



# 2019 Long-Term Summary of Kentucky Forage Variety Trials

G.L. Olson, S.R. Smith, J. C. Henning, and C.D. Teutsch, Plant and Soil Sciences

## Introduction

Forage crops occupy approximately 7 million acres in Kentucky. Forages provide a majority of the nutrition for beef, dairy, horse, goat, sheep, and wild-life in the state. In addition, forage crops play an environmentally friendly 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 12 to 15 years. Detailed variety reports and forage management publications are available from your local county agent or at the University of Kentucky forage website at [forages.ca.uky.edu](http://forages.ca.uky.edu) by clicking on the "Forage Variety Trial" link.

## Species in this Report

**Red clover** (*Trifolium pratense* L.) 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* L.) 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** (*Dactylus 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. This grass, used for both hay and pasture, is the forage base for most of Kentucky's livestock enterprises, particularly beef cattle. 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

List of Tables	Page
Table 1. White Clover Yield .....	4
Table 2. Red Clover Yield .....	5
Table 3. Alfalfa Yield .....	6
Table 4. Roundup Ready Alfalfa Yield .....	8
Table 5. Tall Fescue Yield .....	9
Table 6. Orchardgrass Yield .....	10
Table 7. Timothy Yield .....	12
Table 8. Kentucky Bluegrass Yield .....	13
Table 9. Annual Ryegrass Yield .....	14
Table 10. Perennial Ryegrass Yield .....	15
Table 11. Festulolium Yield .....	17
Table 12. Bromegrass Yield .....	17
Table 13. Sudangrass Yield .....	18
Table 14. Sorghum-Sudangrass Yield .....	18
Table 15. Pearl Millet Yield .....	19
Table 16. Forage Sorghum Yield .....	20
Table 17. Teff Yield .....	20
Table 18. Crabgrass Yield .....	21
Table 19. Spring Oats Yield .....	21
Table 20. White Clover Grazing .....	22
Table 21. Alfalfa Grazing .....	23
Table 22. Tall Fescue Grazing .....	24
Table 23. Orchardgrass Grazing .....	25
Table 24. Perennial Ryegrass/Festulolium Grazing ..	26
Table 25. Tall Fescue Horse Grazing .....	27
Table 26. Orchardgrass Horse Grazing .....	28

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 grasses used in Kentucky. Both have exceptionally high seedling vigor and are highly palatable to livestock. Annual ryegrasses (both Italian and Westerwolds type) 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 grass used in Kentucky for forage after tall fescue, orchardgrass, and Kentucky bluegrass. Timothy is primarily harvested as hay, particularly for horses. In Kentucky, timothy behaves like a short-lived perennial, with stands usually lasting two years.

**Kentucky bluegrass** (*Poa pratensis*) is a high-quality, highly palatable, long-lived pasture plant with limited use for hay. It tolerates close, frequent grazing better than most grasses. It has low yields and low summer production and becomes dormant and brown during hot, dry summers. Kentucky bluegrass is best suited for pastures where a dense sod is more important than high-forage production (e.g., horse pastures).

**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 limited because they do not survive as long as tall fescue. Newer varieties show promise where high quality and yield are more important than long-term persistence.

**Bromegrasses** have several advantages over tall fescue, including retaining quality as they mature and better growth during dry weather, but they are generally less well adapted in Kentucky.

Smooth bromegrass (*Bromus inermis* Leyss) is a perennial pasture and hay grass native to Europe. It has creeping underground stems or rootstocks from which the leafy stems arise. Smooth bromegrass is palatable to all classes of livestock, from emergence to the heading stage. Meadow bromegrass (*Bromus biebersteinii* Roem. & Schult) is a native of southeastern Europe and the adjacent Near East. It resembles smooth bromegrass but has only short rhizomes or none at 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 during the

spring and summer season. It does not spread by rhizomes and is more suited to environments with harsh winters. Prairie bromegrass (*Bromus wildenowii*) 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, and to maintain productive stands for several years, it is necessary to manage at least one growth cycle each year for seed production and natural reseeding. 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. Sudangrass regrows quickly after harvest and can be grazed 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, which are leafier and better suited for grazing, are available.

**The brown midrib or BMR trait** is outward expression of a 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 increasing animal production. Therefore, it is

desirable 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 tannish in color.

**Teff**, also referred to as summer lovegrass (*Eragrostis tef*), is a warm-season annual grass native to Ethiopia and has been used as a grain crop for thousands of years. Recently, there has been considerable interest in teff as a forage crop. It is high quality, palatable, and fine stemmed and therefore makes excellent hay.

**Crabgrass** (*Digitaria sanguinalis*) is a warm season annual which propagates by seed. It is adapted to many soil types. Crabgrass can be utilized by either grazing or haying and is one of the highest quality warm season forages at a vegetative stage.

## Important Selection Considerations

### Local adaptation and seasonal yield.

Choose a variety/species that is adapted to your region of Kentucky, as indicated by good performance across years and locations in replicated yield trials. Also, look for varieties that are productive in the desired season of use. For management recommendations, check with your county Extension agent or see the forage website at [www.uky.edu/Ag/Forage](http://www.uky.edu/Ag/Forage).

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)

**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. 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 to simulate a spring cut hay/summer grazing/fall stockpile management system. 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 check stand survival 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.

## 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. 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 grazing trials, varieties with percentages over 100 persisted better than average, and varieties with percentages less than 100 persisted less than average. Also in the grazing trials, the alfalfa varieties were compared to Alfagraze, and the fescue varieties were compared to KY31+ instead of the mean of all the commercial varieties. In the horse grazing trials, the fescue varieties were compared to KY31- instead of the mean of all the commercial varieties. Direct, statistical comparisons of varieties cannot be made using the summary tables, but these comparisons do help to identify varieties for further consideration. Varieties that have performed better than average over many years and at several locations have very stable performance; others may have performed very well in wet years or on particular soil types. These details may influence variety choice, and the information can be found in the yearly reports. See 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 2019 reports on the forage website. See below for specific reports. The forage website ([forages.ca.uky.edu](http://forages.ca.uky.edu)) contains all reports from 2001 through 2019.

## Yield and Grazing Tolerance Reports

Individual forage species reports can be found at [www.uky.edu/Ag/Forage/ForageVarietyTrials2.htm](http://www.uky.edu/Ag/Forage/ForageVarietyTrials2.htm).

- 2019 Alfalfa Report (PR-763)
- 2019 Red and White Clover Report (PR-764)
- 2019 Orchardgrass Report (PR-765)
- 2019 Tall Fescue and Bromegrass Report (PR-766)
- 2019 Timothy and Kentucky Bluegrass Report (PR-767)
- 2019 Annual and Perennial Ryegrass and Festulolium Report (PR-768)
- 2019 Alfalfa Grazing Tolerance Report (PR-769)
- 2019 Red and White Clover Grazing Tolerance Report (PR-770)
- 2019 Cool-Season Grass Grazing Tolerance Report (PR-771)
- 2019 Cool-Season Grass Horse Grazing Report (PR-772)
- 2019 Annual Grass Report: Warm Season and Cool Season (Cereals) (PR-773)
- 2019 Long-Term Summary of Kentucky Forage Variety Trials (PR-774)

## About the Authors

G.L. Olson is a research specialist, S.R. Smith and J.C. Henning are Extension professors and forage specialists, and C.D. Teutsch is an Extension associate professor and forage specialist.











**Table 4. Summary of Kentucky Roundup Ready alfalfa yield trials 2011-2019 (yield shown as a percentage of the mean of the commercial varieties in the test).**

Variety	Proprietor	Variety Characteristics <sup>1</sup>						Lexington			Princeton			Quicksand	Mean <sup>5</sup> (# trials)
		FD	Disease Resistance <sup>2</sup>					12 <sup>3,4</sup>	15	16	11	13	15	14	
			Bw	Fw	An	PRR	APH	6yr <sup>6</sup>	5yr	3-yr	5yr	4yr	2yr	2yr	
Alfagraze 300 RR	America's Alfalfa	3	HR	R	HR	HR	HR	95	95	101	93	99	93		96(6)
Alfagraze 600 RR	America's Alfalfa	6		R	HR	R	R		99				85	93	92(3)
Ameristand 405T RR	America's Alfalfa	4	HR	HR	HR	HR	HR	100	101	91	97	100	98	93	97(7)
Ameristand 433T RR	America's Alfalfa	3	HR	R	R	HR	HR	92	98	100		95	96	107	98(6)
Ameristand 445TQ RR	America's Alfalfa	4	HR	HR	HR	HR	HR	105	104			100			103(3)
AphaTron RR	Croplan Genetics	4	HR	HR	HR	HR	HR	99				98			99(2)
Consistency 4.10 RR	Croplan Genetics	4	HR	HR	HR	HR	HR	101			102				102(2)
DKA-41-18 RR	Monsanto	4	HR	HR	HR	HR	HR	100			101		100		100(3)
DKA 44-16 RR	Monsanto	4	HR	HR	HR	HR	HR	104				100			102(2)
Stratica RR	Croplan Genetics	4	HR	HR	HR	HR	HR	97		104		96			99(3)
Tonnica RR	Crop Genetics	5	HR	HR	HR	HR	HR	105				101			103(2)
WL 355 RR	W-L Research	4	HR	HR	HR	HR	HR	99			102		110		104(3)
WL 356HQ RR	W-L Research	5	HR	HR	HR	HR	HR	100	98			96			98(3)
WL 372HQ RR	W-L Research	5	HR	HR	HR	HR	HR	102				106			104(2)
428 RR	Allied Seed	4	HR	HR	HR	HR	HR		99	99		104		111	103(4)
54R02 RR	Dupont Pioneer	4	HR	HR	HR	HR	HR	97	108	96	104		102	97	101(6)
55VR06 RR	Dupont Pioneer	5	HR	R	Hr	HR	HR		94					99	97(2)
55VR08 RR	Dupont Pioneer	5	-	HR	HR	HR	HR		104	109			110		108(3)
6516R RR	NEXGROW	5	HR	-	HR	HR	HR	106				109			108(2)

<sup>1</sup> 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.

<sup>2</sup> 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](http://www.alfalfa.org/pdf/2019_Alfalfa_Variety_Leaflet.pdf).

<sup>3</sup> Year trial was established.

<sup>4</sup> 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 Princeton trial planted in 2011 was harvested for five years, so the final yield report would be "2015 Alfalfa Report" archived in the UK Forage website at [forages.ca.uky.edu](http://forages.ca.uky.edu).

<sup>5</sup> Mean only presented when respective variety was included in two or more trials.

<sup>6</sup> Number of years of data.









**Table 7. Summary of Kentucky timothy yield trials 2000-2019 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

Variety	Proprietor/KY Distributor	Lexington															Quicksand		Princeton		Mean <sup>3</sup> (#trials)
		00 <sup>1,2</sup>	01	02	06	07	08	09	11	12	13	14	15	16	17	99	01	00	04		
		2yr <sup>4</sup>	3yr	4yr	3yr	3yr	3yr	3yr	3yr	3yr	3yr	3yr	3yr	3yr	2yr	2yr	2yr	2yr			
Alma	Newfield Seeds/Caudill Seed																	81	-		
Anjo	Hood River Seed													81					-		
Aurora	General Feed and Grain	100														98			99(2)		
Barfleo	Barenbrug USA							95	91	101		108	80	97	98				96(7)		
Barpenta	Barenbrug USA					74			82	82					98				84(4)		
Clair	KY Ag. Exp. Station		104	113	107	95	107	104	112	99	97	111	107	88	94		106	122	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		99	101(5)		
Common	Public		95																-		
Comtral	Caudill Seed									92	92								92(2)		
Dawn	Hood River Seed														101				-		
Derby	Southern States				112	111		106	112	108	112	119	123	112				124	113(10)		
Dolina	DLF Pickseed	99		90															95(2)		
Express	Seed Research of Oregon			95		91		97	95										95(4)		
Hokuei	Snow Brand Seed	103																	-		
Hokusei	Snow Brand Seed	96														99			98(2)		
Joliette	Newfield Seeds/Caudill Seed						86	89										90	88(3)		
Jonaton	Newfield Seeds/Caudill Seed																	84	-		
KY Early	Smith Seed/Central Farm Supply	102	103	115			102				119				115	104	103		108(8)		
Outlaw	Grassland West Company																107		-		
Richmond	Pickseed Canada Inc.	100														103			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)		

<sup>1</sup> Year trial was established.

<sup>2</sup> Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2012 was harvested three years, so the final report would be "2015 Timothy and Kentucky Bluegrass Report" archived in the UK Forage website at [forages.ca.uky.edu](http://forages.ca.uky.edu).

<sup>3</sup> Mean only presented when respective variety was included in two or more trials.

<sup>4</sup> Number of years of data.

**Table 8. Summary of Kentucky bluegrass yield trials at Lexington 2004-2019 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

Variety	Proprietor/ KY Distributor	04 <sup>1,2</sup>	06	07	08	09	10	11	12	13	14	16	17	Mean <sup>3</sup> (#trials)
		3yr <sup>4</sup>	4yr	3yr	3yr	3yr	3yr	3yr	3yr	3yr	3yr	3yr	2yr	
Adam 1	Radix Research	98												-
Balin	Pure Seed												99	-
Barderby	Barenbrug USA			94		101	91	98	87	103	101	103	123	100(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	117	110(11)
Kenblue	Public	102	133				96	95	118	95	100			106(7)
Lato	Turf Seed Inc.			122										-
Park (certified)	Public								90	95	104	117	84	98(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	77	78(2)

<sup>1</sup> Year trial was established.

<sup>2</sup> Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2012 was harvested three years, so the final report would be "2015 Timothy and Kentucky Bluegrass Report" archived in the UK Forage website at [forages.ca.uky.edu](http://forages.ca.uky.edu).

<sup>3</sup> Mean only presented when respective variety was included in two or more trials.

<sup>4</sup> Number of years of data.









**Table 11. Summary of Kentucky festulolium yield trials 2001-2019 (yield shown as a percentage of the mean of the commercial varieties in the trial).<sup>1</sup>**

Variety	Type <sup>2</sup>	Proprietor	Lexington													Mean <sup>5</sup> (#trials)		
			2001 <sup>3,4</sup>	2005	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017				
			2yr <sup>6</sup>	3yr	3yr	3yr	3yr	3yr	2yr	3yr	2yr	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	81				94(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	95				99(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				–
Kenfest	MF x AR	KY Ag. Exp. Station														100		–
Lofa	(TF x Int) x Int	DLF Pickseed					105	107	110	128	112	91	109	110	110			109(8)
Mahulena	(TF x IR) x TF	DLF Pickseed							131	109	107			111	100			112(5)
Meadow Green	–	Pure Seed							37	34								36(2)
Perseus	MF x IR	DLF Pickseed					132	114	126	123	110	109	105	113	113			117(8)
Perun	MF x IR	DLF Pickseed					127	114	107	131	110	102	99	114	114			112(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	91				105(12)
Sweet Tart	MF x IR	ProSeeds Marketing			88		82	63	62									74(4)

<sup>1</sup> The festuloliums were in fescue trials from 2001-2005 and in perennial ryegrass trials from 2008-2009.

<sup>2</sup> MF = meadow fescue, TF = tall fescue, IR = Italian ryegrass, PR = perennial ryegrass, Int = intermediate ryegrass.

<sup>3</sup> Year trial was established.

<sup>4</sup> Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties.

To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2012 was harvested three years, so the final report would be "2015 Annual and Perennial Ryegrass and Festulolium Report" archived in the UK Forage website at forages.ca.uky.edu.

<sup>5</sup> Mean only presented when respective variety was included in two or more trials.

<sup>6</sup> Number of years of data.

**Table 12. Summary of Kentucky bromegrass yield trials at Lexington 2006-2019 (yield shown as a percentage of the mean of the commercial varieties in the trial.)**

Variety	Type	Proprietor/ KY Distributor	2006 <sup>1,2</sup>	2008	2010	2012	2014	2015	2016	2017	Mean <sup>3</sup> (#trials)
			4-yr <sup>4</sup>	3-yr	3-yr	3-yr	3-yr	3-yr	3-yr	2-yr	
AC Knowles	hybrid	Agriculture Canada	85		82	102	89				89(4)
Admiral	meadow	Cisco Seeds							104	108	106(2)
Arid	meadow	Mountain View Seeds							96	93	95(2)
Bigfoot	hybrid	Grassland Oregon	108	116	105						110(3)
Canterbury	mountain	Barenbrug USA		79							–
Carlton	smooth	Pickseed USA				82	95				91(2)
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	102	111	114(7)
Olga	smooth	Barenbrug USA		116	101						109(2)
Peak	smooth	Allied Seed		97		100		93	96	87	95(5)
Persister	prairie	DLF Pickseed		72							–
RAD-BI29	smooth	Columbia Seeds	96	86							91(2)

<sup>1</sup> Year trial was established.

<sup>2</sup> Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties.

To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2012 was harvested three years, so the final report would be "2015 Tall Fescue and Brome Report" archived in the UK Forage website at forages.ca.uky.edu.

<sup>3</sup> Mean only presented when respective variety was included in two or more trials.

<sup>4</sup> Number of years of data.

**Table 13. Summary of Kentucky sudangrass yield trials 2008-2019 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

Variety	Proprietor/ KY Distributor	Lexington											Princeton			Mean <sup>3</sup> (#trials)		
		2008 <sup>1,2</sup>	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2017	2018		2019	
All trials are 1 year yields																		
AS9301 BMR <sup>4</sup>	Advanta Seeds/ Ramer Seed					118											-	
AS9302 BMR (Brachytic Dwarf)	Advanta Seeds/ Ramer Seed											124	104	102	119	117	115	114(6)
Enorma BMR	Cal/West Seeds			99	94	92	91	83	91	98								93(7)
FSG 1000 BMR	Farm Science Genetics								101	124	110							112(3)
Hayking BMR	Central Farm Supply	111	112	91	97	97	96	92	94	90	80	109		99				97(12)
Monarch V	Public	104	96	102	97	93	98	110	99	82								98(9)
Piper	Public	90	91	97	94	104	105	89	94	85	81	86	93	86	99	88		92(15)
ProMax BMR	Ampac Seed	95	101	110	115	96	103	100	111	111	106	102	101	96	84	87		101(15)
SS130 BMR	Cal/West Seeds			101	103		107	106	110	109	99		93			97		103(9)
Trudan Headless	S & W Seed Company							118						112			113	114(3)

<sup>1</sup> Establishment year.

<sup>2</sup> 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.

<sup>3</sup> Mean only presented when respective variety was included in two or more trials.

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

**Table 14. Summary of Kentucky sorghum-sudangrass yield trials 2008-2019 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

Variety	Proprietor/KY Distributor	Lexington											Princeton			Mean <sup>3</sup> (#trials)		
		2008 <sup>1,2</sup>	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2017	2018		2019	
All trials are 1 year yields																		
AS6401 BMR <sup>4</sup>	Advanta Seeds/ Ramer Seed												84			112		98(2)
AS6402 BMR (Brachytic Dwarf)	Advanta Seeds/ Ramer Seed					91						78	82	67	98	98	91	86(7)
AS6503 BMR	Advanta Seeds/ Ramer Seed						96	103	90									96(3)
AS6504 BMR (Dry Stalk)	Advanta Seeds/ Ramer Seed											105	103		114	112		109(4)
Danny Boy II BMR	Dyna-Gro Seeds													117			110	114(2)
FSG 208 BMR	Farm Science Genetics			75														-
FSG 214 BMR	Farm Science Genetics						99	108	112						109	111		108(5)
FSG 215 BMR	Farm Science Genetics								112									-
Fullgraze II	Dyna-Gro Seeds													100			108	104(2)
Fullgraze II BMR	Dyna-Gro Seeds													97			106	102(2)
F75FS13	Dyna-Gro Seeds													94			76	85(92)
Greengrazer V	Farm Science Genetics			166			122	107	92	103	110							117(6)
GW300 BMR	Gayland Ward Seed				88	78	88	81	73	101	100	98		79				87(9)
HyGain	Turner Seed	104	105	118						110	127	117	121	130	108	121		116(10)
KFSugar-Pro555	Byron Seed											110						-
MS 202 BMR	Farm Science Genetics			106														-
Nutra-King BMR	Gayland Ward Seed								110	108	96	113	118	108	114	105		109(8)
NutraPlus BMR	Public	106	97	94	103	106	109	106	96									102(8)
Sordan Headless	Chromatin							105										-
Special Effort	Public	109	110	93	94	115	120	91	111									105(8)
SS211	Southern States				104	93	114	103	118	111	121	118		109	87			108(10)
SS220 BMR	Southern States		107	84		112												101(3)
Sugar Graze II	Coffey Seed												110			110		110(2)
Surpass BMR	Turner Seed	81	80	64						79	84	75	75	88	97	74		80(10)
Super Sugar	Gayland Ward Seed				102	117	107		125	85				91				105(6)
Super Sugar BMR	Gayland Ward Seed								107									-
Super Sugar (Delayed Maturity)	Gayland Ward Seed							101	82		89	104		95	83			92(6)

Continued



**Table 14. Summary of Kentucky sorghum-sudangrass yield trials 2008-2019 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

Variety	Proprietor/KY Distributor	Lexington											Princeton			Mean <sup>3</sup> (#trials)	
		2008 <sup>1,2</sup>	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2017	2018		2019
All trials are 1 year yields																	
Super Sugar Sterile	Gayland Ward Seed							94									-
Super Sweet 10	Dyna-Gro Seeds												121			118	120(2)
Sweet-For-Ever	Gayland Ward Seed				110	107	81										99(3)
Sweet-For-Ever BMR	Gayland Ward Seed					78	70		77	104	106	83		77	82		85(8)
SweetSix BMR	Gayland Ward Seed						93	101		91							95(3)
SweetSix BMR (Dry Stalk)	Gayland Ward Seed								102		72	107		103	108		98(5)
Vita-Cane	Gayland Ward Seed					121											-
Xtragraze BMR	Coffey Seed												79			70	75(2)

<sup>1</sup> Establishment year.

<sup>2</sup> 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.

<sup>3</sup> Mean only presented when respective variety was included in two or more trials.

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

**Table 15. Summary of Kentucky pearl millet yield trials 2013-2019 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

Variety	Proprietor/KY Distributor	Lexington							Princeton			Mean <sup>3</sup> (#trials)					
		2013 <sup>1,2</sup>	2014	2015	2016	2017	2018	2019	2017	2018	2019						
All trials are 1 year yields																	
Epic BMR <sup>4</sup>	Coffey Seed								97			99					98(2)
Exceed BMR	Coffey Seed									89						102	96(2)
FSG 300 Hybrid	Farm Science Genetics				109	99	109					117					109(4)
FSG 315 BMR (Dwarf)	Farm Science Genetics				101	102	81					97					95(4)
Leafy22 Hybrid	Turner Seed					105	124	108			108	115	100	116			111(7)
PearlMil	Dyna-Gro Seed										103				110		107(2)
Pennleaf Hybrid	Pennington Seed	93	91	94	96	87	98	100	84	93							93(9)
PP102M Hybrid	Cisco Seeds	93	93	90	79	90	91	97	77	104	95						91(10)
Prime360	Byron Seed														103		97(2)
SS1562M BMR	Southern States														103		99(2)
SS501	Southern States	90	99	96	86	94	94					89	96				93(8)
SS635	Southern States	108	112	101	116	94	110	108	107	115	105						108(10)
Sweet Summer	Cisco Seeds							86	95				85	104			93(4)
Tifleaf III Hybrid	Gayland Ward Seed	116	106	108	116	120	113	119	114	112	111						114(10)
Wonderleaf	Advanta Seed/Ramer Seed												98		100	107	102(3)

<sup>1</sup> Establishment year.

<sup>2</sup> 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.

<sup>3</sup> Mean only presented when respective variety was included in two or more trials.

<sup>4</sup> 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 2013-2019 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

Variety	Proprietor/KY Distributor	Lexington							Princeton			Mean <sup>3</sup> (#trials)
		2013 <sup>1,2</sup>	2014	2015	2016	2017	2018	2019	2017	2019 <sup>4</sup>	2019	
All trials are one-year yields												
ADVF7232 BMR <sup>5</sup>	Advanta Seed/Ramer Seed							88		93	84	86(2)
AF7201 BMR	Advanta Seed/Ramer Seed	89	81	101	89			94		74	83	90(6)
AF7203 BMR (Brachytic Dwarf)								48	70			59(2)
AF7401 BMR (Brachytic Dwarf)	Advanta Seed/Ramer Seed	76	94	90	83	86	72	85	116	87	100	89(9)
AF8301	Advanta Seed/Ramer Seed							98		124	85	92(2)
Ensilemaster	Caudill Seed	125	90	101	106	111	129	118	171	77	85	115(9)
FSG114 BMR	Farm Science Genetics		94	128	93	125	91	76	71	89	79	95(8)
FSG115 BMR (Brachytic Dwarf)	Farm Science Genetics		51	31	72	81	74	67	72	60	74	65(8)
F74FS23 BMR	Dyna-Gro Seed							125		77	76	101(92)
F74FS72 BMR	Dyna-Gro Seed							93		59	117	105(92)
F75FS13	Dyna-Gro Seed							107		109	84	96(2)
GW2120	Gayland Ward Seed	117	89	113	84	107	88	102	85	98	115	100(9)
GW400 BMR	Gayland Ward Seed	93	79	128	78	91	88	83	42			85(8)
GW475 BMR	Gayland Ward Seed						80	99				90(2)
GW600 BMR	Gayland Ward Seed		107	111	90		90	100				100(5)
KFFiber-Pro70FS	Byron Seed					65	53		70			63(3)
NK300	S&W SeedCompany		126	110	101	116	135	84	119			113(7)
SD1741 BMR	S&W SeedCompany		133	92	103	81	84	95	94			97(7)
SilageKing BMR (Dwarf)	Gayland Ward Seed		48									-
SiloPro BMR (Brachytic Dwarf)	Gayland Ward Seed			24	74		63					54(3)
SP1615	S&W SeedCompany									164	170	-
SS1515	Southern States							125		97	75	100(2)
SS405	Chromatin		188	183	207	138	202	139	160	142	171	174(8)
Super Sile 20	Dyna-Gro Seed							107		106	124	116(2)
Super Sile 30	Dyna-Gro Seed							121		129	104	113(2)
TopTon	Dyna-Gro Seed							131		84	73	102(2)
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)

<sup>1</sup> Establishment year.

<sup>2</sup> 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.

<sup>3</sup> Mean only presented when respective variety was included in two or more trials.

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

<sup>5</sup> 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 2008-2019 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

Variety	Lexington										Princeton			Mean <sup>3</sup> (#trials)
	2008 <sup>1,2</sup>	2009	2010	2011	2012	2013	2014	2015	2016	2019	2008	2009	2019	
All trials are one-year yields														
Corvallis	81	101	91	101	96	100	110	96	102	110	94	112	99	99(13)
CW0604										101			97	99(2)
Dessie	99	92	96	94	95	97	101	104	105	89	102	87	101	98(13)
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	91	84	103	94(13)
Moxie						94	96	105	107	110			95	101(6)
Pharaoh	105	85	106	106	97	101	93	97	94	102	95	101	107	99(13)
Rooiberg	112	109	113	108	115	102	88				102	107		106(9)
Summer Delight		91	96	88	93	100	119	101	104	91		90	99	97(11)
Tiffany	102	93	82	93	102	98	104	97	105	110	102	106	104	100(13)
VA T1 Brown		99	87	91	94	98	104	97	101	100		89		96(10)
Velvet		100	97	98	95	103	95	99	100	101		94	96	98(11)
Witkope	93	101	115	103	101	104	107				94	100		102(9)

<sup>1</sup> Establishment year.

<sup>2</sup> 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.

<sup>3</sup> Mean only presented when respective variety was included in two or more trials.

**Table 18. Summary of Kentucky crabgrass yield trials 2016-2019 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

Variety	Proprietor/ KY Distributor	Lexington			Princeton	Mean <sup>3</sup> (#trials)
		2016 <sup>1,2</sup>	2018	2019	2019	
All trials are one-year yields						
Impact	Barenbrug USA	107	107	108	105	107(4)
Quick-N-Big	Noble foundation	89	85	81	99	89(4)
Red River	Noble foundation	104	108	110	96	105(4)

<sup>1</sup> Establishment year.

<sup>2</sup> 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.

<sup>3</sup> Mean only presented when respective variety was included in two or more trials.

**Table 19. Summary of Kentucky spring oats yield trials 2015-2019 (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 <sup>1,2</sup>	2016	2017	2018	2019	Mean <sup>3</sup> (#trials)
		All trials are one-year yields					
CCSO-102	Caldbeck Consulting				95	102	99(2)
CCSO-120 (black hulled)	Caldbeck Consulting				106	106	106(2)
Common	Central Farm Supply	89					-
Excel	Ag. Alumni Seed, IN	120	101	111	107	115	111(5)
Haywire	Cisco Seeds					81	-
Jerry	Caudill Seed	107	93	103	99	95	99(5)
Persik (black hulled)	Caldbeck Consulting		112	114	127	106	115(4)
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(2)
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	100(4)
021A17815	Ag. Alumni Seed, IN	97	108	87			97(3)

<sup>1</sup> Establishment year.

<sup>2</sup> 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.

<sup>3</sup> Mean only presented when respective variety was included in two or more trials.

**Table 20. Summary of 2002-2019 Kentucky white clover grazing tolerance trials in Lexington (stand persistence shown as a percent of the mean of the commercial varieties in the test).**

Variety	Type	Proprietor	2002 <sup>1,2</sup>	2004	2006 <sup>3</sup>	2006	2008 <sup>4</sup>	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Mean <sup>5</sup> (#trials)
			2yr <sup>6</sup>	4yr	2yr	2yr	3yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	3yr	4yr	3yr	
Alice	Intermediate	Barenbrug USA		59	98									93	71	91	96	85(6)
Barblanca	Intermediate	Barenbrug USA		118	91	151												120(3)
Canterbury	Dutch	Allied Seed											51	93				72(2)
Colt	Intermediate	Seed Research of OR		114	134	122												123(3)
Crescendo	Ladino	Cal/West	84			72												78(2)
Durana	Intermediate	Pennington		83	105	103		115	102	107	126	86	81	113	152	107	87	105(13)
GWC-AS10	–	Ampac Seed								77								–
Insight	Ladino	Allied Seed				77												–
Ivory	Intermediate	DLF Pickseed	132	142														137(2)
Ivory II	Intermediate	DLF Pickseed					102											–
Kakariki	Ladino	Luisetti Seeds															110	–
Kopu II	Intermediate	Ampac Seed			77	122	96		93	113	112	86	106	93	87	95		98(11)
KY Select	Intermediate	KY Agr Ex. Sta.						105		83								94(2)
Neches	–	Barenbrug USA													104			–
Patriot	Intermediate	Pennington		110	137	122		100	111	110	123	102	132	109	123	98	114	115(13)
Pinnacle	Ladino	Allied Seed									87							–
Rampart	–	Oregro Seeds						90										–
Regal	Ladino	Public	92		57	54		93		103								80(5)
Regal Graze	Ladino	Cal/West			84	87	105	90	87	93	72	94	81	102	87	98	87	88(13)
Renovation	Intermediate	Smith Seed											102	100	55		92	87(4)
Resolute	Intermediate	Southern States				101	106				65							91(3)
Seminole	Ladino	Saddle Butte Ag. Inc.		75		97	91						89	85				97(5)
Tillman II	Ladino	Caudill Seed	92															–
WBDX	Dutch	Saddle Butte Ag. Inc.								70								–
Will	Ladino	Allied Seed			117	87	107	105	108	143	115	133	157	111	120	109	114	117(13)

<sup>1</sup> Year trial was established.

<sup>2</sup> 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 test. For example, the trial planted in 2010 was grazed for four years so the final persistence report would be “2014 Red and White Clover Grazing Tolerance Report” archived in the UK Forage website at forages.ca.uky.edu.

<sup>3</sup> This trial was planted in the spring of 2006 due to poor establishment of the fall 2005 planting.

<sup>4</sup> This trial was planted in the spring of 2008 due to poor establishment of the fall 2007 planting.

<sup>5</sup> Mean only presented when respective variety was included in two or more trials.

<sup>6</sup> Number of years of data.

**Table 21. Summary of Kentucky alfalfa grazing trials 1998-2019 (stand persistence shown as a percent of the grazing tolerant Alfagraz).**

Variety	Proprietor	Variety Characteristics <sup>1</sup>										Lexington										Mean <sup>5</sup> (#trials)								
		Disease Resistance <sup>2</sup>					1998 <sup>3,4</sup>					2000					2004						2008							
		FD	Bw	Fw	An	PRR	APH	3yr <sup>6</sup>	2yr	3yr	4yr	5yr	2000	2001	2002	2003	2004	2005	2006	2007	2008		2009	2010	2011	2012	2013	2014	2015	2016
ABT 350	W-L Research	3	HR	HR	HR	HR	HR	HR	HR	HR	HR	46	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	73(2)
ABT 405	W-L Research	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	46	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100(16)
Alfagraz	America's Alfalfa	2	MR	R	MR	R	–	–	–	–	–	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	–	
Alfagraz 300 RR	America's Alfalfa	3	HR	R	HR	HR	HR	HR	HR	HR	HR	–	–	–	–	–	–	–	–	–	–	–	110	–	–	–	–	–	–	
Alfagraz 600 RR	America's Alfalfa	6	–	R	HR	HR	R	R	R	R	R	–	–	–	–	–	–	–	–	–	–	–	–	–	12	–	–	–	–	
Amerigraze 401+Z	America's Alfalfa	4	HR	HR	HR	HR	HR	HR	HR	HR	R	56	26	85	125	–	–	–	–	–	–	–	–	–	–	–	–	–	73(4)	
Ameristand 403T	America's Alfalfa	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	–	–	–	–	–	–	–	–	–	–	–	–	144	118	65	–	–	108(7)	
Ameristand 403TPlus	America's Alfalfa	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	–	–	–	–	–	–	–	–	–	–	–	–	144	118	65	–	–	120(4)	
Ameristand 407TQ	America's Alfalfa	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	89(3)	
Apollo	America's Alfalfa	4	R	R	R	R	–	–	–	–	–	47	17	31	25	36	27	25	17	27	27	70	55	86	24	–	–	–	37(13)	
Archer III	America's Alfalfa	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	58(2)	
Baralfa 54	Barenbrug USA	–	R	HR	HR	HR	HR	HR	HR	HR	HR	78	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Bulldog-505	Univ. of GA	5	–	HR	–	–	R	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
FK 421	Donley Seed Co.	4	HR	H	H	H	H	H	H	H	H	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Feast	Garst Seeds	3	HR	HR	HR	HR	HR	HR	HR	HR	HR	87	92	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Gold Plus	PGI Alfalfa	4	HR	HR	HR	HR	HR	HR	HR	HR	R	81	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Grazeking	Southern States	5	MR	HR	HR	R	S	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Haygrazer	Great Plains Research	4	HR	HR	R	R	MR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Integrity	PGI Alfalfa	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Legendairy5.0	Croplan Genetics	3	HR	HR	HR	HR	HR	HR	HR	HR	HR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
PGI 424	Producers Choice	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
PGI 459	Producers Choice	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Pioneer 98	Pioneer	3	HR	R	HR	R	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ProGro	MBS Inc.	4	HR	HR	R	HR	MR	HR	MR	HR	MR	81	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rebel	Target Seed	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rugged	Target Seed	3	HR	HR	HR	HR	HR	HR	HR	HR	HR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Saranac AR (cert.)	Public	4	MR	R	HR	R	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Spredor 3	Syngenta	1	HR	HR	R	MR	S	75	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Spredor 4	Syngenta	2	HR	HR	HR	HR	R	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TS 4007	Producers Choice	4	HR	R	HR	HR	HR	HR	HR	HR	HR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TS 4010/A4535	Producers Choice	4	HR	R	HR	HR	HR	HR	HR	HR	HR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Triple Trust 450	ABI/America's Alfalfa	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Wintergreen	ABI Alfalfa	3	HR	HR	HR	HR	HR	R	R	R	R	72	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
WL 326GZ	W-L Research	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	88	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
115 Brand	Monsanto	3	HR	HR	R	HR	R	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5432	Pioneer	4	HR	HR	–	MR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

<sup>1</sup> 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.

<sup>2</sup> 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](http://www.alfalfa.org/pdf/2019_Alfalfa_Variety_Leaflet.pdf).

<sup>3</sup> Year trial was established.

<sup>4</sup> 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 test. For example, the Lexington trial planted in 2011 was grazed for four years so final persistence report would be "2015 Alfalfa Grazing Tolerance Report" archived in the UK Forage website at [forages.ca.uky.edu](http://forages.ca.uky.edu).

<sup>5</sup> Mean only presented when respective variety was included in two or more trials.

<sup>6</sup> Number of years of data.







**Table 24. Summary of 2000-2019 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 <sup>1,2</sup>	2001	2003	2007	2008	2010	2011	2012	2013	2014	2015	2016	Mean <sup>3</sup> (#trials)
			4yr <sup>4</sup>	3yr	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 <sup>6</sup>	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	108	103(4)
Citadel	tetraploid	Donley Seed	107												–
Duo (FL)	MF x PR <sup>6</sup>	Ampac Seed	116				95	72	90	115			70	67	89(7)
Lasso	diploid	DLF-Jenks		130											–
Linn (certified)	diploid	Public	112	129	63		95	108	95	103	96	80	74	96	96(11)
Maverick	tetraploid	Ampac Seed		36											–
Meadow Green (FL)	MF x IR <sup>6</sup>	Pure Seed								15					–
Melpetra	tetraploid	Hood River Seed												106	–
PayDay	tetraploid	Mountain View Seeds									101	85			93(2)
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	135	151(3)
Remington PLUS NEA2 <sup>5</sup>	tetraploid	Barenbrug USA										145	171		158(3)
Spring Green (FL)	MF x PR <sup>6</sup>	Rose Agri-Seed	101				109	115	115	120			87	89	105(7)
TetraGain	tetraploid	Pure Seed								112					–
Victorian	diploid	Caudill Seed									114				–

<sup>1</sup> Year trial was established.

<sup>2</sup> 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 four years so the final report would be “2014 Cool-Season Grass Grazing Tolerance Report” archived in the UK Forage website at [forages.ca.uky.edu](http://forages.ca.uky.edu).

<sup>3</sup> Mean only presented when respective variety was included in two or more trials.

<sup>4</sup> Number of years of data.

<sup>5</sup> Remington PLUS NEA2 contains a non-toxic (novel) endophyte.

<sup>6</sup> MF = meadow fescue, PR = perennial ryegrass, IR = Italian ryegrass.

**Table 25. Summary of 1999-2019 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 <sup>1</sup>	Proprietor/ KY Distributor	1999 <sup>2,3</sup> 3-yr <sup>5</sup>	2001 4-yr	2002 4-yr	2003 4-yr	2004 4-yr	2005 4-yr	2006 4-yr	2007 4-yr	2008 4-yr	2009 4-yr	2010 4-yr	2011 4-yr	2012 4-yr	2013 4-yr	2014 4-yr	2015 4-yr	2016 3-yr	Mean <sup>4</sup> (#trials)	
BarOptima PLUS E34 <sup>6</sup>	novel	Barenbrug USA								107			101	101	95	104	99	99	101	101(8)	
Bronson	free	Ampac Seed	80																	–	
Cajun II	free	Smith Seed Services													96				101	99(2)	
Cattle Club	free	Green Seed	95																	–	
Cowgirl	free	Rose Agri-Seed									105				99					102(2)	
Festorina	free	Advanta Seed	102																	–	
Jesup MaxQ	novel	Pennington Seed			98			78				104	97	100	101	97	105	98	100	99	98(11)
Johnstone	free	ProSeeds Marketing		88																–	
KY31+	toxic	KY Agri. Exp. Sta.		105				102	109	120	107	101	101	101	99	105	99	100	101	104(13)	
KY31-	free	KY Agri. Exp. Sta.	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100(17)
Lacefield MaxQ II	novel	Pennington Seed							105	110						104			100	100	103(6)
Nanryo	free	Japanese Grassland Forage Seed								72											–
Seine	free	Seed Research of Oregon					135														–
Select	free	Southern States	82		109	94	99	73	104	76	108	98	100	101	98	98	97	100			96(15)
SS0705TFL	free	Southern States															98	100	100		99(3)
Stargrazer	free	Southern States	70																		–
Stockman	free	Seed Research of Oregon					125														–

<sup>1</sup> 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.

<sup>2</sup> Year trial was established.

<sup>3</sup> 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 four years so the final report would be “2014 Cool-Season Grass Horse Grazing Tolerance Report” archived in the UK Forage website at forages.ca.uky.edu.

<sup>4</sup> Mean only presented when respective variety was included in two or more trials.

<sup>5</sup> Number of years of data.

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

**Table 26. Summary of 1999-2019 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 <sup>1,2</sup> 3-yr <sup>5</sup>	2000 4-yr	2001 4-yr	2002 4-yr	2005 <sup>3</sup> 4-yr	2006 4-yr	2009 4-yr	2010 4-yr	2011 4-yr	2012 4-yr	2013 4-yr	2014 4-yr	2015 4-yr	2016 3-yr	Mean <sup>4</sup> (#trials)
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	127	112(8)
Potomac	Public				117											–
Prairie	Turner Seed			100										92	91	92(2)
Prodigy	Caudill Seed											54				–
Profit	Ampac Seed							93	86		92		108			95(4)
SS-0708OGDT	Southern States									104			92	77	90	91(4)
Tekapo	Ampac Seed	101	115		93	30		92	100	83	87	63		108		94(9)

<sup>1</sup> Year trial was established.

<sup>2</sup> 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 four years so the final report would be “2014 Cool-Season Grass Horse Grazing Tolerance Report” archived in the UK Forage website at forages.ca.uky.edu.

<sup>3</sup> Due to high variation during 2005 these values are not included in the overall mean.

<sup>4</sup> Mean only presented when respective variety was included in two or more trials.

<sup>5</sup> Number of years of data.



Mention or display of a trademark, proprietary product, or firm in text or figures does not constitute an endorsement and does not imply approval to the exclusion of other suitable products or firms.