



2017 Long-Term Summary of Kentucky Forage Variety Trials

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Introduction

Forage crops occupy approximately 7 million acres in Kentucky. Forages provide a majority of the nutrition for beef, dairy, horse, goat, sheep, and wildlife in the state. In addition, forage crops play 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 Web site at www.uky.edu/Ag/Forage 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

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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 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 2002-2017 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Type	Proprietor	Lexington														Princeton		Quicksand	Eden Shale	Mean ³ (#trials)					
			02-2	03	04	06	07	08	09	10	11	12	13	14	15	16	03	05	03	03						
			3yr ⁴	3yr	3-yr	2-yr	2-yr	3yr	2yr	3yr	3yr	2yr	3yr	3yr	2yr	2yr	3yr	3-yr	2yr	2yr						
Advantage	Ladino	Allied Seed, L.L.C.		125											105	120	81		86						98(4)	
Alice	Intermediate	Barenbrug USA																	82							71(2)
Avoca	Dutch	DLF International Seeds				59																				-
Barblanca	Intermediate	Barenbrug USA		92																						-
Bombus	Ladino	Hood River																	108							-
Brianna	Ladino	DLF Pickseed USA																	105							-
CA ladino	Ladino	Public	100		124																103		98			106(4)
Colt	Intermediate	Seed Research of OR		90		57																114				87(3)
Common	Dutch	Public	100				53					98										78				82(4)
Companion	Ladino	Oregro Seeds						87	94	92																91(3)
Crescendo	Ladino	Cal/West Seeds	105			140																	109			118(3)
Crusader II	Intermediate	Allied Seed, L.L.C.									90	50	54	75												67(4)
Excel	Ladino	Allied Seed, L.L.C.			100													87								-
Domino	Ladino	Grassland Oregon																								-
Durana	Intermediate	Pennington		94		94	88	82	85	97	93	84	97	89	78	96	87	83	101							90(16)
GWC-AS10	Ladino	Ampac Seed										102														-
Insight	Ladino	Allied Seed, L.L.C.				128																				-
Ivory	Intermediate	Cebeco	96																							105(3)
Ivory II	Intermediate	DLF International Seeds					86				101	127														-
Jumbo	Ladino	Ampac Seed	93										121	101				99								107(3)
Jumbo II	Ladino	Ampac Seed																								94(8)
Kopu II	Intermediate	Ampac Seed	97			97	95	95	103	96	80	90														97(2)
KY Select	Intermediate	KY Agric. Exp. Station																79								-
Neches	Intermediate	Barenbrug USA																								82(2)
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	104	104	100	98			111				104(16)
Pinnacle	Ladino	Allied Seed, L.L.C.				120																				116(2)
Pinnacle	Ladino	Allied Seed, L.L.C.					80	89	97	83																87(4)
Rampart	Ladino	Allied Seed, L.L.C.																								112(13)
Regal	Ladino	Public	99	96	92		125	100	116	118	129	147	123									107	100	104		120(6)
RegalGraze	Ladino	Cal/West Seeds				127	140	102	103									111	134							85(3)
Renovation	Intermediate	Smith Seed Services														83	85	85								-
Resolute	Intermediate	Southern States				63												40								-
Rivendel	-	DLF Pickseed USA																								93(4)
Seminole	Ladino	Saddle Butte Ag. Inc				108	70	79							114											-
Super Haifa	Intermediate	Allied Seed, L.L.C.				77																				-
Tillman II	Ladino	Caudill Seed	103																							-
WBDX	Dutch	Saddle Butte Ag. Inc																								-
Will	Ladino	Allied Seed, L.L.C.	107			162	150	132	107	119	137	130	123	143	140	145			136							133(13)

1 Year trial was established.

2 Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in spring 2010 was harvested three years, so the final report would be *2012 Red and White Clover Report* archived in the KY Forage website at www.uky.edu/Ag/Forage.

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

4 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 2. Summary of Kentucky red clover yield trials 2001-2017 (yield shown as a percentage of the mean of the named commercial varieties in the trial).

Variety	Proprietor	Lexington														Princeton					Quicksand				Eden Shale			Mean ³ (#trials)				
		01 ^{1,2} 3yr ⁴	02 3yr	03 3yr	04 3yr	06 2yr	08 3yr	09 2yr	10 3yr	11 2yr	12 3yr	13 3yr	14 3yr	15 3yr	16 2yr	03 3yr	05 2yr	08 3yr	09 2yr	11 3yr	13 2yr	15 2yr	01 2yr	03 2yr	05 3yr	08 3yr	10 3yr		03 2yr	08 3yr	10 3yr	
AA117ER	ABI Alfalfa					110										87									92						96(3)	
Bearcat	Brett Young Seeds													117																	-	
Cinnamon Plus	Southern States			97		109	112	123	117	94	116	101	98			112	102	102	100	100					103	108	124		108	122	108(19)	
Common O	Public								96	97	63	84	92	70	59					67	96						72		77	108(11)		
Dominion	Seed Research of OR					102										95	102							93					109	100(5)		
Duration	Cisco Co.	86	100																			106								97(3)		
Emarwan	Turf-Seed				91				117										106				101					99		103(5)		
Evolve	DLF Pickseed USA												98	99								96								98(3)		
FF9615	LaCrosse Seed													106																-		
Freedom!	Barenbrug USA	127	123	96	118	91	100	108	106	109	99	101	97	107	110	110	136	107	116	95	107	108	111	103	119	106	115	102	100	140	109(29)	
Freedom!MR	Barenbrug USA		118	115	102	114	114		112							106	101		108				94	111			128	118		125	112(14)	
FSG 402	Allied Seed											104																			108(2)	
FSG 9601	Allied Seed				89																										-	
Gallant	Turner Seed											101	112																		105(4)	
Juliet	Caudill Seed							84										93	90										84	59	82(5)	
Kenland (cert.)	KY Ag. Exp Sta.	127	139	118	117	117	99	111	99	116	114	109	103	105	113	102	92	113	106	106	115	99	111	88	105	104	123	98	110	138	110(29)	
Kenland (uncert)	Public														49			74						83				67		66	92	73(7)
Kenton	KY Ag. Exp Sta.	119	109	90	95	112	121									95	105	112	94				93	99	106	98		98			103(15)	
Kenway	KY Ag. Exp Sta.	111	134		97	119	118										94	106	103				100		103	94					107(11)	
LS 9703	Lewis Seed										107											86									97(2)	
Morning Star	Cal/West Seeds																		90												90(2)	
Plus II	Allied Seed						130																						90		114(2)	
Quinequeli	Caudill Seed							92											80											57	76(3)	
Red Gold	Proseeds Marketing					81												89											102		91(3)	
Red Gold Plus	Turner Seed	97			95																			98							97(3)	
RedlanGraze II	Americas Alfalfa	91	104																					93							96(3)	
Redland Max	ABI Alfalfa				95																										-	
Robust II	Seed Research of OR																	110											108		109(2)	
Rocket	Seed Research of OR																	106											108		107(2)	
Rojo Diablo	Great Plains	99																													100(2)	
Royal Red	Southern States		91																					101							-	
Rustler	Oregro Seeds						83		101	84																	94	99		104	94(6)	
Sienna	Great Plains	91																													99(2)	
Solid	Production Service		98	84		79										87	86														85(7)	
SS-0303RCG	Southern States											103	109	147														84			113(5)	
Starfire	Ampac Seed		99																												-	
Starfire II	Cal/West & Ampac						101		111				107						112								110	112		115	111	110(8)
Triple Trust 350	ABI Alfalfa					101											92														95(3)	
Vesna	DLF-Jenks	53																													75(2)	
Wildcat	Brett Young Seeds							101																					98		102(3)	

¹ Year trial was established.

² Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in spring 2010 was harvested three years, so the final report would be "2012 Red and White Clover Report" archived in the KY Forage website at www.uky.edu/Ag/Forage.

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

⁴ Number of years of data.

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 of 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 hiebertii* Reem. & 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 (*Bro-*

Table 3. Summary of Kentucky alfalfa yield trials 2000-2017 (yield shown as a percentage of the mean of the commercial varieties in the test).

Variety	Proprietor	Variety Characteristics ¹						Lexington							Princeton					Bowling Green ²		Eden Shale	Mean ⁶ (# trials)											
		FD	Disease Resistance ³				APH	00 ^{4,5} 5yr ⁷	02 5yr	04 5yr	06 7yr	08 6yr	11 6yr	12 5yr	15 3yr	01 4yr	05 5yr	08 5yr	09 6yr	11 4yr	13 3yr	03 3yr		06 4yr	03 4yr									
			Bw	Fw	An	PRR																												
A-4440	Producers Choice	4	HR	HR	HR	HR	HR				100					99															100(2)			
A 5225	Producers Choice	5	HR	HR	HR	HR	R				104						107															106(2)		
AC Longview	Newfield Seeds	-	HR	-	-	-	-			83									104													-		
Adrenalin	Brett Young Seeds	4	HR	HR	HR	HR	HR												104													99(9)		
Ameristand 403T	America's Alfalfa	4	HR	HR	HR	HR	HR				99	91	102	94		97		100	101	107	99											99(2)		
Ameristand 403T Plus	America's Alfalfa	4	HR	HR	HR	HR	HR												94													104(2)		
Ameristand 407TQ	America's Alfalfa	4	HR	HR	HR	HR	HR												103	104												-		
Ameristand 427TQ	America's Alfalfa	4	HR	HR	HR	HR	HR								109																	-		
Anchormate	ProSeed Marketing	-	-	-	-	-	-																										92(10)	
Arc (certified)	Public	4	LR	MR	HR	-	-	91	96	76				93	92		99	95	86			95	98									-		
Archer III	America's Alfalfa	5	HR	HR	HR	HR	HR												104													-		
Baralfa 53HR	Barenbrug USA	5	HR	R	HR	HR	HR												104														87(12)	
Buffalo	Public	-	-	-	-	-	-			90	82	86	80	89		91		95	78	87		91		81	95							100(3)		
Bulldog-505	Univ. of GA	5	-	HR	-	R	-							102							99		103									101(3)		
Caliber	Beck's Hybrids	4	HR	HR	HR	HR	HR							99	105							106										-		
Charger	Beck's Hybrids	5	HR	HR	HR	HR	HR									99																	-	
Contender	Beck's Hybrids	5	HR	HR	HR	HR	HR																										98(2)	
DK 140	Monsanto	4	HR	HR	HR	HR	HR		95								100																-	
DKA 43-13	Monsanto	4	HR	HR	HR	HR	HR																										-	
DKA 50-18	Monsanto	5	HR	HR	HR	HR	HR																										102(2)	
DG4210	Crop Production	4	HR	HR	HR	HR	HR																										101(2)	
Dynagro Everlast	United Agr. Prod.	4	HR	HR	HR	HR	R																									86(2)		
Enforcer	Southern States	4	HR	HR	HR	HR	HR			90																							-	
Escalade	Allied Seeds	5	HR	HR	HR	HR	HR																										-	
Evermore	Southern States	5	HR	HR	HR	HR	HR																										102(4)	
Expedition	NEXGROW	5	HR	HR	R	RR	R																										105(3)	
Feast +EV	NEXGROW	3	HR	HR	HR	R	HR																										-	
Fierce	Beck's Hybrids	4	HR	HR	HR	HR	HR																										-	
FSG 403LR	Farm Sci. Genetics	4	HR	HR	HR	HR	HR																										-	
FSG 406	Allied Seeds	4	HR	HR	HR	HR	HR																											108(2)
FSG 408DP	Allied Seeds	4	HR	HR	HR	HR	R																										-	
FSG 424	Farm Sci. Genetics	4	HR	HR	HR	HR	HR																										-	
FSG 426	Farm Sci. Genetics	4	HR	HR	HR	HR	HR																										107(2)	
FSG 505	Allied Seeds	5	HR	HR	HR	HR	R																										-	
FSG 524	Farm Sci. Genetics	5	HR	HR	HR	HR	HR																										-	
FSG 528SF	Lewis Seed Co.	5	HR	R	HR	HR	R																										-	
GA-535	Prof. Alf. Genetics	5	HR	HR	HR	HR	HR																											104(3)
Geneva	NEXGROW	4	HR	HR	HR	HR	HR	106	103																								107(4)	
Genoa	NEXGROW	4	HR	HR	HR	RR	HR																										-	
GH 744	NEXGROW	4	HR	HR	HR	HR	MR																										-	
Gunner	Croplan Genetics	5	HR	HR	HR	HR	HR																										-	
Integrity	PGI Alfalfa	4	HR	HR	HR	HR	HR																										-	
KingFisher 243	Cal/West	5	HR	HR	HR	HR	HR																										-	
Kingfisher 4020	Legacy Seeds	4	HR	HR	HR	HR	HR																										-	
L447HD	Legacy Seeds	4	HR	HR	HR	HR	HR																										-	
L449Aph2	Legacy Seeds	4	HR	HR	HR	HR	HR																										-	
L455HD	Legacy Seeds	4	HR	HR	HR	HR	HR																										-	
Lancer	Allied Seeds	4	HR	HR	HR	HR	HR																										-	
LegenDairy 5.0	Croplan Genetics	3	HR	HR	HR	HR	HR																										-	
Mariner III	Allied Seeds	4	HR	HR	HR	HR	HR																										-	
Mountaineer 2.0	Croplan Gen.	5	HR	HR	HR	HR	HR																										-	

continued

hms sitchensis), also called Silka 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 willdenowii*) is a tall, cool-season, leafy short-lived, perennial, deep-rooted bunchgrass. It was introduced from South America. Seedheads are produced throughout the growing season,

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

Table 4. Summary of Kentucky Roundup Ready alfalfa yield trials 2011-2017 (yield shown as a percentage of the mean of the commercial varieties in the test).

Variety	Proprietor	FD	Variety Characteristics ¹					Lexington		Princeton			Quicksand	Mean ⁵ (# trials)
			Disease Resistance ²					12 ^{3,4}	15	11	13	15	14	
			Bw	Fw	An	PRR	APH	5yr ⁶	3yr	5yr	4yr	2yr	2yr	
Alfagraze 300 RR	America's Alfalfa	3	HR	R	HR	HR	HR	94	95	93	99	93		95(5)
Alfagraze 600 RR	America's Alfalfa	6		R	HR	R	R		102			85	93	93(3)
Ameristand 405T RR	America's Alfalfa	4	HR	HR	HR	HR	HR	98	105	97	100	98	93	99(6)
Ameristand 433T RR	America's Alfalfa	3	HR	R	R	HR	HR	91	97		95	96	107	97(5)
Ameristand 445TQ RR	America's Alfalfa	4	HR	HR	HR	HR	HR	104	101		100			102(3)
AphaTron RR	Croplan Genetics	4	HR	HR	HR	HR	HR	100			98			99(2)
Consistency 4.10 RR	Croplan Genetics	4	HR	HR	HR	HR	HR	99		102				101(2)
DKA-41-18 RR	Monsanto	4	HR	HR	HR	HR	HR	98		101		100		100(3)
DKA 44-16 RR	Monsanto	4	HR	HR	HR	HR	HR	105			100			103(2)
Stratica RR	Croplan Genetics	4	HR	HR	HR	HR	HR	98			96			97(2)
Tonnica RR	Crop Genetics	4	HR	HR	HR	HR	HR	106			101			104(2)
WL 355 RR	W-L Research	4	HR	HR	HR	HR	HR	100		102		110		104(3)
WL 356HQ RR	W-L Research	5	HR	HR	HR	HR	HR	100	99		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		93		104		111	103(3)
54R02 RR	Dupont Pioneer	4	HR	HR	HR	HR	HR	98	109	104		102	97	102(5)
55VR06 RR	Dupont Pioneer	5	HR	R	HR	HR	HR		90				99	95(2)
55VR08 RR	Dupont Pioneer	5	-	HR	HR	HR	HR		108					-
6516R RR	NEXGROW	5	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 spring 2011 was harvested for five years, so the final yield report would be "2015 Alfalfa Report" archived in the KY Forage website at www.uky.edu/Ag/Forage.

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

⁶ Number of years of data.

dangrass 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 6-12 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 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.

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 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, the alfalfa varieties were compared to Alfagraz, 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 2017 reports on the forage Web site. See below for specific reports. The forage Web site contains all reports from 2001 through 2017.

Yield and Grazing Tolerance Reports

Individual forage species reports can be found at www.uky.edu/Ag/Forage/ForageVarietyTrials2.htm.

- 2017 Alfalfa Report (PR-727)
- 2017 Red and White Clover Report (PR-728)
- 2017 Orchardgrass Report (PR-729)
- 2017 Tall Fescue and Bromegrass Report (PR-730)
- 2017 Timothy and Kentucky Bluegrass Report (PR-731)
- 2017 Annual and Perennial Ryegrass and Festulolium Report (PR-732)
- 2017 Alfalfa Grazing Tolerance Report (PR-733)
- 2017 Red and White Clover Grazing Tolerance Report (PR-734)
- 2017 Cool-Season Grass Grazing Tolerance Report (PR-735)
- 2017 Cool-Season Grass Horse Grazing Report (PR-736)
- 2017 Annual Grass Report: Warm Season and Cool Season (Cereals) (PR-737)
- 2017 Long-Term Summary of Kentucky Forage Variety Trials (PR-738)

About the Authors

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Table 5. Summary of Kentucky tall fescue yield trials 2000-2017 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor	Lexington											Princeton						Quicksand				Mean ³ (#trials)	
		01 ^{1,2} 3-yr ⁴	03 2-yr	05 3-yr	07 3-yr	09 3-yr	11 3-yr	12 3-yr	13 3-yr	14 3-yr	15 2-yr	00 2-yr	02 3-yr	04 3-yr	06 3-yr	08 3-yr	10 3-yr	12 3-yr	15 2-yr	01 2-yr	03 2-yr	05 4-yr		13 3-yr
Atlas Select	ProSeeds Marketing														95									-
Aprilla	ProSeeds Marketing										91								96					94(2)
Baguala	Allied Seed																92							95(3)
BarElite	Barenbrug USA				96			100														95		94(3)
Bariane	Barenbrug USA		87	99																				-
Barolex	Barenbrug USA			90														99	100	96			93	103(11)
BarOptima PLUS E34 ⁵	Barenbrug USA			122	99		107	108	102	99	113						101	91	103			102		99(10)
Bronson	Ampac Seed			88	97	105	102	99	99															-
Brutus	Saddle Butte Ag. Inc.									90									99			97	95	100(8)
Bull	Improved Forages		98	102					100					102	104								90	99(7)
Cajun II	Smith Seed Services							97		105	99	99										97		98(2)
Carmine	DLF International	99																						99(4)
Cowgirl	Rose-AgriSeeds								94								102	100	98					96(2)
Dominate	Allied Seed										105	117												111(2)
Drover	Barenbrug USA														106									104(2)
DuraMax GOLD ⁵	DLF International							102								107								100(2)
Enhance	Allied Seed																		102					103(4)
Estancia ArkShield ⁵	Mountain View Seeds			102					106						101						107			105(3)
Festival	Pickseed West	107								92										101				97(2)
Flourish	Allied Seed											93												98(2)
FSG 402TF	Farm Science Genetics						100			104							99							101(3)
Goliath	Ampac Seed																					106		105(2)
Hoedown	DLF International	104																						100(4)
HyMark	Fraser Seeds							91														103		102(4)
Jesup EF	Pennington Seed							98	105															100(16)
Jesup MaxQ ⁵	Pennington Seed			98	101	110	103	100	93	106	103				94									-
Johnstone	ProSeeds Marketing	108																						-
KENHY	KY Agric Exp Sta.															89								-
Kentucky 32	Oregro Seeds							93	94		101							98	94	101				96(6)

continued

Table 5. continued

Variety	Proprietor	Lexington										Princeton						Quicksand				Mean ³ (#trials)		
		01 ^{1,2} 3-yr ⁴	03 2-yr	05 3-yr	07 3-yr	09 3-yr	11 3-yr	12 3-yr	13 3-yr	14 3-yr	15 2-yr	00 2-yr	02 3-yr	04 3-yr	06 3-yr	08 3-yr	10 3-yr	12 3-yr	15 2-yr	01 2-yr	03 2-yr		05 4-yr	13 3-yr
Kokanee	Ampac Seed	89									86													88(2)
KY31+ ⁵	KY Agric Exp Sta.	118	112	108	102	102	93	95	103	100	96	108	104		104	93	112	101	92	124	98	110	110	104(21)
Lacefield MaxQ II ⁵	Pennington Seed				109										101	106			105				113	104(8)
Maximize	Turf-Seed	95																		93				97(4)
Martin2 Protek ⁵	DLF International						104																	-
Nanryo	Jap. Grassland ForageSeed/				96																			-
Noria	ProSeeds Marketing				98																			-
RAD-ERF50	Radix Research, Inc.															113								-
Resolute	Ampac Seed	90																		65				78(2)
Savory	DLF International														91									-
Seine	Advanta Seeds													96										-
Select	Southern States	106	94	99	99	98	90	100	97	103	100	105	97	105	102	105	99	100	99	112	102	91	99	100(22)
SS-0705TFSL	Southern States									99	98								103					100(3)
Stockman	Seed Research of OR		108											101	97						105			103(4)
Teton II	Mountain View Seeds						107	105		96								99						103(4)
Texoma MaxQ II ⁵	Pennington Seed			95																				-
TF0203G	Seed Research of OR				87																			-
Tower Protek ⁵	DLF International						98																	-
Tuscany	Forage Genetics	112																						-
Tuscany II	Seed Research of OR							97							98			106						100(3)
SCAN	Brett Young					86																		-

¹ Year trial was established.

² Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in fall 2012 was harvested three years, so the final report would be "2015 Tall Fescue Report" archived in the KY Forage website at www.uky.edu/Ag/Forage.

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

⁴ Number of years of data.

⁵ KY31+ contains the toxic endophyte. Jesup MaxQ, Texoma MaxQ II, Lacefield MaxQ II, DuraMax GOLD, Martin2 Protek, Tower Protek and Estancia Arkshield contain a non-toxic endophyte. BarOptima PLUS E34 contains a beneficial endophyte. The other fescue varieties in this table do not contain an endophyte.

Table 7. Summary of Kentucky timothy yield trials 2000-2017 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/KY Distributor	Lexington												Quicksand		Princeton		Mean ³ (#trials)
		00 ^{1,2} 2yr ⁴	01 3yr	02 4yr	06 3yr	07 3yr	08 3yr	09 3yr	11 3yr	12 3yr	13 3yr	14 3yr	15 2yr	99 2yr	01 2yr	00 3yr	04 2yr	
Alma	Newfield Seeds Co/Caudill Seed Co.															81		-
Auroro	General Feed and Grain	100												98				99(2)
Barfleo	Barenbrug USA							95	91	101								95(5)
Barpenta	Barenbrug USA					74			82	82			108	81				79(3)
Clair	Ky Agric. Exp. Station		104	113	107	95	107	104	112	99	97	111	103		106		122	106(13)
Classic	Cebeco International Seeds	100		86											86			91(3)
Climax	Canada Agr. Res. Station				79	102	104	98	102	100	82	96	88					95(9)
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	127			124		115(9)
Dolina	DLF International	99		90														95(2)
Express	Seed Research of Oregon			95		91		97	95									95(4)
Hokuel	Snow Brand Seed	103																-
Hokusei	Snow Brand Seed	96																-
Joliette	Newfield Seeds Co/Caudill Seed Co.						86	89						99			90	98(2)
Jonaton	Newfield Seeds Co/Caudill Seed Co.																84	88(3)
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 International	95																-
Tuukka	Ampac Seed Company		94	88												91	93	92(4)
Varis	Mountain View Seeds											83						-
Zenyatta	DLF International										103							-

¹ Year trial was established.

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

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

⁴ Number of years of data.

Table 8. Summary of Kentucky bluegrass yield trials at Lexington 1996-2017 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/KY Distributor	Lexington												Mean ³ (#trials)				
		96 ^{1,2} 3yr ⁴	03 2yr	04 3yr	06 4yr	07 3yr	08 3yr	09 3yr	10 3yr	11 3yr	12 3yr	13 3yr	14 3yr					
Adam 1	Radix Research			98														-
Barberby	Barenbrug USA					94		101	91	98	87	103	101					95(7)
Big Blue	Rose-AgrSeed							82			95							89(2)
Common	Public				71	66	68											68(3)
Ginger	ProSeeds Marketing		89		118	119	114	118	112	107	110	107	95					109(10)
Kenblue	Public	90		102	133				96	95	118	95	100					104(8)
Lato	Turf Seed Inc.	110				122												116(2)
Park (certified)	Public										90	95	104					96(3)
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											-
Slezanka	DLF International Seeds		111															-

¹ Year trial was established.

² Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in fall 2012 was harvested three years, so the final report would be "2015 Timothy and Kentucky Bluegrass Report" archived in the KY Forage website at www.uky.edu/Ag/Forage. The 96 and 03 Lexington results are in the appropriate Tall Fescue Reports.

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

⁴ Number of years of data.

Table 11. Summary of Kentucky festulolium yield trials 2001-2017 (yield shown as a percentage of the mean of the commercial varieties in the trial).¹

Variety	Type ²	Proprietor	Lexington										Mean ⁵ (#trials)		
			2001 ^{3,4} 2yr ⁶	2005 3yr	2008 3yr	2009 3yr	2010 3yr	2011 3yr	2012 2yr	2013 3yr	2014 2yr	2015 2yr			
Agula	MF x IR	Allied Seed					94								
Barfest	MF x PR	Barenbrug USA					105	101	107	119	91	97		103(6)	
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	89		97(9)	
Felina	(TF x IR) x TF	DLF International	104				132	118	134	114	96			116(6)	
Foltan	(TF x IR) x TF	DLF International					112	101	124	92	72	86		98(6)	
Gain	MF x IR	Allied Seed					103	77	52	75				77(4)	
Hostyn	MF x IR	DLF International							107	110	106			108(3)	
Hykor	(TF x IR) x TF	DLF International					133	141	153	131	119	107		131(6)	
Lofa	(TF x Int) x Int	DLF International					105	107	110	128	112	95		110(6)	
Mahulena	(TF x IR) x TF	DLF International							131	109	107			116(3)	
Meadow Green	--	Pure Seed							37	34				36(2)	
Perseus	MF x IR	DLF International					132	114	126	123	110	116		120(6)	
Perun	MF x IR	DLF International					127	114	107	131	110	106		116(6)	
Rebab	(TFxIR) x TF	DLF International								94	77			86(2)	
Spring Green	MF x PR	Turf-Seed	96	111	114	101	113	112	114	110	103	106		108(10)	
Sweet Tart	MF x IR	ProSeeds Marketing			88		82	63	62					74(4)	

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

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

³ Year trial was established.

⁴ Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in fall 2012 was harvested three years, so the final report would be "2015 Annual and Perennial Ryegrass and Festulolium Report" archived in the KY Forage website at www.uky.edu/Ag/Forage.

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

⁶ Number of years of data.

Table 12. Summary of Kentucky bromegrass yield trials at Lexington 2006-2017 (yield shown as a percentage of the mean of the commercial varieties in the trial.)

Variety	Type	Proprietor/KY Distributor	2006 ^{1,2}	2008	2010	2012	2014	2015	Mean ³ (#trials)
			4-yr ⁴	3-yr	3-yr	3-yr	3-yr	2-yr	
AC Knowles	hybrid	Agriculture Canada	85		82	102	89		89(4)
Bigfoot	hybrid	Grassland Oregon	108	116	105				110(3)
Canterbury	mountain	Barenbrug USA		79					--
Carlton	smooth	Pickseed USA				82	95		91(2)
Dolna	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	106	117(5)
Olqa	smooth	Barenbrug USA		116	101				109(2)
Peak	smooth	Allied Seed		97		100		94	97(3)
Persister	prairie	DLF International		72					--
RAD-BI29	smooth	Columbia Seeds	96	86					91(2)

¹ Year trial was established.

² Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in fall 2012 was harvested three years, so the final report would be "2015 Tall Fescue and Brome Report" archived in the KY Forage website at www.uky.edu/Ag/Forage.

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

⁴ Number of years of data.

Table 13. Summary of Kentucky sudangrass yield trials 2008-2017 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/KY Distributor	Lexington										Princeton	Mean ³ (#trials)		
		2008 ^{1,2}	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017			
		All trials are 1 year yields													
AS9301 BMR ⁴	Alta Seeds/Ramer Seed					118							124	119	122(2)
AS9302 BMR (Brachytic Dwarf)	Alta Seeds/Ramer Seed														93(7)
Enorma BMR	Cal/West Seeds			99	94	92	91	83		91	98				112(3)
FSG 1000 BMR	Farm Science Genetics									101	124	110			96(11)
Hayking BMR	Central Farm Supply	111	112	91	97	97	96	92	94	90	80		99		98(9)
Monarch V	Public	104	96	102	97	93	98	110	99	82					92(11)
Piper	Public	90	91	97	94	104	105	89	94	85	81		86		104(11)
ProMax BMR	Ampac Seed	95	101	110	115	96	103	100	111	111	106		96		105(7)
SS130 BMR	Cal/West Seeds			101	103			107	106	110	109	99			-
Trudan Headless	Chromatin								118						-

- 1 Establishment year.
- 2 Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine actual forage production. The 2017 Annual Grass Report contains yield data from 2013, 2014, 2015, 2016, and 2017.
- 3 Mean only presented when respective variety was included in two or more trials.
- 4 BMR (brown midrib) 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 2008-2017 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/KY Distributor	Lexington										Princeton	Mean ³ (#trials)	
		2008 ^{1,2}	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017		
		All trials are 1 year yields												
AS6402 BMR ⁴ (Brachytic Dwarf)	Alta Seeds/Ramer Seed					91						78	98	89(3)
AS6503 BMR	Alta Seeds/Ramer Seed						96	103	90					96(3)
AS6504 BMR (Dry Stalk)	Alta Seeds/Ramer Seed											105	114	110(2)
FSG 208 BMR	Farm Science Genetics			75										-
FSG 214 BMR	Farm Science Genetics						99	108	112					107(4)
FSG 215 BMR	Farm Science Genetics								112					-
Greengrazer V	Farm Science Genetics			166			122	107	92	103	110		79	117(6)
GW300 BMR	Gayland Ward Seed				88	78	88	81	73	101	100		130	86(8)
HyGain	Turner Seed	104	105	118								110	130	116(6)
KFSugar-Pro555	Byron Seed													-
MS 202 BMR	Farm Science Genetics			106										-
Nutra-King BMR	Gayland Ward Seed								110	108	96	108		103(4)
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	109		109(8)
SS220 BMR	Southern States		107	84		112								101(3)
Surpass BMR	Turner Seed	81	80	64						79	84	88		79(6)
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	95	92(4)
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	77		85(6)
SweetSix BMR	Gayland Ward Seed						93	101		91				95(3)
SweetSix BMR (Dry Stalk)	Gayland Ward Seed								102		72	103		92(3)
Vita-Cane	Gayland Ward Seed					121								-

- 1 Establishment year.
- 2 Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine actual forage production. The 2017 Annual Grass Report contains yield data from 2013, 2014, 2015, 2016, and 2017.
- 3 Mean only presented when respective variety was included in two or more trials.
- 4 BMR (brown midrib) 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 2013-2017 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/KY Distributor	Lexington					Princeton	Mean ³ (#trials)
		2013 ^{1,2}	2014	2015	2016	2017	2017	
All trials are 1 year yields								
FSG 300 Hybrid	Farm Science Genetics			109	99	109	117	109(4)
FSG 315 BMR ⁴ (Dwarf)	Farm Science Genetics			101	102	81	97	95(4)
Leafy22 Hybrid	Turner Seed				105	124	115	115(3)
Pennleaf Hybrid	Pennington Seed	93	91	94	96	87	84	91(6)
PP102M Hybrid	Cisco	93	93	90	79	90	77	87(6)
SS501	Southern States	90	99	96	86	94	89	92(6)
SS635	Southern States	108	112	101	116	94	107	106(6)
Tifleaf III Hybrid	Gayland Ward Seed	116	106	108	116	120	114	113(6)

¹ Establishment year.

² Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine actual forage production. The 2017 Annual Grass Report contains yield data from 2013, 2014, 2015, 2016, and 2017.

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

⁴ BMR (brown midrib) 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 2013-2017 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/KY Distributor	Lexington					Mean ³ (#trials)
		2013 ^{1,2}	2014	2015	2016	2017	
AF7201 BMR ⁴	Alta Seed/Ramer Seed	89	81	101	89		90(4)
AF7203 BMR (Brachytic Dwarf)	Alta Seed/Ramer Seed					74	-
AF7401 BMR (Brachytic Dwarf)	Alta Seed/Ramer Seed	76	94	90	83	86	85(5)
Emsilemaster	Caudill Seed	125	90	101	106	111	107(5)
FSG114 BMR	Farm Science Genetics		94	128	93	125	110(4)
FSG115 BMR (Brachytic Dwarf)	Farm Science Genetics		51	31	72	81	59(4)
GW2120	Gayland Ward Seed	117	89	113	84	107	104(5)
GW400 BMR	Gayland Ward Seed	93	79	128	78	91	94(5)
GW600 BMR	Gayland Ward Seed		107	111	90		103(3)
KFFiber-Pro70FS	Byron Seed					65	-
NK300	Chromatin		126	110	101	116	113(4)
SD1741 BMR	Chromatin		133	92	103	81	102(4)
SilageKing BMR (Dwarf)	Gayland Ward Seed		48				-
SiloPro BMR (Dwarf)	Gayland Ward Seed			24	74		49(2)
SS405	Chromatin		188	183	207	138	179(4)
1990	Chromatin		121	89	118	125	113(4)

¹ Establishment year.

² Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine actual forage production. The 2017 Annual Grass Report contains yield data from 2013, 2014, 2015, 2016, and 2017.

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

⁴ BMR (brown midrib) 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 ³ (#trials)	
	2008 ^{1,2}	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)
Excalber	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)

¹ Establishment year.

² Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine actual forage production. The 2017 Annual Grass Report contains yield data from 2013, 2014, 2015, 2016, and 2017.

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

Table 18. Summary of 2002-2017 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 ^{1,2}	2004	2006 ³	2006	2008 ⁴	2008	2009	2010	2011	2012	2013	2014	2015	Mean ⁵ (#trials)
			2yr ⁶	4yr	2yr	2yr	3yr	4yr	4yr	4yr	4yr	4yr	4yr	3yr	2yr	
Alice	Intermediate	Barenbrug USA		59	98									93	101	88(4)
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	107	103(11)
GWC-AS10	-	Ampac Seed								77						-
Insight	Ladino	Allied Seed				77										-
Ivory	Intermediate	DLF International	132	142												137(2)
Ivory II	Intermediate	DLF International					102									-
Kopu II	Intermediate	Ampac Seed			77	122	96		93	113	112	86	106	93	100	100(10)
KY Select	Intermediate	KY Agr Ex. Sta.						105		83						94(2)
Neches	-	Barenbrug USA													105	-
Patriot	Intermediate	Pennington		110	137	122		100	111	110	123	102	132	109	111	115(11)
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	88	89(11)
Renovation	Intermediate	Smith Seed											102	100	86	96(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	103	117(11)

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 test. For example, the trial planted in fall 2010 was grazed for four years so the final persistence report would be "2014 Red and White Clover Grazing Tolerance Report" archived in the KY Forage website at www.uky.edu/Ag/Forage.

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

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

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

⁶ Number of years of data.

Table 20. Summary of 2000-2017 Kentucky tall fescue grazing tolerance trials (stand persistence shown as a percent of the stand rating of KY 31+).

Variety	Proprietor	Lexington															Princeton	Mean ³ (#trials)
		2000 ^{1,2}	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2002	
		4yr ⁴	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	3yr	4yr	
Advance MaxQ ⁵	Pennington Seed							94										-
Bariane	Barenbrug USA				89		75	47	29									60(4)
BarElite	Barenbrug USA								96									-
Barolex	Barenbrug USA						78	101	86									88(3)
BarOptima PLUS E34 ⁵	Barenbrug USA						100		97			98	100	98	100	100		99(7)
Bronson	Ampac Seed										98	98						98(2)
Bull	Caudill Seed													96				-
Cajun II	Smith Seed Services											98					98	93(3)
Cattle Club	Green Seed	93	91															92(2)
Carmine	DLF-Jenks		90															-
Cowgirl	Rose Agri-Seed					99								99				99(2)
Festival	Pickseed West		100	101													89	97(3)
Flourish	Allied Seed													98				-
Goliath	Ampac Seed											98						-
Hoedown	DLF-Jenks	88																-
HyMark	Fraser Seeds									95			100					98(2)
Jesup MaxQ ⁵	Pennington Seed			103	97		68	102	97	97	99	98	100	99	99	99	105	97(13)
Johnstone	Proseeds		92															-
KY31+ ⁵	KY Agri. Exp Sta.	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100(16)
KY31- ⁵	KY Agri. Exp Sta.		98	103	98	100	83	101	100	98	99	99	100	100	99	100	105	99(15)
Kokanee	Ampac Seed	43																-
Lacefield MaxQ II ⁵	Pennington Seed						82	102	99	98	98	97			100	99		97(8)
Maximize	Rose Agri-Seed		99															-
Nanryo	Japanese Grassland For.Seed								100									-
Orygun	-			99														-
Resolute	Ampac Seed		23															-
Select	Southern States	107	101	100	100		67	100	93	95	97	100	100	99	99	99	98	97(15)
SS0705TFSL	Southern States															100		-
Stargrazer	Southern States	86	89															79(4)
Stockman	Seed Res. of OR					102												-
Texoma MaxQ II ⁵	Pennington Seed						88	100	98									95(3)
Tuscany II	Seed Res. of OR							101										-
Verdant	Am.Grass Seed							97										-

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 fall 2010 was grazed four years so the final report would be "2014 Cool-Season Grass Grazing Tolerance Report" archived in the KY Forage website at www.uky.edu/Ag/Forage.

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

⁴ Number of years of data.

⁵ KY 31- is the variety KY31 from which the toxic endophyte has been removed. KY31+ contains the toxic endophyte. Jesup MaxQ, Advance MaxQ, Texoma MaxQ II, and Lacefield MaxQ II contain a non-toxic endophyte. BarOptima PLUS E34 contains a beneficial endophyte. The other fescue varieties in this table do not contain an endophyte.

Table 21. Summary of 2000-2017 Kentucky orchardgrass grazing tolerance trials (stand persistence shown as a percent of the mean of the commercial varieties in the trial).

Variety	Proprietor	Lexington													Princeton	Mean ⁴ (#trials)
		2000 ^{1,2} 4yr ⁵	2001 4yr	2002 4yr	2003 4yr	2004 4yr	2005 ³ 4yr	2007 4yr	2009 4yr	2010 4yr	2011 4yr	2012 4yr	2013 ³ 4yr	2014 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	131	133	119(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	89	94		51	57			79(4)
Haymate	Southern States	53	115	100	118										83	94(5)
Intensiv	Barenbrug USA				51											
Mammoth	DLF-Jenks		115													
Megabite	Turf Seed		77													
Niva	DLF-Jenks			76											83	80(2)
Perslst	Smith Seed						138	107	103	100	96	115	102	121		107(6)
Potomac (certified)	Public			116		119									117	117(3)
Prairie	Turner Seed	127	121								94		131	96	83	104(5)
Prodigy	Caudill Seed												109	121		
Profile	Scott Seed			116												
Profit	Ampac Seed								95	99	102	94	95	80		94(5)
Tekapo	Ampac Seed		55	74	118		50	103	95	105	106	80	66	86	100	92(10)
Takena	Smith Seed		99													
Seco	Southern States							85								
550708OGDT	Southern States													106		

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 fall 2010 was grazed four years so the final report would be "2014 Cool-Season Grass Grazing Tolerance Report" archived in the KY Forage website at www.uky.edu/Ag/Forage.

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 22. Summary of 2000-2017 Kentucky perennial ryegrass and festulolium (FL) grazing tolerance trials in Lexington (stand persistence shown as a percent of the mean of the commercial varieties in the trial).

Variety	Type	Proprietor	2000 ^{1,2}	2001	2003	2007	2008	2010	2011	2012	2013	2014	Mean ³ (#trials)
			4yr ⁴	3yr	4yr	4yr	4yr	4yr	4yr	4yr	4yr	3yr	
AGRLP103	—	AqResearch USA	128		86								107(2)
Aries	diploid	Ampac Seed		139									—
Barfest (FL)	MF x PR ⁶	Barenbrug USA						116	112				114(2)
Boost	tetraploid	Allied Seed					101	83	95	104			96(4)
Calibra	tetraploid	DLF International								120		88	104(2)
Citadel	tetraploid	Donley Seed	107										—
Duo (FL)	MF x PR ⁶	Ampac Seed	116				95	72	90	115			98(5)
Grand Daddy	tetraploid	Smith Seed Services		121		82		100	81	103		99	98(6)
Lasso	diploid	DLF-Jenks		130									—
Linn (certified)	diploid	Public	112	129	63		95	108	95	103	96	87	99(9)
Maverick	tetraploid	Ampac Seed		36									—
Meadow Green (FL)	MF x IR ⁶	Pure Seed								15			—
PayDay	tetraploid	Mountain View Seeds									101	92	97(2)
Polly II	tetraploid	FS Growmark	36	68									52(2)
Power	tetraploid	Ampac Seed				158		107	112	109	89	94	112(6)
Quartet	tetraploid	Ampac Seed		77		59							60(3)
Remington	tetraploid	Barenbrug USA			151							118	135(2)
Remington PLUS NEA2 ⁵	tetraploid	Barenbrug USA										122	—
Spring Green (FL)	MF x PR ⁶	Rose Agri-Seed	101				109	115	115	120			112(5)
TetraGain	tetraploid	Pure Seed								112			—
Victorian	diploid	Caudill Seed									114		—

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 fall 2010 was grazed four years so the final report would be "2014 Cool-Season Grass Grazing Tolerance Report" archived in the KY Forage website at www.uky.edu/Ag/Forage.

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

⁴ Number of years of data.

⁵ Remington PLUS NEA2 contains a non-toxic endophyte.

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

Table 23. Summary of 1999-2017 Kentucky tall fescue horse grazing tolerance trials in Lexington (stand persistence shown as a percent of the stand rating of KY 31-).

Variety	Proprietor/KY Distributor	1999 ^{1,2} 3-yr ⁴	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 3-yr	Mean ³ (#trials)
BarOptima PLUS E34 ⁵	Barenbrug								107			101	101	95	104	99	101(6)
Bronson	Ampac Seed	80															—
Cajun II	Smith Seed														96		—
Cattle Club	Green Seed	95															—
Cowgirl	Rose Agri-Seed									105				99			102(2)
Festorina	Advanta Seed	102															—
Jesup MaxQ ⁵	Pennington Seed			98			78			104	97	100	101	97	105	98	98(9)
Johnstone	ProSeeds		88														—
KY31+ ⁵	KY Agri. Exp.Sta.		105				102	109	120	107	101	101	101	99	105	99	104(11)
KY31- ⁵	KY Agri. Exp.Sta.	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100(15)
Lacefield MaxQ II ⁵	Pennington Seed							105	110		98				104		104(4)
Nanryo	Japanese Grassland For. Seed								72								—
Seine	Seed Research of OR					135											—
Select	Southern States	82		109	94	99	73	104	76	108	98	100	101	98	98	97	96(14)
Stargrazer	Southern States	70															—
Stockman	Seed Research of OR					125											—

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 fall 2010 was grazed four years so the final report would be "2014 Cool-Season Grass Horse Grazing Tolerance Report" archived in the KY Forage website at www.uky.edu/Ag/Forage.

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

⁴ Number of years of data.

⁵ KY 31- is the variety KY31 from which the toxic endophyte has been removed. KY31+ contains the toxic endophyte. Jesup MaxQ and Lacefield MaxQII contain a non-toxic endophyte. BarOptima PLUS E34 contains a beneficial endophyte, but is not recommended in pastures with late term mares since it produces low levels of ergovaline. The other fescue varieties in this table do not contain an endophyte.

Table 24. Summary of 1999-2017 Kentucky orchardgrass horse grazing tolerance trials in Lexington (stand persistence shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/KY Distributor	1999 ^{1,2}	2000	2001	2002	2005 ³	2006	2009	2010	2011	2012	2013	2014	Mean ⁴ (#trials)
		3-yr ⁵	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	4-yr	3-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	101	119(8)
Crown Royale	Grassland Oregon			95										--
Crown Royale Plus	Grassland Oregon				97									--
Ellse	Pure Seed										87			--
Haymate	Southern States	96	85		97									93(3)
Persist	Smith Seed					114		103	101	92	112	146	117	134(6)
Potomac	Public				117									--
Prairie	Turner Seed			100										--
Prodlgy	Caudill Seed											54		--
Profit	Ampac Seed							93	86		92		78	87(4)
SS-0708OGDT	Southern States									104			105	105(2)
Tekapo	Ampac Seed	101	115		93	30		92	100	83	87	63		92(8)

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 in fall 2010 was grazed four years so the final report would be "2014 Cool-Season Grass Horse Grazing Tolerance Report" archived in the KY Forage website at www.uky.edu/Ag/Forage.

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

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

⁵ Number of years of data.

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