



# 2018 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 wildlife in the state. In addition, forage crops play an environmentally friendly role in soil conservation, water quality, and air quality. There are over 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 contain safe endophytes, which enhance

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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 increasing 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.

**Table 1. Summary of Kentucky white clover yield trials 2002-2018 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

Variety	Type	Proprietor	Lexington												Princeton			Quicksand		Eden Shale		Mean <sup>3</sup> (#trials)								
			02 <sup>1,2</sup> 3yr <sup>4</sup>	03 3yr	04 3-yr	06 2-yr	07 2-yr	08 3yr	09 2yr	10 3yr	11 3yr	12 2yr	13 3yr	14 3yr	15 2yr	16 3yr	17 2yr	03 3yr	05 3-yr	03 2yr	03 2yr									
Advantage	Ladino	Allied Seed, L.L.C.	125																									106	116(2)	
Alice	Intermediate	Barenbrug USA																												98(5)
Avoca	Dutch	DLF Pickseed			59																									71(2)
Barblanca	Intermediate	Barenbrug USA	92																											-
Bombus	Ladino	Hood River																				111	113							112(2)
Brianna	Ladino	DLF Pickseed																				103	103							103(2)
CA ladino	Ladino	Public	100	124																										106(4)
Colt	Intermediate	Seed Research of OR	90	57																										87(3)
Common	Dutch	Public	100			53			98																					82(4)
Companion	Ladino	Oregro Seeds					87	94	92																					91(3)
Crescendo	Ladino	Cal/West Seeds	105	140								90	50	54	75															118(3)
Crusader II	Intermediate	Allied Seed, L.L.C.																												67(4)
Excel	Ladino	Allied Seed, L.L.C.		100																										-
Domino	Ladino	Grassland Oregon												87																-
Durana	Intermediate	Pennington	94	94	88	82	85	97	93	84	97	89	78	99	86	87	83													90(17)
GWC-AS10	Ladino	Ampac Seed							102																					-
Insight	Ladino	Allied Seed, L.L.C.		128																										-
Ivory	Intermediate	Cebeco	96																											-
Ivory II	Intermediate	DLF Pickseed			86					101	127																			105(3)
Jumbo	Ladino	Ampac Seed	93									121	101																	-
Jumbo II	Ladino	Ampac Seed												99																107(3)
Kakariki	Ladino	Luisetti Seeds														110														-
Kopu II	Intermediate	Ampac Seed	97		97	95	103	96	80	90																				94(8)
KY Select	Intermediate	KY Agric. Exp. Station								98	95																			97(2)
Neches	Intermediate	Barenbrug USA													79															-
Ocoee	Ladino	Allied Seed, L.L.C.								89	74																			82(2)
Patriot	Intermediate	Pennington	103	87	104	113	95	117	117	99	82	78	88	100	90	104	100													104(17)
Pinnacle	Ladino	Allied Seed, L.L.C.		120												111														116(2)
Rampart	Ladino	Allied Seed, L.L.C.			80	89	97	83																						87(4)
Regal	Ladino	Public	99	92	125	100	116	118	129	147	123																			112(13)
RegalGraze	Ladino	Cal/West Seeds		127	140	102	103							111	119	115														117(7)
Renovation	Intermediate	Smith Seed Services																			83	85	91							85(3)
Resolute	Intermediate	Southern States			63																									-
RIVENDEL	-	DLF Pickseed																												72(2)
Seminole	Ladino	Saddle Butte Ag. Inc		108	70	79																								93(4)
Super Haifa	Intermediate	Allied Seed, L.L.C.		77																										-
Tillman II	Ladino	Caudill Seed	103																											-
WBDX	Dutch	Saddle Butte Ag. Inc								72																				-
Will	Ladino	Allied Seed, L.L.C.	107	162	150	132	107	119	137	130	123	143	140	140	104	136														131(14)

<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 2010 was harvested 3 years, so the final report would be “2012 Red and White Clover Report” archived in the KY 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

**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



Table 3. Summary of Kentucky alfalfa yield trials 2000-2018 (yield shown as a percentage of the mean of the commercial varieties in the test).

Variety	Variety Characteristics <sup>1</sup>				Lexington										Princeton				Bowling Green <sup>2</sup>			Eden Shale	Mean <sup>6</sup> (# trials)	
	FD	Disease Resistance <sup>3</sup>			00 <sup>4.5</sup>	02	04	06	08	11	12	15	16	01	05	08	09	11	13	03	06			03
		Bw	Fw	An	PRR	APH	5yr7	5yr	5yr	7yr	6yr	6yr	4yr	3yr	4yr	5yr	6yr	4yr	3yr	3yr	4yr			4yr
Proprietor																								
A-4440	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
A 5225	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
AC Longview		HR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Newfield Seeds						83									107									
Adrenalin	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Ameristand 403T	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Ameristand 403T Plus	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Ameristand 407TQ	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Ameristand 427TQ	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Anchormate		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Arc (certified)	4	LR	MR	HR	HR	-	-	-	-	-	91	96	76						99	95	86			
Archer III	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Baralfa 53HR	5	HR	R	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Buffalo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Bulldog-505	5	-	HR	-	R	-	-	-	-	-	-	90	82	86	80	89		88		95	78	87		
Caliber	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Charger	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Contender	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
DK 140	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
DKA 43-13	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
DKA 50-18	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
DG4210	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Dynaagro Everlast	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Enforcer	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Escalade	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Evermore	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Expedition	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Feast +EV	3	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Fierce	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
FSG 403LR	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
FSG 406	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
FSG 408DP	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
FSG 415BR	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
FSG 424	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
FSG 426	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
FSG 505	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
FSG 524	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
FSG 528SF	5	HR	R	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
GA-497HD	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
GA-535	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Geneva	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Genoa	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
GH 744	4	HR	HR	HR	HR	HR	HR	HR	MR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Gunner	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Integrity	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Kingfisher 243	5	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
Kingfisher 4020	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		
L447HD	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR	HR		

continued

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:** 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





Table 3. continued

Variety	Variety Characteristics <sup>1</sup>										Lexington									Princeton			Bowling Green <sup>2</sup>		Shale							
	FD	Bw	Fw	An	PRR	APH	5yr <sup>7</sup>	5yr	00 <sup>4,5</sup>	02	04	06	08	11	12	15	16	01	05	08	09	11	13	03		06	03	04	Mean <sup>6</sup>			
6417	4	HR	HR	HR	HR	HR																										
6420	4	HR	R	HR	R	HR	HR	HR	HR	106			105																			
6422Q	4	HR	HR	HR	HR	HR	HR	HR	HR					112																		
6530	5	HR	HR	HR	HR	HR	HR	HR	HR																92							107(2)
6552	5	HR	HR	HR	HR	HR	HR	HR	HR				105																			

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 The Bowling Green test is on soil infested with phytophthora and aphanomyces root rot.  
 3 Disease resistance: S=susceptible, LR=low resistance, MR=moderate resistance, R=resistance, HR=high resistance.  
 4 Year trial was established  
 5 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 KY Forage website at forages.ca.uky.edu.  
 6 Mean only presented when respective variety was included in two or more trials.  
 7 Number of years of data

Table 4. Summary of Kentucky Roundup Ready alfalfa yield trials 2011-2018 (yield shown as a percentage of the mean of the commercial varieties in the test).

Variety	FD	Disease Resistance <sup>1</sup>							Lexington			Princeton			Quicksand			Mean <sup>5</sup> (# trials)
		Bw	Fw	An	PRR	APH	12 <sup>3,4</sup>	15	11	13	15	11	13	14	15	14	2yr	
Afagraz 300 RR	3	HR	R	HR	HR	HR	HR	HR	HR	95	95	99	93				95(5)	
Afagraz 600 RR	6	-	R	HR	R	R	R	R	R	100	100	100	85	93			93(3)	
Ameristand 405T RR	4	HR	HR	HR	HR	HR	HR	HR	HR	100	102	97	100	98	93		98(6)	
Ameristand 433T RR	3	HR	R	R	R	HR	HR	HR	HR	92	99	100	95	96	107		98(5)	
Ameristand 445TQ RR	4	HR	HR	HR	HR	HR	HR	HR	HR	105	103	100	100				103(3)	
AlphaIron RR	4	HR	HR	HR	HR	HR	HR	HR	HR	99		98					99(2)	
Consistency 4.10 RR	4	HR	HR	HR	HR	HR	HR	HR	HR	101		102					102(2)	
DKA-41-18 RR	4	HR	HR	HR	HR	HR	HR	HR	HR	100		101		100			100(3)	
DKA 44-16 RR	4	HR	HR	HR	HR	HR	HR	HR	HR	104		100		100			102(2)	
Stratica RR	4	HR	HR	HR	HR	HR	HR	HR	HR	97		96					97(2)	
Tonnica RR	5	HR	HR	HR	HR	HR	HR	HR	HR	105		101					103(2)	
WL 355 RR	4	HR	HR	HR	HR	HR	HR	HR	HR	99		102		110			104(3)	
WL 356HQ RR	5	HR	HR	HR	HR	HR	HR	HR	HR	100	98		96				98(3)	
WL 372HQ RR	5	HR	HR	HR	HR	HR	HR	HR	HR	102		106					104(2)	
428 RR	4	HR	HR	HR	HR	HR	HR	HR	HR	96		104					104(3)	
54R02 RR	4	HR	R	HR	HR	HR	HR	HR	HR	97	108	104				111	102(5)	
55VR06 RR	5	HR	R	HR	HR	HR	HR	HR	HR		92					99	96(2)	
55VR08 RR	5	-	HR	HR	HR	HR	HR	HR	HR		105			110			108(2)	
6516R RR	5	HR	-	HR	HR	HR	HR	HR	HR	106		109					108(2)	

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.  
 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 Princeton trial planted in 2011 was harvested for 5 years, so the final yield report would be “2015 Alfalfa Report” archived in the KY Forage website at <forages.ca.uky.edu>.  
 5 Mean only presented when respective variety was included in two or more trials.  
 6 Number of years of data

during dry weather, but they are generally less well adapted in Kentucky.  
**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

Table 5. Summary of Kentucky tall fescue yield trials 2002-2018 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Endophyte Status <sup>1</sup>	Proprietor	Lexington			Princeton			Quicksand			Mean <sup>4</sup> (#trials)													
			03-3 <sup>2</sup> 2-yr	05 3-yr	07 3-yr	09 3-yr	11 3-yr	12 3-yr	13 3-yr	14 3-yr	15 3-yr		16 2-yr	03 2-yr	05 4-yr	13 3-yr	16 2-yr								
Atlas Select	free	ProSeeds Marketing																							
Aprilia	free	ProSeeds Marketing										95										-			
Baguala	free	Allied Seed										93											-		
BarElite	free	Barenbrug USA					100						92										94(2)		
Bariane	free	Barenbrug USA	87	99	96											95							95(3)		
Barolex	free	Barenbrug USA		90																			94(3)		
BarOptima PLUS E34	novel	Barenbrug USA			122	99	107	108	102	99	113	98			99	100	96					93	119	104(13)	
Bronson	free	Ampac Seed			88	97	105	102	99	99		99		101	91	103								99(11)	
Brutus	free	Saddle Butte Ag. Inc.								90														-	
Bull	free	Improved Forages	98	102				100						104			97							99(7)	
Cajun II	free	Smith Seed Services					97		105	99	99	93			101	104								98(9)	
Cowgirl	free	Rose-AgriSeeds						94							102	100	98							99(4)	
Dominate	free	Allied Seed																						95(2)	
Drover	free	Barenbrug USA									105	120													113(2)
DuraMax GOLD	novel	DLF Pickseed					102											106						104(2)	
Enhance	free	Allied Seed						93										107						100(2)	
Estancia ArkShield	novel	Mountain View Seeds	102						106										101					102(6)	
Festival	free	Pickseed West																102						-	
Flourish	free	Allied Seed						92											101					97(2)	
FSG 402TF	free	Farm Science Genetics									92									103					98(2)
Goliath	free	Ampac Seed			100																			101(3)	
HyMark	free	Fraser Seeds						91								102								100(4)	
Jesup EF	free	Pennington Seed						98	105															102(4)	
Jesup MaxQ	novel	Pennington Seed			98	101	110	103	100	93	106	102	109	94										102(18)	
KENHY	free	KY Agric Exp Sta.																89						-	

continued

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 which 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.

## 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)

**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

Table 5. continued

Variety	Endophyte Status <sup>1</sup>	Proprietor	Lexington							Princeton							Quicksand			Mean <sup>4</sup> (#trials)					
			03-2-3 2-yr <sup>5</sup>	05 3-yr	07 3-yr	09 3-yr	11 3-yr	12 3-yr	13 3-yr	14 3-yr	15 3-yr	16 2-yr	02 3-yr	04 3-yr	06 3-yr	08 3-yr	10 3-yr	12 3-yr	15 2-yr		03 2-yr	05 4-yr	13 3-yr	16 2-yr	
Kentucky 32	free	Oregro Seeds				93	94	101																96(6)	
Kora Protek	novel	DLF Pickseed																						89	97(2)
KY31+	toxic	KY Agric Exp Sta.	112	108	102	102	93	95	103	100	99	107	104											103(20)	
Lacefield	novel	Pennington Seed			109				97	104	93													101(10)	
MaxQ II	novel	DLF Pickseed					104																	109	103(3)
Martin2 Protek	free	Jap. Grassland ForageSeed			96																			-	
Namryo	free	ProSeeds Marketing			98																			-	
Noria	free	Brett Young										93												112	103(2)
Payload	free	Radix Research, Inc.																						-	
RAD-ERF50	free	DLF Pickseed																						-	
Savory	free	Advanta Seeds																						-	
Seine	free	Southern States																						-	
Select	free	Southern States	94	99	99	98	90	100	97	103	97	103	103	97	105	102	105	102	102	91	102	91	84	98(21)	
SS-0705TFSL	free	Seed Research of OR	108							99	99	106											103	102(5)	
Stockman	free	Mountain View Seeds																						103(4)	
Teton II	free	Pennington Seed								107	105													91	101(6)
Texoma MaxQ II	novel	Seed Research of OR			87																			-	
TF0203G	free	DLF Pickseed																						94	98(2)
Tower	free	DLF Pickseed																						80	94(3)
Tower Protek	novel	Forage Genetics								98														-	
Tuscany	free	Seed Research of OR																						100(3)	
Tuscany II	free	Brett Young																						-	
5CAN	free																							-	

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 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 2 years, so the final report would be "2015 Tall Fescue Report" archived in the KY Forage website at <forages.ca.uky.edu>.  
4 Mean only presented when respective variety was included in two or more trials.  
5 Number of years of data.

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. 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,



**Table 6. Summary of Kentucky orchardgrass yield trials 2002-2018 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

Variety	Proprietor	Lexington											Princeton											Quicksand						Mean <sup>3</sup> (#trials)
		2003 <sup>1,2</sup> 3-yr <sup>4</sup>			2006	2007	2009	2011	2012	2013	2014	2015	2016	2002	2004	2006	2008	2010	2012	2015	2003	2005	2010	2013	2016					
		4-yr	3-yr	3-yr	3-yr	3-yr	3-yr	3-yr	3-yr	3-yr	3-yr	2-yr	3-yr	3-yr	3-yr	3-yr	3-yr	3-yr	2-yr	3-yr	3-yr	3-yr	3-yr	2-yr						
Abertop	Pennington												71																	
Albert	Oregro Seeds												100												98					
Alpine II	Mountain View Seeds												107																	
Ambassador	DLF Pickseed													95																
Ambrosia	American Grass Seed Prod.														90															
Benchmark	Southern States												113																	
Benchmark Plus	Southern States	100	108	105	106	106	97	109	104				107		107	104	102	107							104(16)					
Bounty	Allied Seed	101																			98				100(2)					
Century	Seed Research of Oregon	98																			104				101(2)					
Checkmate	Seed Research of Oregon		102				117											106							108(3)					
Christoss	Proseeds Marketing		92																											
Command	Seed Research of Oregon													87																
Crown	Donley Seed			97									101			105									101(3)					
Crown Royale Plus	Donley Seed												108												103(2)					
Devour	Mountain View Seeds																													
Echelon	DLF Pickseed												97											110	104(2)					
Elise	Rose-AgriSeed						86						97					98							94(3)					
Endurance	DLF Pickseed																								96(3)					
Extend	Allied Seed				107													105							105(4)					
Hallmark	James VanLeeuwen	102											103	98											100(4)					
Harvestar	Columbia Seeds	91	97					94													100		102		100(6)					
Haymaster	Southern States	94			102																97				98(3)					
Haymate	Southern States												106												105(2)					
Icon	Seed Research of Oregon		105																		98				102(2)					

continued

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 2018 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 2018.

Table 6. continued

Variety	Proprietor	Lexington					Princeton					Quicksand					Mean <sup>3</sup> (#trials)								
		2003 <sup>1,2</sup> 3-yr <sup>4</sup>	2006 4-yr	2007 3-yr	2009 3-yr	2011 3-yr	2012 3-yr	2013 3-yr	2014 3-yr	2015 3-yr	2016 2-yr	2015 3-yr	2012 3-yr	2010 3-yr	2008 3-yr	2006 3-yr		2004 3-yr	2002 3-yr	2003 3-yr	2005 4-yr	2010 3-yr	2013 3-yr	2016 2-yr	
Inavale	DLF Pickseed																							107	99(4)
Intensiv	Barenbrug	102																							-
Lazuly	Proseeds Marketing													97											-
LG-31	DLF Pickseed																								-
Lyra	Hood River Seed												90												94(2)
Megabite	Turf-Seed																								-
Niva	DLF Pickseed																81								-
Olathe	DLF Pickseed																								-
Paiute	DLF Pickseed																								105(4)
Persist	Smith Seed	123	105	106	107	112	106	100	103	111	111	99													-
Potomac	Public																								105(19)
Prairie	Turner Seed		107	101	109	106	113	123	108	103	111	104													101(15)
Prodigy	Caudill Seed																								106(20)
Profit	Ampac Seed																								99(7)
RAD-LCF 25	Radix Research																								100(13)
Rushmore II	Mountain View seeds																								101(2)
Shawnee	Rose-AgriSeed																								-
Shiloh II	Proseeds Marketing																								-
SS07080GDT	Southern States																								100(5)
Takena	Smith Seed																								-
Tekena II	Smith Seed	110	102																						106(5)
Tekapo	Ampac Seed																								86(15)
Treposno	Hood River Seed																								96(2)
Tucker	Oregro Seeds																								95(5)
Udder	Improved Forages																								103(5)
Vaillant	Proseeds Marketing	100	107																						-
Vision	Cropmark Seeds	63																							65(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 3 years, so the final report would be "2015 Orchardgrass Report" archived in the KY 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.

## 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).

- 2018 Alfalfa Report (PR-743)
- 2018 Red and White Clover Report (PR-744)
- 2018 Orchardgrass Report (PR-745)
- 2018 Tall Fescue and Bromegrass Report (PR-746)
- 2018 Timothy and Kentucky Bluegrass Report (PR-747)
- 2018 Annual and Perennial Ryegrass and Festulolium Report (PR-748)
- 2018 Alfalfa Grazing Tolerance Report (PR-749)
- 2018 Red and White Clover Grazing Tolerance Report (PR-750)
- 2018 Cool-Season Grass Grazing Tolerance Report (PR-751)
- 2018 Cool-Season Grass Horse Grazing Report (PR-752)
- 2018 Annual Grass Report: Warm Season and Cool Season (Cereals) (PR-753)
- 2018 Long-Term Summary of Kentucky Forage Variety Trials (PR-754)

## 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 7. Summary of Kentucky timothy yield trials 2000-2018 (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	99	01	00	04								
		2yr <sup>4</sup>	3yr	4yr	3yr	3yr	3yr	3yr	3yr	3yr	3yr	3yr	3yr	2yr	2yr	2yr	2yr	2yr								
Alma	Newfield Seeds Co/Caudill Seed Co.																	81	-							
Anjo	Hood River Seed												80						-							
Auroro	General Feed and Grain	100												98					99(2)							
Barfleo	Barenbrug USA						95	91	101			108	80						96(6)							
Barpenta	Barenbrug USA					74													79(3)							
Clair	Ky Agric. Exp. Station		104	113	107	95	107	104	112	99	97	111	107		106			122	105(14)							
Classic	Cebeco International Seeds	100		86										86					91(3)							
Climax	Canada Agr. Res. Station				79	102	104	98	102	100	82	96	90	101					95(10)							
Colt	FS Growmark	105		100	90									112				99	101(5)							
Common	Public		95																-							
Comtral	Caudill Seed									92	92								92(2)							
Derby	Southern States				112	111		106	112	108	112	119	123					124	114(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 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(7)							
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	92(4)							
Varis	Mountain View Seeds										83								-							
Zenyatta	DLF Pickseed									103									110(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 3 years, so the final report would be "2015 Timothy and Kentucky Bluegrass Report" archived in the KY 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 8. Summary of Kentucky bluegrass yield trials at Lexington 2004-2018 (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	Mean <sup>3</sup> (#trials)
		3yr <sup>4</sup>	4yr	3yr	3yr	3yr	3yr	3yr	3yr	3yr	3yr	2yr	
Adam 1	Radix Research	98											-
Barderby	Barenbrug USA			94		101	91	98	87	103	101	100	97(8)
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	97	108(10)
Kenblue	Public	102	133				96	95	118	95	100		106(7)
Lato	Turf Seed Inc.			122									-
Park (certified)	Public								90	95	104	127	104(4)
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											80	-

<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 3 years, so the final report would be "2015 Timothy and Kentucky Bluegrass Report" archived in the KY 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 9. Summary of Kentucky annual ryegrass yield trials 2000-2018 (yield shown as a percentage of the yield value of Marshall).**

Variety	Type	Proprietor	Lexington <sup>1</sup>											Princeton		Mean <sup>4</sup> (#trials)				
			03- <sup>2</sup> 3	04	05	06	07	08	09	10	10	11	12	12	13		14	15	16	17
Abundant	tetraploid	Ampac Seed			12															
Acrobat	-	Proseeds Marketing				144														
AE110	Westersworld tetraploid	Pickseed USA, Inc.						89	100											95(2)
Amp	Westersworld tetraploid	Columbia Seeds										75								
Andy	Westersworld tetraploid	DLF Pickseed											88				97			
Assist	Westersworld diploid	SaddleButte												52	69					90(2)
Attain	Westersworld tetraploid	Smith Seed Services					111										107			
Avance	Westersworld diploid	DLF Pickseed																		
Barextra	Italian tetraploid	Barenbrug USA												103	95	125	108		121	
Barmultra II	Italian tetraploid	Barenbrug USA					133									67				117(4)
Big Bang	-	Brett Young																		
Big Boss	Westersworld tetraploid	Smith Seed Services											98	86	38	73				86(3)
Big Daddy	Westersworld tetraploid	FFR/Sou. St.						86	98	82							88	87		88(5)
Bill	Westersworld diploid	Smith Seed Services													62					
Brangus	Italian tetraploid	KB SeedSolutions					94													
Bruiser	Westersworld diploid	Ampac Seed					65	105	100	104	86			100	105	95	86	121		96(9)
Common	-	Public																83	87	85(2)
Centurion	Westersworld diploid	Mountain View Seeds												97			100	126		114(4)
DH-3	Italian tetraploid	Allied Seed				91	27					89								69(3)
Diamond T	Italian tetraploid	Oregro Seeds				8														
Dixie Gold	Westersworld tetraploid	Caudill Seed											19							
Domino	Italian tetraploid	DLF Pickseed																120		
Dyna-Gain	Westersworld diploid	Columbia Seeds											71							
Ed	Westersworld diploid	Smith Seed Services								96										
Fantastic	Westersworld diploid	Ampac Seed				48	84							101	100					98(2)
Feast II	Italian tetraploid	Ampac Seed																88		86(3)
Flying A	Westersworld diploid	Oregro Seeds				39	59					81	93	71	47	56	88	80	93	127
Fox	Italian diploid	DLF Pickseed								109										88(11)
Fria	Westersworld diploid	Allied Seed								109										
GR-AS10	Italian	Ampac Seed																		
Graze-N-Gro	Westersworld diploid	Seed Research of OR					67													89(6)
Green Farm	Westersworld diploid	Smith Seed Services																		
Gulf	Westersworld diploid	Public															85			91(2)
Hercules	Westersworld tetraploid	Barenbrug USA																		
HS-1	Italian diploid	KB SeedSolutions																	108	100(2)
Jackson	Westersworld diploid	The Wax Co.				66	100	62	103	59	101	99	106	106	91	77	69	100	99	97
Jumbo	Westersworld tetraploid	Barenbrug USA																		113
KB Royal	Italian diploid	KB SeedSolutions																		94
Koga	Westersworld tetraploid	Smith Seed Services																		101
Kospeed	Westersworld diploid	Smith Seed Services																80	92	
Kowinearly	Westersworld diploid	Smith Seed Services																95	96	
LHT-102	Intermediate	Ampac Seed												100						
Marshall	Westersworld diploid	The Wax Co.				100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Maximo	Intermediate tetraploid	Pickseed USA, Inc.																		100(17)
Maximus	Westersworld tetraploid	Barenbrug USA																		
Melquatro	Italian tetraploid	Hood River Seed																135	78	107(2)

*continued*



Table 9. continued

Variety	Type	Proprietor	Lexington <sup>1</sup>												Princeton		Mean <sup>4</sup> (#trials)		
			03 <sup>2,3</sup>	04	05	06	07	08	09	10	10	11	12	13	14	15		16	17
Meroa	Westerwold diploid	Smith Seed Services													93	102			98(2)
MX 108	Westerwold tetraploid	Pickseed USA, Inc.									95	114							105(2)
Nelson	Westerwold tetraploid	The Wax Co.									86			93	65	77	105	97	78
Oryx	Italian diploid	Hood River Seed														100			89(6)
Passarel Plus	Westerwold diploid	Pennington Seed																	103
Primecut	Westerwold brand	Oregro Seeds										94							–
Rio	Westerwold diploid	–																	98
Spark	tetraploid	DLF Pickseed																	99
Stockaid	diploid	–				82													–
Striker	Westerwold tetraploid	Seed Research of OR					90												–
TAMTBO	Italian tetraploid	Tex. Ag Exp Sta.						47	101	108	95				79				86(5)
Tam 90	Italian diploid	Tex. Ag Exp Sta.						49							78				72(3)
TetraPrime	Italian tetraploid	Mountain View Seeds										101				96	104	91	106
TetraPro	Italian tetraploid	Tex. Ag Exp Sta.						40											100(5)
TillageRootMax	Westerwold diploid	Cover Crop Solutions																	–
TillageMax-Bristol <sup>5</sup>	Westerwold diploid	Cover Crop Solutions									82	90							86(2)
TillageMax-INDY <sup>5</sup>	Westerwold diploid	Cover Crop Solutions									90	91							91(2)
T-Rex	Westerwold tetraploid	SaddleButte									89	90							90(2)
Ugne	Italian tetraploid	Hood River Seed															102		–
Verdure	Westerwold tetraploid	Smith Seed Services							86									42	58
Winterhawk	Westerwold diploid	Oregro Seeds																	121
Winter Star	Italian tetraploid	Ampac Seed									104	117	92						111(5)
Zorro	Italian tetraploid	DLF Pickseed																	99
																			132
																			134
																			133(2)

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 KY Forage website at <forages.ca.uky.edu>.  
4 Mean only presented when respective variety was included in two or more trials.  
5 These are TillageRootMax that included crimson clover and/or tillage radish.

Table 10. Summary of Kentucky perennial ryegrass yield trials 2000-2018 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Type	Proprietor	Lexington												Princeton			Bowling Green			Mean <sup>3,4</sup> (#trials)							
			01 <sup>1,2</sup>	03	04	05	06	07	08	09	10	11	12	13	14	15	16	00	02	03								
			2yr	3yr	3yr	3yr	2yr	3yr	3yr	3yr	2yr	3yr	3yr	3yr	2yr	2yr	2yr	2yr	3yr	2yr		2yr						
Aires	diploid	Ampac Seed	95																								94(2)	
Albion	tetraploid	Grasslands Oregon																										104(2)
Amazon	tetraploid	AgriBioTech			99								105	103														103(2)
Anaconda	tetraploid	Caudill Seed																		95					103			99(2)
Aubisque	tetraploid	Seed Research of OR		144																								122(2)
Bandit	tetraploid	Grassland West																										110(2)
Barvitra	diploid	Barenbrug USA												104														-
Bastion C-2	tetraploid	Seed Research of OR			91																							-
Bestfor	tetraploid	Improved Forages																										113(3)
Best for Plus	hybrid tetraploid	Improved Forages		116	108	118																						120(4)
BG-34	diploid	Barenbrug USA				83	85					86																84(7)
Bison	hybrid tetraploid	International Seeds																										-
Boost	tetraploid	Allied Seed					130	125	120	143	110	103	102															119(7)
Boxer	tetraploid	AgriBioTech																										-
Calibra	tetraploid	DLF Pickseed																			106							98(10)
CAS MP64	diploid	Cascade International	97					96	109	81	99	103	96															-
Citadel	tetraploid	Ag Canada																										103(3)
Crave	tetraploid	Ampac Seed																										-
Derby	-	Public																										-
Elena DS	tetraploid	Allied Seed																										111(2)
Eurostar	tetraploid	Seed Research of OR					112																					-
Everlast	diploid	Caudill Seed											104															-
Feeder	diploid	Seed Research of OR																										-
Grand Daddy	tetraploid	Smith Seed	118					76	109	76	92	84	86															98(9)
Green Gold	tetraploid	Grasslands Oregon																										-
Herbal	-	ProSeeds Marketing						77																				-
Impressario	tetraploid	DLF Pickseed																										-
Kentaur	tetraploid	DLF Pickseed																										100(2)
Lactal	tetraploid	Brett Young																										112(2)
Lasso	diploid	DLF Pickseed	98																									-
LHT-102	tetraploid	Ampac Seed																										-
Linn (certified)	diploid	Public	98	98	102	98	85	84	101	92	93	80	95	83	89	82	87	88	77									90(17)
Manhattan	diploid	-																										-
Mara	diploid	Barenbrug USA																										-
Matrix	diploid	Cropmark seeds		77																								64
Maverick Gold	hybrid tetraploid	Ampac Seed	97																									84(2)
Melpetra	tetraploid	Hood River Seed																										-
Orantas	diploid	DLF Pickseed																										-
Ortet	tetraploid	Oregro Seeds																										-
PayDay	tetraploid	Mountain View Seeds																										-
Polly II	tetraploid	FS Growmark																										98(4)
Polly Plus	hybrid tetraploid	Allied Seed		64																								118(2)
Power	tetraploid	Ampac Seed																										60
Polim	tetraploid	DLF Pickseed																										104(9)
Quartermaster	tetraploid	Radix Research																										-

continued



**Table 11. Summary of Kentucky festulolium yield trials 2001-2018 (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				
			2yr <sup>6</sup>	3yr	3yr	3yr	3yr	3yr	2yr	3yr	2yr	3yr	2yr				
Agula	MF x IR	Allied Seed					94										–
Barfest	MF x PR	Barenbrug USA					105	101	107	119	91	92	91				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	82				95(10)
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	96				99(7)
Gain	MF x IR	Allied Seed					103	77	52	75							77(4)
Hostyn	MF x IR	DLF Pickseed							107	110	106				112		109(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													84		–
Lofa	(TF x Int) x Int	DLF Pickseed					105	107	110	128	112	91	109				109(7)
Mahulena	(TF x IR) x TF	DLF Pickseed							131	109	107				113		115(4)
Meadow Green	–	Pure Seed							37	34							36(2)
Perseus	MF x IR	DLF Pickseed					132	114	126	123	110	109	109				118(7)
Perun	MF x IR	DLF Pickseed					127	114	107	131	110	102	100				113(7)
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	91				107(11)
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 3 years, so the final report would be “2015 Annual and Perennial Ryegrass and Festulolium Report” archived in the KY 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 2006-2018 (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	Mean <sup>3</sup> (#trials)
			4-yr <sup>4</sup>	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	–
ARID	meadow	Mountain View Seeds							97	–
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	104	115(6)
Olga	smooth	Barenbrug USA		116	101					109(2)
Peak	smooth	Allied Seed		97		100		93	95	96(4)
Persiste	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 3 years, so the final report would be “2015 Tall Fescue and Brome Report” archived in the KY 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 2008-2018 (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	2017	2018				
		All trials are 1 year yields																
AS9301 BMR <sup>4</sup>	Alta Seeds/Ramer Seed					118												–
AS9302 BMR (Brachytic Dwarf)	Alta Seeds/Ramer Seed											124	104	119	117			116(4)
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	86	99				92(13)
ProMax BMR	Ampac Seed	95	101	110	115	96	103	100	111	111	106	102	96	84				102(13)
SS130 BMR	Cal/West Seeds			101	103		107	106	110	109	99							105(7)
Trudan Headless	Chromatin							118										–

<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 2008-2018 (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	2017	2018				
		All trials are 1 year yields																
AS6402 BMR <sup>4</sup> (Brachytic Dwarf)	Alta Seeds/Ramer Seed					91					78	82	98	98				89(4)
AS6503 BMR	Alta Seeds/Ramer Seed						96	103	90									96(3)
AS6504 BMR (Dry Stalk)	Alta Seeds/Ramer Seed										105	103	114	112				109(4)
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									–
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	130	108				115(8)
KFSugar-Pro555	Byron Seed										110							–
MS 202 BMR	Farm Science Genetics			106														–
Nutra-King BMR	Gayland Ward Seed								110	108	96	113	108	114				108(6)
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)
Surpass BMR	Turner Seed	81	80	64						79	84	75	88	97				81(8)
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)
Super Sugar Sterile	Gayland Ward Seed							94										–
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												–

<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 2013-2018 (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	2017	2018	
		All trials are 1 year yields								
FSG 300 Hybrid	Farm Science Genetics			109	99	109		117		109(4)
FSG 315 BMR <sup>4</sup> (Dwarf)	Farm Science Genetics			101	102	81		97		95(4)
Leafy22 Hybrid	Turner Seed				105	124	108	115	100	110(4)
Pennleaf Hybrid	Pennington Seed	93	91	94	96	87	98	84	93	92(8)
PP102M Hybrid	Cisco Seeds	93	93	90	79	90	91	77	104	90(8)
SS501	Southern States	90	99	96	86	94	94	89	96	93(8)
SS635	Southern States	108	112	101	116	94	110	107	115	108(8)
Sweet Summer	Cisco Seeds						86		85	86(2)
Tifleaf III Hybrid	Gayland Ward Seed	116	106	108	116	120	113	114	112	113(8)
Wonderleaf	Alta Seed								100	-

<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 2013-2018 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

Variety	Proprietor/KY Distributor	Lexington						Mean <sup>3</sup> (#trials)
		2013 <sup>1,2</sup>	2014	2015	2016	2017	2018	
AF7201 BMR <sup>4</sup>	Alta Seed/Ramer Seed	89	81	101	89			90(4)
AF7401 BMR (Brachytic Dwarf)	Alta Seed/Ramer Seed	76	94	90	83	86	72	84(6)
Ensilemaster	Caudill Seed	125	90	101	106	111	129	110(6)
FSG114 BMR	Farm Science Genetics		94	128	93	125	91	106(5)
FSG115 BMR (Brachytic Dwarf)	Farm Science Genetics		51	31	72	81	74	62(5)
GW2120	Gayland Ward Seed	117	89	113	84	107	88	100(6)
GW400 BMR	Gayland Ward Seed	93	79	128	78	91	88	93(6)
GW475 BMR	Gayland Ward Seed						80	-
GW600 BMR	Gayland Ward Seed		107	111	90		90	100(4)
KFFiber-Pro70FS	Byron Seed					65	53	59(2)
NK300	Chromatin		126	110	101	116	135	118(5)
SD1741 BMR	Chromatin		133	92	103	81	84	99(5)
SilageKing BMR (Dwarf)	Gayland Ward Seed		48					-
SiloPro BMR (Dwarf)	Gayland Ward Seed			24	74		63	54(3)
SS405	Chromatin		188	183	207	138	202	184(5)
XF7203 BMR (Brachytic Dwarf)	Alta Seed/Ramer Seed					74	73	74(2)
1990	Chromatin		121	89	118	125	177	126(5)

<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 17. Summary of Kentucky teff yield trials 2008-2016 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

Variety	Princeton		Lexington								Mean <sup>3</sup> (#trials)	
	2008 <sup>1,2</sup>	2009	2008	2009	2010	2011	2012	2013	2014	2015		2016
	All trials are 1 year yields											
Corvallis	94	112	81	101	91	101	96	100	110	96	102	99(11)
Dessie	102	87	99	92	96	94	95	97	101	104	105	97(11)
Excaliber	109	111	109	104	125	108	106	103				109(8)
Highveld	111	115	100	121	106	101	109	103	102			108(9)
HorseCandi	91	84	99	105	89	108	94	97	80	104	82	94(11)
Moxie								94	96	105	107	101(4)
Pharaoh	95	101	105	85	106	106	97	101	93	97	94	98(11)
Rooiberg	102	107	112	109	113	108	115	102	88			106(9)
Summer Delight		90		91	96	88	93	100	119	101	104	98(9)
Tiffany	102	106	102	93	82	93	102	98	104	97	105	99(11)
VA T1 Brown		89		99	87	91	94	98	104	97	101	96(9)
Velvet		94		100	97	98	95	103	95	99	100	98(9)
Witkope	94	100	93	101	115	103	101	104	107			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 spring planted spring oats yield trials 2015-2018 (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	Mean <sup>3</sup> (#trials)
		All trials are 1 year yields				
CCSO-102	Caldbeck Consulting				95	–
CCSO-120 (black hulled)	Caldbeck Consulting				106	–
Common	Central Farm Supply	89				–
Excel	Ag. Alumni Seed, IN	120	101	111	107	110(4)
Jerry	Caudill Seed	107	93	103	99	101(4)
Persik (black hulled)	Caldbeck Consulting		112	114	127	118(3)
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	109(4)
Saber	Ag. Alumni Seed, IN	104			100	102(2)
VNK	Public		97	107	101	102(2)
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 19. Summary of 2002-2018 Kentucky white clover grazing tolerance trials with 2 or more years of data 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	Mean <sup>5</sup> (#trials)
			2yr <sup>6</sup>	4yr	2yr	2yr	3yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	3yr	3yr	
Alice	Intermediate	Barenbrug USA		59	98									93	97	95	88(5)
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	108	108	103(12)
GWC-AS10	–	Ampac Seed								77							–
Insight	Ladino	Allied Seed				77											–
Ivory	Intermediate	DLF Pickseed	132	142													137(2)
Ivory II	Intermediate	DLF Pickseed					102										–
Kopu II	Intermediate	Ampac Seed			77	122	96		93	113	112	86	106	93	107	100	100(11)
KY Select	Intermediate	KY Agr Ex. Sta.						105		83							94(2)
Neches	–	Barenbrug USA													100		–
Patriot	Intermediate	Pennington		110	137	122		100	111	110	123	102	132	109	111	105	114(12)
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	86	90	89(12)
Renovation	Intermediate	Smith Seed											102	100	91		98(3)
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	101	102	116(12)

<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 4 years so the final persistence report would be “2014 Red and White Clover Grazing Tolerance Report” archived in the KY 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 20. Summary of 1998-2018 Kentucky alfalfa grazing trials with 2 or more years of data in Lexington (stand persistence shown as a percent of the grazing tolerant Alfagraz).<sup>1</sup>**

Variety	Proprietor	Variety Characteristics <sup>1</sup>											Lexington											Mean <sup>5</sup> (#trials)		
		Disease Resistance <sup>2</sup>						1998 <sup>3,4</sup>					2000					2011-2016								
		FD	Bw	Fw	An	PRR	APH	3yr <sup>6</sup>	2yr	3yr	4yr	5yr	2000	2001	2004	2005	2006	2008	2009	2010	2011	2012	2013		2014	2016
ABT 350	W-L Research	3	HR	HR	HR	HR	HR	HR	HR	HR	HR	46														
ABT 405	W-L Research	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	46	100													73(2)
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	100	100(15)
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	R	R																12			-
Amerigraze 401+Z	America's Alfalfa	4	HR	HR	HR	HR	R	HR	HR	HR	HR	26	85	125												73(4)
Ameristand 403T	America's Alfalfa	4	HR	HR	HR	HR	HR	HR	HR	HR	HR	56														108(7)
Ameristand 403TPlus	America's Alfalfa	4	HR	HR	HR	HR	HR	HR	HR	HR	HR															113(3)
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	31	25	25	27	25	25	17	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	-																			100(3)
FK 421	Donley Seed Co.	4	HR	H	H	H	H						100													-
Feast	Garst Seeds	3	HR	HR	HR	HR	HR	R	HR	HR	HR	87	92													90(2)
Gold Plus	PGI Alfalfa	4	HR	HR	HR	HR	HR	R	81																	-
Grazeking	Southern States	5	MR	HR	HR	R	S						50													-
Haygrazer	Great Plains Research	4	HR	HR	R	R	MR					38														-
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															44(2)
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															55(2)
Pioneer 98	Pioneer	3	HR	R	HR	R	-	56																		-
ProGro	MBS Inc.	4	HR	HR	R	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	LR	-						100													-
Spredor 3	Syngenta	1	HR	HR	R	MR	S	75																		72(2)
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															116(3)
Wintergreen	ABI Alfalfa	3	HR	HR	HR	HR	R	72																		-
WL 326GZ	W-L Research	4	HR	HR	HR	HR	HR	HR	HR	HR	HR															-
115 Brand	Monsanto	3	HR	HR	R	HR	R	88																		-
5432	Pioneer	4	HR	HR	-	MR	-																			71(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.

<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 4 years so final persistence report would be "2015 Alfalfa Grazing Tolerance Report" archived in the KY 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 21. Summary of 2000-2018 Kentucky tall fescue grazing tolerance trials with three or more years of data (stand persistence shown as a percent of the stand rating of the endophyte infected variety KY 31+).

Variety	Endophyte Status <sup>1</sup>	Proprietor	Lexington													Princeton			Mean <sup>4</sup> (#trials)																			
			2000 <sup>2,3</sup> 4yr <sup>5</sup>	2001 4yr	2002 4yr	2003 4yr	2004 4yr	2005 4yr	2006 4yr	2007 4yr	2008 4yr	2009 4yr	2010 4yr	2011 4yr	2012 4yr	2013 4yr	2014 4yr	2015 3yr		2002 4yr																		
Advance MaxQ	novel	Pennington Seed																																				
Baguala	free	Allied Seed										94																										
Bariane	free	Barenbrug USA				89						75	29																						60(4)			
BarElite	free	Barenbrug USA											96																									
Barolex	free	Barenbrug USA											86																							88(3)		
BarOptima PLUS E34	novel	Barenbrug USA										100	97						98	100	98	100	100	100	100	100	100	100	100	100	100	100	100	100	100	99(8)		
Bronson	free	Ampac Seed																	98	98																98(2)		
Bull	free	Caudill Seed																			96																	
Cajun II	free	Smith Seed Services																																			98(3)	
Cattle Club	free	Green Seed	93	91																98																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																																	97(3)	
FSG 402TF	free	Farm Service Genetics																																				
Flourish	free	Allied Seed																																				
Goliath	free	Ampac Seed																		98																		
Hoedown	free	DLF-Jenks	88																																			
HyMark	free	Fraser Seeds																		95																		
Jesup MaxQ	novel	Pennington Seed			103	97								68	102	102	100	97	97	99	99	99	99	100	100	100	100	100	100	100	100	100	100	105	105	98(2)	97(14)	
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	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100(17)	
KY31-	free	KY Agri. Exp Sta.	98	103	98	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	99(16)	
Kokanee	free	Ampac Seed	43																																			
Lacefield MaxQ II	novel	Pennington Seed												82	102	102	99	98	98	98	97																97(9)	
Maximize	free	Rose Agri-Seed	99																																			
Nanryo	free	Japanese Grassland For.Seed															100																					
Orygun	free	-																																				
Resolute	free	Ampac Seed	23																																			
Select	free	Southern States	107	101	100	100	100	100	100	100	100	100	100	67	100	100	93	95	95	97	100	100	100	100	99	99	99	99	99	99	100	100	100	98	98	97(16)		
SS0705TFSL	free	Southern States																																				
Stargrazer	free	Southern States	86	89																																		79(4)
Stockman	free	Seed Res. of OR																																				
Texoma MaxQ II	novel	Pennington Seed																																				
Tuscany II	free	Seed Res. of OR																																				95(3)
Verdant	free	Am.Grass Seed																																				

<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 4 years so the final report would be "2014 Cool-Season Grass Grazing Tolerance Report" archived in the KY 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

**Table 22. Summary of 2000-2018 Kentucky orchardgrass grazing tolerance trials with three or more years of data (stand persistence shown as a percent of the mean of the commercial varieties in the trial).**

Variety	Proprietor	Lexington										Princeton			Mean <sup>4</sup> (#trials)			
		2000 <sup>1,2</sup> 4yr <sup>5</sup>	2001 4yr	2002 4yr	2003 4yr	2004 4yr	2005 <sup>3</sup> 4yr	2007 4yr	2009 4yr	2010 4yr	2011 4yr	2012 4yr	2013 4yr	2014 4yr		2015 3yr	2002 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											133	122(4)		
Benchmark Plus	Southern States		120			152	135	106	106	108	115	146	154		133	122(8)		
Boone	Public	102																
Command	Seed Research of OR					81												
Crown Royale	Donley Seed		100															
Crown Royale Plus	Donley Seed			124											83	104(2)		
Elise	Pure Seed										97							
Hallmark	James VanLeeuwen		115		113										83	104(3)		
Harvestar	Columbia Seeds									75			34			73(4)		
Haymate	Southern States	53	115	100	118					89	94	51			83	94(5)		
Intensiv	Barenbrug USA				51													
Mammoth	DLF-Jenks		115															
Megabite	Turf Seed		77															
Niva	DLF-Jenks			76														
Persist	Smith Seed														83	80(2)		
Potomac (certified)	Public			116		119										108(7)		
Prairie	Turner Seed	127	121													113(4)		
Prodigy	Caudill Seed									94					83	103(6)		
Profile	Scott Seed			116								109	119					
Profit	Ampac Seed																	
Tekapo	Ampac Seed		55	74	118					95	99	102	94	95	90	84	94(6)	
Takana	Smith Seed		99							105	105	106	80	66	63	81	100	89(11)
Seco	Southern States																	
SS0708OGDT	Southern States																	
															128	128		128(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 KY Forage website at <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 23. Summary of 2000-2018 Kentucky perennial ryegrass and festulolium (FL) grazing tolerance trials with three or more years of data 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	Mean <sup>3</sup>
			4yr <sup>4</sup>	4yr <sup>4</sup>	3yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	3yr
AGRLP103	-	AgResearch USA	128			86									107(2)
Albion	tetraploid	Grassland Oregon												113	-
Aries	diploid	Ampac Seed			139										-
Barfest (FL)	MF x PR <sup>6</sup>	Barenbrug USA						116	112						114(2)
Barvitra	diploid	Barenbrug USA											34	-	
Boost	tetraploid	Allied Seed					101	83	95	104					96(4)
Calibra	tetraploid	DLF International								120		88	101		103(3)
Citadel	tetraploid	Donley Seed	107												-
Duo (FL)	MF x PR <sup>6</sup>	Ampac Seed	116					72	90	115			82		95(6)
Grand Daddy	tetraploid	Smith Seed Services			121		82	100	81	103		85	115		98(7)
Lasso	diploid	DLF-Jenks			130										-
Linn (certified)	diploid	Public	112		129	63		95	108	103	96	80	73		95(10)
Maverick	tetraploid	Ampac Seed			36										-
Meadow Green (FL)	MF x IR <sup>6</sup>	Pure Seed								15					-
PayDay	tetraploid	Mountain View Seeds										101	85		93(2)
Polly II	tetraploid	FS Growmark	36		68										52(2)
Power	tetraploid	Ampac Seed					158								108(7)
Quartet	tetraploid	Ampac Seed			77		59								68(2)
Remington	tetraploid	Barenbrug USA				151						138	142		140(2)
Remington PLUS NEA2 <sup>5</sup>	tetraploid	Barenbrug USA										145	137		141(2)
Spring Green (FL)	MF x PR <sup>6</sup>	Rose Agri-Seed	101					109	115	115	120		100		110(6)
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 4 years so the final report would be "2014 Cool-Season Grass Grazing Tolerance Report" archived in the KY 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

<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 24. Summary of 1999-2018 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>	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Mean <sup>4</sup>
			3-yr <sup>5</sup>	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	3-yr
BarOptima PLUS E34 <sup>6</sup>	novel	Barenbrug USA								107			101	101	95	104	99	99	101(6)
Bronson	free	Ampac Seed	80													96			-
Cajun II	free	Smith Seed Services																	-
Cattle Club	free	Green Seed	95												99				-
Cowgirl	free	Rose Agri-Seed									105								102(2)
Festorina	free	Advanta Seed	102																-
Jesup MaxQ	novel	Pennington Seed			98			78			104	97	100	101	97	105	98	100	98(9)
Johnstone	free	ProSeeds Marketing		88															-
KY31+	toxic	KY Agri. Exp.Sta.		105				102	109	120	107	101	101	101	99	105	99	100	104(11)
KY31-	free	KY Agri. Exp.Sta.	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100(15)
Lacefield MaxQ II	novel	Pennington Seed						105	105	110		98				104		100	104(4)
Nanryo	free	Japanese Grassland Forage Seed								72									-
Seine	free	Seed Research of Oregon					135												-
Select	free	Southern States			109	94	99	73	104	76	108	98	100	101	98	98	97	99	96(14)
SS0705TFSL	free	Southern States																	-
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 4 years so the final report would be "2014 Cool-Season Grass Horse Grazing Tolerance Report" archived in the KY 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 25. Summary of 1999-2018 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>		2000		2001		2002		2005 <sup>3</sup>		2006		2009		2010		2011		2012		2013		2014		2015		Mean <sup>4</sup> (#trials)
		3-yr <sup>5</sup>	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	
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		92		146		95		110		108(7)
Potomac	Public							117																				
Prairie	Turner Seed			100																						88		
Prodigy	Caudill Seed																					54						
Proft	Ampac Seed													93		86					92		108		92			95(4)
SS-0708OGDT	Southern States															104							92		92			96(3)
Tekapo	Ampac Seed	101	115					93		30				92		100		83		87		63		110		110		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 4 years so the final report would be "2014 Cool-Season Grass Horse Grazing Tolerance Report" archived in the KY 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





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