 stand persistence between varieties. To find actual persistence ratings, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2010 was grazed 4 years so the final report would be "2014 Cool-Season Grass Grazing Tolerance Report" archived in the UK Forage website (<https://forages.ca.uky.edu>).

3 Due to high variation during 2005 and 2013 trials these values are not included in the overall mean

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

5 Number of years of data

Stand thinning may have been greater for preferred varieties due to closer grazing. See individual trial tables for preference ratings.

Table 24. Summary of 2000-2020 Kentucky perennial ryegrass and festulolium (FL) grazing tolerance trials in Lexington (stand persistence shown as a percent of the mean of the commercial varieties in the trial).

Variety	Type	Proprietor	2000 ^{1,2}	2001	2003	2007	2008	2010	2011	2012	2013	2014	2015	2016	2017	Mean ³ (#trials)
			4yr ⁴	3yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	3yr	
AGRLP103	–	AgResearch USA	128		86											107(2)
Albion	tetraploid	Grassland Oregon											120			–
Aries	diploid	Ampac Seed		139												–
Barfest (FL)	MF x PR ⁶	Barenbrug USA						116	112							114(2)
Barvitra	diploid	Barenbrug USA											35			–
BG-34	diploid	Barenbrug USA											83			–
Boost	tetraploid	Allied Seed					101	83	95	104						96(4)
Calibra	tetraploid	DLF International								120		88	97	98		101(4)
Citadel	tetraploid	Donley Seed	107													–
Duo (FL)	MF x PR ⁶	Ampac Seed	116				95	72	90	115			70	65		89(7)
Lasso	diploid	DLF-Jenks		130												–
Linn (certified)	diploid	Public	112	129	63		95	108	95	103	96	80	74	88	75	93(12)
Maverick	tetraploid	Ampac Seed		36												–
Meadow Green (FL)	MF x IR ⁶	Pure Seed								15						–
Melpetra	tetraploid	Hood River Seed												90		–
PayDay	tetraploid	Mountain View Seeds									101	85			101	96(3)
Polly II	tetraploid	FS Growmark	36	68												52(2)
Power	tetraploid	Ampac Seed				158		107	112	109	89	79	83			105(7)
Quartet	tetraploid	Ampac Seed		77		59										68(2)
Remington	tetraploid	Barenbrug USA			151							138	180	169	133	154(5)
Remington PLUS NEA2 ⁵	tetraploid	Barenbrug USA										145	171			158(3)
Spring Green (FL)	MF x PR ⁶	Rose Agri-Seed	101				109	115	115	120			87	88		105(7)
TetraGain	tetraploid	Pure Seed								112					72	–
Victorian	diploid	Caudill Seed									114				119	117(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 stand persistence between varieties. To find actual persistence ratings, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2010 was grazed 4 years so the final report would be "2014 Cool-Season Grass Grazing Tolerance Report" archived in the UK Forage website (<https://forages.ca.uky.edu>).

³ Mean only presented when respective variety was included in two or more trials.

⁴ Number of years of data

⁵ Remington PLUS NEA2 contains a non-toxic (novel) endophyte.

⁶ MF = meadow fescue, PR = perennial ryegrass, IR = Italian ryegrass.

Table 25. Summary of 2001-2020 Kentucky tall fescue horse grazing tolerance trials with three or more years of data in Lexington (stand persistence shown as a percent of the stand rating of the endophyte free variety KY 31-).

Variety	Endophyte Status ¹	Proprietor/KY Distributor	2001 ^{2,3}		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		Mean ⁴ (#trials)			
			4yr ⁵	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr		4yr		
BarOptima PLUS E34 ⁶	novel	Barenbrug USA													107						101	101	101	95	104	99	101	99	101	101	100	101	100	101(9)						
Cajun II	free	Smith Seed Services																							96										99(2)					
Cowgirl	free	Rose Agri-Seed															105							99												102(2)				
Jesup MaxQ	novel	Pennington Seed								78							104				100	101	97		105	98	100	99								98(12)				
Johnstone	free	ProSeeds Marketing			88																																			
KY31+	toxic	KY Agri. Exp.Sta.			105					102							107				101	101	99		105	99	100	101									104(14)			
KY31-	free	KY Agri. Exp.Sta.			100					100							100				100	100	100		100	100	100	100									100(17)			
Lacefield MaxQ II	novel	Pennington Seed												105	110																						102(7)			
Nanryo	free	Japanese Grassland Forage Seed													72																									
Seine	free	Seed Research of Oregon							135																															
Select	free	Southern States											73	104	76		108				100	101	98		98	97	100											96(15)		
SS0705TFSL	free	Southern States																																						
Stockman	free	Seed Research of Oregon								125																														100(4)

¹ Free-varieties that do not contain an endophyte. Toxic-KY31+ contains a toxic endophyte. Novel-varieties that contain an endophyte that aids persistence but is not toxic to cattle.

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 stand persistence between varieties. To find actual persistence ratings, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2010 was grazed 4 years so the final report would be "2014 Cool-Season Grass Horse Grazing Tolerance Report" archived in the UK Forage website (<https://forages.ca.uky.edu>).

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

⁵ Number of years of data

⁶ BarOptima PLUS E34 is not recommended for pregnant mares because it produces low levels of the alkaloid ergovaline.

Table 26. Summary of 1999-2020 Kentucky orchardgrass horse grazing tolerance trials with three or more years of data in Lexington (stand persistence shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/KY Distributor	1999 ^{1,2}	2000	2001	2002	2005 ³	2006	2009	2010	2011	2012	2013	2014	2015	2016 ³	2017	Mean ⁴ (#trials)
		3yr ⁵	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	3yr		
Albert	Univ. of Wisconsin			95													–
Ambrosia	Amer.Grass Seed Prod.						61										–
Benchmark	Southern States	104			85												95(2)
Benchmark Plus	Southern States				111	157	139	111	114	121	121	137	105				120(8)
Crown Royale	Grassland Oregon			95													–
Crown Royale Plus	Grassland Oregon				97												–
Elise	Pure Seed										87						–
Haymate	Southern States	96	85		97												93(3)
Persist	Smith Seed Services					114		103	101	92	112	146	95	123	109	115	111(9)
Potomac	Public				117											80	–
Prairie	Turner Seed			100									92	95	108		99(4)
Prodigy	Caudill Seed											54					–
Profit	Ampac Seed							93	86		92		108				95(4)
SS-0708OGDT	Southern States									104			92	77	95	97	93(5)
Tekapo	Ampac Seed	101	115		93	30		92	100	83	87	63		108			94(9)

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 stand persistence between varieties. To find actual persistence ratings, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2010 was grazed 4 years so the final report would be "2014 Cool-Season Grass Horse Grazing Tolerance Report" archived in the UK Forage website (<https://forages.ca.uky.edu>).

³ Due to high variation during 2005 these values are not included in the overall mean

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

⁵ Number of years of data



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