



2020 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 2018-2020 forage yield trials with sudangrass, sorghum/sudangrass, millets, teff, and cereal crops.

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 harvested 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 to 12 feet tall and is typically harvested when the seed is in the milk to soft dough stage.

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

The brown midrib or BMR trait is an 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 more desirable for animal production. Therefore, it is beneficial to seed summer annuals that

Table 1. Temperature and rainfall at Lexington, Kentucky, in 2018, 2019, and 2020.

	2018				2019				2020 ²			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	31	0	2.01	-0.85	33	+2	4.11	+1.25	40	+9	3.72	+0.86
FEB	45	+10	9.77	+6.56	42	+7	7.64	+4.43	38	+3	5.14	+1.93
MAR	42	-2.	5.16	+0.76	43	-1	3.49	-0.91	51	+7	3.79	-0.61
APR	50	-5	5.52	+1.64	54	+4	4.76	+0.88	52	-3	4.92	+1.04
MAY	73	+9	8.39	+3.92	69	+5	4.49	+0.02	62	-2	5.69	+1.22
JUN	76	+4	6.42	+2.76	73	+1	6.13	+2.47	72	0	2.56	-1.10
JUL	77	+1	6.15	+1.15	79	+3	3.30	-1.70	79	+3	3.23	-1.77
AUG	77	+2	6.45	+2.52	77	+2	2.42	-1.51	75	0	3.41	-0.52
SEP	74	+6	12.88	+9.68	77	+9	0.18	-3.02	68	0	4.43	+0.83
OCT	59	+2	6.54	+3.97	61	+4	7.55	+5.58	57	0	4.98	+2.41
NOV	42	-3	5.64	+2.25	41	-4	5.39	+2.00				
DEC	40	+4	7.35	+3.37	43	+7	5.74	+1.76				
Total			82.28	+37.73			55.20	+10.65			41.47	+4.29

¹ DEP is departure from the long-term average.

² 2020 data is for ten months through October.

Table 2. Temperature and rainfall at Princeton, Kentucky, in 2018, 2019, and 2020.

	2018				2019				2020 ²			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	32	-2	4.28	+0.48	36	+2	3.62	-0.18	40	+6	4.27	+0.47
FEB	45	+7	9.50	+5.07	43	+5	11.14	+6.71	40	+2	6.80	+2.37
MAR	47	0	9.53	-1.41	44	-3	3.34	-1.60	52	+5	6.63	+1.69
APR	53	-6	4.9	+0.1	59	0	4.50	-0.30	54	-5	3.08	-1.72
MAY	74	+7	4.69	-0.27	69	+2	5.61	+0.05	64	-3	5.48	+0.52
JUN	78	+3	7.80	+3.95	73	*2	4.33	+0.48	74	-1	5.13	+1.28
JUL	78	0	2.58	-1.71	77	-1	3.12	-1.17	79	+1	6.31	+2.02
AUG	77	0	2.68	-1.33	76	-1	6.31	+2.30	75	-2	3.77	-0.24
SEP	74	+4	5.61	+2.28	75	+4	0.34	-2.99	69	-2	4.93	+1.60
OCT	61	+2	2.96	-0.09	59	0	6.36	+3.31	57	-2	7.45	+4.40
NOV	42	-5	4.77	+0.14	42	-5	6.94	+2.31				
DEC	42	+3	5.45	+0.41	43	+4	3.32	-1.82				
Total			58.75	+7.62			58.93	+7.80			53.85	+12.39

¹ DEP is departure from the long-term average.

² 2020 data is for the ten months through October.

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 which 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.

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Table 3. Descriptive scheme for the stages of development in perennial forage grasses

Code	Description	Remarks
Leaf development		
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	
Sheath elongation		
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	
Tillering (alternative to sheath elongation)		
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	
Stem elongation		
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	
Booting		
45	Boot swollen	
Inflorescence emergence		
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	
Anthesis		
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.
Seed ripening		
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 Proceedings, 416-418.

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

Cool season annual grasses (specifically cereal crops) are also used as forage 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*).

Table 4. Dry matter yields, seedling vigor, stand rating, maturity, and plant height of sudangrass varieties sown May 29, 2018, at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Seedling Vigor ¹ Jun 13	Stand						Percent							
			Jun 13		Aug 2		Oct 12		Plant Height (in)		Maturity ²		Yield (DM tons/acre)		Total	
			Jun 13	Jun 13	Jul 9	Aug 2	Aug 30	Oct 12	Jul 9	Aug 2	Aug 30	Oct 12	Jul 9	Aug 2		Aug 30
Commercial Varieties-Available for Farm Use																
HayKing BMR ³	Cal/West Seeds	4.6	99	34.0	32.5	37.5	45.0	66	53	46	47	2.38	2.11	1.31	1.37	7.16*
AS9302 BMR (Brachytic Dwarf)	Advanta Seed / Ramer Seed	4.8	98	33.3	31.0	32.3	50.8	56	35	36	35	2.85	1.55	1.22	1.19	6.81*
ProMax BMR	Ampac Seed	3.8	93	34.0	32.8	45.0	45.0	69	56	49	41	2.16	2.09	1.35	1.06	6.66
Piper	Public	5.0	100	33.5	32.3	32.3	35.8	60	50	41	32	2.07	1.94	0.94	0.67	5.62
Mean		4.5	97	33.7	32.1	36.8	44.1	63	48	43	38	2.36	1.92	1.20	1.07	6.56
CV%		7.9	2	1.0	1.2	15.3	7.6	3	5	5	10	5.73	7.60	16.30	15.83	4.26
LSD,0.05		0.6	4	0.5	0.6	9.0	5.4	3	4	3	6	0	0.23	0.31	0.27	0.45

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

² 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 3 for complete scale.

³ BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

*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 June 1 and July 19 (Total of 120 lb of N/acre).

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 mois-

ture 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). Forage sorghum, sorghum-sudangrass hybrids, and sudan-

grass are related grasses (in the sorghum family) and can produce prussic acid immediately after frost or when immature shoots are grazed during severe drought.

Table 5. Dry matter yields, seedling vigor, stand rating, maturity, and plant height of sudangrass varieties sown May 16, 2019, at Lexington, Kentucky.

Variety	Proprietors/ Distributors	Seedling Vigor ¹ Jun 3	Percent														
			Stand			Maturity ²			Plant Height (in)			Yield (DM tons/acre)					
			Jun 3	Jun 26	Jun 3	Jul 11	Aug 1	Sep 9	Jun 26	Jul 11	Aug 1	Sep 9	Jun 26	Jul 11	Aug 1	Sep 9	Oct 15
Commercial Varieties-Available for Farm Use																	
Trudan Headless	S & W Seed Company	4.0	92	35.3	33.8	36.0	44.3	31	30	31	41	0.96	1.08	1.24	1.75	0.74	5.77*
AS9302 BMR ³ (Brachytic Dwarf)	Advanta Seed/ Ramer Seed	4.3	96	33.0	27.0	35.3	45.8	31	31	61	1.00	0.80	1.33	1.51	0.61	5.25*	
ProMax BMR	Cisco Seeds	4.5	85	40.5	43.5	39.0	47.3	31	32	51	0.77	1.27	1.10	1.42	0.68	5.24*	
SS130 BMR	Cal/West Seeds	4.3	90	39.0	39.0	36.8	36.8	31	31	42	0.89	1.12	1.05	1.11	0.64	4.81	
Piper	Public	4.9	96	45.8	41.3	39.8	41.3	31	31	44	1.01	1.20	0.98	0.92	0.68	4.79	
Mean		4.4	92	38.7	36.9	37.4	43.1	31	31	47	0.92	1.10	1.14	1.34	0.67	5.17	
CV,%		10.5	2	8.6	4.6	7.8	6.6	3	1	7	15.27	9.28	11.34	6.64	25.74	7.17	
LSD _{0.05}		0.7	2	5.1	2.6	4.5	4.4	1	1	5	0.22	0.16	0.20	0.14	0.27	0.57	

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.
² 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 3 for complete scale.
³ BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.
 *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 15, 30 lb/A on June 28 and 60 lb/A on Aug 6 (Total of 150 lb of N/acre).

Table 6. Dry matter yields, seedling vigor, stand rating, maturity, and plant height of sudangrass varieties sown May 27, 2020, at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Seedling Vigor ¹ Jun 25	Percent Stand Jun 25	Maturity ²						Plant Height (in)						Yield (DM tons/acre)																	
				Jul 8		Aug 5		Sep 4		Jul 8		Aug 5		Sep 4		Jul 8		Aug 5		Sep 4		Oct 7		Total									
				Jul 8	Aug 5	Jul 8	Aug 5	Jul 8	Aug 5	Jul 8	Aug 5	Jul 8	Aug 5	Jul 8	Aug 5	Jul 8	Aug 5	Jul 8	Aug 5	Jul 8	Aug 5	Jul 8	Aug 5	Jul 8	Aug 5	Jul 8	Aug 5	Jul 8	Aug 5	Jul 8	Aug 5	Jul 8	Aug 5
Commercial Varieties-Available for Farm Use																																	
AS9302 BMR (Brachytic Dwarf)	Advanta Seed/ Ramer Seed	4.8	100	32.0	31.0	46.3	36	34	35	1.39	1.14	1.25	0.68	4.46*																			
Trudan Headless	S & W Seed Company	4.8	99	32.3	33.3	37.3	38	38	36	1.22	1.27	1.29	0.49	4.27*																			
ProMax BMR	Ampac Seed	4.4	100	32.8	34.5	40.5	41	42	40	1.17	1.24	1.36	0.47	4.23*																			
SS130 BMR	Cal/West Seeds	4.5	99	35.5	34.8	34.0	44	40	35	1.14	1.31	0.83	0.41	3.69*																			
Piper	Public	4.6	98	36.0	39.0	33.8	45	44	32	1.10	1.16	0.71	0.35	3.32																			
Mean		4.6	99	33.7	34.5	38.4	41	39	36	1.21	1.22	1.09	0.48	3.99																			
CV,%		7.4	2	12.0	10.0	11.7	11	13	8	10.70	19.67	20.09	34.97	12.50																			
LSD _{0.05}		0.5	3	6.2	5.4	6.9	7	8	5	0.20	0.37	0.34	0.26	0.77																			

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.
² 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 3 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 29, 40 lb/A on July 9 and 60 lb/A on Aug 14 (Total of 150 lb of N/acre).

Table 7. Dry matter yields, stand rating, maturity, and plant height of sudangrass varieties sown May 29, 2019, at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Percent Stand Jun 27	Maturity ¹ Jun 27	Plant Height (in)			Yield (DM tons/acre)				
				Jun 27	Jul 25	Aug 29	Jul 1	Jul 26	Aug 29	Nov 4	Total
Commercial Varieties-Available for Farm Use											
AS9302 BMR ² (Brachytic Dwarf)	Advanta Seed/Ramer Seed	93	34.0	33	41	49	1.81	3.00	1.23	1.42	7.46*
Trudan Headless	S & W Seed Company	94	34.0	35	48	53	1.88	2.47	1.45	1.57	7.37*
SS130 BMR	Cal/West Seeds	95	35.5	40	55	50	1.73	2.50	1.09	1.00	6.32*
Piper	Public	96	34.8	40	54	52	1.66	2.50	0.98	0.55	5.69
ProMax BMR	Cisco Seeds	94	34.5	39	56	57	1.58	2.42	0.94	0.74	5.68
Mean		94	34.6	37	51	52	1.73	2.58	1.14	1.06	6.50
CV,%		3	3.0	5	6	6	12.65	20.88	10.68	31.43	13.03
LSD,0.05		4	1.6	3	5	5	0.34	0.83	0.19	0.51	1.31

¹ 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 3 for complete scale.

² BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

*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 22 and 60 lb/A of actual nitrogen on July 10 and July 29 (Total of 180 lb of N/acre).

Table 8. Dry matter yields, maturity, and plant height of sudangrass varieties sown June 2, 2020, at Princeton, Kentucky.

Variety	Proprietor/ Distributor	Maturity ¹ Jul 10	Plant Height (in)		Yield (DM tons/acre)			
			Jul 10	Aug 6	Jul 10	Aug 6	Sep 11	Total
Commercial Varieties-Available for Farm Use								
Trudan Headless	S&W Seed Company	31.8	47	40	1.75	1.44	1.47	4.59*
AS9302 BMR (Brachytic Dwarf)	Advanta Seed/Ramer Seed	31.8	41	38	1.62	1.28	1.21	4.11*
SS130 BMR	Cal/West Seeds	33.0	51	47	1.22	1.55	0.94	3.61
ProMax BMR	Ampac Seed	32.8	56	49	1.16	1.27	0.69	3.13
Piper	Public	32.8	55	46	1.32	1.06	0.58	2.96
Mean		32.4	50	44	1.41	1.32	0.98	3.63
CV,%		1.8	4	7	17.90	20.27	17.58	10.86
LSD,0.05		0.9	3	5	0.39	0.44	0.28	0.66

¹ 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 3 for complete scale.

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

Nitrogen application: 60 lb/acre of actual nitrogen on June 1, July 23, and August 13 (Total of 180 lb of N/acre).

Table 9. Dry matter yields, seedling vigor, stand rating, maturity, and plant height of sorghum-sudangrass varieties sown May 29, 2018, at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Seedling Vigor ¹ Jun 13	Percent Stand		Maturity ²				Plant Height (in)				Yield (DM tons/acre)				
			Jun 13	Oct 12	Jun 9	Aug 2	Aug 30	Oct 12	Jul 9	Aug 2	Aug 30	Oct 12	Jul 9	Aug 2	Aug 30	Oct 12	Total
Commercial Varieties-Available for Farm Use																	
SS211	Southern States	3.5	86	86	32.8	15.8	32.5	42.0	72	44	44	42	2.13	2.28	1.69	1.44	7.54*
Hygain	Turner Seed	3.6	97	97	33.0	15.8	33.0	41.8	68	44	43	37	2.23	2.23	1.62	1.36	7.45*
NutraKing BMR ³	Public	4.6	99	99	32.8	15.0	32.0	45.0	63	38	38	31	2.60	2.01	1.58	1.05	7.24*
SweetSix BMR (Dry Stalk)	Gayland Ward Seed	5.0	100	100	33.0	14.5	35.3	47.5	62	34	38	32	2.47	2.00	1.46	0.92	6.85*
SuperSugar (Delayed Maturity)	Gayland Ward Seed	4.4	100	100	32.8	15.0	32.3	33.0	68	38	41	38	2.26	1.71	1.43	1.24	6.64
AS6504 BMR (Dry Stalk)	Advanta Seed/ Ramer Seed	4.3	98	95	31.8	15.0	32.0	35.0	58	35	39	29	2.59	1.64	1.58	0.74	6.55
GW300 BMR	Gayland Ward Seed	3.4	96	96	32.8	14.8	32.8	45.0	74	37	43	40	2.36	1.50	1.41	0.96	6.24
SweetForEver BMR	Gayland Ward Seed	4.6	98	60	31.8	14.5	32.0	35.0	63	35	39	29	2.45	1.34	1.02	0.49	5.31
AS6402 BMR (Brachytic Dwarf)	Advanta Seed/ Ramer Seed	4.4	96	96	32.0	14.8	32.0	45.0	53	32	36	26	1.93	1.26	1.33	0.70	5.21
Surpass BMR	Turner Seed	4.4	89	89	31.0	14.0	36.5	44.0	53	31	38	26	1.79	1.22	1.15	0.65	4.82
Mean		4.2	96	92	32.4	14.9	33.0	41.3	63	37	40	33	2.28	1.72	1.43	0.96	6.39
CV,%		12.3	8	11	1.7	5.2	10.3	12.7	6	6	7	13	9.80	10.16	14.61	22.12	8.41
LSD,0.05		0.8	11	15	0.8	1.1	4.9	7.6	6	3	4	6	0.32	0.25	0.30	0.31	0.78

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

² 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 3 for complete scale.

³ BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

*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 June 1 and July 19 (Total of 120 lb of N/acre).

Table 10. Dry matter yields, seedling vigor, stand rating, maturity, and plant height of sorghum-sudangrass varieties sown May 17, 2019, at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Seedling Vigor ¹ Jun 3	Percent Stand Jun 3	Maturity ²			Plant Height (in)			Yield (DM tons/acre)			Total				
				Jun 26	Jul 16	Aug 5	Sep 9	Jun 26	Jul 16	Aug 5	Sep 9	Jun 26		Jul 16	Aug 5		
Commercial Varieties-Available for Farm Use																	
HyGain	Turner Seed	4.4	97	47.3	35.3	38.3	50.3	28	31	32	53	1.77	1.10	1.26	2.08	0.65	6.87*
Super Sweet10	Dyna-Gro Seeds	4.3	100	42.8	32.3	36.8	46.5	27	31	32	53	1.79	1.04	1.30	2.06	0.68	6.87*
NutraKing BMR ³	Public	4.8	100	43.5	29.3	34.5	44.3	27	28	32	52	1.98	0.96	1.32	1.82	0.61	6.67*
Danny Boy II BMR	Dyna-Gro Seeds	3.5	98	36.0	30.0	33.0	43.5	27	29	32	35	1.38	1.17	1.24	2.14	0.72	6.65*
SugarGrazz II	Coffey Seed	4.6	98	43.5	36.0	38.3	48.0	28	31	32	52	1.64	1.14	1.14	1.76	0.57	6.25*
Fullgraze II	Dyna-Gro Seeds	3.9	99	42.8	30.0	37.5	39.0	27	29	31	35	1.62	0.59	1.41	1.59	0.48	5.49
Fullgraze II BMR	Dyna-Gro Seeds	4.4	99	39.0	27.8	33.0	37.5	27	29	32	32	1.37	0.79	1.07	1.74	0.53	5.49
F75F513	Dyna-Gro Seeds	4.1	98	36.0	30.0	33.0	39.0	27	30	35	55	1.47	0.81	1.15	1.43	0.44	5.31
AS6401 BMR	Advanta Seed/Ramer Seed	3.5	97	33.8	28.5	32.3	39.0	27	28	32	43	0.91	0.78	0.90	1.67	0.49	4.76
Xtragrazz BMR	Coffey Seed	4.5	95	36.8	28.5	35.3	41.3	27	30	32	48	1.12	0.63	0.96	1.11	0.66	4.48
Surpass BMR	Turner Seed	3.8	93	30.0	30.8	27.8	36.8	27	34	33	54	0.86	0.85	0.79	1.27	0.49	4.26
AS6402 BMR (Brachytic Dwarf)	Advanta Seed	4.0	98	30.0	30.8	24.0	34.5	27	31	30	52	0.71	0.95	0.61	1.06	0.46	3.79
Experimental Varieties																	
181552	Gayland Ward Seed	4.8	100	53.3	34.5	37.5	55.5	28	30	32	51	1.98	1.10	1.28	2.10	0.77	7.24*
18182 BMR	Gayland Ward Seed	4.8	99	45.8	31.5	35.3	50.3	28	29	32	53	1.89	0.86	1.30	1.97	0.52	6.53*
ADVXS007 BMR	Advanta Seed/Ramer Seed	3.1	96	34.5	30.8	31.5	38.3	27	30	32	45	1.30	1.19	1.09	2.05	0.69	6.31*
19154	Gayland Ward Seed	3.6	98	41.3	32.3	34.5	51.8	27	31	32	32	1.42	0.86	0.97	1.77	0.63	5.65
19102	Gayland Ward Seed	4.4	99	36.8	33.0	30.8	44.3	27	29	31	32	1.44	1.03	0.79	1.79	0.56	5.62
18180	Gayland Ward Seed	4.6	100	39.0	30.8	33.8	42.0	27	29	32	35	1.29	0.87	0.97	1.62	0.54	5.30
19153	Gayland Ward Seed	4.1	100	36.8	33.0	31.5	47.3	27	29	32	34	1.26	0.89	0.87	1.59	0.51	5.14
18181 BMR	Gayland Ward Seed	3.8	97	37.5	28.5	36.0	34.5	27	29	32	32	1.35	0.70	1.10	1.26	0.47	4.89
ADVXS8007 BMR	Advanta Seed/Ramer Seed	4.1	99	33.0	30.0	28.5	39.8	27	30	32	52	1.06	1.04	0.81	1.38	0.49	4.77
ADVXS008 BMR	Advanta Seed/Ramer Seed	3.0	98	28.5	29.3	25.5	33.0	26	30	32	38	0.92	0.99	0.66	1.30	0.60	4.47
3618 BMR	Coffey Seed	3.3	92	27.8	31.5	21.0	33.0	26	28	31	50	0.85	0.93	0.67	1.17	0.36	3.99
5618 BMR	Coffey Seed	3.4	93	27.0	32.3	18.0	33.0	26	31	31	56	0.63	1.07	0.36	1.26	0.49	3.81
3619 BMR	Coffey Seed	2.8	73	28.5	29.3	24.8	35.3	27	49	41	58	0.66	0.69	0.59	1.04	0.49	3.47
5619 BMR	Coffey Seed	2.6	59	25.5	34.5	28.5	42.8	26	50	36	58	0.31	0.93	0.37	0.96	0.39	2.96
Mean		3.9	95	36.8	31.2	31.6	41.5	27	31	32	46	1.27	0.92	0.96	1.58	0.55	5.28
CV/%		15.0	11	13.1	11.3	12.9	13.2	2	9	10	12	33.66	28.75	36.37	20.52	29.52	17.64
LSD _{0.05}		0.8	14	6.8	5.0	8.0	7.2	1	4	5	8	0.60	0.37	0.49	0.46	0.23	1.31

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

² 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 3 for complete scale.

³ BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

*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 15, 30 lb/A on June 28 and 60 lb/A on Aug 6 (Total of 150 lb of N/acre).

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, but forage sorghum and foxtail millet are harvested only once. For more detailed management

recommendations refer to *Warm Season Annual Grasses in Kentucky* (AGR-229) and related publications at <http://forages.ca.uky/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, yield at the first harvest of the season is most important. For all cereals, winter survival is an important factor. Fortunately winter wheat and cereal rye rarely show winterkill in Kentucky regardless of the variety. Winter oats are a marginal crop in Kentucky because severe winterkill usually occurs one out of every two to three years. We have started testing spring plant spring oats and other cereals (Tables 35, 36, and 37) 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. Consequently, yields are very low with spring planted winter wheat.

Description of the Tests

This report summarizes seventeen warm season annual studies (2018-2020) and eight cool-season annual studies (2018-2020) in Lexington. It also summarizes fourteen warm-season annual studies (2018-2020) in Princeton. The soils at Lexington (Maury) and Princeton (Crider) are well drained silt loams well suited to annual grass production. Plots were 5 feet by 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 by 15 feet with a harvested area of 4 feet by 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 in 2018 (the center 15-foot row) and with a silage chopper in 2019 and 2020. Fresh

Table 11. Dry matter yields, seedling vigor, stand rating, maturity, and plant height of sorghum-sudangrass varieties sown May 27, 2020, at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Seedling Vigor ¹ Jun 25	Percent Stand Jun 25	Maturity ²			Plant Height (in)			Yield (DM tons/acre)			Total	
				Jul 8	Aug 5	Sep 4	Jul 8	Aug 5	Sep 4	Jul 8	Aug 5	Sep 4		Oct 7
Commercial Varieties-Available for Farm Use														
Sordan 79	S&W Seed Company	4.8	100	32.0	39.0	43.5	41	47	46	1.17	1.53	1.84	0.59	5.14*
SugarGraze II	Coffey Seed	4.8	99	32.3	36.0	43.5	42	44	41	1.22	1.64	1.70	0.54	5.10*
HyGain	Turner Seed	5.0	98	32.5	37.0	43.5	44	47	45	1.14	1.60	1.79	0.55	5.08*
Sordan Headless	S&W Seed Company	4.6	100	30.8	33.8	34.5	33	41	38	1.07	1.56	1.70	0.60	4.92*
FirstGraze	Dyna-Gro Seeds	4.9	100	32.8	39.0	45.0	44	45	44	1.18	1.48	1.67	0.57	4.89*
AS6401 BMR ³	Advanta Seed/ Ramer Seed	4.9	99	30.8	35.3	39.0	34	40	39	1.05	1.63	1.75	0.40	4.82*
Super Sweet 10	Dyna-Gro Seeds	4.9	100	31.5	33.5	45.0	40	41	40	1.04	1.39	1.66	0.65	4.74*
FullGraze II	Dyna-Gro Seeds	4.6	100	32.0	33.5	39.0	40	39	42	1.18	1.36	1.66	0.49	4.70*
NutraKing BMR	Public	4.8	99	31.8	36.0	42.0	40	40	36	1.31	1.43	1.49	0.41	4.64*
F75FS13	Dyna-Gro Seeds	4.9	100	30.8	36.8	45.0	35	38	37	1.27	1.25	1.40	0.55	4.47
DynaGraze II	Dyna-Gro Seeds	4.6	94	32.3	36.0	40.5	40	44	43	0.96	1.40	1.51	0.53	4.40
Danny Boy II BMR	Dyna-Gro Seeds	4.0	97	32.0	35.3	36.0	32	44	35	0.73	1.63	1.36	0.53	4.25
AS6402 BMR (Brachytic Dwarf)	Advanta Seed/ Ramer Seed	4.8	97	30.0	31.0	37.3	32	33	33	1.00	1.30	1.38	0.55	4.24
SP 4105 BMR	S&W Seed Company	4.5	100	29.5	27.8	32.5	26	35	32	0.80	1.44	1.43	0.42	4.09
FullGraze II BMR	Dyna-Gro Seeds	4.5	98	30.0	33.8	39.0	35	38	38	0.83	1.29	1.47	0.45	4.03
SP 7106 BMR	S&W Seed Company	4.6	100	29.0	31.0	35.8	26	32	32	0.85	1.14	1.38	0.66	4.02
Xtragraze BMR	Coffey Seed	4.6	98	31.5	31.0	43.5	38	35	37	1.14	0.94	1.23	0.35	3.66
Surpass BMR	Turner Seed	4.3	97	30.8	33.3	45.0	32	35	35	0.89	0.91	1.26	0.55	3.62
Mean		4.7	99	31.2	34.4	40.5	36	40	39	1.05	1.38	1.54	0.52	4.49
CV%		8.7	2	4.1	9.7	7.2	8	5	8	20.49	11.70	13.96	35.15	9.96
LSD,0.05		0.6	3	1.8	4.8	4.2	4	3	4	0.30	0.23	0.30	0.26	0.64

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

² 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 3 for complete scale.

³ BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

*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 29, 40 lb/A on July 9 and 60 lb/A on Aug 14 (Total of 150 lb of N/acre).

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. See table footnotes for specific nitrogen rates used in each trial. Pests were controlled so that they would not limit yield. For example, for weed control in forage sorghum the her-

bicides atrazine and Dual were used. Forage sorghum seed was treated with Concep to prevent seedling injury from Dual.

Results and Discussion

Weather data for Lexington and Princeton are presented in Tables 1 and 2. Ratings for maturity (see Table 3) and yield data (on a dry-matter basis) are reported in Tables 4 through 42. Varieties are listed

in order from highest to lowest total annual 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. To determine if two varieties are truly different, compare the difference between the two varieties to the least significant difference (LSD) at the 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), 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.

Summaries of yield data from 2008 to 2020 of commercial varieties are presented in Tables 43 through 49. The value for each variety in these tables is listed as a percentage of the mean of the commercial varieties entered in each specific trial. Varieties with percentages over 100 yielded better than average, and varieties with percentages less than 100 yielded lower than average. Direct, statistical comparisons of varieties cannot be made using the summary Tables 43 through 49, but the data can help identify varieties for further consideration. Varieties that have performed better than average over many years and at several locations have very stable performance in comparison to varieties that have only been tested at one location or for one year.

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.

Table 12. Dry matter yields and plant height of sorghum-sudangrass and sudangrass varieties sown June 8, 2018, at Princeton, Kentucky.

Variety	Species	Proprietor/ Distributor	Plant Height (in)		Yield (DM tons/acre)		
			Jul 25	Sep 4	Jul 25	Sep 4	Total
Commercial Varieties-Available for Farm Use							
NutraKing BMR ¹	sorghum-sudangrass	Public	54	60	1.81	1.14	2.96*
AS6504 BMR (Dry Stalk)	sorghum-sudangrass	Advanta Seed/Ramer Seed	44	59	1.65	1.27	2.91*
FSG214 BMR	sorghum-sudangrass	Farm Science Genetics	54	68	1.60	1.27	2.87*
HyGain	sorghum-sudangrass	Turner Seed	53	65	1.42	1.38	2.80*
Sweet Six BMR (Dry Stalk)	sorghum-sudangrass	Gayland Ward Seed	52	63	1.67	1.13	2.80*
AS6402 BMR (Brachytic Dwarf)	sorghum-sudangrass	Advanta Seed/Ramer Seed	44	50	1.44	1.12	2.55*
Surpass BMR	sorghum-sudangrass	Turner Seed	46	53	1.65	0.87	2.52*
AS9302 BMR (Brachytic Dwarf)	sudangrass	Advanta Seed/Ramer Seed	45	57	1.22	1.22	2.44
SS211	sorghum-sudangrass	Southern States	56	73	1.22	1.05	2.27
Super Sugar (Delayed Maturity)	sorghum-sudangrass	Gayland Ward Seed	48	67	1.21	0.94	2.15
Sweet Forever BMR	sorghum-sudangrass	Gayland Ward Seed	55	61	1.32	0.81	2.13
Piper	sudangrass	Public	54	80	0.98	1.09	2.06
Promax BMR	sudangrass	Ampac Seed	53	74	0.76	1.00	1.76
Mean			51	64	1.38	1.10	2.48
CV,%			6	5	14.76	23.06	13.54
LSD,0.05			4	4	0.29	0.36	0.48

¹ BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

*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 June 8 and July 26 (Total of 120 lb of N/acre).

For more information, consult the following University of Kentucky Cooperative Extension publications related to annual grass management. These resources are available from your county Extension office may be accessed in the Publications section of the UK Forage website at <http://forages.ca.uky.edu>.

- Lime and Fertilizer Recommendations (AGR-1)
- Grain and Forage Crop Guide for Kentucky (AGR-18)
- Establishing Forage Crops (AGR-64)
- Warm Season Annual Grasses in Kentucky. (AGR-229)
- Sudangrass and Sorghum-sudangrass Hybrids (AGR-234)
- Pearl Millet (AGR-231)
- Forage Sorghum (AGR-230)
- Crabgrass (AGR-232)
- Extending Grazing and Reducing Stored Feed Needs (AGR-199)
- Managing Small Grains for Livestock Forage (AGR-160)

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Table 13. Dry matter yields, stand rating, maturity, and plant height of sorghum-sudangrass varieties sown May 29, 2019, at Princeton, Kentucky.

Variety	Proprietor/ Distributor	Percent Stand Jun 20	Maturity ¹ Jul 26	Plant Height (in)			Yield (DM tons/acre)				
				Jul 1	Jul 26	Aug 29	Jul 1	Jul 26	Aug 29	Nov 5	Total
Commercial Varieties-Available for Farm Use											
HyGain	Turner Seed	84	34.5	32	54	65	1.36	2.82	3.25	2.70	10.13*
Super Sweet10	Dyna-Gro Seed	95	33.8	30	43	61	1.72	1.95	3.14	3.06	9.86*
AS6401 BMR ²	Advanta Seed/Ramer Seed	88	33.5	29	43	59	1.48	2.68	3.37	1.80	9.34*
Danny Boy II BMR	Dyna-Gro Seed	90	34.3	28	39	52	1.40	2.43	3.40	1.96	9.20*
SugarGraze II	Coffey Seed	88	33.8	30	51	62	1.39	1.97	3.37	2.44	9.17*
Fullgraze II	Dyna-Gro Seed	91	33.8	29	45	60	1.36	2.20	3.93	1.56	9.06*
Fullgraze II BMR	Dyna-Gro Seed	91	33.8	28	38	55	1.56	2.13	3.68	1.52	8.90
NutraKing BMR	Public	92	33.0	31	44	54	1.88	2.58	2.80	1.51	8.78
AS6402 BMR (Brachytic Dwarf)	Advanta Seed/Ramer Seed	83	33.5	25	35	45	1.31	2.06	2.59	1.65	7.61
F75F513	Dyna-Gro Seed	89	33.8	28	37	52	1.36	1.31	2.68	1.00	6.34
Surpass BMR	Turner Seed	86	33.8	23	36	44	1.25	1.70	2.12	1.11	6.19
Xtragraze BMR	Coffey Seed	85	33.8	27	34	54	1.38	1.18	1.95	1.36	5.88
Experimental Varieties											
18552	Gayland Ward Seed	94	34.3	37	49	63	1.88	2.07	3.15	3.14	10.24*
18180	Gayland Ward Seed	88	34.0	30	41	60	1.74	1.95	3.85	2.04	9.59*
19153	Gayland Ward Seed	94	34.0	30	41	57	1.80	2.18	3.54	1.53	9.06*
ADVXS007 BMR	Advanta Seed/Ramer Seed	85	33.8	24	44	57	1.36	2.37	3.26	1.66	8.65
19154	Gayland Ward Seed	85	34.0	29	47	62	1.47	1.81	3.26	1.70	8.25
ADVXS008 BMR	Advanta Seed/Ramer Seed	90	34.0	22	36	46	1.40	2.05	3.00	1.68	8.13
ADVXS8007 BMR	Advanta Seed/Ramer Seed	91	34.0	28	39	54	1.53	1.72	2.90	1.93	8.07
19102	Gayland Ward Seed	94	33.5	27	40	53	1.63	1.75	3.16	1.39	7.93
18182 BMR	Gayland Ward Seed	93	33.8	32	43	58	1.76	1.42	2.56	1.97	7.71
18181 BMR	Gayland Ward Seed	90	33.8	29	34	58	1.67	1.48	3.00	0.81	6.96
5619BMR	Coffey Seed	84	38.0	23	32	40	1.42	1.48	1.69	1.34	5.93
5618 BMR	Coffey Seed	84	33.3	24	33	40	1.19	1.93	1.45	0.91	5.48
3619 BMR	Coffey Seed	85	39.3	23	32	36	1.00	1.66	1.62	1.05	5.33
3618 BMR	Coffey Seed	84	33.0	21	34	36	1.01	1.56	1.42	0.68	4.67
Mean		88	34.1	28	40	53	1.47	1.94	2.85	1.67	7.94
CV,%		4	5.5	9	12	7	17.82	23.91	16.29	36.69	11.69
LSD,0.05		5	2.7	3	7	5	0.37	0.65	0.65	0.87	1.31

¹ 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 3 for complete scale.

² BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

*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 22 and 60 lb/A of actual nitrogen on July 10 and July 29 (Total of 180 lb of N/acre).

Table 14. Dry matter yields, maturity, and plant height of sorghum-sudangrass varieties sown June 2, 2020, at Princeton, Kentucky.

Variety	Proprietor/ Distributor	Maturity ¹ Jul 10	Plant Height (in)		Yield (DM tons/acre)			
			Jul 10	Aug 4	Jul 10	Aug 4	Sep 11	Total
Commercial Varieties-Available for Farm Use								
Super Sweet 10	Dyna-Gro Seeds	31.3	52	50	1.31	1.52	2.22	5.05*
Sordan 79	S&W Seed Company	31.3	52	53	1.31	1.79	1.77	4.87*
DynaGraze II	Dyna-Gro Seeds	31.8	57	55	1.02	1.71	2.07	4.80*
SugarGraze II	Coffey Seed	30.8	52	54	1.04	1.78	1.98	4.80*
FirstGraze	Dyna-Gro Seeds	31.5	51	52	1.14	1.71	1.82	4.67*
HyGain	Turner Seed	31.5	57	52	1.23	1.57	1.54	4.35
AS6401 BMR ²	Advanta Seed/Ramer Seed	29.0	40	50	0.90	1.59	1.68	4.17
Sordan Headless	S&W Seed Company	29.0	42	47	1.11	1.48	1.61	4.03
DannyBoy II BMR	Dyna-Gro Seeds	29.0	36	50	0.71	1.64	1.54	3.89
NutraKing BMR	Public	29.5	44	49	0.93	1.34	1.52	3.79
F75F513	Dyna-Gro Seeds	29.0	41	42	1.02	1.34	1.34	3.71
FullGraze II	Dyna-Gro Seeds	29.0	41	51	0.77	1.45	1.49	3.71
FullGraze II BMR	Dyna-Gro Seeds	30.0	39	44	0.83	1.47	1.34	3.64
SP7106 BMR	S&W Seed Company	29.5	34	32	1.04	1.17	1.39	3.60
AS6402 BMR (Brachytic Dwarf)	Advanta Seed/Ramer Seed	29.0	32	45	0.57	1.64	1.14	3.34
SP4105 BMR	S&W Seed Company	29.0	32	39	0.88	1.22	1.03	3.14
Xtragraze BMR	Coffey Seed	29.5	40	46	0.74	1.28	0.93	2.95
Surpass BMR	Turner Seed	29.0	32	41	0.54	1.27	0.98	2.78
Mean		25.9	43	47	0.95	1.49	1.52	3.95
CV,%		2.0	8	8	17.97	13.94	16.80	10.29
LSD,0.05		0.9	5	5	0.24	0.30	0.36	0.59

¹ 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 3 for complete scale.

² BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

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

Nitrogen application: 60 lb/acre of actual nitrogen on June 1, July 23, and August 13 (Total of 180 lb of N/acre).

Table 15. Dry matter yields, seedling vigor, stand rating, maturity, and plant height of pearl millet varieties sown May 29, 2018, at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Seedling Vigor ¹ Jun 13	Percent Stand Jun 13	Maturity ²				Plant Height (in)				Yield (DM tons/acre)				
				Jul 13	Aug 9	Sep 12	Oct 12	Jul 13	Aug 9	Sep 12	Oct 12	Jul 13	Aug 9	Sep 12	Oct 12	Total
Commercial Varieties-Available for Farm Use																
Tifleaf III Hybrid	Gayland Ward Seed	4.9	98	18.3	52.0	50.0	58.0	38	43	30	24	1.93	3.12	1.09	1.27	7.41*
SS635	Southern States	4.5	99	17.5	48.8	48.0	56.0	38	41	29	23	1.88	2.70	1.28	1.33	7.18*
Leafy22 Hybrid	Turner Seed	5.0	100	18.5	46.3	50.5	57.0	38	43	32	25	1.80	2.72	1.26	1.27	7.06*
Pennleaf Hybrid	Pennington Seed	3.8	95	17.3	48.5	50.5	56.0	35	41	32	25	1.73	2.56	1.10	1.00	6.39
SS501	Southern States	4.1	91	35.5	42.0	54.5	56.0	56	41	42	26	2.05	1.88	1.27	0.90	6.11
PP102M Hybrid	Cisco Seeds	3.6	94	38.3	54.5	57.0	57.5	51	35	36	22	1.95	1.90	1.25	0.83	5.91
SweetSummer	Cisco Seeds	3.9	92	17.0	39.0	53.5	55.5	33	31	26	20	1.60	2.24	0.95	0.85	5.64
Mean		4.3	96	23.2	47.2	52.0	56.6	41	39	32	23	1.85	2.44	1.17	1.06	6.53
CV,%		8.4	3	26.0	5.0	9.5	3.4	3	7	10	10	5.96	8.13	15.13	11.69	5.65
LSD,0.05		0.5	5	8.9	3.5	7.4	2.9	2	4	5	4	0.16	0.30	0.26	0.18	0.55

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

² 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 3 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 June 1 and July 19 (Total of 120 lb of N/acre).

Table 16. Dry matter yields, seedling vigor, stand rating, maturity, and plant height of pearl millet varieties sown May 16, 2019, at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Seedling Vigor ¹ Jun 3	Percent Stand Jun 3	Maturity ²			Plant Height (in)			Yield (DM tons/acre)							
				Jul 3	Jul 16	Aug 14	Sep 20	Jul 3	Jul 16	Aug 14	Sep 20	Jul 3	Jul 16	Aug 14	Sep 20	Oct 14	Total
				Jul 3	Jul 16	Aug 14	Sep 20	Jul 3	Jul 16	Aug 14	Sep 20	Jul 3	Jul 16	Aug 14	Sep 20	Oct 14	Total
Commercial Varieties-Available for Farm Use																	
Tifleaf III Hybrid	Gayland Ward Seed	4.4	94	28.0	29.5	60.5	62.0	33	28	36	32	1.21	0.77	1.41	0.54	4.36*	
SS635	Southern States	4.5	95	27.8	30.8	56.0	62.0	35	32	38	32	1.29	0.69	1.47	0.44	4.22*	
Leafy22 Hybrid	Turner Seed	4.4	91	28.3	31.0	58.5	62.0	32	32	36	32	0.93	0.65	1.65	0.59	4.20*	
SS1562M BMR ³	Southern States	3.8	95	27.0	27.0	40.8	58.0	29	25	26	19	1.06	0.77	1.47	0.41	4.02*	
PearlMill	DynaGro	3.6	79	27.5	31.5	59.5	62.0	32	34	41	35	0.95	0.66	1.54	0.60	4.00*	
Pennleaf Hybrid	Pennington Seed	3.0	73	26.8	29.3	58.0	62.0	29	29	34	29	1.00	0.67	1.41	0.52	3.88*	
Wonderleaf	Alta Seed/Ramer Seed	3.9	80	34.3	29.5	61.0	62.0	41	29	48	31	1.30	0.63	1.23	0.44	3.83*	
PP102M Hybrid	Cisco Seed	3.3	70	43.3	33.8	62.0	61.0	41	29	45	29	1.20	0.62	1.41	0.37	3.79*	
Epic BMR	Coffey Seed	3.8	86	26.8	27.3	37.3	61.0	27	24	25	21	0.84	0.77	1.54	0.27	3.77*	
SweetSummer	Cisco Seed	3.9	91	27.5	28.5	34.5	60.5	31	26	25	20	0.96	0.77	1.42	0.36	3.72	
Prime360	Byron Seed	3.1	80	27.0	27.5	42.3	61.0	28	26	26	20	0.83	0.68	1.31	0.42	3.53	
Exceed BMR	Coffey Seed	3.4	83	27.0	27.8	41.3	62.0	29	26	26	24	0.89	0.71	1.08	0.38	3.45	
Experimental Varieties																	
18183	Gayland Ward Seed	5.0	98	27.0	29.5	62.0	62.0	34	29	38	32	1.20	0.65	1.59	0.61	4.43*	
LeafyTR-9	Coffey Seed	3.5	79	27.5	29.3	49.8	62.0	32	29	33	28	0.90	0.76	1.29	0.68	4.18*	
LeafyTR-7	Coffey Seed	3.8	88	27.3	29.0	55.0	61.5	31	27	32	26	0.93	0.68	1.47	0.32	3.84*	
Mean		3.8	85	28.9	29.4	51.9	61.4	32	28	34	27	1.03	0.70	1.42	0.46	3.95	
CV%		13.2	11	10.0	8.5	14.4	1.7	8	9	7	12	20.19	21.23	16.86	31.58	11.79	
LSD0.05		0.7	13	4.1	3.6	10.7	1.5	4	4	4	5	0.30	0.21	0.34	0.21	0.18	

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

² 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 3 for complete scale.

³ BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

**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 16 and 30 lb/A of actual nitrogen on July 3 (Total of 90 lb of N/acre).

Table 17. Dry matter yields, seedling vigor, stand rating, maturity, and plant height of pearl millet varieties sown May 27, 2020, at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Seedling Vigor ¹ Jun 25	Percent Stand Jun 25	Maturity ²		Plant Height (in)		Yield (DM tons/acre)						
				Jul 17	Aug 11	Sep 4	Jul 17	Aug 11	Sep 4	Jul 17	Aug 11	Sep 4	Oct 6	Total
Commercial Varieties-Available for Farm Use														
Leafy22 Hybrid	Turner Seed	4.8	99	21.5	55.5	54.5	28	41	29	0.96	1.77	1.07	1.03	4.82*
PearlMil	Dyna-Gro Seeds	4.8	98	22.0	56.0	54.5	29	41	34	1.05	1.68	1.02	1.03	4.78*
Millex32	S&W Seed Company	5.0	100	39.8	49.3	56.5	45	37	39	1.44	1.26	0.94	1.06	4.69*
SS635	Southern States	4.1	92	21.3	55.5	56.0	26	42	34	0.97	1.37	1.10	1.04	4.48*
Exceed BMR ³	Coffey Seed	5.0	100	18.5	52.3	55.0	27	31	29	1.01	1.43	0.90	1.02	4.36*
Wonderleaf	Advanta Seed/Ramer Seed	4.9	98	42.0	46.3	54.5	37	39	38	1.42	1.13	0.78	0.89	4.23
SweetSummer	Cisco Seeds	4.6	100	18.8	49.3	56.5	27	28	26	1.12	1.27	0.74	0.99	4.12
Pennleaf Hybrid	Pennington Seed	4.0	94	28.3	58.5	55.5	29	40	30	0.80	1.51	0.70	1.03	4.03
Tifleaf III Hybrid	Gayland Ward Seed	4.5	100	25.0	55.0	55.0	27	35	30	0.85	1.36	0.93	1.00	4.04
SS1562M BMR	Southern States	4.4	99	17.8	42.0	54.5	25	29	27	0.88	1.20	0.90	1.01	3.99
Epic BMR	Coffey Seed	3.8	98	17.8	47.0	54.5	25	30	26	0.62	1.32	1.02	1.00	3.97
PP102M Hybrid	Cisco Seeds	4.6	98	45.0	55.5	54.0	35	36	38	1.18	1.12	0.82	0.77	3.89
Prime360	Byron Seed	4.0	92	18.5	51.5	53.0	26	32	26	0.91	1.14	0.70	1.08	3.83
Experimental Varieties														
LeafyTR7	Coffey Seed	3.9	98	19.0	52.8	55.0	29	38	32	1.02	1.63	1.07	1.22	4.93*
18183	Gayland Ward Seed	5.0	100	22.0	54.5	55.0	30	38	28	1.02	1.53	1.03	1.15	4.75*
LeafyTR9	Coffey Seed	4.6	100	18.5	54.5	50.3	27	34	28	0.87	1.47	0.98	1.19	4.51*
Mean		4.5	98	24.7	52.2	54.6	29	36	31	1.01	1.39	0.92	1.02	4.34
CV,%		10.6	4	20.9	6.3	3.4	11	9	11	25.36	17.25	30.94	11.06	10.28
LSD,0.05		0.7	6	7.4	4.7	2.6	5	5	5	0.36	0.34	0.40	0.16	0.64

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

² 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 3 for complete scale.

³ BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

*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 29, 50 lb/A on July 17 and 60 lb/A on Aug 14 (Total of 160 lb of N/acre).

Table 18. Dry matter yields and plant height of pearl millet varieties sown June 8, 2018, at Princeton, Kentucky.

Variety	Proprietor/ Distributor	Plant Height (in)		Yield (DM tons/acre)		
		Jul 26	Sep 17	Jul 26	Sep 17	Total
Commercial Varieties-Available for Farm Use						
SS635	Southern States	51	42	2.59	0.64	3.23*
Tifleaf III Hybrid	Gayland Ward Seed	48	46	2.48	0.68	3.16*
PP102M Hybrid	Cisco Seeds	65	49	2.28	0.64	2.93*
Leafy22 Hybrid	Turner Seed	53	47	2.27	0.56	2.83*
Wonderleaf	Alta Seed/Ramer Seed	62	51	2.30	0.52	2.82*
SS501	Southern States	65	60	1.93	0.79	2.72*
PennLeaf Hybrid	Pennington Seed	49	43	2.05	0.58	2.63*
Sweet Summer	Cisco Seeds	42	43	1.66	0.73	2.39*
Mean		55	48	2.19	0.63	2.82
CV,%		7	12	27.83	50.09	22.08
LSD,0.05		5	8	0.90	0.47	0.92

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

Nitrogen application: 60 lb/A actual nitrogen on June 8 and July 26 (Total of 120 lb of N/acre).

Table 19. Dry matter yields, maturity, and plant height of pearl millet varieties sown May 29, 2019, at Princeton, Kentucky.

Variety	Proprietor/ Distributor	Maturity ¹ Jul 26	Plant Height (in)			Yield (DM tons/acre)				Total
			Jul 3	Jul 26	Aug 29	Jul 3	Jul 26	Sep 3	Nov 5	
Commercial Varieties-Available for Farm Use										
Leafy22 Hybrid	Turner Seed	34.0	31	42	45	1.72	2.31	2.70	0.49	7.22*
Tifleaf III Hybrid	Gayland Ward Seed	39.3	30	40	40	1.68	2.29	2.32	0.62	6.91*
PearlMil	Dyna-Gro Seed	37.5	30	41	42	1.61	2.13	2.76	0.35	6.84*
Wonderleaf	Alta Seed/Ramer Seed	35.3	36	37	50	2.01	1.86	2.54	0.25	6.66*
SS635	Southern States	36.3	30	39	40	1.56	2.17	2.39	0.43	6.55*
SweetSummer	Cisco Seed	34.5	29	31	34	1.66	2.13	2.48	0.19	6.46*
Prime360	Byron Seed	34.3	29	34	37	1.46	2.01	2.35	0.58	6.40
Exceed BMR ²	Coffey Seed	34.0	29	32	37	1.67	2.11	2.35	0.18	6.31
Epic BMR	Coffey Seed	34.8	29	30	35	1.61	2.14	2.11	0.31	6.17
SS1562M BMR	Southern States	34.0	28	30	35	1.30	2.12	2.16	0.32	5.90
PP102M Hybrid	Cisco Seed	38.5	33	35	45	1.61	2.01	1.99	0.29	5.90
Experimental Varieties										
LeafyTR-7	Coffey Seed	36.3	30	36	40	1.74	2.08	2.90	0.48	7.20*
18183	Gayland Ward Seed	38.0	29	38	40	1.84	2.27	2.51	0.49	7.10*
LesfyTR-9	Coffey Seed	34.8	30	38	41	1.61	2.15	2.63	0.62	7.01*
Mean		35.8	30	36	40	1.65	2.13	2.44	0.40	6.62
CV,%		7.6	5	12	8	9.08	12.82	18.13	67.18	8.51
LSD,0.05		3.9	2	6	4	0.21	0.39	0.63	0.38	0.81

¹ 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 3 for complete scale.

² BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

*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 22 and 60 lb/A of actual nitrogen on July 10 and July 29 (Total of 180 lb of N/acre).

Table 20. Dry matter yields and plant height of pearl millet varieties sown June 2, 2020, at Princeton, Kentucky.

Variety	Proprietor/ Distributor	Plant height (in)		Yield (DM tons/acre)			
		Jul 16	Aug 16	Jul 16	Aug 16	Sep 9	Total
Commercial Varieties-Available for Farm Use							
Millex32	S&W Seed Company	62	20	3.47	0.44	2.09	6.00*
Leafy22 Hybrid	Turner Seed	42	20	3.00	0.72	2.07	5.99*
SS635	Southern States	42	25	2.70	0.99	1.96	5.92*
Wonderleaf	Advanta Seed/Ramer Seed	58	20	3.09	0.73	2.03	5.85*
Tifleaf III Hybrid	Gayland Ward Seed	40	23	3.02	0.95	1.46	5.43*
PearlMil	Dyna-Gro Seed	44	21	2.71	0.84	1.86	5.41*
Epic BMR ¹	Coffey Seed	34	19	2.59	1.04	1.68	5.18
Prime360	Byron Seed	36	20	2.51	0.76	1.88	5.15
SS1562M BMR	Southern States	34	19	2.60	0.98	1.55	5.13
SweetSummer	Cisco Seeds	36	21	2.54	0.78	1.59	4.91
Pennleaf Hybrid	Pennington Seed	40	24	2.56	0.65	1.62	4.82
Exceed BMR	Coffey Seed	35	20	2.56	0.55	1.71	4.82
Experimental Varieties							
LeafyTR9	Coffey Seed	40	24	2.64	0.78	2.06	5.47*
LeafyTR7	Coffey Seed	39	21	2.59	1.16	1.38	5.14
Mean		41	21	2.76	0.71	1.78	5.35
CV,%		6	13	11.78	38.81	19.91	9.82
LSD,0.05		3	4	0.46	0.46	0.51	0.78

¹ BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

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

Nitrogen application: 60 lb/acre of actual nitrogen on June 1, July 23, and August 13 (Total of 180 lb of N/acre).

Table 21. Dry matter yields, seedling vigor, stand rating, heading date, plant height, lodging, and maturity of forage sorghum varieties Sown May 29, 2018 at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Seedling Vigor ¹ Jun 13	Percent Stand Jun 13	Heading Date ²	Lodging ³ Sep 18	Plant Height(ft) Sep 18	Maturity ⁴ Sep 18	Yield (DM tons/ acre) Sep 18
Commercial Varieties-Available for Farm Use								
SS405	S & W Seed Company	3.8	94	Aug 29	0.0	14.0	87.0	14.05*
1990	S & W Seed Company	3.5	92	did not head	0.0	13.6	29.0	12.29*
NK300	S & W Seed Company	4.5	96	Aug 19	3.3	7.1	91.0	9.39
Ensilemaster	Caudill Seed	3.5	86	Aug 24	2.3	12.0	91.0	8.98
FSG114 BMR ⁵	Farm Science Genetics	3.3	93	Aug 5	4.8	7.9	93.5	6.31
GW600 BMR	Gayland Ward Seed	4.0	95	Aug 4	7.0	9.9	93.0	6.26
GW400 BMR	Gayland Ward Seed	3.1	86	Aug 3	8.5	8.5	93.0	6.14
GW2120	Gayland Ward Seed	2.5	85	Aug 6	0.3	9.4	91.0	6.11
SD1741 BMR	Chromatin	4.5	99	Aug 2	0.8	9.3	85.5	5.82
GW475 BMR	Gayland Ward Seed	3.6	96	Aug 6	8.0	9.5	93.0	5.54
FSG115 BMR (Brachytic Dwarf)	Farm Science Genetics	3.5	86	Aug 27	0.0	7.8	88.5	5.17
XF7203 BMR (Brachytic Dwarf)	Advanta Seed/Ramer Seed	2.8	90	Aug 2	8.5	5.8	91.0	5.04
AF7401 BMR (Brachytic Dwarf)	Advanta Seed/Ramer Seed	3.0	88	Aug 27	0.3	7.9	93.0	5.02
SiloPro BMR (Dwarf)	Gayland Ward Seed	2.5	70	Aug 24	0.0	7.9	88.0	4.41
KFFiber-Pro70F	Byron Seed	2.9	71	Aug 28	0.3	8.5	89.0	3.69
Mean		3.4	88	Aug 14	2.9	9.3	90.5	6.95
CV,%		15.9	8	3 days	47.6	15.5	3.1	22.75
LSD,0.05		0.8	10	4 days	2.0	2.1	4.0	2.26

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

² Approximately 50% of heads fully emerged. Those without a date are photoperiod sensitive and remain vegetative all season.

³ Lodging score based on a scale of 0 to 9. 0 indicating no lodging and 9 indicating all plants lodged.

⁴ Maturity rating scale: 29 = 9 or more elongated sheaths, 45 = boot swollen, 62 = beginning of pollen shed, 75 = endosperm milky, 93 = endosperm hard and dry. See Table 3 for complete scale.

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

*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 June 1.

Table 22. Dry matter yields, seedling vigor, stand rating, heading date, aphid damage, lodging, plant height, and maturity of forage sorghum varieties sown May 17, 2019, at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Seedling Vigor ¹ Jun 5	Percent Stand Jun 5	Heading Date ²	Sugarcane Aphid Injury ³ Sep 12	Lodging ⁴ Sep 12	Plant Height(ft) Sep 12	Maturity ⁵ Sep 12	Yield (DM tons/ acre) Sep 12
Commercial Varieties-Available for Farm Use									
SS405	S & W Seed Company	3.6	84	Aug 22	3	0.0	10.0	92.5	10.87*
TopTon	Dyna-Gro Seed	4.1	88	Aug 18	2	1.8	10.0	86.5	10.18*
F74FS23 BMR ⁶	Dyna-Gro Seed	4.3	91	Aug 3	2	0.3	8.8	92.5	9.78*
SS1515	Southern States	3.6	90	Aug 8	3	1.3	6.8	91.0	9.77*
Super Sile 30	Dyna-Gro Seed	3.9	90	Aug 21	4	0.0	9.8	84.5	9.43*
Ensilemaster	Caudill Seed	3.5	90	Aug 15	3	1.0	9.6	92.0	9.23*
1990	S & W Seed Company	3.8	76	did not head	1	0.0	10.3	29.0	8.80
Super Sile 20	Dyna-Gro Seed	3.3	91	Aug 20	3	0.0	10.0	84.5	8.37
F75FS13	Dyna-Gro Seed	3.3	82	Jul 31	2	0.3	9.8	93.0	8.35
GW2120	Gayland Ward Seed	3.0	76	Jul 30	2	0.5	9.3	92.5	7.97
GW600 BMR	Gayland Ward Seed	4.6	89	Jul 30	1	2.3	10.3	92.5	7.80
GW475 BMR	Gayland Ward Seed	4.4	90	Jul 28	2	0.3	8.1	92.5	7.69
AF8301	Advanta Seed/Ramer Seed	4.6	88	Aug 5	2	0.0	7.3	91.5	7.67
SD1741 BMR	S & W Seed Company	4.4	84	Jul 27	2	0.0	9.8	93.0	7.44
AF7201 BMR	Advanta Seed/Ramer Seed	3.9	88	Jul 23	2	0.0	8.9	93.0	7.34
F74FS72 BMR	Dyna-Gro Seed	3.0	90	Aug 14	3	0.0	5.5	90.5	7.22
ADV7232 BMR	Advanta Seed/Ramer Seed	3.6	91	Aug 13	3	0.0	5.8	86.5	6.85
AF7401 BMR	Advanta Seed/Ramer Seed	3.5	88	Aug 12	1	0.5	5.5	89.5	6.65
NK300	S & W Seed Company	4.1	84	Aug 6	4	1.5	6.6	92.0	6.53
GW400BMR	Gayland Ward Seed	4.0	90	Jul 22	2	0.5	7.6	92.5	6.45
FSG114 BMR	Farm Science Genetics	3.8	84	Jul 27	3	1.3	9.0	93.0	5.93
FSG115 BMR(Brachytic Dwarf)	Farm Science Genetics	3.0	74	Aug 12	3	0.3	6.0	88.5	5.25
XF7203 BMR(Brachytic Dwarf)	Advanta Seed/Ramer Seed	3.1	83	Jul 28	2	9.5	7.5	88.5	3.73
Experimental Varieties									
FX19133	Dyna-Gro Seed	3.4	74	Aug 21	4	0.0	6.9	86.5	9.22*
ADVXF033	Advanta Seed/Ramer Seed	4.5	88	Aug 13	2	0.3	7.1	90.5	8.96
19156	Gayland Ward Seed	3.0	50	Aug 5	1	0.8	10.6	92.0	8.69
19055	Gayland Ward Seed	3.4	91	Jul 30	3	2.3	8.8	92.5	8.69
18116 BMR	Gayland Ward Seed	4.4	83	Jul 29	1	1.3	8.8	93.0	8.40
19176 BMR	Gayland Ward Seed	4.0	78	Aug 10	3	1.0	10.0	92.5	8.31
ADVXF025 BMR	Advanta Seed/Ramer Seed	4.0	85	Jul 26	1	0.3	9.9	92.0	8.20
18117 BMR	Gayland Ward Seed	3.9	89	Jul 26	2	2.5	8.6	92.5	8.01
19042	Gayland Ward Seed	3.5	88	Aug 23	1	0.0	7.1	80.0	7.93
18118 BMR	Gayland Ward Seed	4.3	88	Jul 26	2	0.3	8.9	93.0	7.59
18487	Gayland Ward Seed	3.8	93	Aug 1	2	0.0	8.3	86.5	7.53
19155 BMR	Gayland Ward Seed	3.6	96	Jul 30	4	0.3	7.8	92.5	7.41
19174 BMR	Gayland Ward Seed	3.6	88	Aug 11	4	0.3	8.4	89.0	7.36
19047 BMR	Gayland Ward Seed	3.9	84	Jul 30	2	1.3	8.5	93.0	7.15
18119 BMR	Gayland Ward Seed	4.4	93	Jul 25	1	0.8	7.4	93.0	7.14
19177 BMR	Gayland Ward Seed	3.9	81	Aug 3	3	0.8	8.8	92.5	7.13
19038	Gayland Ward Seed	4.3	85	Aug 21	5	0.0	6.5	84.0	6.85
19179	Gayland Ward Seed	3.3	61	Aug 19	1	0.0	6.0	82.5	6.60
18096	Gayland Ward Seed	4.1	90	Aug 1	3	0.0	5.8	93.0	6.51
19175BMR	Gayland Ward Seed	3.3	70	Jul 31	2	0.3	8.4	92.5	6.44
18351	Gayland Ward Seed	3.6	89	Aug 3	1	0.0	7.8	88.5	6.43
19178 BMR	Gayland Ward Seed	4.0	87	Aug 5	2	0.3	9.5	90.5	5.55
FX19178 BMR	Dyna-Gro Seed	3.6	78	Aug 8	3	1.5	5.4	93.0	5.28
19181BMR	Gayland Ward Seed	3.6	88	Jul 26	5	0.0	5.0	93.0	4.93
19040	Gayland Ward Seed	3.8	81	Aug 13	2	0.0	6.3	87.0	4.73
Mean		3.8	84	Aug 5	2	0.7	8.1	90.4	7.51
CV,%		16.6	11	4 days	57	156.4	9.4	4.2	17.50
LSD,0.05		0.9	13	5 days	2	1.6	1.1	5.2	1.84

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

² Approximately 50% of heads fully emerged. Those without a date are photoperiod sensitive and remain vegetative all season.

³ Aphid damage score based on a scale of 1 to 9 with 9 indicating all leaves affected by aphids.

⁴ Lodging score based on a scale of 0 to 9. 0 indicating no lodging and 9 indicating all plants lodged.

⁵ Maturity rating scale: 29 = 9 or more elongated sheaths, 45 = boot swollen, 62 = beginning of pollen shed, 75 = endosperm milky, 93 = endosperm hard and dry. See Table 3 for complete scale.

⁶ BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

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

Nitrogen application: 120 lb/A of actual nitrogen on May 15.

Table 23. Dry matter yields, seedling vigor, stand rating, heading date, plant height, and maturity of forage sorghum varieties sown May 28, 2020, at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Seedling Vigor ¹ Jun 25	Percent Stand Jun 25	Heading Date ²	Plant Height(ft) Sep 16	Maturity ³ Sep 16	Yield (DM tons/ acre) Sep18
Commercial Varieties-Available for Farm Use							
SS405	S & W Seed Company	4.6	97	Aug 31	11.5	88.5	8.48*
TopTon	Dyna-Gro Seed	3.9	95	Aug 27	10.0	85.5	7.71*
Ensilemaster	Caudill Seed	4.3	95	Aug 26	10.8	85.5	7.67*
SP1615	S & W Seed Company	4.4	99	did not head	11.5	29.0	7.42*
SS304	S & W Seed Company	3.5	97	Aug 28	11.3	87.0	7.15
Super Sile 20	Dyna-Gro Seed	4.1	99	Aug 30	10.0	87.5	7.09
Super Sile 30	Dyna-Gro Seed	4.0	97	Aug 27	10.8	88.0	6.79
SS1515	Southern States	4.1	98	Aug 16	6.5	88.0	6.20
NK300	S & W Seed Company	4.8	100	Aug 16	6.8	87.0	6.17
AF8301	Advanta Seed/Ramer Seed	4.4	99	Aug 17	7.0	89.0	6.10
F75FS13	Dyna-Gro Seed	4.1	98	Aug 1	8.8	93.0	5.57
F74FS23 BMR ⁴	Dyna-Gro Seed	4.1	97	Aug 15	9.5	88.0	5.56
ADV7232 BMR	Advanta Seed/Ramer Seed	4.1	99	Aug 26	5.6	86.0	5.44
GW2120	Gayland Ward Seed	4.3	99	Jul 31	7.5	93.0	5.42
FSG114 BMR	Farm Science Genetics	4.5	100	Jul 29	8.6	93.0	5.37
SP3904 BMR(Brachytic Dwarf)	S & W Seed Company	3.8	94	Aug 25	6.0	85.0	5.21
F74FS72 BMR	Dyna-Gro Seed	3.9	97	Aug 25	5.5	87.5	5.15
GW400 BMR	Gayland Ward Seed	4.4	98	Jul 31	7.6	93.0	5.04
AF7201 BMR(Brachytic Dwarf)	Advanta Seed/Ramer Seed	4.6	96	Jul 31	7.5	92.5	4.99
GW475 BMR	Gayland Ward Seed	4.6	99	Aug 1	8.6	91.5	4.97
GW600 BMR	Gayland Ward Seed	4.9	100	Jul 30	7.4	92.0	4.96
SP3905 BMR(Brachytic Dwarf)	S & W Seed Company	3.6	99	Aug 2	5.9	93.0	4.79
AF7401 BMR	Advanta Seed/Ramer Seed	4.0	98	Aug 25	5.9	86.0	4.56
FSG115 BMR(Brachytic Dwarf)	Farm Science Genetics	4.6	98	Aug 24	7.0	88.5	4.55
Mean		4.2	98	Aug 16	8.2	86.5	5.93
CV _v %		13.4	4	4 days	6.8	2.7	13.37
LSD _{0.05}		0.8	5	4 days	0.8	3.3	1.12

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

² Approximately 50% of heads fully emerged. Those without a date are photoperiod sensitive and remain vegetative all season.

³ Maturity rating scale: 29 = 9 or more elongated sheaths, 45 = boot swollen, 62 = beginning of pollen shed, 75 = endosperm milky, 93 = endosperm hard and dry. See Table 3 for complete scale.

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

*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 May 29.

Table 24. Dry matter yields, aphid injury, lodging, and maturity of forage sorghum varieties sown June 6, 2019, at Princeton, Kentucky

Variety	Proprietor/ Distributor	Sugarcane Aphid Injury ¹ Sep 23	Lodging ² Sep 24	Maturity ³ Sep 24	Yield (DM tons/ acre) Sep 30
Commercial Varieties-Available for Farm Use					
SS405	S&W Seed Company	8	0.3	93.0	12.59*
SP1615	S&W Seed Company	6	0.0	29.0	12.51*
Super Sile 20	Dyna-Gro Seed	7	1.8	85.5	9.11
F74FS72 BMR ⁴	Dyna-Gro Seed	6	0.0	87.0	8.63
GW2120	Gayland Ward Seed	5	0.0	86.5	8.49
Super Sile 30	Dyna-Gro Seed	8	2.3	88.0	7.64
AF7401 BMR	Advanta Seed/Ramer Seed	6	0.0	87.0	7.33
EnsileMaster	Caudill Seed	7	9.0	89.0	6.27
AF8301	Advanta Seed/Ramer Seed	7	1.3	86.0	6.22
ADVF7232 BMR	Advanta Seed/Ramer Seed	6	0.0	85.0	6.18
F75FS13	Dyna-Gro Seed	6	2.0	87.0	6.17
AF7201 BMR	Advanta Seed/Ramer Seed	8	1.3	87.0	6.10
FSG114 BMR	Farm Science Genetics	6	2.0	87.0	5.80
F74FS23 BMR	Dyna-Gro Seed	8	8.0	89.5	5.60
SS1515	Southern States	6	2.8	89.0	5.54
FSG115 BMR (Brachytic Dwarf)	Farm Science Genetics	8	1.3	87.0	5.42
TopTon	Dyna-Gro Seed	7	9.0	87.0	5.37
Experimental Varieties					
FX19133	Dyna-Gro Seed	8	0.0	87.0	10.34*
19156	Gayland Ward Seed	6	3.0	86.5	10.23*
19038	Gayland Ward Seed	6	0.0	87.0	7.96
ADVXF033	Advanta Seed/Ramer Seed	7	0.0	87.0	7.69
19176 BMR	Gayland Ward Seed	7	4.8	86.5	7.61
18096	Gayland Ward Seed	4	0.0	86.5	7.54
ADVXF025 BMR	Advanta Seed/Ramer Seed	6	3.5	86.0	7.45
19177 BMR	Gayland Ward Seed	7	7.3	86.5	7.43
19042	Gayland Ward Seed	5	0.3	91.0	7.37
18118 BMR	Gayland Ward Seed	8	1.3	87.0	7.09
19175 BMR	Gayland Ward Seed	6	4.0	86.5	6.94
19178 BMR	Gayland Ward Seed	6	5.8	87.0	6.59
19179	Gayland Ward Seed	5	0.0	85.0	6.48
18351	Gayland Ward Seed	6	0.0	87.0	6.43
19055	Gayland Ward Seed	6	0.5	87.0	6.42
19181	Gayland Ward Seed	7	0.0	87.0	6.23
19040	Gayland Ward Seed	6	0.0	85.0	6.17
18116 BMR	Gayland Ward Seed	7	7.3	87.0	5.59
18119 BMR	Gayland Ward Seed	6	1.0	86.5	5.50
18487	Gayland Ward Seed	6	7.8	86.5	5.42
19174 BMR	Gayland Ward Seed	7	7.3	86.5	5.25
19155 BMR	Gayland Ward Seed	7	6.5	87.0	5.16
FX19178 BMR	Dyna-Gro Seed	6	0.0	85.0	4.43
19047 BMR	Gayland Ward Seed	8	5.3	87.0	4.41
18117 BMR	Gayland Ward Seed	7	8.5	88.5	3.99
Mean		7	2.7	85.7	6.91
CV,%		16	65.5	2.7	25.24
LSD,0.05		1	2.5	3.2	2.47

¹ Aphid damage score based on a scale of 1 to 9 with 9 indicating all leaves affected by aphids.

² Lodging score based on a scale of 0 to 9. 0 indicating no lodging and 9 indicating all plants lodged.

³ Maturity rating scale: 29 = 9 or more elongated sheaths, 45 = boot swollen, 62 = beginning of pollen shed, 75 = endosperm milky, 93 = endosperm hard and dry. See Table 3 for complete scale.

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

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

Nitrogen application: 120 lb/A of actual nitrogen on May 22.

Table 25. Dry matter yields, aphid damage, lodging, and maturity of forage sorghum varieties sown June 6, 2019, at Princeton, Kentucky, and sprayed with an aphicide on August 24, 2019.

Variety	Proprietor/ Distributor	Sugarcane Aphid Injury ¹ Sep 23	Lodging ² Sep 24	Maturity ³ Sep 24	Yield (DM tons/ acre) Sep 30
Commercial Varieties-Available for Farm Use					
SP1615	S&W Seed Company	5	0.0	29.0	14.84*
SS405	S&W Seed Company	7	0.3	93.0	12.82*
Super Sile 30	Dyna-Gro Seeds	5	3.0	85.0	11.67
AF8301	Advanta Seed/Ramer Seed	6	1.5	86.0	11.19
F75FS13	Dyna-Gro Seeds	5	1.3	87.0	9.86
Super Sile 20	Dyna-Gro Seeds	6	3.3	85.5	9.61
GW2120	Gayland Ward Seed	4	0.0	86.5	8.84
SS1515	Southern States	4	2.3	87.0	8.74
ADVF7232 BMR ⁴	Advanta Seed/Ramer Seed	5	0.0	89.0	8.43
FSG114 BMR	Farm Science Genetics	6	1.5	86.5	8.07
AF7401 BMR	Advanta Seed/Ramer Seed	5	0.0	87.0	7.86
TopTon	Dyna-Gro Seeds	5	7.8	85.0	7.58
F74FS23 BMR	Dyna-Gro Seeds	6	6.5	87.0	7.00
EnsileMaster	Caudill Seed	5	7.5	87.0	6.99
AF7201 BMR	Advanta Seed/Ramer Seed	7	3.5	87.0	6.66
FSG115 BMR (Brachytic Dwarf)	Farm Science Genetics	7	0.0	87.5	5.39
F74FS72 BMR	Dyna-Gro Seeds	5	0.0	87.0	5.32
Experimental Varieties					
FX19133	Dyna-Gro Seeds	6	0.3	89.0	13.03*
19038	Gayland Ward Seed	5	0.0	87.0	9.85
ADVXF033	Advanta Seed/Ramer Seed	5	0.0	87.0	9.40
19042	Gayland Ward Seed	4	0.0	91.0	8.63
ADVXF025 BMR	Advanta Seed/Ramer Seed	5	3.3	87.0	8.03
19175 BMR	Gayland Ward Seed	7	2.3	86.5	8.00
18118 BMR	Gayland Ward Seed	7	1.5	87.0	7.75
19179	Gayland Ward Seed	4	0.0	87.0	7.40
19176 BMR	Gayland Ward Seed	6	5.5	87.0	7.26
19178 BMR	Gayland Ward Seed	5	4.8	86.5	7.21
19055	Gayland Ward Seed	4	0.0	87.0	7.04
18119 BMR	Gayland Ward Seed	6	0.3	86.5	7.02
19156	Gayland Ward Seed	6	6.0	86.0	6.94
18116 BMR	Gayland Ward Seed	7	7.5	86.5	6.85
19174 BMR	Gayland Ward Seed	7	4.5	86.5	6.75
18351	Gayland Ward Seed	4	0.0	86.5	6.63
18096	Gayland Ward Seed	3	0.0	87.0	6.61
19177 BMR	Gayland Ward Seed	6	5.3	86.5	6.18
18117 BMR	Gayland Ward Seed	6	6.7	87.0	6.09
19040	Gayland Ward Seed	3	0.0	87.5	6.03
19181	Gayland Ward Seed	7	0.0	87.0	5.64
FX19178 BMR	Dyna-Gro Seeds	5	0.3	87.0	5.61
18487	Gayland Ward Seed	5	6.5	86.0	5.59
19047 BMR	Gayland Ward Seed	7	3.8	87.0	5.52
19155 BMR	Gayland Ward Seed	7	5.5	87.0	4.63
Mean		6	2.4	85.7	7.91
CV,%		11	65.4	2.8	25.51
LSD,0.05		2	2.2	3.3	2.91

¹ Aphid damage score based on a scale of 1 to 9 with 9 indicating all leaves affected by aphids.

² Lodging score based on a scale of 0 to 9. 0 indicating no lodging and 9 indicating all plants lodged.

³ Maturity rating scale: 29 = 9 or more elongated sheaths, 45 = boot swollen, 62 = beginning of pollen shed, 75 = endosperm milky, 93 = endosperm hard and dry. See Table 3 for complete scale.

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

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

Nitrogen application; 120 lb/A of actual nitrogen on May 22.

Table 26. Dry matter yields, seedling vigor, stand rating, and maturity of teff varieties sown May 16, 2019, at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Jun 5	Percent Stand Jun 5	Maturity ²			Yield (tons/acre)			
			Jun 26	Jul 16	Aug 18	Jun 27	Jul 16	Aug 18	Total
Commercial Varieties-Available for Farm Use									
Moxie	3.5	99	45.0	45.0	52.5	1.14	1.44	1.16	3.74*
Tiffany	4.2	99	45.0	48.3	52.7	1.04	1.70	1.01	3.74*
Corvallis	3.9	96	45.0	46.3	53.0	1.13	1.51	1.09	3.73*
Pharaoh	4.4	100	45.0	46.3	53.0	1.29	1.11	1.07	3.47*
CW0604	3.8	100	49.3	46.3	53.5	0.95	1.57	0.95	3.47*
Velvet	3.4	95	48.8	47.5	52.5	0.94	1.53	0.98	3.45*
VAT1Brown	4.1	100	45.0	45.0	51.5	1.22	1.15	1.04	3.40*
SummerDelight	3.6	98	47.5	47.5	53.0	0.98	1.21	0.90	3.09*
Dessie	3.5	100	46.3	47.5	54.0	0.81	1.32	0.90	3.02*
HorseCandi	1.8	96	45.0	48.8	52.5	0.59	1.43	0.92	2.94*
Experimental Varieties									
BARETCT	3.7	99	48.3	50.0	52.5	1.17	1.19	1.25	3.62*
F11	4.3	78	45.0	46.3	52.5	1.17	1.27	0.92	3.36*
Mean	3.6	96	46.2	47.0	52.8	1.03	1.36	1.01	3.41
CV,%	24.7	14	3.9	5.1	2.9	32.44	25.91	20.02	16.26
LSD,0.05	1.3	20	2.7	3.6	2.3	0.49	0.52	0.30	0.82

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

² 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 3 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 May 15 and 30 lb/A of actual nitrogen on June 28 (Total of 90 lb of N/acre).

Table 27. Dry matter yields, seedling vigor, stand rating, and maturity of teff varieties sown May 27, 2020, at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Jun 25	Percent Stand Jun 25	Maturity ²			Yield (tons/acre)			
			Jul 17	Aug 11	Sep 9	Jul 17	Aug 11	Sep 9	Total
Commercial Varieties-Available for Farm Use									
Corvallis	4.9	99	47.0	52.0	66.0	1.35	1.12	1.62	4.09*
Dessie	4.5	100	49.3	52.0	66.0	1.02	1.16	1.68	3.85*
Moxie	4.5	100	50.8	52.0	66.0	1.00	1.00	1.70	3.70*
Tiffany	5.0	100	49.5	52.5	66.0	1.16	1.03	1.37	3.56*
CW0604	5.0	100	46.5	51.5	66.0	0.90	1.00	1.63	3.52*
Velvet	4.5	100	47.0	52.5	66.0	0.90	1.07	1.47	3.44*
VAT1Brown	4.6	100	46.0	49.8	66.0	0.89	0.94	1.56	3.40*
HorseCandi	4.8	99	40.5	51.5	66.0	0.78	1.04	1.53	3.34*
SummerDelight	4.9	100	48.3	52.0	66.0	0.97	1.00	1.19	3.16
Pharaoh	4.8	100	43.3	50.0	66.0	0.90	0.95	1.31	3.16
Experimental Varieties									
BARETCT	4.9	99	41.8	52.5	66.0	0.98	0.95	1.28	3.21*
F11	4.9	100	47.3	52.5	66.0	0.83	1.03	1.27	3.13
Mean	4.8	100	46.4	51.7	66.0	0.97	1.02	1.47	3.46
CV,%	6.7	1	17.2	3.8	0.0	31.70	21.63	19.86	17.93
LSD,0.05	0.5	1	8.1	2.8	0.0	0.44	0.32	0.42	0.89

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

² 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 3 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 29, 50 lb/A on July 17 and 60 lb/A on Aug 14 (Total of 160 lb of N/acre).

Table 28. Dry matter yields and maturity of teff varieties sown May 29, 2019, at Princeton, Kentucky.

Variety	Maturity ¹ Jul 26	Yield (tons/acre)			
		Jul 1	Jul 29	Sep 9	Total
Commercial Varieties-Available for Farm Use					
Pharaoh	35.0	1.51	0.88	1.44	3.83*
Tiffany	34.8	1.43	1.08	1.20	3.75*
HorseCandi	35.0	1.34	1.11	1.14	3.69*
Dessie	36.3	1.54	0.95	1.12	3.61*
SummerDelight	36.3	1.58	0.99	1.07	3.55*
Corvallis	35.0	1.37	1.07	1.02	3.55*
CW0604	36.3	1.34	1.05	1.08	3.48*
Velvet	35.0	1.45	0.97	0.98	3.43*
Moxie	35.5	1.52	1.04	0.97	3.42*
Experimental Varieties					
BARETCT	35.0	1.35	0.97	0.98	3.26*
Mean	35.4	1.44	1.01	1.10	3.56
CV,%	3.9	16.47	14.03	13.53	9.83
LSD,0.05	2.0	0.35	0.21	0.26	0.60

¹ 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 3 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 May 22 and 60 lb/A of actual nitrogen on July 10 and July 29 (Total of 180 lb of N/acre).

Table 29. Dry matter yields, maturity, and plant height of teff varieties sown June 2, 2020, at Princeton, Kentucky.

Variety	Maturity ¹ Jul 16	Plant Height (in) Jul 16	Yield (tons/acre)			
			Jul 16	Aug 7	Sep 9	Total
Commercial Varieties-Available for Farm Use						
Corvallis	54	20	2.48	1.10	1.82	5.40*
HorseCandi	54	23	1.61	1.30	2.12	5.03*
Pharaoh	54	23	1.70	1.39	1.92	5.01*
CW0604	54	22	1.85	1.18	1.94	4.96*
Moxie	54	20	1.74	1.20	1.95	4.89*
Velvet	54	20	1.67	1.08	1.97	4.72*
Tiffany	54	20	1.64	1.38	1.70	4.72*
Dessie	54	21	1.87	0.90	1.94	4.71*
VAT1Brown	54	20	1.77	0.99	1.69	4.46*
SummerDelight	54	22	1.65	1.45	1.22	4.32*
Mean	54	21	1.80	1.20	1.83	4.82
CV,%	0	14	29.05	27.51	27.71	18.11
LSD,0.05	0	4	0.76	0.48	0.73	1.27

¹ 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 3 for complete scale.

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

Nitrogen application: 60 lb/acre of actual nitrogen on July 22 and August 13 (Total of 120 lb of N/acre).

Table 30. Dry matter yields, seedling vigor, maturity and stand rating of crabgrass varieties sown May 29, 2018, at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Seedling Vigor ¹ Jun 13	Percent Stand Jun 13	Maturity ² Jul 13	Plant Height (in) Jul 13	Yield (tons/acre)			
						Jul 13	Aug 20	Sep 21	Total
Commercial Varieties-Available for Farm Use									
RedRiver	Noble Foundation	4.8	96	45	22	1.87	2.40	0.60	4.87*
Impact	Barenbrug USA	4.5	98	45	22	1.57	2.37	0.87	4.81*
QuickNBig	Noble Foundation	5.0	100	52	29	1.71	1.58	0.53	3.82
Mean		4.8	98	47	24	1.71	2.12	0.67	4.50
CV,%		9.3	2	0	8	14.77	14.86	25.65	9.50
LSD,0.05		0.8	3	0	3	0.44	0.54	0.30	0.74

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

² 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 3 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 June 1 and July 19 (Total of 120 lb of N/acre).

Table 31. Dry matter yields, seedling vigor, stand rating, and maturity of crabgrass varieties sown May 16, 2019, at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Seedling Vigor ¹ Jun 5	Percent Stand		Maturity ²		Yield (tons/acre)			
			Jun 5	Oct 14	Jul 2	Aug 12	Jul 2	Aug 12	Oct 14	Total
Commercial Varieties-Available for Farm Use										
Red River	Noble Foundation	4.5	99	99	45.0	58.0	1.94	2.57	0.33	4.84*
Impact	Barenbrug USA	3.5	96	96	45.0	57.5	1.78	2.64	0.35	4.77*
QuickNBig	Noble Foundation	5.0	100	9	55.0	57.5	2.22	1.34	0.02	3.58
Experimental Varieties										
BARDSiRR	Barenbrug USA	4.0	99	99	45.0	58.0	1.83	2.39	0.24	4.46*
Mean		4.1	98	79	47.0	57.7	1.91	2.32	0.26	4.49
CV,%		13.2	2	3	1.8	1.3	6.33	12.57	55.13	7.06
LSD,0.05		0.8	3	3	1.2	1.0	0.19	0.42	0.20	0.45

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

² 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 3 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 May 15 and 30 lb/A of actual nitrogen on July 3 (Total of 90 lb of N/acre).

Table 32. Dry matter yields, seedling vigor, stand rating, and maturity of crabgrass varieties sown May 27, 2020, at Lexington, Kentucky.

Variety	Proprietor/ Distributor	Seedling Vigor ¹ Jun 25	Percent Stand Jun 25	Maturity ²		Yield (tons/acre)			
				Jul 17	Sep 9	Jul 17	Aug 11	Sep 9	Total
Commercial Varieties-Available for Farm Use									
Impact	Barenbrug USA	4.1	97	29	66	0.37	1.37	1.66	3.40*
Red River	Noble Foundation	4.6	100	29	66	0.58	1.30	1.26	3.13*
Mojo	Barenbrug USA	4.3	97	29	66	0.48	1.14	1.49	3.11*
QuickNBig	Noble Foundation	5.0	100	51	66	0.94	0.97	1.09	3.01*
Experimental Varieties									
BARDSiRR	Barenbrug USA	4.5	97	29	66	0.40	1.26	1.69	3.35*
Mean		4.5	98	33.5	66	0.55	1.21	1.44	3.20
CV,%		4.2	1	6.5	0	36.27	20.28	15.70	15.15
LSD,0.05		0.3	2	3.3	0	0.31	0.38	0.35	0.75

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

² 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 3 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 29, 50 lb/A on July 17 and 60 lb/A on Aug 14 (Total of 160 lb of N/acre).

Table 33. Dry matter yields, maturity, and plant height of crabgrass varieties sown May 29, 2019 at Princeton, Kentucky.

Variety	Proprietor/ Distributor	Maturity ¹		Plant Height (in)		Yield (tons/acre)		
		Jul 9	Aug 13	Jul 9	Aug 13	Jul 9	Aug 13	Total
Commercial Varieties-Available for Farm Use								
Impact	Barenbrug USA	33.4	56.3	22	23	1.10	1.79	2.88*
QuickNBig	Noble Foundation	48.3	58.8	32	20	1.48	1.15	2.70*
RedRiver	Noble Foundation	34.0	56.8	23	24	1.30	1.38	2.62*
Experimental Varieties								
BARDSiRR	Barenbrug USA	32.8	57.5	22	23	1.23	1.59	2.83*
Mean		36.4	57.1	24	23	1.24	1.53	2.78
CV,%		9.8	2.8	10	8	14.56	35.33	20.29
LSD,0.05		5.1	2.3	3	2	0.26	0.93	0.97

¹ 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 3 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 May 22 and 60 lb/A of actual nitrogen on July 10 (Total of 120 lb of N/acre).

Table 34. Dry matter yields, maturity, and plant height of crabgrass varieties sown June 2, 2020, at Princeton, Kentucky.

Variety	Proprietor/ Distributor	Maturity ¹ Jul 16	Plant Height (in) Jul 16	Yield (tons/acre)			Total
				Jul 16	Aug 6	Sep 9	
Commercial Varieties-Available for Farm Use							
Red River	Noble Foundation	41.5	22	2.04	0.74	2.15	4.92*
QuickNBig	Noble Foundation	41.5	20	2.01	1.06	1.81	4.87*
Impact	Barenbrug USA	41.5	20	1.77	1.02	2.19	4.84*
Mojo	Barenbrug USA	41.5	22	1.69	0.80	2.21	4.70*
Mean		41.5	21	1.86	0.90	2.08	4.83
CV,%		0	12	15.72	25.25	12.58	8.78
LSD,0.05		0	4	0.47	0.37	0.44	0.72

¹ 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 3 for complete scale.

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

Nitrogen application: 60 lb/acre of actual nitrogen on July 22 and August 13 (Total of 120 lb of N/acre).

Table 35. Dry matter yields, seedling vigor, stand rating, and maturity of cereal crops and annual ryegrass sown April 12, 2018, at Lexington, Kentucky.

Variety	Species	Proprietor/ Distributor	Seedling Vigor ¹ May 22	Percent Stand May 22	Maturity ² Jun 14	Yield (tons/acre) Jun 14
Persik	black hulled oat	Caldbeck Consulting	4.6	99	52.8	1.95*
Excel	spring oat	Ag. Alumni Seed, IN	4.3	92	60.0	1.65*
CCSO-120	black hulled oat	Caldbeck Consulting	4.4	94	54.0	1.63*
Reins	spring oat	Ag. Alumni Seed, IN	5.0	100	59.5	1.57
Robust	spring oat	Ag. Alumni Seed, IN	4.6	97	58.0	1.57
VNK	spring oat	public	4.4	92	58.5	1.56
Saber	spring oat	Ag. Alumni Seed, IN	4.6	95	60.0	1.54
Jerry	spring oat	Caudill Seed	4.3	97	55.5	1.52
PST50288C	spring oat	Caldbeck Consulting	3.8	83	47.3	1.49
CCSO-102	spring oat	Caldbeck Consulting	3.1	74	51.8	1.47
PST241	spring oat	Caldbeck Consulting	3.3	63	45.0	1.32
PST50200	spring oat	Caldbeck Consulting	3.4	66	53.5	1.22
Marshall	annual ryegrass	The Wax Company	2.9	82	62.0	0.87
Byron	spring triticale	Byron Seed	3.0	70	43.5	0.37
TetraPrime	Italian ryegrass	Mountain View Seed	2.8	87	29.0	0.36
AgriMAXX447	winter wheat	AgriMAXX Wheat Co.	2.3	65	29.0	0.08
Mean			3.8	85	51.2	1.26
CV,%			13.0	13	5.0	19.26
LSD,0.05			0.8	18	3.7	0.34

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

² 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 3 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 13.

Table 36. Dry matter yields, seedling vigor, stand rating, and maturity of cereal crops and annual ryegrass sown March 19, 2019, at Lexington, Kentucky.

Variety	Species	Proprietor/ Distributor	Seedling Vigor ¹ Apr 25	Percent Stand Apr 25	Maturity ²		Yield (tons/acre)		
					May 21	Jun 20	May 21	Jun 21	Total
Excell	spring oat	Ag. Alumni Seed, IN	5.0	100	45.0	58.0	2.20	0.55	2.75*
CCSO120	black hulled oat	Caldbeck Consulting	5.0	100	45.0	47.8	1.84	0.71	2.55*
Persik	black hulled oat	Caldbeck Consulting	4.6	100	45.0	47.5	1.91	0.64	2.55*
CCSO102	spring oat	Caldbeck Consulting	4.9	98	46.3	50.8	1.90	0.55	2.45*
Saber	spring oat	Ag. Alumni Seed, IN	5.0	100	50.0	59.5	1.93	0.40	2.33
Jerry	spring oat	Caudill Seed	5.0	100	45.0	46.3	1.69	0.60	2.29
VNK	spring oat	public	4.6	100	48.8	58.5	1.76	0.51	2.27
Robust	spring oat	Ag. Alumni Seed, IN	4.9	100	45.0	49.0	1.82	0.45	2.27
BCO18006	spring oat	Seed-link Inc.	4.5	99	45.0	46.3	1.56	0.64	2.20
Haywire	spring oat	Cisco Seeds	5.0	100	45.0	45.0	1.65	0.31	1.96
Marshall	annual ryegrass	The Wax Company	3.1	100	56.0	62.0	1.06	0.82	1.88
Byron	spring triticale	Byron Seed	3.6	99	45.0	60.0	1.34	0.53	1.87
BCO18007	spring oat	Seed-link Inc.	4.0	98	45.0	47.5	1.40	0.39	1.79
BCT18501	spring triticale	Seed-link Inc.	2.6	95	47.5	61.5	1.20	0.54	1.74
CCSW330	spring wheat	Caldbeck Consulting	3.8	98	45.0	58.0	0.99	0.48	1.47
Maton	cerealRye	Caudill Seed	5.0	100	56.0	62.0	0.76	0.56	1.31
TetraPrime	Italian ryegrass	Mountain View Seed	2.9	99	29.0	29.0	0.78	0.53	1.31
Dynagro9600	winter wheat	Dyna-Gro Seed	3.1	100	29.0	33.0	0.52	0.42	0.94
Mean			4.3	99	45.1	51.2	1.46	0.53	2.00
CV,%			10.0	2	2.4	6.6	15.53	31.70	12.97
LSD,0.05			0.6	2	1.6	4.8	0.32	0.16	0.37

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

² 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 3 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 19.

Table 37. Dry matter yields, stand rating, and maturity of cereals sown March 28, 2020, at Lexington, Kentucky.

Variety	Species	Proprietor/ Distributor	Percent Stand		Maturity ¹		Yield (tons/acre)		
			Apr 23	Jul 16	Jun 10	Jul 16	Jun 10	Jul 16	Total
Excel	spring oat	Ag. Alumni Seed, IN	100	66	57.5	75.0	1.77	0.23	2.00*
Jerry	spring oat	Caudill Seed	100	81	55.5	75.0	1.50	0.40	1.90*
CCSO102	spring oat	Caldbeck Consulting	99	93	56.0	75.0	1.30	0.37	1.67*
Persik	black hulled oat	Caldbeck Consulting	100	83	55.5	75.0	1.40	0.22	1.62
Haywire	spring oat	Cisco Seeds	99	88	45.0	75.0	1.12	0.46	1.57
Reins	spring oat	Ag. Alumni Seed, IN	99	43	58.0	75.0	1.32	0.25	1.57
VNK	spring oat	public	100	48	57.5	75.0	1.32	0.17	1.48
CCSO120	black hulled oat	Caldbeck Consulting	99	86	54.0	75.0	1.15	0.30	1.45
BCO18006	spring oat	Seed-link Inc.	98	91	46.8	75.0	0.93	0.50	1.44
BCO18007	spring oat	Seed-link Inc.	100	79	57.5	75.0	1.07	0.25	1.32
CCSW330	spring wheat	Caldbeck Consulting	99	98	55.5	75.0	0.90	0.37	1.28
BCT18501	spring triticale	Seed-link Inc.	97	33	62.0	75.0	0.97	0.14	1.11
Elbon	cereal rye	Caudill Seed	100	100	62.0	71.8	0.45	0.42	0.87
Pembroke 2016	winter wheat	KY. Agric. Exp. Station	100	100	29.0	29.0	0.11	0.33	0.44
Mean			99	78	53.7	71.4	1.09	0.31	1.41
CV,%			1	18	2.7	2.4	17.46	35.77	16.58
LSD,0.05			1	20	2.1	2.5	0.27	0.16	0.33

¹ 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 3 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 Mar 30.

Table 38. Dry matter yields, stand rating, and maturity of cereal crops sown September 20, 2018, at Lexington, Kentucky (early first harvest).

Variety	Species	Proprietor/ Distributor	Percent Stand Sep 28, 2018	Maturity ¹		Yield (tons/acre)		
				Apr 10	May 10	Apr 10	May 10	Total
Elbon	rye	Noble Foundation/Caudill Seed	100	45.0	58.0	3.50	1.41	4.91*
Maton	rye	Noble Foundation/Caudill Seed	100	45.0	58.0	3.24	1.31	4.55*
SouthernBlue	rye	Caudill Seed	100	45.0	58.0	2.76	1.23	4.00
Forerunner	triticale	Cisco Seeds	100	31.5	53.5	2.06	1.44	3.50
Bobcat	triticale	Fabian Seed Farms	100	32.0	55.5	2.02	1.18	3.20
DG9701	wheat	Dyna-Gro Seed	100	31.0	53.0	1.53	1.33	2.85
DG9600	wheat	Dyna-Gro Seed	100	31.3	53.0	1.55	1.25	2.80
DG9750	wheat	Dyna-Gro Seed	100	31.0	54.0	1.51	1.28	2.79
Mean			100	36.5	55.4	2.27	1.30	3.57
CV,%			0	0.8	3.1	10.43	13.65	9.74
LSD,0.05			0	0.4	2.5	0.35	0.26	0.51

¹ 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 3 for complete scale.

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

Table 39. Dry matter yields, stand rating, and maturity of cereal crops sown September 20, 2018, at Lexington, Kentucky.

Variety	Species	Proprietor/ Distributor	Percent Stand Sep 28, 2018	Maturity ¹ May 10	Yield (tons/acre) May 10
Forerunner	triticale	Cisco Seeds	100	64	5.12*
Elbon	rye	Noble Foundation/Caudill Seed	100	75	4.65*
Maton	rye	Noble Foundation/Caudill Seed	100	75	4.53
Bobcat	triticale	Fabian Seed Farms	100	64	4.41
DG9750	wheat	Dyna-Gro Seed	100	66	3.99
SouthernBlue	rye	Caudill Seed	100	75	3.94
DG9600	wheat	Dyna-Gro Seed	100	66	3.93
DG9701	wheat	Dyna-Gro Seed	100	66	3.80
Mean			100	68.9	4.29
CV,%			0	0	8.11
LSD,0.05			0	0	0.51

¹ 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 3 for complete scale.

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

Table 40. Dry matter yields, seedling vigor, stand rating, plant height, and maturity of cereal crops sown October 16, 2019, at Lexington, Kentucky (early first harvest).

Variety	Species	Proprietor/ Distributor	Seedling Vigor ¹ Nov 11, 2019	Percent Stand Nov 11, 2019	Plant Height (in) Apr 2, 2020	Maturity ²			Yield (tons/acre)			
						Apr 2	May 14	Jun 18	Apr 2	May 14	Jun 18	Total
Elbon	rye	Noble Foundation/ Caudill Seed	5.0	100	30	45.0	55.5	62.0	2.21	1.28	0.42	3.91*
WrensAbruzzi	rye	Caudill Seed	5.0	100	26	45.0	56.5	62.0	1.93	1.04	0.36	3.32*
Triticale/rye	triticale/rye		4.5	98	11	30.5	55.5	61.5	0.57	2.19	0.51	3.27
Forerunner	triticale	Cisco Seeds	4.0	94	10	29.3	46.3	61.5	0.54	2.07	0.42	3.03
Bobcat	triticale	Fabian Seed Farms	4.5	97	18	35.0	56.0	59.5	0.57	1.11	0.36	2.05
WheatVNS	wheat	Public	3.4	94	14	33.8	55.2	57.6	0.52	0.99	0.44	1.95
DG9701	wheat	Dyna-Gro Seed	4.4	100	12	31.3	52.8	59.0	0.48	0.92	0.30	1.70
DG9750	wheat	Dyna-Gro Seed	3.9	96	13	31.0	54.0	57.0	0.59	0.71	0.32	1.63
DG9600	wheat	Dyna-Gro Seed	4.7	99	12	30.7	51.0	57.3	0.53	0.50	0.32	1.34
Mean			4.3	97	16	34.7	53.8	59.7	0.88	1.22	0.39	2.48
CV,%			9.5	2	17	9.8	5.3	2.0	23.04	18.77	31.98	16.70
LSD,0.05			0.6	3	4	5.0	4.2	1.8	0.30	0.34	0.18	0.61

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

² 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 3 for complete scale.

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

Table 41. Dry matter yields, seedling vigor, stand rating, and maturity of cereal crops sown Oct 16, 2019, at Lexington, Kentucky.

Variety	Species	Proprietor/ Distributor	Seedling Vigor ¹ Nov 11, 2019	Percent Stand Nov 11, 2019	Maturity ²		Yield (tons/acre)		
					May 14	Jun 18	May 14	Jun 18	Total
Triticale/Rye	triticale/rye		3.9	93	67.0	59.5	5.33	0.11	5.44*
Elbon	rye	Noble Foudation/ Caudill Seed	5.0	100	70.0	62.0	3.83	0.58	4.41
Forerunner	triticale	Cisco Seeds	3.5	89	55.5	60.0	3.84	0.37	4.21
WrensAbruzzi	rye	Caudill Seed	5.0	100	70.0	62.0	3.51	0.38	3.90
DG9750	wheat	Dyna-Gro Seed	4.3	96	58.0	57.0	2.95	0.32	3.26
Bobcat	triticale	Fabian Seed Farm	3.9	94	58.0	58.0	2.81	0.30	3.11
DG9701	wheat	Dyna-Gro Seed	4.4	98	58.0	57.0	2.86	0.17	3.04
DG9600	wheat	Dyna-Gro Seed	4.3	97	58.0	57.3	2.93	0.08	3.01
WheatVNS	wheat	Public	3.3	93	58.0	57.6	2.68	0.33	3.00
Mean			4.1	95	61.4	58.9	3.41	0.30	3.71
CV,%			11.6	2	3.3	2.1	11.27	51.20	9.48
LSD,0.05			0.7	3	3.0	1.8	0.56	0.23	0.52

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

² 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 3 for complete scale.

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

Table 42. 2020 Kentucky Wheat Variety Forage/Cover Crop Trial.

Variety	Soft Dough Stage Dry Matter (tons/a)		Cover Crop* Canopy (%)	Head Type
	2020	2019-20	2020	
13VTKA2:F82429-3	4.25		27	Bearded
SYNGENTA SY 576	4.19		24	Bearded
Liberty 5658	4.11	3.18	39	Bearded
KY07C-1145-94-12-5	4.04	3.32	36	Awnless
PROGENY PGX19-17	4.00		39	Awnless
HILLIARD	4.00		33	Bearded
X10-0594-7-1-3	3.98	3.32	29	Awnless
Dyna-Gro 9692	3.93		30	Bearded
X11-0374-104-13-5	3.93		35	Awnless
X11-0420-120-13-3	3.92	3.22	29	Bearded
AgriMAXX 454	3.91	3.20	26	Bearded
KY06C-1178-16-10-3-34	3.86	3.14	30	Bearded
Go Wild Feral Forage	3.85		23	Awnless
AgriMAXX 492	3.84	3.11	25	Bearded
PROGENY #BLAZE	3.81	3.44	28	Bearded
SYNGENTA SY VIPER	3.78	3.11	24	Awnless
KAS 19X24	3.75		37	Bearded
KAS RAGE	3.74		26	Bearded
PEMBROKE 2016	3.74	3.19	34	Bearded
PROGENY PGX19-10	3.68		27	Bearded
LOCAL LW2958	3.67	3.13	33	Bearded
Truman	3.64	2.94	28	Awnless
KAS ADAMS	3.61		39	Bearded
PEMBROKE 2014	3.61	2.96	39	Bearded
USG 3221	3.60		33	Bearded
PROGENY #BULLET	3.59	2.86	34	Bearded
PROGENY PGX18-9	3.59		36	Bearded
PROGENY PGX19-11	3.58		25	Bearded
PROGENY PGX19-12	3.57		31	Bearded
AgriMAXX 505	3.56		38	Bearded
NSS EXP119	3.53		29	Bearded
LCS L11713	3.52	2.99	24	Bearded
LOCAL LW2046	3.52		27	Bearded
PEMBROKE 2008	3.51	2.96	33	Bearded
USG 3316	3.46	3.11	27	Bearded
Dyna-Gro WX19713	3.45	3.09	34	Bearded
PROGENY #BERKELEY	3.43		37	Bearded
Dyna-Gro 9701	3.41	2.87	29	Bearded
GoWheat 2059	3.41	2.83	37	Awnless
USG 3329	3.40	2.98	29	Bearded
LOCAL LW2068	3.39		35	Bearded
KY09C-1245-99-12-3	3.37	3.06	24	Awnless
AgriMAXX 473	3.37	2.88	28	Bearded
KAS 19X27	3.36		25	Bearded
SYNGENTA SY 007	3.36		26	Bearded
PROGENY PGX18-7	3.35		31	Bearded
SYNGENTA SY RITCHIE	3.34		26	Awnless
NSS EXP219	3.32		31	Bearded
USG 3790	3.31		21	Bearded
LOCAL LW2937	3.30	2.58	32	Bearded

continued

Table 42. (continued)

Variety	Soft Dough Stage Dry Matter (tons/a)		Cover Crop* Canopy (%)	Head Type
	2020	2019-20	2020	
KY10-0178-1-2-5	3.30	2.79	28	Awnless
SYNGENTA SY 547	3.29	2.87	30	Awnless
LCS L11919	3.28		29	Awnless
KAS 19X21	3.28		34	Bearded
KY09C-1245-99-1-5	3.28	2.90	27	Awnless
Dyna-Gro 9941	3.27	3.09	27	Bearded
KWS333	3.27		25	Bearded
X12-619-205-14-1	3.26	3.02	36	Bearded
AgriMAXX 503	3.26		24	Awnless
KWS246	3.25		24	Bearded
Dyna-Gro WX20737	3.25		32	Bearded
X12-3010-3-5-3	3.25	2.92	29	Tip-Awned
PROGENY PGX18-11	3.25		29	Awnless
Dyna-Gro 9932	3.23	2.75	36	Bearded
CROPLAN CP8081	3.21		33	Bearded
X11-0170-52-3-3	3.21		36	Awnless
CROPLAN CP8800	3.21	2.79	26	Bearded
Clark	3.20		37	Awnless
LOCAL LW2848	3.20	2.68	25	Bearded
CROPLAN CP8015	3.19		27	Bearded
AgriMAXX EXP 2003	3.18		33	Bearded
X12-3010-4-4-1	3.18		19	Awnless
AgriMAXX 496	3.17	2.64	25	Bearded
Go Wheat 5056	3.16		27	Bearded
Go Wheat 4010	3.13	3.02	31	Bearded
GoWheat 2058	3.11	2.93	29	Bearded
AgriMAXX 495	3.10	2.64	29	Bearded
PROGENY PGX 18-8	3.10	2.76	30	Bearded
Go Wheat 4059S	3.08	2.81	28	Awnless
Dyna-Gro WX20731	3.06		23	Bearded
KAS EISENHOWER	3.02		33	Bearded
CROPLAN CP8022	3.02		27	Bearded
Dyna-Gro 9002	2.98	2.78	19	Bearded
Dyna-Gro 9070	2.97		27	Bearded
AgriMAXX 485	2.95	2.72	31	Awnless
LOCAL LWX20C	2.85		27	Bearded
Bess	2.84	2.72	29	Awnless
PROGENY PGX19-3	2.82		19	Awnless
Average	3.43	2.96	30	
C.V.	12.23	13.15	14	
LSD (0.10)	0.70	0.48	7	

*Winter cover crop/grazing biomass estimate (% canopy coverage using Canopeo); measured: 1-14-2020.

Location: Bluegrass Region—Fayette County
Planting date: 10-5-2019; conventional tillage; dry matter yield harvest date at soft dough stage: 5-22-2020.

Originally appeared in PR-778 Table 5 (uky.edu/ag/WheatVarietyTest).

Table 44. Summary of Kentucky sorghum-sudangrass yield trials 2008-2020 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/KY Distributor	Lexington												Princeton					Mean ³ (#trials)								
		2008 ^{1,2}	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2017	2018	2019	2020									
		All trials are 1 year yields																									
AS6401 BMR ⁴	Advanta Seeds/Ramer Seed																84	107					112	106	102(4)		
AS6402 BMR (Brachytic Dwarf)	AdvantaSeeds/Ramer Seed					91														78	82				98	85	87(9)
AS6503 BMR	Advanta Seeds/Ramer Seed						96	103	90																		96(3)
AS6504 BMR (Dry Stalk)	Advanta Seeds/Ramer Seed																			105	103				114	112	109(4)
Danny Boy II BMR	Dyna-Gro Seeds																										105(4)
DynaGraze II	Dyna-Gro Seeds																										105(4)
FirstGraze	Dyna-Gro Seeds																										110(2)
FSG 208 BMR	Farm Science Genetics			75																							1104(2)
FSG 214 BMR	Farm Science Genetics																										—
FSG 215 BMR	Farm Science Genetics						99	108	112																109	111	108(5)
Fullgraze II	Dyna-Gro Seeds																										—
Fullgraze II BMR	Dyna-Gro Seeds																										103(4)
F75F513	Dyna-Gro Seeds																										96(4)
Greengrazer V	Farm Science Genetics			166			122	107	92	103	110																117(6)
GW300 BMR	Gayland Ward Seed						88	78	88	81	73	101	100	98													87(9)
HyGain	Turner Seed																			110	127	117	121	113	130	108	115(12)
KFSugar-Pro55S	Byron Seed																										—
MS 202 BMR	Farm Science Genetics			106																							—
Nutra-King BMR	Gayland Ward Seed																										107(10)
NutraPlus BMR	Public			106																							102(8)
Sordan Headless	S&W Seed Company																										106(3)
Sordan 79	S&W Seed Company																										123
Special Effort	Public			109																							119(2)
SP 4105 BMR	S&W Seed Company																										105(8)
SP 7106 BMR	S&W Seed Company																										85(2)
SS211	Southern States						104	93	114	103	118	111	121	118													91(2)
SS220 BMR	Southern States																										108(10)
Sugar Graze II	Coffey Seed																										101(3)
Surpass BMR	Turner Seed																										114(4)
Super Sugar	Gayland Ward Seed																			79	84	75	81	88	97	74	70
Super Sugar BMR	Gayland Ward Seed																			125	85						79(12)
Super Sugar (Delayed Maturity)	Gayland Ward Seed																			107							105(6)
Super Sugar Sterile	Gayland Ward Seed																										—
Super Sweet 10	Dyna-Gro Seeds																										92(6)
Sweet-For-Ever	Gayland Ward Seed																										—
Sweet-For-Ever BMR	Gayland Ward Seed																										118(4)
SweetSix BMR	Gayland Ward Seed																										99(3)
SweetSix BMR (Dry Stalk)	Gayland Ward Seed																										85(8)
Vita-Cane	Gayland Ward Seed																										95(3)
Xtragraze BMR	Coffey Seed																										98(5)
																											—
																											77(4)

1 Establishment year.
 2 Use this summary table as a guide in making variety decisions, but refer to specific tables in this report to determine statistical differences in forage yield between varieties.
 3 Mean only presented when respective variety was included in two or more trials.
 4 BMR (Brown Mid-rib) means that a variety has been developed to produce lower amounts of lignin which usually translates into higher quality.

Table 45. Summary of Kentucky pearl millet yield trials 2013-2020 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/ KY Distributor	Lexington										Princeton					Mean ³ (#trials)			
		2013 ^{1,2}	2014	2015	2016	2017	2018	2019	2020	2017	2018	2019	2020							
		All trials are 1 year yields																		
Epic BMR	Coffey Seed							97	93						99	96	96(4)			
Exceed BMR	Coffey Seed							89	103						102	90	96(4)			
FSG 300 Hybrid	Farm Science Genetics			109	109								117				109(4)			
FSG 315 BMR ⁴ (Dwarf)	Farm Science Genetics			101	102	81							97				95(4)			
Leafy22 Hybrid	Turner Seed			105	124	108							113	115	100	116	111	111(9)		
Millix32	S&W Seed Company												110				111	111(2)		
PearlMill	Dyna-Gro Seed												103	113			110	100	107(4)	
Pennleaf Hybrid	Pennington Seed	93	91	94	96	87	98	100	95	84	93						90	93(11)		
PT102M Hybrid	Cisco Seeds	93	93	90	79	90	91	97	92	77	104	95						91(11)		
Prime360	Byron Seed												90	90			103	96	95(4)	
SS1562M BMR	Southern States												103	94			95	97(4)		
SS501	Southern States	90	99	96	86	94	94						89	96				93(8)		
SS635	Southern States	108	112	101	116	94	110	108	105	107	115	105						110	108(12)	
Sweet Summer	Cisco Seeds						86	95	97	85	104	91						91	93(6)	
Tifleaf III Hybrid	Gayland Ward Seed	116	106	108	116	120	113	119	95	114	112	111	101					101	111(12)	
Wonderleaf	Advanta Seed/Ramer Seed																	107	109	103(5)

¹ Establishment year.

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

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

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

Table 46. Summary of Kentucky teff yield trials 2008-2020 (yield shown as a percentage of the mean of the commercial varieties in the trial).

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

¹ Establishment year.

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

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

Table 47. Summary of Kentucky forage sorghum yield trials 2013-2020 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/KY Dis-tributor	Lexington										Princeton				Mean ³ (#trials)
		2013 ^{1,2}	2014	2015	2016	2017	2018	2019	2020	2017	2019 ⁴	2019				
		All Trials are 1 year yields														
ADVF7232 BMR ⁵	Advanta Seed/Ramer Seed		81	101	89			88	92		93	84	88(3)			
AF7201 BMR	Advanta Seed/Ramer Seed	89						94	84		74	83	89(7)			
AF7203 BMR (Brachytic Dwarf)	Advanta Seed/Ramer Seed							48			70		59(2)			
AF7401 BMR (Brachytic Dwarf)	Advanta Seed/Ramer Seed	76	94	90	83	86	72	85	77	116	87	100	88(10)			
AF8301	Advanta Seed/Ramer Seed							98	103		124	85	95(3)			
Enslemaster	Caudill Seed	125	90	101	106	111	129	118	129	171	77	85	117(10)			
FSG114 BMR	Farm Science Genetics		94	128	93	125	91	76	91	71	89	79	94(9)			
FSG115 BMR (Brachytic Dwarf)	Farm Science Genetics		51	31	72	81	74	67	77	72	60	74	66(9)			
F74FS23 BMR	Dyna-Gro Seed							125	94		77	76	98(3)			
F74FS72 BMR	Dyna-Gro Seed							93	87		59	117	99(3)			
F75FS13	Dyna-Gro Seed							107	94		109	84	95(3)			
GW2120	Gayland Ward Seed	117	89	113	84	107	88	102	91	85	98	115	99(10)			
GW400 BMR	Gayland Ward Seed	93	79	128	78	91	88	83	85	42			85(9)			
GW475 BMR	Gayland Ward Seed						80	99	84				88(3)			
GW600 BMR	Gayland Ward Seed		107	111	90			100	84				97(6)			
KFFiber-Pro70FS	Byron Seed					65	53			70			63(3)			
NK300	S&W SeedCompany		126	110	101	116	135	84	104	119			112(8)			
SD1741 BMR	S&W SeedCompany		133	92	103	81	84	95		94			97(7)			
SilageKing BMR (Dwarf)	Gayland Ward Seed		48										-			
SiloPro BMR (Dwarf)	Gayland Ward Seed			24	74		63						54(3)			
SPI1615	S&W SeedCompany								125		164	170	148(2)			
SP3904 BMR (Brachytic Dwarf)	S&W SeedCompany								88				-			
SP3905 BMR (Brachytic Dwarf)	S&W SeedCompany								81				-			
SS1515	Southern States							125	105		97	75	102(3)			
SS304	S&W SeedCompany								121				-			
SS405	Chromatin		188	183	207	138	202	139	143	160	142	171	170(9)			
Super Sile 20	Dyna-Gro Seed							107	120		106	124	120(3)			
Super Sile 30	Dyna-Gro Seed							121	115		129	104	113(3)			
TopTon	Dyna-Gro Seed							131	130		84	73	111(3)			
XF7203 BMR (Brachytic Dwarf)	Advanta Seed/Ramer Seed					74	73						74(2)			
1990	S&W SeedCompany		121	89	118	125	177	113		131			125(7)			

1 Establishment year.

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

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

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

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

Table 48. Summary of Kentucky crabgrass yield trials 2016-2020 (yield shown as a percentage of the mean of the commercial varieties in the trial).

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

¹ Establishment year.

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

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

Table 49. Summary of Kentucky spring oats yield trials 2015-2020, planted mid-March to early April (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Proprietor/ Distributor	2015 ^{1,2}	2016	2017	2018	2019	2020	Mean ³ (#trials)
		All trials are 1 year yields						
BCO18006	Seed-Link Inc.						90	
BCO18007	Seed-Link Inc.						82	
CCSO-102	Caldbeck Consulting				95	102	104	100(3)
CCSO-120 (black hulled)	Caldbeck Consulting				106	106	91	101(3)
Common	Central Farm Supply	89						
Excel	Ag. Alumni Seed, IN	120	101	111	107	115	125	113(6)
Haywire	Cisco Seeds					81	98	90(2)
Jerry	Caudill Seed	107	93	103	99	95	119	103(6)
Persik (black hulled)	Caldbeck Consulting		112	114	127	106	101	112(5)
PST-241	Caldbeck Consulting	91	86	86	86			87(4)
PST50200	Caldbeck Consulting	102	90	87	79			90(4)
PST50-288C	Caldbeck Consulting	91	102	88	97			95(4)
Reins	Ag. Alumni Seed, IN	94			102		98	98(3)
Robust	Ag. Alumni Seed, IN	104	111	117	102	94		106(5)
Saber	Ag. Alumni Seed, IN	104			100	97		100(3)
VNK	Public		97	107	101	94	92	98(5)
O21A17815	Ag. Alumni Seed, IN	97	108	87				97(3)

¹ Establishment year.

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

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



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