



# 2016 Annual Grass Report: Warm Season and Cool Season (Cereals)

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## Introduction

Summer annual grasses provide an important forage crop option for producers in Kentucky. These grasses are mainly used as emergency or supplemental hay and pasture crops, but little information is available on their yield potential. The purpose of this publication is to summarize the University of Kentucky 2013-2016 forage yield trials with sudangrass, sorghum/sudangrass, millets, and teff.

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 x 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 9-12 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.

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.

Cool season annual grasses (specifically cereal crops) are also used as forages crops for hay, baleage or grazing. The cereal crops used in this report are wheat (*Triticum aestivum*), rye (*Secale cereale*), oats (*Avena sativa*) and triticale (*Triticum secale*).

## Considerations in Selecting a Summer Annual Variety

The major factor in selecting a variety of summer annual grass is yield, both total and seasonal. Growth after first cutting is strongly dependent on available moisture and nitrogen fertilization. Summer annual grasses generally have different characteristics and uses. Pearl millets vary considerably in height and can be used for both pasture and hay. Pearl millet has the advantage of not producing prussic acid (HCN or cyanide). Sudangrass and sorghum-sudangrass hybrids are related grasses (in the sorghum family) and can produce prussic acid im-

mediately after frost or when immature shoots are grazed during severe drought. Sudangrasses are considered to have the least potential for prussic acid poisoning. Sudangrass has smaller, finer stems than sorghum-sudangrass hybrids, which have finer stems than forage sorghums. Consequently, sudangrasses are more easily cured for hay. Pearl millets, sudangrass, sorghum-sudangrass, and teff are typically harvested multiple times during the growing season, and foxtail millet is harvested only once. For more detailed management recommendations refer to *Producing Summer Annual Grasses for Emergency or Supplemental Forage* (AGR-88), and *Teff*, which can be found at [www.uky.edu/Ag/Forage](http://www.uky.edu/Ag/Forage) under "Publications" in the "Grass" species.

## Considerations in Selecting a Cool Season Cereal Variety

The major factors in selecting cool season cereal grass varieties are yield, winter survival and regrowth. If cutting a cereal grass for silage or baleage then yield at the first harvest of the season is most important. For all cereals, winter survival is an important factor as evidenced by the complete winterkill in one triticale variety (Tables 25 & 26) in comparison to the others in the test. Fortunately winter

Table 1. Temperature and rainfall at Lexington, Kentucky in 2013, 2014, 2015, and 2016.

	2013				2014				2015				2016 <sup>2</sup>			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP <sup>1</sup>	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	38	+7	4.50	+1.64	25	-6	2.28	-.58	32	+1	2.17	-0.69	32	+1	0.80	-2.06
FEB	36	+1	1.78	-1.43	30	-5	5.47	+2.26	26	14	3.08	-0.13	38	+3	6.09	+2.88
MAR	39	-5	5.47	+1.07	39	-5	3.08	-1.32	45	+1	7.34	+2.94	52	+8	4.07	-0.33
APR	55	0	4.46	+0.58	58	+3	5.27	-1.89	57	+2	13.19	+9.31	57	+2	3.97	+0.09
MAY	65	+1	5.23	+0.76	66	+2	5.72	+1.25	69	+5	3.02	-1.45	64	0	9.17	+4.70
JUN	72	0	7.32	+3.66	75	+3	2.93	-0.73	75	+3	8.20	+4.54	76	+4	5.09	+1.43
JUL	72	-4	9.33	+4.33	74	-2	3.18	-1.82	77	+1	10.22	+5.22	79	+3	7.43	+2.43
AUG	72	-3	3.68	-0.25	76	+1	6.53	+2.60	74	-1	3.49	-0.44	79	+4	4.37	+0.44
SEP	67	-1	2.21	-0.99	69	+1	3.63	+4.3	72	+4	3.49	+0.29	74	+6	2.18	-1.02
OCT	55	-2	7.02	+4.45	57	0	5.55	+2.98	59	+2	2.78	+0.21	64	+7	0.37	-2.20
NOV	41	-4	3.06	-0.33	41	-4	2.79	-0.60	51	+6	3.72	+0.33				
DEC	36	0	4.19	+0.21	40	+4	2.47	-1.51	49	+13	8.42	+4.44				
Total			58.25	+13.70			49.4	+4.85			69.12	+24.57			43.54	+6.36

<sup>1</sup> DEP is departure from the long-term average.

<sup>2</sup> 2016 data is for the ten months through October.

wheat and cereal rye rarely show winter-kill in Kentucky regardless of the variety. Winter oats are a marginal crop in Kentucky because severe winterkill usually occurs one out of every three years. We have started testing spring plant spring oats and other cereals (Tables 27 & 28) to determine which species and which varieties have the best potential as short term cool season forage crops. Notice the very low yield of winter wheat when planted in the spring. Spring plantings of winter wheat are not recommended because the lack of vernalization temperatures prevent stem elongation and vigorous spring growth.

## Description of the Tests

This report summarizes warm season annual studies (five in 2013, five in 2014, five in 2015 and five in 2016) and cool-season annual studies (four in 2013, two in 2015, and one in 2016) in Lexington. The soil at Lexington (Maury) is a well-drained silt loam and is well suited to annual grass production. Plots were 5 feet x 20 feet in a randomized complete block design with four replications with a harvested area of 5 feet by 15 feet. The wheat trial plots were 4 feet x 15 feet with a harvested area of 4 feet x 12 feet. All trials were sown into a prepared seedbed using a disk drill at the following rates (lb/acre): sudangrass (25), sorghum-sudangrass (30), forage sorghum (8), pearl millet (20), teff (5 for uncoated, 8 for coated), wheat (120), rye (110), oats (80) and triticale (100). Plots were harvested with a sickle-type forage plot harvester. Cutting height was 4 inches for teff and 6 inches for millet, sudangrass and sorghum-sudangrass. The cool season grasses were cut at a height of 3 inches. The forage sorghum was harvested by hand (5 feet by 5 feet in the center of the plot in 2013 and the center 15 foot row in 2014, 2015 and 2016). Fresh weight samples were taken at each harvest to calculate percent dry matter production. All tests were managed for establishment, fertility, pest control, and harvest according to University of Kentucky Cooperative Extension Service recommendations. Pests were controlled so that they would not limit yield. See individual yield tables for nitrogen application.

**Table 2. Descriptive scheme for the stages of development in perennial forage grasses.**

Code	Description	Remarks
<b>Leaf development</b>		
11	First leaf unfolded	Applicable to regrowth of established (plants) and to primary growth of seedlings.
12	2 leaves unfolded	Further subdivision by means of leaf development index (see text).
13	3 leaves unfolded	
•	•••••	
19	9 or more leaves unfolded	
<b>Sheath elongation</b>		
20	No elongated sheath	Denotes first phase of new spring growth after overwintering. This character is used instead of tillering which is difficult to record in established stands.
21	1 elongated sheath	
22	2 elongated sheaths	
23	3 elongated sheaths	
•	•••••	
29	9 or more elongated sheaths	
<b>Tillering (alternative to sheath elongation)</b>		
21	Main shoot only	Applicable to primary growth of seedlings or to single tiller transplants.
22	Main shoot and 1 tiller	
23	Main shoot and 2 tillers	
24	Main shoot and 3 tillers	
•	•••••	
29	Main shoot and 9 or more tillers	
<b>Stem elongation</b>		
31	First node palpable	More precisely an accumulation of nodes. Fertile and sterile tillers distinguishable.
32	Second node palpable	
33	Third node palpable	
34	Fourth node palpable	
35	Fifth node palpable	
37	Flag leaf just visible	
39	Flag leaf ligule/collar just visible	
<b>Booting</b>		
45	Boot swollen	
<b>Inflorescence emergence</b>		
50	Upper 1 to 2 cm of inflorescence visible	
52	¼ of inflorescence emerged	
54	½ of inflorescence emerged	
56	¾ of inflorescence emerged	
58	Base of inflorescence just visible	
<b>Anthesis</b>		
60	Preanthesis	Inflorescence-bearing internode is visible. No anthers are visible.
62	Beginning of anthesis	First anthers appear.
64	Maximum anthesis	Maximum pollen shedding.
66	End of anthesis	No more pollen shedding.
<b>Seed ripening</b>		
75	Endosperm milky	Inflorescence green
85	Endosperm soft doughy	No seeds loosening when inflorescence is hit on palm.
87	Endosperm hard doughy	Inflorescence losing chlorophyll; a few seeds loosening when inflorescence hit on palm
91	Endosperm hard	Inflorescence-bearing internode losing chlorophyll; seeds loosening in quantity when inflorescence hit on palm.
93	Endosperm hard and dry	Final stage of seed development; most seeds shed.

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

## Results and Discussion

Weather data for Lexington is presented in Table 1.

Yield data (on a dry-matter basis) for all tests are reported in Tables 3 through 29. Varieties are listed in order from highest to lowest total production. Yields are given by cutting and as a total for the year. Statistical analyses were performed on all

yield data to determine if the apparent differences are truly due to variety or just due to chance. Varieties not significantly different from the highest numerical value in a column are marked with one asterisk (\*). To determine if two varieties are truly different, compare the difference between the two varieties to the Least Significant Difference (LSD) at the

**Table 3. Dry matter yields, seedling vigor, percent stand, maturity, and stand height of sudangrass varieties sown May 28, 2013, at Lexington, Kentucky.**

Variety	Proprietor/ Distributor	Seedling Vigor <sup>1</sup> Jun 20	Percent Stand Jun 20	Maturity <sup>2</sup>			Height (inches)				Yield (DM tons/acre)				
				Jul 8	Aug 7	Sep 9	Jul 8	Aug 7	Sep 9	Oct 21	Jul 8	Aug 7	Sep 9	Oct 21	Total
<b>Commercial Varieties-Available for Farm Use</b>															
SS130 BMR	Cal/West Seeds	4.6	97	32.0	33.3	42.3	43	49	50	16	1.37	1.74	1.69	0.39	5.19*
Piper	Public	4.8	99	32.3	33.5	33.8	46	58	54	24	1.37	1.69	1.53	0.47	5.07*
ProMax BMR	Ampac Seed	4.4	96	32.3	34.0	36.8	44	60	57	20	1.35	1.73	1.52	0.38	4.98*
Monarch V	Public	5.0	99	32.3	33.3	36.3	44	52	46	17	1.40	1.66	1.37	0.33	4.76*
Hayking BMR	Cal/West Seeds	3.9	95	32.0	33.8	39.5	44	55	52	21	1.18	1.60	1.52	0.36	4.66*
Enorma BMR	Cal/West Seeds	3.5	97	32.0	33.5	42.3	40	53	53	17	1.17	1.50	1.44	0.28	4.39
Mean		4.4	97	32.1	33.5	38.5	43	54	52	19	1.31	1.65	1.51	0.37	4.84
CV,%		11.5	3	1.1	1.8	13.2	8	10	7	9	17.19	12.86	7.64	17.29	9.62
LSD,0.05		0.8	4	0.5	0.9	7.6	5	9	6	3	0.34	0.32	0.17	0.10	0.70

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

• Nitrogen application: 50 lb/A of actual nitrogen on July 22 and Aug 8 (Total of 100 lb of N/acre).

**Table 4. Dry matter yields, seedling vigor, stand rating, maturity, and plant height of sudangrass varieties sown May 21, 2014, at Lexington, Kentucky.**

Variety	Proprietor/ Distributor	Seedling Vigor <sup>1</sup> Jun 17	Percent Stand Jun 17	Maturity <sup>2</sup>		Plant Height (in)			Yield (DM tons/acre)					
				Jul 8	Aug 11	Jul 8	Aug 11	Sep 12	Jul 8	Aug 11	Sep 12	Oct 29	Total	
<b>Commercial Varieties-Available for Farm Use</b>														
Trudan Headless	Chromatin	5.0	100	33.0	32.0	38	28	41	1.57	1.15	1.53	0.46	4.71*	
Monarch V	Public	4.3	100	46.3	43.5	42	36	32	1.50	1.30	1.21	0.37	4.38*	
SS130 BMR	Cal/West Seeds	4.4	99	39.0	46.3	39	37	35	1.45	1.29	1.16	0.34	4.24*	
Promax BMR	Ampac Seed	3.8	97	44.3	48.8	41	41	37	1.22	1.27	1.10	0.41	4.00*	
Hayking BMR	Cal/West Seeds	3.0	94	39.0	45.0	38	40	35	1.13	1.23	1.05	0.27	3.69	
Piper	Public	3.9	98	42.0	45.0	41	38	32	1.20	1.02	0.91	0.43	3.57	
Enorma BMR	Cal/West Seeds	3.3	97	43.0	46.3	39	37	33	1.11	1.09	0.90	0.24	3.33	
Mean		3.9	98	40.9	43.8	40	37	35	1.31	1.19	1.12	0.36	3.99	
CV,%		15.9	2	8.7	4.6	14	9	6	23.91	9.75	15.56	36.65	13.13	
LSD,0.05		0.9	3	5.3	3.0	8	5	3	0.47	0.17	0.26	0.20	0.78	

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 50 lb/A of actual nitrogen on May 27, July 11, and August 15 (Total of 150 lb of N/acre).

bottom of the column. If the difference is equal to or greater than the LSD, the varieties are truly different when grown under the conditions at a given location. The Coefficient of Variation (CV), which is a measure of the variability of the data, is included for each column of means. Low variability is desirable, and increased variability within a study results in higher CVs and larger LSDs.

Tables 30, 31, 32, and 33 are summaries of yield data from 2008 to 2016 of commercial varieties that have been entered in the 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. Direct, statistical comparisons of

**Table 5. Dry matter yields, percent stand, maturity, and plant height of sudangrass varieties sown May 21, 2015, at Lexington, Kentucky.**

Variety	Proprietor/ Distributor	Percent Stand Jun 17	Maturity <sup>1</sup> Jul 13	Plant Height (in)		Yield (tons/acre)			
				Jul 13	Sep 16	Jul 13	Aug 7	Sep 16	Total
<b>Commercial Varieties-Available for Farm Use</b>									
ProMax BMR	Ampac Seed	100	33.8	57	39	1.37	1.00	0.95	3.31*
SS130 BMR	Cal/West Seeds	99	33.8	52	35	1.40	1.02	0.85	3.28*
FSG1000 BMR	Farm Science Genetics	94	33.3	50	35	1.06	1.06	0.89	3.01*
Monarch V	Public	100	33.5	52	31	1.30	1.05	0.60	2.95*
Piper	Public	98	33.5	53	39	1.13	0.91	0.78	2.82*
HayKing BMR	Cal/West Seeds	97	33.5	50	32	1.17	1.11	0.52	2.80*
Enorma BMR	Cal/West Seeds	97	33.0	47	32	1.14	0.99	0.61	2.73*
<b>Experimental Varieties</b>									
EG 666	Saddle Butte	100	33.0	42	42	0.99	1.14	1.15	3.28*
Mean		98	33.4	50	36	1.20	1.03	0.79	3.02
CV,%		2	1.8	7	15	17.96	14.77	27.25	15.32
LSD,0.05		3	0.9	6	8	0.32	0.22	0.32	0.68

<sup>1</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD. Nitrogen application: 50 lb/A of actual nitrogen on June 3 and July 21 (Total of 100 lb of N/acre).

**Table 6. Dry matter yields, seedling vigor, stand rating, plant height, and maturity of sudangrass varieties sown May 24, 2016, at Lexington, Kentucky.**

Variety	Proprietor/ Distributor	Seedling Vigor <sup>1</sup> Jun 14	Percent Stand Jun 14	Maturity <sup>2</sup>		Plant Height (in)				Yield (tons/acre)				
				Jun 30	Jul 25	Jun 30	Jul 25	Aug 25	Oct 11	Jun 30	Jul 25	Aug 25	Oct 11	Total
<b>Commercial Varieties-Available for Farm Use</b>														
FSG1000 BMR	Farm Science Genetics	4.9	100	32.3	32.0	44	39	38	32	0.99	1.19	0.99	0.86	4.03*
ProMax BMR	Ampac Seed	4.4	96	32.0	32.3	42	39	35	32	0.97	1.09	0.84	0.69	3.59*
SS130 BMR	Cal/West Seeds	4.9	100	31.8	31.5	37	33	34	28	0.88	0.94	0.95	0.75	3.52*
Enorma BMR	Cal/West Seeds	4.5	97	31.5	31.5	38	35	30	27	0.74	1.01	0.74	0.68	3.18
HayKing BMR	Cal/West Seeds	4.4	96	32.0	31.8	37	33	31	27	0.98	0.82	0.64	0.48	2.92
Piper	Public	4.9	100	31.8	31.5	41	35	29	29	0.94	0.68	0.54	0.56	2.73
Monarch V	Public	4.9	100	31.8	31.3	38	32	26	26	0.88	0.92	0.40	0.44	2.64
<b>Experimental Varieties</b>														
EG666	Saddle Butte	5.0	100	31.8	32.3	37	40	32	35	0.69	1.03	0.87	0.86	3.46*
Mean		4.7	99	31.8	31.8	39	36	32	29	0.88	0.96	0.75	0.67	3.26
CV,%		7.4	2	2.0	1.1	7	8	14	12	22.48	22.17	24.21	20.55	14.09
LSD,0.05		0.5	2	0.9	0.5	4	4	7	5	0.29	0.31	0.27	0.20	0.68

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 50 lb/A of actual nitrogen on July 1, July 28, and August 31 (Total of 150 lb of N/acre).

**Table 7. Dry matter yields, seedling vigor, percent stand, maturity, and stand height of sorghum-sudangrass varieties sown May 28, 2013, at Lexington, Kentucky.**

Variety	Proprietor/ Distributor	Seedling Vigor <sup>1</sup> Jun 20	Percent Stand Jun 20	Maturity <sup>2</sup>			Height (inches)				Yield (DM tons/acre)				
				Jul 8	Aug 7	Sep 9	Jul 8	Aug 7	Sep 9	Oct 21	Jul 8	Aug 7	Sep 9	Oct 21	Total
<b>Commercial Varieties-Available for Farm Use</b>															
Greengrazer V	Farm Science Genetics	5.0	100	31.5	32.5	33.0	53	50	52	18	1.76	1.79	2.11	0.53	6.19*
Special Effort	Public	4.9	100	31.5	31.8	36.5	50	50	52	19	1.75	1.60	2.14	0.62	6.11*
SS211	Southern States	4.5	94	31.3	32.0	33.3	49	47	56	17	1.64	1.54	2.12	0.49	5.78*
NutraPlus BMR	Public	5.0	100	31.5	30.5	32.8	45	37	48	14	1.87	1.27	1.84	0.54	5.53*
SuperSugar	Gayland Ward Seed	4.8	97	31.8	32.5	33.5	50	52	51	19	1.59	1.53	1.82	0.50	5.45*
FSG214 BMR6	Farm Science Genetics	4.8	90	31.5	32.5	36.0	45	49	47	13	1.66	1.38	1.62	0.39	5.04
AS6503 BMR6	Alta Seeds/Ramer Seed	4.5	100	30.8	26.5	31.8	38	32	36	11	1.75	1.15	1.71	0.26	4.87
SweetSix BMR	Gayland Ward Seed	4.9	100	31.5	32.3	33.0	47	44	45	16	1.70	1.28	1.41	0.33	4.71
GW 300 BMR	Gayland Ward Seed	3.0	84	30.8	31.5	32.5	42	42	51	16	1.27	1.26	1.58	0.37	4.48
Sweet-for-Ever	Gayland Ward Seed	2.3	74	31.0	30.5	32.0	36	45	43	15	0.96	1.42	1.47	0.28	4.14
Sweet-for-Ever BMR	Gayland Ward Seed	3.5	90	30.5	30.0	31.3	36	36	35	12	1.23	0.99	1.13	0.21	3.56
Mean		4.3	93	31.2	31.1	31.2	44	44	47	15	1.56	1.38	1.72	0.41	5.08
CV,%		9.2	8	1.9	5.8	7.3	6	11	11	9	10.82	12.79	14.00	22.74	10.56
LSD,0.05		0.6	11	0.8	2.6	3.5	4	7	7	2	0.24	0.26	0.35	0.14	0.77

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 50 lb/A of actual nitrogen on July 22 and Aug 8 (Total of 100 lb of N/acre).

varieties cannot be made using the summary Tables 30, 31, 32, and 33, 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.

## Summary

Warm and cool season annual grasses can be an important supplemental source of pasture, hay, and silage in Kentucky. Varieties should be selected for their seasonal and total yield characteristics and for their suitability for the method of harvest to be employed (pasture, hay, or silage). Make sure seed of the chosen variety is properly labeled and will be available when needed.

The following is a list of University of Kentucky Cooperative Extension publications related to annual grass management. They are available from your county Extension office and are listed in the “Publications” section of the UK Forage website, [www.uky.edu/Ag/Forage](http://www.uky.edu/Ag/Forage).

- Lime and Fertilizer Recommendations (AGR-1)
- Grain and Forage Crop Guide for Kentucky (AGR-18)
- Establishing Forage Crops (AGR-64)

**Table 8. Dry matter yields, stand rating, maturity, and plant height of sorghum-sudangrass varieties sown May 21, 2014, at Lexington, Kentucky.**

Variety	Proprietor/ Distributor	Percent Stand Jun 17	Maturity <sup>1</sup>			Plant Height (in)			Yield (DM tons/acre)				
			Jul 8	Aug 13	Sep 16	Jul 8	Aug 13	Sep 16	Jul 8	Aug 13	Sep 16	Oct 29	Total
<b>Commercial Varieties-Available for Farm Use</b>													
FSG 214 BMR6	Farm Sci. Genetics/Allied	100	32.0	43.0	55.0	39	29	50	1.89	1.25	1.99	0.35	5.47*
GreenGrazer V	Farm Sci. Genetics/Allied	99	32.0	33.3	56.3	41	33	46	1.89	1.19	2.00	0.34	5.41*
NutraPlus BMR	Public	100	31.3	40.5	50.5	33	32	47	1.67	1.23	2.11	0.35	5.37*
Sordan Headless	Chromatin	100	31.0	31.8	37.0	35	32	45	1.49	1.28	2.29	0.26	5.32*
AS6503 BMR6	Atla Seeds/Ramer Seed	100	31.3	34.5	37.0	34	26	35	1.78	1.23	1.94	0.25	5.20*
SS211	Southern States	91	31.5	36.3	41.0	40	35	52	1.53	1.28	2.11	0.27	5.19*
Super Sugar Delayed maturity	Gayland Ward Seed	100	31.5	32.5	37.0	40	30	51	1.59	1.03	2.19	0.31	5.12*
SweetSix BMR	Gayland Ward Seed	100	31.3	34.8	49.0	35	29	48	1.50	1.29	1.97	0.34	5.10*
SDH2942 BMR	Chromatin	100	31.0	31.8	37.0	30	32	37	1.56	1.27	1.85	0.28	4.96*
Super Sugar Sterile	Gayland Ward Seed	99	32.3	33.3	51.0	38	32	47	1.55	1.05	1.87	0.28	4.76*
Special Effort	Public	100	31.3	39.5	50.8	33	32	44	1.45	1.06	1.73	0.38	4.62
GW 300 BMR	Gayland Ward Seed	98	31.5	31.0	41.0	38	26	44	1.56	0.82	1.64	0.07	4.09
<b>Experimental Varieties</b>													
ASBDSS	Farm Sci. Genetics/Allied	100	31.0	34.5	43.0	32	27	39	1.77	1.04	1.80	0.25	4.86*
SPX3952	Chromatin	100	31.0	41.8	45.0	29	29	34	1.29	1.14	1.53	0.36	4.32
Mean		99	314.0	35.6	45.0	35	30	44	1.63	1.15	1.93	0.29	4.99
CV,%		2	1.9	15.7	11.1	12	10	10	23.24	18.04	10.90	35.23	11.20
LSD,0.05		2	0.9	8.0	7.1	6	4	7	0.53	0.30	0.30	0.15	0.80

<sup>1</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 50 lb/A of actual nitrogen on May 27, July 11 and August 15 (Total of 150 lb of N/acre).

**Table 9. Dry matter yields, seedling vigor, percent stand, maturity, and plant height of sorghum-sudangrass varieties sown May 21, 2015, at Lexington, Kentucky.**

Variety	Proprietor/Distributor	Seedling Vigor <sup>1</sup> Jun 17	Percent Stand Jun 17	Maturity <sup>2</sup>		Plant Height (in)			Yield (tons/acre)			
				Jul 13	Aug 19	Jul 13	Aug 19	Oct 12	Jul 13	Aug 19	Oct 12	Total
<b>Commercial Varieties-Available for Farm Use</b>												
Super Sugar	Gayland Ward Seed	4.9	100	33.8	32.3	60	53	28	2.35	1.52	1.39	5.26*
SS211	Southern States	4.0	98	33.3	32.0	59	53	28	2.02	1.38	1.55	4.95*
FSG 215 BMR6	Farm Science Genetics	4.6	99	33.0	31.3	54	41	23	2.05	1.26	1.42	4.73*
FSG 214 BMR6	Farm Science Genetics	4.6	100	33.8	31.8	57	46	25	2.05	1.26	1.40	4.71*
Special Effort	Public	3.4	95	33.8	32.3	60	56	30	1.78	1.31	1.58	4.67*
Nutra-King BMR6	Gayland Ward Seed	4.9	100	33.0	31.5	53	39	20	2.23	1.19	1.19	4.61*
SweetSix BMR (Dry Stalk)	Gayland Ward Seed	4.9	100	32.8	31.8	54	43	23	1.92	1.14	1.23	4.29*
NutraPlus BMR	Public	3.9	98	32.8	31.5	50	37	22	1.74	1.19	1.11	4.04
GreenGrazer V	Farm Science Genetics	3.0	96	33.5	32.3	57	54	29	1.50	1.14	1.25	3.89
AS6503 BMR6	Alta Seeds/Ramer Seed	4.0	100	32.5	31.0	40	30	22	1.75	0.86	1.17	3.78
Super Sugar (Delayed Maturity)	Gayland Ward Seed	3.9	100	33.3	31.3	50	41	23	1.69	0.95	0.81	3.46
Sweet-For-Ever BMR	Gayland Ward Seed	4.4	100	32.3	31.3	50	38	25	1.52	0.82	0.90	3.24
GW 300 BMR	Gayland Ward Seed	3.3	97	31.8	31.0	47	33	18	1.37	0.70	1.00	3.08
Mean		4.1	99	33.0	31.6	53	43	24	1.84	1.13	1.23	4.21
CV,%		15.6	2	1.7	1.4	7	12	9	18.08	22.23	28.49	16.48
LSD,0.05		0.9	2	0.8	0.6	5	7	3	0.48	0.36	0.50	0.99

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 50 lb/A of actual nitrogen on June 3 and July 21 (Total of 100 lb of N/acre).

- Producing Summer Annual Grasses for Emergency or Supplemental Forage (AGR-88)
- Extending Grazing and Reducing Stored Feed Needs (AGR-199)
- Managing Small Grains for Livestock Forage (AGR-160)

## About the Authors

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**Table 10. Dry matter yields, seedling vigor, stand rating, maturity, and plant height of sorghum-sudangrass varieties sown May 24, 2016, at Lexington, Kentucky.**

Variety	Proprietor/ Distributor	Seedling Vigor <sup>1</sup> Jun 14	Percent Stand Jun 14	Maturity <sup>2</sup>				Plant Height (in)				Yield (tons/acre)				
				Jun 30	Jul 18	Aug 10	Sep 28	Jun 30	Jul 18	Aug 10	Sep 28	Jun 30	Jul 18	Aug 10	Sep 28	Total
<b>Commercial Varieties-Available for Farm Use</b>																
SS211	Southern States	4.8	98	30.0	27.8	32.0	38.5	40	32	42	41	1.10	1.20	1.88	1.93	6.12*
HyGain	Turner Seed	4.6	100	30.0	29.5	33.3	61.5	41	34	41	45	1.10	1.08	1.86	2.05	6.08*
Nutra-King BMR6	Gayland Ward Seed	5.0	100	30.0	26.0	33.8	51.0	38	29	38	39	1.20	0.98	1.91	1.86	5.95*
Super Sugar BMR	Gayland Ward Seed	4.1	98	29.5	31.5	32.0	35.0	37	33	41	42	0.94	1.23	1.69	2.07	5.93*
Sweet-For-Ever BMR	Gayland Ward Seed	5.0	100	29.5	31.3	31.8	35.0	38	34	41	29	1.15	1.05	1.94	1.63	5.77*
GreenGrazer V	Farm Science Genetics	4.9	100	29.0	25.8	32.0	58.0	40	28	38	41	1.27	1.05	1.68	1.71	5.71*
GW 300 BMR	Gayland Ward Seed	4.8	100	30.5	28.0	32.3	52.5	39	32	41	44	1.17	1.12	1.47	1.85	5.61*
SweetSix BMR	Gayland Ward Seed	3.3	59	29.5	30.3	35.5	59.0	31	38	40	48	0.56	1.37	1.45	1.67	5.05
Super Sugar	Gayland Ward Seed	3.8	97	29.5	29.5	35.8	53.8	32	32	32	41	0.75	1.16	1.18	1.64	4.72
Surpass BMR6	Turner Seed	4.8	99	29.5	31.0	36.5	60.0	30	31	29	40	0.85	1.10	1.11	1.33	4.38
Mean		4.5	95	29.7	29.1	33.5	50.4	36	32	38	41	1.01	1.13	1.62	1.77	5.53
CV,%		8.1	8	3.5	10.7	15.1	10.0	11	13	7	21	31.96	15.20	14.83	19.69	10.95
LSD,0.05		0.5	11	1.5	4.5	7.3	7.3	6	6	4	12	0.47	0.25	0.35	0.51	0.88

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 50 lb/A of actual nitrogen on July 1, July 28, and August 31 (Total of 150 lb of N/acre).

**Table 11. Dry matter yields, seedling vigor, percent stand, and maturity of pearl millet varieties sown May 28, 2013, at Lexington, Kentucky.**

Variety	Proprietor/ Distributor	Seedling Vigor <sup>1</sup> Jun 20	Percent Stand Jun 20	Maturity <sup>2</sup>			Plant Height (inches)				Yield (tons/acre)					
				Jul 12	Aug 7	Sep 9	Jul 12	Aug 7	Sep 9	Oct 21	Jul 15	Aug 7	Sep 9	Oct 21	Total	
<b>Commercial Varieties-Available for Farm Use</b>																
Tifleaf III Hybrid	Gayland Ward Seed	4.8	99	30.0	48.5	64	32	35	45	21	1.64	1.65	2.26	0.62	6.16*	
SS635	Southern States	3.5	89	29.5	37.0	64	32	32	47	22	1.61	1.39	2.19	0.55	5.74*	
Pennleaf Hybrid	Pennington Seed	2.5	74	30.0	46.3	64	30	34	43	19	1.47	1.29	1.75	0.44	4.95*	
PP102M Hybrid	Cisco	2.3	74	29.5	46.3	64	34	33	53	19	1.59	1.16	1.84	0.35	4.93*	
SS501	Southern States	3.0	76	30.0	33.3	64	42	32	59	21	1.57	1.08	1.84	0.31	4.80*	
Mean		3.2	82	29.8	42.3	64	34	33	49	21	1.58	1.31	1.97	0.45	5.32	
CV,%		32.7	10	4.1	19.7	0	11	6	9	15	25.54	11.75	16.09	23.58	17.04	
LSD,0.05		1.6	13	1.9	12.8	0	6	3	7	5	0.62	0.24	0.49	0.23	1.40	

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 50 lb/A of actual nitrogen on July 22 and Aug 8 (Total of 100 lb of N/acre).

**Table 12. Dry matter yields, stand rating, maturity, and plant height of pearl millet varieties sown May 21, 2014, at Lexington, Kentucky.**

Variety	Proprietor/ Distributor	Percent Stand Jun 17	Maturity <sup>1</sup>		Plant Height (in)			Yield (tons/acre)				
			Jul 15	Aug 11	Jul 15	Aug 11	Sep 12	Jul 15	Aug 11	Sep 12	Oct 29	Total
<b>Commercial Varieties-Available for Farm Use</b>												
SS635	Southern States	97	31.0	60.0	30	34	38	1.41	1.55	1.72	0.56	5.24*
Tifleaf III Hybrid	Gayland Ward Seed	99	31.5	61.0	27	35	35	1.26	1.27	1.74	0.67	4.94*
SS501	Southern States	97	31.8	46.3	38	29	47	1.75	0.91	1.69	0.28	4.64*
PP102M Hybrid	Cisco	100	32.0	55.0	34	27	42	1.63	0.95	1.48	0.27	4.33*
Pennleaf Hybrid	Pennington Seed	98	31.0	58.0	27	28	33	1.21	1.04	1.57	0.43	4.25*
Mean		98	31.5	56.1	31	30	39	1.45	1.15	1.64	0.44	4.68
CV,%		3	2.2	4.1	7	9	12	12.19	21.54	17.91	24.97	13.69
LSD,0.05		4	1.1	3.5	3	4	7	0.27	0.38	0.45	0.17	0.99

<sup>1</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 50 lb/A of actual nitrogen on May 27, July 21, and August 15 (Total of 150 lb of N/acre).

**Table 13. Dry matter yields, seedling vigor, percent stand, maturity, and plant height of pearl millet varieties sown May 21, 2015, at Lexington, Kentucky.**

Variety	Proprietor/ Distributor	Seedling Vigor <sup>1</sup> Jun 17	Percent Stand Jun 17	Maturity <sup>2</sup>		Plant Height (in)			Yield (tons/acre)			
				Jul 20	Aug 20	Jul 20	Aug 20	Oct 12	Jul 20	Aug 20	Oct 12	Total
<b>Commercial Varieties-Available for Farm Use</b>												
FSG 300	Farm Science Genetics	4.8	99	31.0	51.3	41	35	28	3.09	1.08	1.71	5.88*
Tifleaf III Hybrid	Gayland Ward Seed	4.6	100	31.0	51.5	38	30	27	3.36	0.95	1.48	5.79*
SS635	Southern States	4.3	98	31.0	54.5	38	35	30	2.86	1.14	1.44	5.45*
FSG 315Dwarf BMR	Farm Science Genetics	4.6	99	31.0	56.0	35	41	24	2.66	1.51	1.27	5.43*
SS501	Southern States	4.8	95	45.0	49.8	63	36	35	3.01	1.00	1.11	5.13*
Pennleaf Hybrid	Pennington Seed	4.3	92	31.0	53.3	35	35	27	2.60	1.11	1.35	5.07*
PP102M Hybrid	Cisco	4.3	96	52.0	56.5	62	30	25	3.03	0.87	0.94	4.84
Mean		4.5	97	36.0	53.3	44	35	28	2.95	1.10	1.33	5.37
CV,%		11.0	2	0.0	9.0	8	19	7	8.23	23.81	28.37	11.05
LSD,0.05		0.7	3	0.0	7.1	5	10	3	0.36	0.39	0.56	0.88

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 50 lb/A of actual nitrogen on June 3 and July 27 (Total of 100 lb of N/acre).

**Table 14. Dry matter yields, stand rating, seedling vigor, maturity, and plant height of pearl millet varieties sown May 24, 2016, at Lexington, Kentucky.**

Variety	Proprietor/ Distributor	Seedling Vigor <sup>1</sup> Jun 14	Percent Stand Jun 14	Maturity <sup>2</sup>			Plant Height (in)			Yield (tons/acre)			
				Jul 25	Aug 25	Oct 11	Jul 25	Aug 25	Oct 11	Jul 25	Aug 25	Oct 11	Total
<b>Commercial Varieties-Available for Farm Use</b>													
SS635	Southern States	5.0	99	30.0	60.5	58.0	34	36	26	1.21	1.46	0.89	3.57*
Tifleaf III Hybrid	Gayland Ward Seed	5.0	100	31.3	61.0	59.0	32	37	24	1.22	1.49	0.85	3.55*
Leafy22 Hybrid	Turner Seed	3.9	92	29.5	59.0	58.0	33	40	29	1.03	1.31	0.89	3.23*
FSG 315 Dwarf BMR	Farm Science Genetics	4.3	100	27.5	52.3	66.0	26	29	26	0.81	1.27	1.06	3.14*
FSG 300 Hybrid	Farm Science Genetics	3.3	91	31.5	60.5	59.5	32	39	26	0.88	1.47	0.69	3.04*
Pennleaf Hybrid	Pennington Seed	3.6	81	31.3	58.0	60.0	32	38	23	0.95	1.32	0.68	2.95*
SS501	Southern States	4.6	96	47.5	54.3	61.5	47	32	28	1.31	0.78	0.54	2.63
PP102M Hybrid	Cisco	3.5	86	56.0	57.0	62.0	41	33	21	1.15	0.88	0.40	2.43
<b>Experimental Varieties</b>													
Exp10220	Gayland Ward Seed	4.8	99	29.3	51.0	65.5	27	29	27	1.01	1.42	0.94	3.37*
Mean		4.2	94	34.9	57.1	61.1	34	35	25	1.06	1.27	0.77	3.10
CV,%		16.2	8	12.7	7.8	3.5	9	14	10	26.91	18.64	20.54	15.00
LSD,0.05		1.0	11	6.5	6.5	3.1	5	7	4	0.42	0.34	0.23	0.68

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 50 lb/A of actual nitrogen on July 1, July 28, and August 31 (Total of 150 lb of N/acre).

**Table 15. Dry matter yields, seedling vigor, percent stand, heading date, harvest height, and harvest date of forage sorghum varieties sown May 28, 2013, at Lexington, Kentucky.**

Variety	Proprietor/Distributor	Seedling Vigor <sup>1</sup> Jun 20	Percent Stand Jun 20	Heading Date <sup>2</sup>	Harvest Height (feet)	Harvest Date <sup>3</sup>	Yield (tons/acre)
<b>Commercial Varieties-Available for Farm Use</b>							
Ensilemaster	Caudill Seed	2.6	81	Aug 22	10.6	Sept 10	10.41*
GW2120	Gayland Ward Seed	3.5	91	Aug 13	9.4	Sept 6	9.77*
GW400 BMR	Gayland Ward Seed	3.5	87	Aug 13	9.9	Sept 6	7.81
AF7201 BMR6	Alta Seeds/Ramer Seed	4.0	90	Aug 9	9.8	Aug 27	7.45
AF7401 BMR6	Alta Seeds/Ramer Seed	4.9	98	Aug 21	6.5	Sept 10	6.36
<b>Experimental Varieties</b>							
Exp10074	Gayland Ward Seed	4.9	97	Aug 2	10.6	Aug 27	8.49
Mean		3.9	91		9.5		8.38
CV,%		11.4	6		3.0		12.63
LSD,0.05		0.7	8		0.4		1.60

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth

<sup>2</sup> Approximately 50% of heads fully emerged.

<sup>3</sup> Harvested at soft dough stage.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 100 lb/A of actual nitrogen on August 1.

**Table 16. Dry matter yields, stand rating, heading date, plant height, and maturity of forage sorghum varieties sown May 21, 2014, at Lexington, Kentucky.**

Variety	Proprietor/Distributor	Percent Stand Jun 17	Heading Date <sup>1</sup>	Plant Height (ft) Sep 18	Maturity <sup>2</sup> Sep 18	Yield					
						Forage Quality Analysis <sup>3</sup>					
						(DM tons/acre) Sep 18	%CP	%ADF	%NDF	%TDN	RFV
<b>Commercial Varieties-Available for Farm Use</b>											
SS405	Chromatin	98	Aug 25	9.9	86.5	11.88*	3.4	36.5	58	57	97
SD1741 BMR	Chromatin	97	Jul 29	8.5	93.0	8.39	7.8	35.6	59.2	57	96
NK300	Chromatin	97	Aug 12	6.0	92.5	7.94	6.1	32.9	51.6	57	114
1990	Chromatin	88	—	9.9	—	7.62	4.7	43.2	70.3	54	73
GW600 BMR	Gayland Ward Seed	94	Aug 11	8.3	92.0	6.79	8.2	27.8	46.4	60	135
FSG114 BMR6	Farm Science Genetics	93	Aug 5	6.6	90.5	5.96	5.5	34	54	58	108
AF7401 BMR6	Alta Seeds/Ramer Seed	100	Aug 19	5.3	89.5	5.96	6.3	28.5	47.7	59	130
EnsileMaster	Caudill Seed	59 <sup>4</sup>	Aug 26	8.5	84.5	5.66	3.4	33.9	59.6	57	104
GW2120	Gayland Ward Seed	93	Aug 6	6.9	91.0	5.60	6.2	29.6	48.7	59	126
AF7201 BMR6	Alta Seeds/Ramer Seed	90	Aug 10	7.0	91.0	5.12	2.5	39.1	66.5	54	82
GW400 BMR	Gayland Ward Seed	94	Aug 4	7.1	89.5	4.99	6.2	28.5	48.8	59	127
FSG115Dwarf BMR6	Farm Science Genetics	53 <sup>4</sup>	Aug 26	6.4	92.5	3.24	7.5	36.2	57.8	57	97
SilageKingDwarf BMR6	Gayland Ward Seed	39 <sup>4</sup>	Aug 25	6.1	91.0	3.02	8	32.1	55	58	108
<b>Experimental Varieties</b>											
SPX28313	Chromatin	93	Aug 27	11.0	77.5	13.28*	4.5	34.5	58.8	57	98
SPX902	Chromatin	98	—	10.9	—	11.47	3.5	41.8	64.7	55	81
SPX904	Chromatin	99	—	10.9	—	11.07	5.6	40.1	68.5	54	78
SPX903	Chromatin	98	—	11.9	—	9.78	4.2	42.3	69.1	54	75
SPX901	Chromatin	92	—	10.8	—	7.89	7.7	40.5	68	54	78
X942BMR	Chromatin	99	—	9.0	—	7.38	7.6	34.1	59.3	57	98
SPX3952	Chromatin	98	Aug 1	7.8	92.5	5.19	6.7	35.4	59	57	97
SPX3902	Chromatin	88	Aug 22	6.1	89.5	4.34	6.3	32.2	55.2	58	108
SPX3903	Chromatin	93	Aug 24	5.1	92.5	3.43	9.5	31.1	55.7	58	108
Mean		89	Aug 14	8.2	89.7	7.09					
CV,%		10	4 days	12.6	3.5	17.35					
LSD,0.05		13	5 days	1.5	4.5	1.74					

<sup>1</sup> Approximately 50% of heads fully emerged. Those without a date are photoperiod sensitive.

<sup>2</sup> See Table 2 for maturity scale.

<sup>3</sup> CP = crude protein, ADF = acid detergent fiber, NDF = neutral detergent fiber, TDN = total digestible nutrients, RFV = relative feed value. All were harvested on the same day, therefore quality may not be optimal for some varieties.

<sup>4</sup> Poor germination of these varieties resulted in reduced stand and yield.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 60 lb/A of actual nitrogen on May 27.

**Table 17. Dry matter yields, seedling vigor, percent stand, heading date, plant height, and maturity of forage sorghum varieties sown May 21, 2015, at Lexington, Kentucky.**

Variety		Seedling Vigor <sup>1</sup> Jun 17	Percent Stand Jun 17	Heading Date <sup>2</sup>	Plant Height (ft) Sep 25	Maturity <sup>3</sup> Sep 25	Yield (tons/acre) Sep 25
<b>Commercial Varieties-Available for Farm Use</b>							
SS405	Chromatin	4.5	100	Sep 6	9.8	88.0	9.78*
GW-400 BMR	Gayland Ward Seed	4.3	99	Aug 10	7.3	92.5	6.86
FSG114 BMR6	Farm Science Genetics	4.5	99	Aug 12	7.6	90.5	6.84
GW-2120	Gayland Ward Seed	3.9	100	Aug 16	6.8	90.0	6.04
GW-600 BMR	Gayland Ward Seed	4.6	100	Aug 9	8.1	90.0	5.92
NK300	Chromatin	4.1	99	Aug 17	6.9	89.5	5.86
Ensilemaster	Caudill Seed	3.6	95	Aug 24	7.8	89.8	5.40
AF7201 BMR6	Alta Seeds/Ramer Seed	4.8	100	Aug 10	7.0	87.5	5.38
SD1741 BMR	Chromatin	4.4	99	Aug 12	7.6	81.5	4.90
AF7401 BMR6	Alta Seeds/Ramer Seed	4.6	100	Aug 19	5.4	84.8	4.83
1990	Chromatin	3.4	86	—	7.4	—	4.74
FSG115 Brachytic Dwarf BMR6	Farm Science Genetics	3.6	97	Aug 26	4.5	87.0	1.68
SiloPro BMR Dwarf	Gayland Ward Seed	3.3	98	Sep 1	4.4	82.0	1.27
<b>Experimental Varieties</b>							
Exp4020	Gayland Ward Seed	3.3	91	Sep 3	4.8	87.7	2.48
Mean		4.1	97	Aug 20	6.9	87.8	5.19
CV,%		11.9	4	6 days	13.4	6.0	24.30
LSD,0.05		0.7	6	7 days	1.3	7.5	1.81

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Approximately 50% of heads fully emerged. Those without a date are photoperiod sensitive.

<sup>3</sup> See Table 2 for maturity scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 50 lb/A of actual nitrogen on June 3.



**Table 18. Dry matter yields, seedling vigor, stand rating, heading date, plant height, lodging, and maturity of forage sorghum varieties sown May 24, 2016, at Lexington, Kentucky.**

Variety	Proprietor/ Distributor	Seeding Rate (seeds/ acre)	Seedling Vigor <sup>1</sup> Jun 14	Percent Stand Jun 14	Heading Date <sup>2</sup>	Plant Height (ft) Sep 15	Lodging <sup>3</sup> Sep 15	Maturity <sup>4</sup> Sep 15	Yield (tons/ acre) Sep 15
<b>Commercial Varieties-Available for Farm Use</b>									
SS405	Chromatin	80000	5.0	91	Aug 12	10.9	0.0	87.5	14.22*
1990	Chromatin	80000	4.1	86	—	10.3	0.0	—	8.24
Ensilemaster	Caudill Seed	80000	4.1	71	Aug 17	9.8	5.0	89.5	7.29
SD1741 BMR	Chromatin	80000	4.3	89	Jul 31	8.5	0.0	85.0	7.11
NK300	Chromatin	80000	4.0	88	Aug 9	7.1	8.0	89.5	6.96
FSG114 BMR6	Farm Science Genetics	80000	3.6	78	Aug 7	8.4	1.3	92.5	6.43
GW-600 BMR	Gayland Ward Seed	60000	2.8	40	Aug 7	8.6	6.5	87.5	6.17
AF7201 BMR6	Alta Seed/Ramer Seed	80000	4.4	87	Jul 30	8.1	0.0	93.0	6.11
GW-2120	Gayland Ward Seed	80000	2.3	28	Aug 8	8.0	1.5	91.0	5.76
AF7401 BMR6	Alta Seed/Ramer Seed	80000	4.0	75	Aug 16	5.9	4.8	87.5	5.74
GW-400 BMR	Gayland Ward Seed	75000	2.3	30	Aug 7	8.1	6.0	89.5	5.37
SiloPro BMR Dwarf	Gayland Ward Seed	65000	3.6	66	Aug 13	6.3	0.0	91.0	5.09
FSG115 Brachytic	Farm Science Genetics	80000	3.5	80	Aug 14	6.3	0.0	89.0	4.97
Dwarf BMR6									
<b>Experimental Varieties</b>									
Exp10216	Gayland Ward Seed	75000	3.1	73	Aug 6	8.5	1.8	89.0	6.55
Mean			3.6	70	Aug 9	8.2	2.5	89.3	6.86
CV,%			15.6	13	5 days	6.5	46.5	3.7	25.93
LSD,0.05			0.8	13	5 days	0.8	1.7	4.7	2.54

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Approximately 50% of heads fully emerged. Those without a date are photoperiod sensitive.

<sup>3</sup> Lodging score based on a scale of 0 to 9.0 indicating no lodging and 9 indicating all plants lodged.

<sup>4</sup> See Table 2 for maturity scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 50 lb/A of actual nitrogen on July 1.

**Table 19. Dry matter yields, seedling vigor, percent stand, and maturity of teff varieties sown May 28, 2013, at Lexington, Kentucky.**

Variety <sup>3</sup>	Seedling Vigor <sup>1</sup> Jun 20	Percent Stand Jun 20	Maturity <sup>2</sup>		Yield (tons/acre)				
			Jul 17	Aug 7	Jul 17	Aug 7	Sep t9	Oct 21	Total
<b>Commercial Varieties-Available for Farm Use</b>									
Witkope	2.4	93	56.0	49.0	1.98	1.20	1.12	0.61	4.90*
Excaliber	3.4	99	52.5	51.5	1.99	1.17	1.18	0.54	4.87*
Highveld	3.1	98	49.8	32.0	1.94	0.96	1.47	0.48	4.86*
Velvet	2.6	98	53.0	40.8	2.15	1.04	1.11	0.55	4.84*
Rooiberg	2.8	97	56.0	48.8	2.09	1.07	1.24	0.44	4.83*
Pharaoh	3.3	99	45.0	35.3	2.03	1.14	1.09	0.52	4.78*
Corvalis	2.5	98	48.0	38.5	1.95	1.09	1.18	0.51	4.73*
SummerDelight	3.9	99	48.0	35.3	2.14	1.04	1.04	0.51	4.72*
VA-T1Brown	2.9	99	51.3	37.0	2.10	1.03	1.08	0.38	4.60*
Tiffany	2.9	100	49.0	32.0	1.95	1.08	1.02	0.55	4.60*
Dessie	2.6	95	54.0	43.0	1.88	1.04	1.17	0.49	4.59*
HorseCandi	2.0	95	49.8	40.3	2.01	1.09	0.98	0.47	4.56*
Moxie	2.6	97	53.5	33.8	2.04	0.93	1.02	0.45	4.45*
<b>Experimental Varieties</b>									
F11	2.8	100	46.3	37.0	2.08	1.04	1.00	0.56	4.67*
Mean	2.8	98	50.9	39.6	2.02	1.07	1.12	0.50	4.21
CV,%	43.0	4	6.0	16.3	8.12	13.47	19.82	20.51	9.02
LSD,0.05	1.7	6	4.3	9.2	0.23	0.21	0.32	0.15	0.61

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

<sup>3</sup> Check with local dealers for available varieties.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 40 lb/A on June 5 and 50 lb/A on July 22 and Aug 8 of actual nitrogen (Total of 140 lb of N/acre).

**Table 20. Dry matter yields, stand rating, and maturity of teff varieties sown May 21, 2014, at Lexington, Kentucky.**

Variety <sup>2</sup>	Percent Stand Jun 17	Maturity <sup>1</sup>		Yield (tons/acre)				
		Jul 8	Aug 4	Jul 8	Aug 4	Aug 29	Oct 13	Total
<b>Commercial Varieties-Available for Farm Use</b>								
Summer Delight	100	55.5	54.0	1.63	1.01	1.78	0.93	5.34*
Corvalis	100	52.3	52.5	1.27	1.05	1.64	0.98	4.95*
Witkope	96	56.0	59.0	1.09	1.09	1.68	0.94	4.81*
VA-T1Brown	100	55.5	52.0	1.15	1.09	1.70	0.76	4.70*
Tiffany	98	54.0	53.0	1.23	1.17	1.55	0.73	4.69*
Highveld	89	50.5	54.5	0.89	1.11	1.74	0.85	4.59*
Dessie	95	54.0	56.0	0.97	1.18	1.39	1.00	4.55*
Moxie	100	52.8	54.0	1.28	1.11	1.40	0.53	4.33*
Velvet	100	56.0	54.0	0.78	0.91	1.60	1.00	4.29*
Pharaoh	97	51.7	51.5	1.09	0.91	1.42	0.75	4.18*
Rooiberg	98	54.5	59.0	0.66	1.05	1.44	0.82	3.97*
HorseCandi	98	54.5	53.0	0.78	0.89	1.30	0.61	3.58
<b>Experimental Varieties</b>								
F11	99	50.5	53.5	0.97	0.89	1.30	0.87	4.04*
Mean	98	53.7	54.3	1.06	1.04	1.54	0.83	4.47
CV,%	6	6.8	4.3	44.66	16.00	23.91	38.16	20.95
LSD,0.05	8	5.5	3.4	0.70	0.24	0.54	0.46	1.38

<sup>1</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

<sup>2</sup> Check with local dealer for available varieties.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD. Nitrogen application: 50 lb/A of actual nitrogen on May 27 and July 11 (Total of 100 lb of N/acre).

**Table 21. Dry matter yields, seedling vigor, percent stand, and maturity of teff varieties sown May 21, 2015, at Lexington, Kentucky.**

Variety <sup>3</sup>	Seedling Vigor <sup>1</sup> Jun 17	Percent Stand Jun 17	Maturity <sup>2</sup>		Yield (tons/acre)			
			Jul 20	Aug 14	Jul 20	Aug 14	Sep 17	Total
<b>Commercial Varieties-Available for Farm Use</b>								
Moxie	4.8	100	52.5	47.5	2.33	1.83	0.23	4.39*
HorseCandi	4.3	100	51.5	48.5	2.08	1.78	0.48	4.34*
Dessie	4.5	100	51.5	45.0	2.28	1.67	0.37	4.32*
Summer Delight	4.9	100	52.5	51.0	2.26	1.55	0.41	4.22*
Velvet	4.4	100	52.0	51.0	2.20	1.59	0.35	4.14*
Tiffany	4.9	100	52.0	46.8	2.16	1.52	0.38	4.06*
Pharaoh	4.9	100	52.5	48.0	2.32	1.39	0.32	4.04*
VA-T1Brown	4.6	100	51.0	47.5	2.02	1.57	0.44	4.03*
Corvallis	4.6	100	51.0	46.3	2.15	1.58	0.26	3.99*
<b>Experimental Varieties</b>								
F11	4.8	100	53.0	52.5	2.18	1.51	0.25	3.95*
Mean	4.7	100	52.0	48.4	2.20	1.60	0.35	4.15
CV,%	6.7	0	2.6	5.6	12.86	12.39	38.07	9.77
LSD,0.05	0.5	0	1.9	4.0	0.41	0.29	0.19	0.59

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

<sup>3</sup> Check with local dealer for available varieties.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD. Nitrogen application: 50 lb/A of actual nitrogen on June 3 and July 27 (Total of 100 lb of N/acre).

**Table 22. Dry matter yields, seedling vigor, stand rating, and maturity of teff varieties sown May 24, 2016, at Lexington, Kentucky.**

Variety <sup>3</sup>	Seedling Vigor <sup>1</sup> Jun 14	Percent Stand Jun 14	Maturity <sup>2</sup>		Yield (tons/acre)			
			Jul 28	Aug 25	Jul 28	Aug 25	Oct 11	Total
<b>Commercial Varieties-Available for Farm Use</b>								
Moxie	4.3	100	50.0	59.5	0.69	1.21	0.74	2.64*
Tiffany	4.8	100	52.5	58.0	0.59	1.15	0.85	2.60*
Dessie	4.5	100	45.0	58.0	0.77	1.09	0.73	2.59*
Summer Delight	4.3	100	53.5	59.5	0.62	1.08	0.86	2.57*
Corvallis	4.4	100	44.0	59.0	0.69	1.13	0.70	2.52*
VA-T1-Brown	4.0	100	38.5	57.0	0.72	1.02	0.75	2.49*
Velvet	4.0	100	45.5	58.5	0.67	1.12	0.68	2.47*
Pharoah	4.3	100	51.0	55.5	0.75	0.91	0.66	2.32*
HorseCandi	4.0	100	44.0	56.5	0.46	0.83	0.75	2.03*
<b>Experimental Varieties</b>								
BARCW0604	4.4	100	52.0	58.5	0.70	1.33	0.73	2.76*
F11	4.5	100	38.5	56.0	0.73	1.16	0.77	2.66*
PST-CRYTE	4.3	100	43.5	56.0	0.58	0.90	0.67	2.15*
Mean	4.3	100	46.5	57.7	0.66	1.08	0.74	2.48
CV,%	19.4	0	23.5	4.4	31.70	28.64	32.51	23.86
LSD,0.05	1.2	0	15.7	3.6	0.31	0.44	0.35	0.85

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

<sup>2</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

<sup>3</sup> Check with local dealer for available varieties.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 50 lb/A of actual nitrogen on July 1, July 28, and August 31 (Total of 150 lb of N/acre).

**Table 23. Dry matter yields, seedling vigor, and stand persistence of cereal rye varieties sown October 11, 2013, at Lexington, Kentucky (early first harvest).**

Variety	Proprietor/ Distributor	Seedling Vigor <sup>1</sup> Dec 2, 2013	Percent Stand		Yield (tons/acre)			
			2013	2014	2014			
			Dec 2	Mar 13	Apr 9	May 1	May 25	Total
Oklon	Noble Foundation	4.9	100	100	0.82	1.56	0.72	3.10*
Elbon	Noble Foundation	5.0	100	100	0.97	1.40	0.65	3.02*
Maton	Noble Foundation	4.4	98	100	0.66	1.57	0.70	2.92*
Southern Blue	Caudill Seed	5.0	99	100	0.77	0.95	0.58	2.29
Mean		4.8	99	100	0.81	1.37	0.66	2.84
CV,%		5.7	2	0	9.16	14.17	23.51	6.13
LSD,0.05		0.4	2	0	0.12	0.31	0.25	0.28

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Plots were harvested at the first joint stage on April 9 and at early head stage on May 1 and May 25.

Plant height: 15-16 in. on April 9 and 22-24 in. on May 1

Nitrogen application: 60 lb/A of actual nitrogen on March 13.

**Table 24. Dry matter yields, seedling vigor, and stand persistence of cereal rye varieties sown October 11, 2013, at Lexington, Kentucky (delayed first harvest).**

Variety	Proprietor/ Distributor	Seedling Vigor <sup>1</sup> Dec 2, 2013	Percent Stand		Yield (tons/acre)			
			2013	2014	2014			
			Dec 2	Mar 13	Apr 22	May 13	May 29	Total
Oklon	Noble Foundation	4.8	100	100	2.63	0.68	0.11	3.41*
Elbon	Noble Foundation	4.6	100	100	2.50	0.69	0.09	3.28*
Maton	Noble Foundation	4.6	99	100	2.51	0.62	0.07	3.20*
Southern Blue	Caudill Seed	4.3	99	100	2.03	0.60	0.12	2.75
Mean		4.6	99	100	2.42	0.65	0.10	3.16
CV,%		13.8	1	1	12.74	16.44	48.44	12.83
LSD,0.05		1.0	1	1	0.49	0.17	0.08	0.65

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Plots were harvested at the early head stage on April 22, May 13 and May 29.

Plant height: 30-32 in. on Apr 22 and 16-18 in. on May 13.

Nitrogen application: 60 lb/A of actual nitrogen on March 13.

**Table 25. Dry matter yields, seedling vigor, and stand persistence of triticale varieties sown October 11, 2013, at Lexington, Kentucky (early first harvest).**

Variety	Proprietor/ Distributor	Seedling Vigor <sup>1</sup> Dec 2, 2013	Percent Stand		Yield (tons/acre)			
			2013	2014	2014			
			Dec 2	Mar 13	Apr 9	May 7	May 29	Total
Trical336	Syngenta	3.3	98	99	0.30	2.51	0.21	3.02*
CCTCLE1	Caldbeck Consulting	2.8	96	90	0.16	2.15	0.07	2.39
CCTCLL22	Caldbeck Consulting	5.0	98	1	0.07	0.28	0.00	0.34
Mean		3.7	97	63	0.18	1.65	0.09	1.92
CV,%		10.2	4	6	32.41	9.71	27.68	10.84
LSD,0.05		0.6	6	6	0.10	0.28	0.05	0.36

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Plots were harvested in the vegetative stage on April 9 and at the early head stage on May 7 and May 29.

Plant height: 6-8 in. on Apr 9 and 26-28 in. on May 7.

Nitrogen application: 60 lb/A of actual nitrogen on March 13.

**Table 26. Dry matter yields, seedling vigor, and stand persistence of triticale varieties sown October 11, 2013, at Lexington, Kentucky (delayed first harvest).**

Variety	Proprietor/ Distributor	Seedling Vigor <sup>1</sup> Dec 2, 2013	Percent Stand		Yield (tons/acre)		
			2013	2014	2014		
			Dec 2	Mar 13	May 7	May 29	Total
Trical336	Syngenta	3.4	94	94	3.04	0.15	3.19*
CCTCLE1	Caldbeck Consulting	3.3	93	83	2.36	0.02	2.38
CCTCLL22	Caldbeck Consulting	5.0	98	1	0.22	0.02	0.25
Mean		3.9	95	59	1.88	0.06	1.94
CV,%		16.2	5	15	16.89	71.32	17.48
LSD,0.05		1.1	8	16	0.55	0.08	0.59

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Plots were harvested at the early head stage on May 7 and May 29.

Plant height: 28-30 in. on May 7.

Nitrogen application: 60 lb/A of actual nitrogen on March 13.

**Table 27. Dry matter yields, stand rating, and maturity of cereal crops and annual ryegrass sown March 18, 2015, at Lexington, Kentucky.**

Variety	Species	Proprietor/Distributor	Percent Stand 2015 Apr 22	Maturity <sup>1</sup> 2015 May 27	Yield (tons/acre)		
					2015		
					May 27	Jun 18	Total
Excel	Spring Oats	Ag. Alum. Seed Imp. Assoc., Ind.	88	55.5	1.50	0.40	1.90*
Jerry	Spring Oats	Caudill Seed	84	55.5	1.20	0.49	1.69*
Saber	Spring Oats	Ag. Alum. Seed Imp. Assoc., Ind.	66	56.0	1.09	0.55	1.65*
Robust	Spring Oats	Ag. Alum. Seed Imp. Assoc., Ind.	86	47.5	1.14	0.49	1.64*
Marshall	Annual Ryegrass	The Wax Company	100	55.5	0.75	0.87	1.61*
PSTSO-200	Spring Oats	Caldbeck Consulting	69	46.8	0.90	0.71	1.61*
021A17815	Spring Oats	Ag. Alum. Seed Imp. Assoc., Ind.	83	56.0	1.12	0.41	1.53
IL06-5433	Spring Oats	Ag. Alum. Seed Imp. Assoc., Ind.	78	56.0	1.00	0.49	1.49
PST-241	Spring Oats	Caldbeck Consulting	63	46.3	0.76	0.68	1.44
PSTSO-288	Spring Oats	Caldbeck Consulting	81	45.0	0.86	0.57	1.43
Common	Spring Oats	Central Farm Supply	54	46.3	0.75	0.66	1.41
Southern Blue	Cereal Rye	Caudill Seed	100	62.0	0.90	0.48	1.38
AgriMAXX 447	Winter Wheat	AgriMAXX Wheat Co.	97	29.0	0.07	0.46	0.54
Mean			80	50.6	0.93	0.56	1.48
CV,%			12	3.4	18.64	26.37	16.80
LSD,0.05			14	2.5	0.25	0.21	0.36

<sup>1</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 60 lb/A of actual nitrogen on March 18.

**Table 28. Dry matter yields, seedling vigor, stand rating, and maturity of cereal crops and annual ryegrass sown March 17, 2016, at Lexington, Kentucky.**

Variety	Species		Seedling Vigor <sup>1</sup> Apr 15	Percent Stand Apr 15	Maturity <sup>2</sup>		Yield (tons/acre)		
					May 31	Jul 5	May 31	Jul 5	Total
CCS0101	Black Hulled Oat	Caldbeck Consulting	4.5	99	45.0	66.0	1.67	0.52	2.20*
Robust	Spring Oats	Ag. Alum. Seed Imp. Assoc., Ind.	4.9	98	52.0	66.0	1.68	0.49	2.17*
021A17815	Spring Oats	Ag. Alum. Seed Imp. Assoc., Ind.	5.0	99	56.5	66.0	1.74	0.38	2.12*
PSTS0288C	Spring Oats	Caldbeck Consulting	5.0	99	45.0	66.0	1.46	0.53	2.00*
Excell	Spring Oats	Ag. Alum. Seed Imp. Assoc., Ind.	4.9	99	56.0	66.0	1.64	0.32	1.97*
VNK	Spring Oats	Public	5.0	97	56.0	66.0	1.64	0.25	1.89*
Marshall	Annual Ryegrass	The Wax Company	3.5	100	56.0	66.0	0.91	0.97	1.88*
Jerry	Spring Oats	Caudill Seed	5.0	100	55.5	66.0	1.58	0.24	1.82*
PSTS0200	Spring Oats	Caldbeck Consulting	4.4	96	46.8	66.0	1.22	0.54	1.76
PST241	Spring Oats	Caldbeck Consulting	4.1	94	45.0	66.0	1.20	0.48	1.68
Byron	Spring Triticale	Byron Seed	5.0	99	56.0	66.0	1.18	0.17	1.35
Southern Blue	Cereal Rye	Caudill Seed	5.0	100	64.0	66.0	0.74	0.50	1.24
PST101	Spring Wheat	Caldbeck Consulting	4.8	97	45.0	66.0	0.63	0.48	1.11
AgriMAXX4	Winter Wheat	AgriMAXX Wheat Co.	4.5	99	29.0	29.0	0.13	0.38	0.51
Mean			4.7	98	50.6	63.4	1.25	0.45	1.69
CV,%			6.7	2	2.5	0.0	22.80	39.66	17.62
LSD,0.05			0.4	2	1.8	0.0	0.41	0.25	0.43

<sup>1</sup> Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth

<sup>2</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shed. See Table 2 for complete scale.

\*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Nitrogen application: 60 lb/A of actual nitrogen on April 19.

**Table 29. Dry matter yields of wheat varieties sown October 9, 2015, at Lexington, Kentucky (originally appeared in PR-707, Table 4).**

Variety	DM Yield* at Soft Dough Stage Tons/acre			Head Type
	2016	2015-16	2014-16	
L11541	4.31			Smooth
SC 13S26™	4.28			Bearded
BECK 125	4.05	3.72	4.31	Bearded
ARMOR ARW1513	3.98			Bearded
CROPLAN 9101	3.97			Bearded
Pioneer variety 26R10	3.86	3.82	4.17	Bearded
EXP1083	3.84			Smooth
EXP1060	3.83			Smooth
AgriMAXX 454	3.80	3.72		Bearded
EXP1078	3.80			Bearded
AgriMAXX 490	3.78			Bearded
USG 3404	3.73	3.52	3.77	Bearded
HILLIARD	3.71	3.42		Bearded
PEMBROKE 2016	3.70	3.63	3.72	Bearded
SS 8340	3.67	3.65	4.02	Bearded
SS 8700	3.65	3.67	3.99	Bearded
CROPLAN SRW 9415	3.63			Bearded
Pioneer variety 26R41	3.62	3.36	3.86	Bearded
AgriMAXX 415	3.60	3.56	3.79	Bearded
AgriMAXX 438	3.59	3.61	4.23	Smooth
SC 1335-15™	3.58	3.50	3.75	Bearded
Dyna-Gro 9223	3.57	3.63	4.08	Smooth
CROPLAN 9201	3.56			Bearded
PROGENY PGX 15-14	3.56			Tip-Awned
STEYER STex141	3.56			Bearded
STEYER STex142	3.56	3.42		Bearded
SS 8513	3.55	3.33		Tip-Awned
Dyna-Gro 9692	3.54	3.55		Bearded
L11425	3.53			Smooth
Pioneer variety 26R53	3.53	3.32	3.71	Bearded
BECK 128	3.52	3.47		Bearded
ARMOR INFERNO	3.51	3.40	3.82	Bearded
ARMOR ARW1551	3.50			Smooth
EXP1074	3.50			Bearded
KAS S2500	3.50			Bearded
ARMOR ARW1516	3.49			Bearded
EXP1052	3.47			Bearded
VA 12W-72	3.47			Bearded
AgriMAXX 463	3.42			Smooth
BECK 123	3.42	3.41		Bearded
L11419	3.42			Smooth
SC 1325-15™	3.42	3.31	3.72	Bearded
SYNGENTA SY 483	3.42	3.46	4.16	Smooth
USG 3895	3.42			Bearded
SYNGENTA SY HARRISON	3.41			Bearded
BECK 114	3.40			Smooth
STEYER STex155	3.40			Bearded
PROGENY PGX 15-16	3.39			Smooth
Equity Brand Butler	3.35	3.46	3.83	Smooth
STEYER EVANS	3.35	3.43		Bearded
USG 3013	3.35	3.49	3.96	Smooth
PEMBROKE 2014	3.34	3.41	3.66	Bearded

Variety	DM Yield* at Soft Dough Stage Tons/acre			Head Type
	2016	2015-16	2014-16	
SYNGENTA SY 547	3.34	3.37	3.96	Smooth
BECK 120	3.33	3.42	3.85	Bearded
TN1102	3.32			Bearded
USG 3197	3.32			Bearded
SC EXP142™	3.30			Bearded
AgriMAXX Exp. 1670	3.29			Smooth
SS 8360	3.29	3.28	3.91	Bearded
AgriMAXX 446	3.28	3.70	4.03	Bearded
PEMBROKE 2008	3.28	3.11	3.60	Bearded
Dyna-Gro 9522	3.27	3.50	4.14	Bearded
KAS Liberty IV	3.27	3.32		Bearded
SS 8530	3.26	3.26		Bearded
SC EXP102™	3.24			Bearded
ARMOR ARW1521	3.22			Bearded
Pioneer variety 25R32	3.22	3.22	3.32	Bearded
Dyna-Gro 9591	3.21	3.21	3.59	Bearded
KY06C-1178-16-10-3	3.21			Bearded
Ag 2650	3.19			Bearded
Dyna-Gro 9600	3.19	3.21		Bearded
Pioneer variety XW13W	3.19	3.26		Bearded
AgriMAXX 452	3.17			Smooth
PROGENY P 243	3.16	3.17		Bearded
AgriMAXX Exp. 1674	3.14			Smooth
EXP1053	3.13			Smooth
PROGENY PGX 15-10	3.11			Bearded
Dyna-Gro WX15742	3.09	3.05		Bearded
KAS Lowery	3.08	3.22		Smooth
Pioneer variety 26R59	3.08			Tip-Awned
SYNGENTA VIPER	3.07			Smooth
CROPLAN 9203	3.06			Smooth
EXP1072	3.05			Smooth
ARMOR RUMBLE	2.97			Bearded
EXP1081	2.97			Smooth
AgriMAXX 444	2.96	3.14	3.85	Bearded
EXP DEI 16098	2.95			Smooth
SC 1315-15™	2.94	3.27		Bearded
Dyna-Gro WX16771	2.92			Smooth
KAS S1200	2.91	3.16	3.48	Bearded
PROGENY P 870	2.91	3.28	3.59	Bearded
PROGENY P 357	2.90	3.42	3.87	Bearded
SYNGENTA BRANSON	2.77	2.95		Tip-Awned
PROGENY PGX 15-12	2.75			Smooth
SYNGENTA SY 007	2.73	2.91	3.30	Bearded
Truman	2.69	2.83	3.28	Smooth
STEYER MORRIN	2.64	3.25		Smooth
<b>AVERAGE</b>	3.37	3.38	3.82	
C.V.	13.71	12.06	13.67	
LSD (0.10)	0.77	0.48	0.47	

**Location:** Bluegrass Region - Fayette Co.; Conventional tillage

**Planting date:** 10-9-15

**Harvest date:** 5-23-16

\*DM=Dry Matter Yield

**Table 30. Summary of Kentucky sudangrass yield trials 2008-2016 (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)	
		2008 <sup>1,2</sup>	2009	2010	2011	2012	2013	2014	2015	2016		
All trials are 1 year yields												
AS9301 BMR <sup>4</sup>	Alta Seeds/Ramer Seed					118						–
Enorma BMR	Cal/West Seeds			99	94	92	91	83	91	98		93(7)
FSG 1000 BMR	Farm Science Genetics								101	124		113(2)
Hayking BMR	Central Farm Supply	111	112	91	97	97	96	92	94	90		98(9)
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		94(9)
ProMax BMR	Ampac Seed	95	101	110	115	96	103	100	111	111		105(9)
SS130 BMR	Cal/West Seeds			101	103		107	106	110	109		106(6)
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 31. Summary of Kentucky sorghum-sudangrass yield trials 2008-2016 (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)	
		2008 <sup>1,2</sup>	2009	2010	2011	2012	2013	2014	2015	2016		
All trials are 1 year yields												
AS6402 BMR <sup>4</sup>	Alta Seeds/Ramer Seed					91						–
AS6503 BMR6	Alta Seeds/Ramer Seed						96	103	90			96(3)
FSG 208 BMR	Farm Science Genetics			75								–
FSG 214 BMR6	Farm Science Genetics						99	108	112			106(3)
FSG 215 BMR6	Farm Science Genetics								112			–
Greengrazer V	Farm Science Genetics			166			122	107	92	103		118(5)
GW300 BMR	Gayland Ward Seed				88	78	88	81	73	101		85(6)
HyGain	Turner Seed	104	105	118						110		109(4)
MS 202 BMR	Farm Science Genetics			106								–
Nutra-King BMR6	Gayland Ward Seed								110	108		109(2)
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		107(6)
SS220 BMR	Southern States		107	84		112						101(3)
Surpass BMR-6	Turner Seed	81	80	64						79		76(4)
Super Sugar	Gayland Ward Seed				102	117	107		125	85		107(5)
Super Sugar BMR	Gayland Ward Seed									107		–
Super Sugar (Delayed Maturity)	Gayland Ward Seed							101	82			–
Super Sugar Sterile	Gayland Ward Seed							94				92(2)
Sweet-For-Ever	Gayland Ward Seed				110	107	81					99(3)
Sweet-For-Ever BMR	Gayland Ward Seed					78	70		77	104		82(4)
SweetSix BMR	Gayland Ward Seed						93	101		91		95(3)
SweetSix BMR (Dry Stalk)	Gayland Ward Seed								102			–
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 32. 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 33. Summary of Kentucky pearl millet yield trials 2013-2016 (yield shown as a percentage of the mean of the commercial varieties in the trial).**

Variety	Proprietor/KY Distributor	2013 <sup>1,2</sup>	2014	2015	2016	Mean <sup>3</sup> (#trials)
FSG 300 Hybrid	Farm Science Genetics			109	99	—
FSG 315 Dwarf BMR	Farm Science Genetics			101	102	—
Leafy22 Hybrid	Turner Seed				105	—
Pennleaf Hybrid	Pennington Seed	93	91	94	96	93(3)
PP102M Hybrid	Cisco	93	93	90	79	92(3)
SS501	Southern States	90	99	96	86	95(3)
SS635	Southern States	108	112	101	116	107(3)
Tifleaf III Hybrid	Gayland Ward Seed	116	106	108	116	110(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.