

2007 Timothy and Kentucky Bluegrass Report

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Introduction

Timothy (*Phleum pratense*) is the fourth most widely sown cool-season perennial grass used in Kentucky for forage after tall fescue, orchardgrass, and Kentucky bluegrass. It is a late-maturing bunchgrass that can be used for grazing or wildlife habitat. Timothy is primarily harvested as hay, particularly for horses.

Management is similar to that for other cool-season grasses. Harvesting at the mid- to late-boot stage is needed to assure good yields and high forage quality. The quality of timothy declines more rapidly after heading than other cool-season grasses. In Kentucky, timothy behaves like a short-lived perennial, with stands lasting two to four years.

Kentucky bluegrass (*Poa pratensis*) is a high-quality, highly palatable, long-lived pasture plant with limited use for hay. It tolerates close frequent grazing better than most grasses. It has low yields and low summer production and becomes dormant and brown during hot, dry summers. Kentucky bluegrass is slow to establish.

This report provides current maturity and yield data on timothy varieties included in yield trials in Kentucky as well as guidelines for selecting timothy varieties. Tables 6 and 7 show summaries of all timothy and Kentucky bluegrass varieties tested in Kentucky for the last six years. The UK Forage Extension Web site at <www.uky.edu/Ag/Forage> contains electronic versions of all forage variety testing reports from Kentucky and surrounding states and from a large number of other forage publications.

Considerations in Selection

Local Adaptation and Seasonal Yield. Choose a variety that is adapted to Kentucky, as indicated by good performance across locations in replicated yield trials such as those presented in this publication. Also, look for varieties that are productive in the desired season of use, whether for hay or grazing. Later maturity is desirable when timothy alone is to be grown for hay, while early maturity would help timothy grown in mixtures with legumes.

Seed Quality. Buy premium-quality seed that is high in germination and purity and free from weed seed. Buy certified seed or proprietary varieties of seed of an improved variety. An improved variety is one that has performed well in independent trials such as those reported in this publication or others like it.

Description of the Test

Data from three studies are reported. Timothy varieties were sown at Lexington (2006), and Kentucky bluegrass varieties were sown at Lexington (2004 and 2006) as part of the University of Kentucky Forage Variety Testing Program. The soil at Lexington (Maury) is a well-drained silt loam and is well suited for timothy and bluegrass production. Seedings were made at the rate of 6 lb/A for timothy and 15 lb/A for Kentucky bluegrass into a prepared seedbed with a disk drill. Plots were 5 by 15 feet, arranged in a randomized complete block design with four replications. Nitrogen was topdressed at 60 lb/A of actual N in March, May and August. The test was harvested using a sickle-type forage plot harvester leaving a 3-inch stubble to simulate a hay management system. The first cutting was harvested when spring growth of most varieties had reached the mid- to late-boot stage. Subsequent harvests were taken when forage growth was adequate for harvest. Fresh weight samples were taken at each harvest to calculate dry matter production. Establishment, fertility, weed control and harvest were managed according to University of Kentucky Cooperative Extension Service recommendations.

Results and Discussion

Weather data for Lexington are presented in Table 1.

Maturity ratings and dry matter yields are reported in Tables 2 through 4. Yields are given by harvest date and as total annual production. Stated yields are adjusted for percent weeds; therefore, value listed is for crop only. Varieties are listed by descending total production. Experimental varieties, listed separately at the bottom of the tables, are not available commercially.

Statistical analyses were performed on all data to determine if the apparent differences are truly due to varietal differences. Varieties not significantly different from the top variety in the column are marked with one asterisk (*). To determine if two varieties are significantly different, compare the difference between them to the Least Significant Difference (LSD) at the bottom of that column. If the difference is equal to or greater than the LSD, the varieties are significantly different when grown under those conditions. The Coefficient of Variation (CV) is a measure of the variability of the data and is included for each column of means. Low variability is desirable, and increased variability within a study results in higher CVs and larger LSDs.

Table 5 summarizes information about distributors and yield performance for Kentucky bluegrass varieties currently included in tests in this report. Varieties are listed in alphabetical order, with the experimental varieties at the bottom. Remember that experimental varieties are not available for farm use. In Table 5, an open block indicates that the variety was not in that particular test (labeled at the top of the column); an (x) in the block means that the variety was in the test but yielded significantly less than the top-yielding variety. A single asterisk (*) means that the variety was not significantly different from the highest yielding variety. It is best to choose a variety that has performed well over several years and locations.

Tables 6 and 7 are summaries of yield data from 2000-2007 of commercial varieties that have been entered in the Kentucky trials. The data is listed as a percentage of the mean of the commercial varieties entered in each specific trial. In other words, the mean for each trial is 100%—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 6 and 7, but these comparisons do help to identify varieties for further consideration. Varieties that have performed better than average over many years and at several locations have very stable performance; others may have performed very well in wet years or on particular soil types. These details may influence variety choice, and the information can be found in the yearly reports. See footnotes in Tables 6 and 7 to determine which yearly report to refer to.

Summary

Selecting a good timothy or Kentucky bluegrass variety is an important first step in establishing a productive stand of grass. Proper management, beginning with seedbed preparation and

continuing throughout the life of the stand, is necessary for even the highest yielding variety to produce to its genetic potential.

The following is a list of University of Kentucky Cooperative Extension publications related to timothy and Kentucky bluegrass management. They are available from your county Extension office or can be found at www.uky.edu/Ag/Forage.

- AGR-1 *Lime and Fertilizer Recommendations*
- AGR-18 *Grain and Forage Crop Guide for Kentucky*
- AGR-64 *Establishing Forage Crops*
- AGR-84 *Timothy*
- AGR-134 *Kentucky Bluegrass as a Forage Crop*
- ID-147 *Establishing and Managing Horse Pastures*

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Table 1. Temperature and rainfall at Lexington, Kentucky in 2004, 2005, 2006 and 2007.

	2004				2005				2006				2007 ²			
	Temp.		Rainfall		Temp.		Rainfall		Temp.		Rainfall		Temp.		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	30	-1	3.14	+0.28	37	+6	4.35	+1.49	42	+11	4.77	+1.91	37	+6	2.93	+0.07
FEB	36	+1	1.32	-1.89	39	+4	1.68	-1.53	36	+1	2.13	-1.08	27	-8	1.83	-1.38
MAR	47	+3	3.43	-0.97	41	-3	2.79	-1.61	44	0	3.05	-1.35	52	+8	1.97	-2.43
APR	55	0	3.06	-0.82	56	+1	3.30	-0.58	59	+4	3.52	-0.36	53	-2	3.87	-0.01
MAY	68	+4	9.79	+5.32	61	-3	1.78	-2.69	62	-2	2.99	-1.48	68	+4	1.45	-3.02
JUN	72	0	3.13	-0.53	75	+3	1.33	-2.33	70	-2	1.82	-1.84	74	+2	1.77	-1.89
JUL	73	-3	7.65	+2.65	77	+1	3.30	-1.70	76	0	5.13	+0.13	74	-2	6.90	+1.90
AUG	71	-4	2.91	-1.02	78	+3	3.34	-0.59	76	+1	3.23	-0.70	80	+5	2.56	-1.37
SEP	68	0	2.61	-0.59	72	+4	0.59	-2.21	64	-4	9.27	+6.07	72	+4	1.15	-2.05
OCT	58	+1	5.65	+3.08	58	+1	0.92	-1.65	54	-3	4.88	+2.31	63	+6	5.28	+2.71
NOV	49	+4	6.29	+2.90	47	+2	1.54	-1.85	47	+2	1.78	-1.61	46	+1	2.86	-0.53
DEC	36	0	3.20	-0.78	32	-4	2.19	-1.79	42	+6	2.45	-1.53				
Total			52.18	+7.63			27.15	-17.04			45.02	+0.47			32.57	-8.00

¹ DEP is departure from the long-term average.

² 2007 data is for 11 months through November.

Table 2. Dry matter yields, seedling vigor, maturity and stand persistence of Kentucky bluegrass varieties sown September 13, 2004 at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Nov 8, 2004	Maturity ²			Percent Stand				Yield (tons/acre)							
		2005	2006	2007	2006		2007		2005	2006	2007			3-yr		
		May 13	Apr 24	May 9	Apr 14	Oct 17	Mar 26	Oct 11	Total	Total	May 9	Jul 2	Aug 14	Nov 27	Total	Total
Commercial Varieties-Available for Farm Use																
Kenblue	4.3	66.5	56.0	60.0	100	100	100	100	3.07	3.95	1.29	0.66	0.21	0.33	2.50	9.52*
Adam1	5.0	63.0	58.0	60.0	100	100	100	100	2.80	4.25	0.92	0.54	0.24	0.30	2.00	9.04*
Experimental Varieties																
KYPP9901	3.0	66.5	55.5	59.5	100	100	100	100	2.69	4.13	1.13	0.69	0.15	0.23	2.22	9.04*
2RAD-28A	3.3	66.5	38.0	56.5	100	100	100	100	2.64	3.05	0.57	0.80	0.17	0.19	1.72	7.41
Mean	3.9	65.6	51.9	59.0	100	100	100	100	2.80	3.85	0.98	0.67	0.19	0.26	2.11	8.75
CV,%	7.5	3.8	2.2	2.3	0	0	0	0	9.86	8.69	13.17	24.02	13.25	21.59	5.74	7.14
LSD,0.05	0.5	4.0	1.9	2.1	0	0	0	0	0.44	0.53	0.21	0.26	0.04	0.09	0.19	1.00

¹ Vigor score based on 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.

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

Table 3. Dry matter yields, seedling vigor, maturity and stand persistence of Kentucky bluegrass varieties sown September 6, 2006 at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct 25, 2006	Maturity ² 2007 May 15	Percent Stand			Yield (tons/acre)			
			2006	2007		2007			
			Oct 25	Mar 26	Oct 11	May 15	Aug 13	Nov 27	Total
Commercial Varieties-Available for Farm Use									
Kenblue	4.0	60.0	100	99	100	0.50	0.82	0.31	1.62*
RAD-643	2.5	45.0	98	98	98	0.52	0.85	0.15	1.53*
Ginger	3.3	52.3	100	97	97	0.47	0.87	0.13	1.47*
RAD-762	2.5	52.3	100	98	97	0.22	0.79	0.20	1.22
RAD-731zx	1.8	52.3	97	95	95	0.15	0.79	0.18	1.12
RAD-339	3.5	60.0	99	98	99	0.27	0.53	0.28	1.08
RAD-5	1.0	60.0	94	97	95	0.30	0.59	0.17	1.06
Common	3.0	29.0	98	97	97	0.09	0.42	0.19	0.70
Experimental Varieties									
B-50815	4.0	60.0	100	99	100	0.38	0.84	0.50	1.72*
HTBF-1000	3.8	60.0	100	99	98	0.57	0.73	0.24	1.54*
HTBF-2000	3.5	60.0	99	98	100	0.26	0.76	0.25	1.27
H01-847	4.5	52.8	100	100	99	0.28	0.30	0.29	0.88
B-50336	3.3	52.3	100	98	97	0.12	0.57	0.12	0.81
Mean	3.1	53.5	98.8	97.7	97.7	0.32	0.68	0.23	1.23
CV,%	24.2	20.6	3.0	2.7	3.6	49.40	18.59	29.88	18.47
LSD,0.05	1.1	15.8	2.9	3.8	5.1	0.23	0.18	0.10	0.33

¹ Vigor score based on 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.

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

Table 4. Dry matter yields, seedling vigor, maturity and stand persistence of timothy varieties sown September 8, 2006 at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct 25, 2006	Maturity ² 2007 May 10	Percent Stand			Yield (tons/acre)			
			2006	2007		2007			
			Oct 25	Mar 26	Nov 30	May 10	Jun 27	Aug 13	Total
Commercial Varieties-Available for Farm Use									
Treasure	4.0	48.8	100	100	72	1.95	0.25	0.66	2.87*
Derby	3.8	50.0	100	100	88	1.81	0.32	0.65	2.77*
Talon	4.5	46.0	99	100	80	1.58	0.38	0.74	2.70*
Clair	3.5	46.0	100	100	83	1.39	0.39	0.72	2.50
Colt	3.8	34.0	100	100	80	1.29	0.29	0.58	2.16
Climax	2.8	43.3	100	100	85	1.20	0.23	0.60	2.04
RAD-EMR74	1.8	37.8	98	99	72	0.94	0.28	0.58	1.81
Experimental Varieties									
PF7PPT-1	3.5	37.3	100	100	74	1.27	0.31	0.73	2.31
Mean	3.4	42.9	99.3	99.8	79.1	1.43	0.31	0.66	2.39
CV,%	24.1	11.8	1.5	1.0	13.0	11.69	33.85	16.48	8.54
LSD,0.05	1.2	7.4	2.2	1.4	16.6	0.25	0.15	0.16	0.30

¹ Vigor score based on 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.

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

Table 5. Performance of Kentucky bluegrass varieties at Lexington.

Variety	Proprietor/KY Distributor	Lexington			
		2004 ¹			2006
		05 ²	06	07	07
Commercial Varieties-Available for Farm Use					
Adam 1	Radix Research	*	*	x ³	
Common	Public				x
Ginger	ProSeeds Marketing				*
Kenblue	Public	*	*	*	*
RAD-339	Radix Research				x
RAD-5	Radix Research				x
RAD-643	Radix Research				*
RAD-731zx	Radix Research				x
RAD-762	Radix Research				x
Experimental Varieties					
2RAD-28A	Radix Research	*	x	x	
B-50336	Blue Moon Farms				x
B-50815	Blue Moon Farms				*
H01-847	ProSeeds Marketing				x
HTBF-1000	FFR				*
HTBF-2000	FFR				x
KYPP9901	Ky Agric. Exp. Station	*	*	x	

¹ Establishment year

² Harvest year

³ x in the block indicates the variety was in the test but yielded significantly less than the top yielding variety in the test. Open boxes indicate the variety was not in the test.

* Not significantly different from the highest yielding variety in the test.

Table 6. Summary of Kentucky Bluegrass Yield Trials 1996-2007 (yield shown as a percentage of the mean of the commercial varieties in the trial.

Variety	Proprietor/KY Distributor	Lexington			Princeton		Mean ³ (#trials)
		96 ^{1,2}	03	04	02	02	
		3yr ⁴	2yr	3yr	3yr	3yr	
Adam 1	Radix Research				97		-
Barberby	Barenbrug					114	-
Ginger	ProSeeds Marketing		89				-
Kenblue	Public	90		103			97(2)
Lato	Turf Seed Inc.	110					-
Slezanka	DLF International Seeds		111				-

¹ Year trial was established

² Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2004 was harvested 2 years, so the final report would be "2006 Timothy and Kentucky Bluegrass Report" archived in the KY Forage website at <www.uky.edu/Ag/Forage>. The 96 and 03 Lexington and 02 Princeton results are in the appropriate Tall Fescue Reports.

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

⁴ Number of years of data

Table 7. Summary of Kentucky Timothy Yield Trials 1999-2006 (yield shown as a percentage of the mean of the commercial varieties in the trial.

Variety	Proprietor/KY Distributor	Lexington			Quicksand		Princeton		Mean ³ (#trials)
		00 ^{1,2}	01	02	99	01	00	04	
		2yr ⁴	3yr	4yr	2yr	2yr	3yr	2yr	
Commercial Varieties-Available for Farm Use									
Alma	Newfield Seeds Co/Caudill Seed Co.							81	-
Auroro	General Feed and Grain	100			98				99(2)
Clair	Ky Agric. Exp. Station		109	115		108		122	114(4)
Classic	Cebeco International Seeds	100		88	87				92(3)
Colt	FFR Cooperative	105		101	112			99	104(4)
Common	Public		96						-
Derby	FFR Cooperative							124	-
Dolina	DLF-Trifolium	100		91					96(2)
Express	Seed Research of Oregon			97					-
Hokuei	Snow Brand Seed	103							-
Hokusei	Snow Brand Seed	97			99				98(2)
Joliet	Newfield Seeds Co/Caudill Seed Co.							90	-
Jonaton	Newfield Seeds Co/Caudill Seed Co.							84	-
Outlaw	Grassland West Company						107		-
Richmond	Pickseed Canada Inc.	100			103				102(2)
Summit	Allied Seed, L.L.C.			114					-
Tundra	DLF-Trifolium	95							-
Tuukka	Ampac Seed Company		95	90		92	93		93(4)

¹ Year trial was established.

² Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2000 was harvested 2 years, so the final report would be "2002 Timothy Report" archived in the KY Forage website at <www.uky.edu/Ag/Forage>.

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

⁴ Number of years of data.



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