

2005 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. Go to the UK Forage Extension Web site at www.uky.edu/AG/FORAGE to obtain electronic versions of all forage variety testing reports as well as 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 high-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 five studies are reported. Timothy varieties were sown at Lexington (2002) and Princeton (2004) and Kentucky bluegrass varieties were sown at Lexington (2004) as part of the

University of Kentucky Forage Variety Testing Program. Also included in this report are two other trials (tall fescue sown at Lexington in 2003 and perennial ryegrass sown at Princeton in 2002) that had bluegrass varieties in them. The soil at Lexington (Maury) and Princeton (Crider) are well-drained silt loams and are well suited for timothy and bluegrass production. Cultivars were sown at the rate of 6 lb/A 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 and Princeton are presented in Tables 1 and 2.

Maturity ratings and dry matter yields are reported in Tables 3 through 7. 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 LSD (Least Significant Difference) 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.

Tables 8 and 9 summarize information about distributors and yield performance across locations for timothy and 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 Tables 8 and 9, an open block indicates that the variety was not in that particular test (labeled at the top of the column), while 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.

Table 1. Temperature and rainfall at Lexington, Kentucky in 2003, 2004 and 2005.

	2003				2004				2005			
	Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	26	-5	0.96	-1.90	30	-1	3.14	+0.28	37	+6	4.35	+1.49
FEB	32	-3	3.59	+0.38	36	+1	1.32	-1.89	39	+4	1.68	-1.53
MAR	47	+3	2.09	-2.31	47	+3	3.43	-0.97	41	-3	2.79	-1.61
APR	57	+2	3.14	-0.74	55	0	3.06	-0.82	56	+1	3.30	-0.58
MAY	63	-1	6.68	+2.21	68	+4	9.79	+5.32	61	-3	1.78	-2.69
JUN	69	-3	4.85	+1.19	72	0	3.13	-0.53	75	+3	1.33	-2.33
JUL	74	-2	2.68	-2.32	73	-3	7.65	+2.65	77	+1	3.30	-1.70
AUG	75	0	5.26	+1.33	71	-4	2.91	-1.02	78	+3	3.34	-0.59
SEP	65	-3	4.22	+1.02	68	0	2.61	-0.59	72	+4	0.59	-2.21
OCT	56	-1	1.61	-0.96	58	+1	5.65	+3.08	58	+1	0.92	-1.65
NOV	50	+5	4.63	+1.24	49	+4	6.29	+2.90	47	+2	1.54	-1.85
DEC	36	0	3.26	-0.72	36	0	3.20	-0.78				
Total			42.97	-1.58			52.18	+7.63			25.32	-15.25

DEP is departure from the long-term average.

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.

- 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

Table 2. Temperature and rainfall at Princeton, Kentucky in 2003, 2004 and 2005.

	2003				2004				2005			
	Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	31	-3	2.19	-1.61	36	+2	4.12	+0.32	41	+7	5.30	+1.50
FEB	35	-3	7.45	+3.02	39	+1	2.44	-1.99	43	+5	2.30	-2.13
MAR	50	+3	2.46	-2.48	53	+6	4.28	-0.66	47	0	4.11	-0.83
APR	60	+1	6.99	+2.19	59	0	5.32	+0.52	60	+1	4.61	-0.19
MAY	67	0	4.81	-0.15	72	+5	7.34	+2.38	65	-2	1.54	-3.42
JUN	71	-4	5.05	+1.20	74	-1	3.40	-0.45	76	+1	3.09	-0.76
JUL	79	+1	4.75	+0.46	75	-3	4.87	+0.58	79	+1	2.39	-1.90
AUG	79	+2	2.05	-1.96	73	-4	3.02	-0.99	80	+3	11.54	+7.53
SEP	69	-2	6.17	+2.84	71	0	0.20	-3.13	74	+2	2.17	-1.16
OCT	60	+1	3.73	+0.68	64	+5	4.03	+0.98	60	+1	0.19	-2.86
NOV	53	+6	5.85	+1.22	53	+6	6.94	+2.31	50	+3	2.48	-2.15
DEC	40	+1	2.39	-2.65	37	-1	4.29	-0.75				
Total			53.89	+2.76			50.25	-0.88			39.72	-6.37

DEP is departure from the long-term average.

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Table 3. Dry matter yields (tons/acre), stand and maturity rating of timothy varieties sown September 18, 2002 at Lexington, Kentucky.

Variety	Maturity ¹ May 23, 2005	2005 Percent Stand		Yield (tons/acre)						
		April 8	Oct 18	2003 Total	2004 Total	2005 Yields			2005 Total	3-yr Total
						May 23	Aug 15	Oct 18		
Commercial Varieties—Available for Farm Use										
Summit	55.5	71	68	4.20	3.73	3.55	0.36	0.44	4.35	12.28*
Clair	56.0	73	70	4.23	3.98	3.00	0.36	0.55	3.91	12.11*
Colt	54.0	70	63	3.93	3.70	2.57	0.30	0.38	3.25	10.88*
Express	55.5	60	35	3.65	2.88	3.38	0.39	0.29	4.06	10.59
Classic	51.5	58	70	3.52	3.03	2.73	0.31	0.51	3.54	10.09
Dolina	53.5	75	60	3.80	3.22	2.21	0.27	0.42	2.91	9.93
Tuukka	55.5	55	38	3.66	2.44	2.85	0.31	0.31	3.47	9.57
Experimental Varieties										
KYPP 9301	55.5	73	83	4.27	3.93	3.35	0.30	0.60	4.24	12.44*
KY Early	55.5	73	78	4.40	3.62	3.43	0.30	0.52	4.25	12.27*
Mean	54.8	68	63	3.98	3.43	3.06	0.03	0.45	3.83	11.24
CV,%	2.9	16	16	9.78	13.21	25.70	44.80	22.46	22.20	9.94
LSD,0.05	2.2	16	15	0.55	0.64	1.11	0.21	0.14	1.20	1.57

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

Table 4. Dry matter yields (tons/acre), stand and maturity rating of timothy varieties sown September 1, 2004 at Princeton, Kentucky.

Variety	Seedling Vigor ¹ Dec. 21, 2004	Maturity ² May 24, 2005	2005 Percent Stand		2005 Yield (tons/acre)			
			Apr 15	Nov 3	May 24	Jul 29	Oct 5	Total
Clair	3.8	56.0	99	85	2.74	0.30	0.71	3.75*
Derby	4.3	55.5	100	78	2.85	0.30	0.56	3.71*
Jonaton	4.5	45.0	95	45	2.87	0.21	0.40	3.47*
Joliet	4.8	45.0	98	55	2.90	0.15	0.41	3.47*
Colt	4.5	46.3	100	58	2.78	0.21	0.37	3.37*
Alma	4.3	47.5	95	53	2.69	0.15	0.32	3.15
Mean	4.3	49.2	98	62	2.80	0.22	0.46	3.49
CV,%	14.6	3.5	2	26	6.63	28.38	28.04	7.93
LSD,0.05	1.0	2.6	3	24	0.28	0.09	0.20	0.42

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

Variety	Seedling Vigor ¹ Nov. 8, 2004	Maturity ² May 13, 2005	2005 Percent Stand		2005 Yields (tons/acre)				
			Apr 11	Oct 18	May 13	Jun 28	Aug 18	Oct 18	Total
Commercial Varieties—Available for Farm Use									
Kenblue	4.3	66.5	100	100	1.12	0.95	0.64	0.36	3.07*
Adam1	5.0	63.0	100	100	0.87	0.80	0.68	0.44	2.80*
Experimental Varieties									
KYPP9901	3.0	66.5	98	100	1.14	0.68	0.40	0.46	2.69*
2RAD-28A	3.3	66.5	99	100	0.64	0.92	0.52	0.56	2.64*
Mean	3.9	65.6	99	100	0.94	0.84	0.56	0.46	2.80
CV,%	7.5	3.8	2	0	19.41	22.77	19.61	29.40	9.86
LSD,0.05	0.5	4.0	3	0	0.29	0.31	0.18	0.21	0.44

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

Variety	Maturity ¹ May 10, 2005	2005 Percent Stand		Yield (tons/acre)					
		Apr 13	Nov 3	2003 Total	2004 ² Total	2005			3-yr Total
						May 10	Jun 13	Total	
Commercial Varieties—Available for Farm Use									
Citadel	31.5	91	36	7.52	1.36	0.88	0.65	1.53	10.41*
Quartet	29.0	18	18	8.66	1.04	0.16	0.56	0.71	10.41*
Calibra	29.0	90	39	7.60	1.07	1.03	0.57	1.60	10.26*
Granddaddy	36.3	91	36	7.84	1.07	0.93	0.39	1.32	10.23*
Bestfor	38.0	3	3	7.30	1.64	0.38	0.54	0.91	9.86*
Amazon	54.5	58	13	6.96	1.01	1.41	0.46	1.87	9.84*
Duo (FL)	47.8	93	31	6.23	1.29	1.27	0.43	1.70	9.22
Aires HD	50.3	35	18	6.43	0.91	0.82	0.35	1.17	8.51
Linn	55.5	93	25	5.36	0.63	1.75	0.35	2.11	8.09
Manhattan	40.3	85	33	5.74	0.92	0.80	0.34	1.13	7.80
Maverick Gold	40.7	2	0	5.10	1.10	0.05	0.32	0.36	6.56
Experimental Varieties									
EC 410	55.5	63	26	6.54	0.95	1.00	0.35	1.35	8.84
KYLP 9801	57.0	74	15	6.05	0.73	1.18	0.45	1.63	8.41
S-22 (BG)	62.0	90	75	5.72	0.86	1.17	0.46	1.63	8.22
Barberia	48.3	5	4	5.15	0.78	0.19	0.37	0.56	6.49
VB 5649 (BG)	60.0	84	78	4.30	0.87	0.71	0.32	1.03	6.19
Mean	46.0	61	28	6.41	1.01	0.86	0.43	1.29	8.71
CV,%	14.9	14	60	11.85	23.68	50.41	32.25	39.05	9.15
LSD, 0.05	10.0	12	24	1.08	0.34	0.62	0.20	0.72	1.14

*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.
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.
² This study was inadvertently mowed in late April, so there was no Spring harvest.

Table 7. Dry matter yields (tons/acre), seedling vigor, maturity and stand rating of tall fescue, festulolium (FL) and Kentucky bluegrass (BG) sown September 16, 2003 at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct. 31 2003	Maturity ² May 13, 2005	2005 Percent Stand		Yield (tons/acre)						2-yr Total
			Apr 8	Oct 31	2004	2005					
					Total	May 13	Jun 24	Aug 18	Oct 26	Total	
Commercial Varieties—Available for Farm Use											
KY31+ ³	4.8	54.0	98	94	7.04	2.95	1.23	0.42	0.59	5.19	12.23*
Stockman	4.0	56.0	98	93	7.66	2.69	1.02	0.10	0.26	4.07	11.73*
KY31- ³	4.5	55.5	100	96	6.94	2.52	1.03	0.11	0.30	3.96	10.90*
Bull	4.3	58.0	100	94	6.28	2.76	0.91	0.30	0.41	4.37	10.66
Hykor (FL) ⁴	4.3	56.5	100	81	6.90	2.36	1.06	0.13	0.19	3.73	10.64
Select	3.3	55.5	96	78	6.35	2.77	0.63	0.15	0.29	3.84	10.18
Barianne	3.8	45.0	99	94	5.57	2.17	1.00	0.30	0.38	3.84	9.41
Slezanka (BG)⁴	2.3	55.5	95	95	3.03	1.97	0.62	0.19	0.47	3.25	6.27
Ginger (BG)⁴	2.0	66.0	83	48	3.20	1.40	0.16	0.08	0.15	1.78	4.98
Experimental Varieties											
CIS-FTF25	4.5	56.5	98	95	6.95	2.57	1.14	0.28	0.42	4.41	11.36*
KYFA0006	4.3	50.5	98	91	6.89	2.86	1.07	0.18	0.27	4.38	11.27*
KYTF2	4.0	51.5	98	75	7.18	2.61	0.86	0.14	0.24	3.85	11.02*
KYFA9304	4.0	54.0	98	95	6.85	2.69	0.94	0.18	0.29	4.10	10.95*
ERF38	4.0	56.5	99	90	6.20	2.68	0.84	0.20	0.30	4.01	10.21
CIS-FTF24	4.5	58.0	100	91	5.57	2.74	0.88	0.44	0.46	4.52	10.09
MRF42	4.0	54.5	98	95	6.36	2.30	0.75	0.18	0.26	3.49	9.85
KYFA9611	3.0	46.3	95	74	6.74	1.77	0.83	0.12	0.17	2.88	9.62
KYFA9602	3.3	52.5	95	63	6.08	2.30	0.74	0.10	0.21	3.35	9.43
KYFA9819 (FL) ⁴	5.0	46.3	88	86	5.26	2.20	0.64	0.05	0.02	3.05	8.31
KYPP9901 (BG)⁴	2.5	64.5	99	100	2.26	2.56	0.38	0.07	0.32	3.33	5.58
HB95 (BG)⁴	1.0	61.0	15	34	0.04	0.31	0.25	0.17	0.16	0.89	0.93
HB96 (BG)⁴	1.0	66.0	0	20	0.08	0.17	0.13	0.07	0.12	0.48	0.56
Mean	3.6	52.3	89	82	5.49	2.27	0.78	0.18	0.30	3.52	9.01
CV,%	11.2	2.9	9	21	12.89	19.52	27.97	63.01	36.84	17.85	11.86
LSD, 0.05	0.6	2.4	12	24	1.00	0.62	0.31	0.16	0.15	0.89	1.51

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

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 shedding.

³ "+" indicates variety is endophyte infected; "-" indicates variety is endophyte free.

⁴ FL=festulolium; BG=Kentucky bluegrass

Table 8. Performance of timothy varieties at Lexington and Princeton.					
Variety	Proprietor/KY Distributor	Lexington 2002 ¹			Princeton 2004 05
		03 ²	04	05	
Commercial Varieties—Available for Farm Use					
Alma	Newfield Seeds Co/Caudill Seed Co.				X
Clair	Ky Agric. Exp. Station	*	*	*	*
Classic	Cebeco International Seeds	X	X	X	
Colt	FFR Cooperative	*	*	*	*
Derby	FFR Cooperative				*
Dolina	DLF-Trifolium	X	X	X	
Express	Seed Research of Oregon	X	X	X	
Joliet	Newfield Seeds Co/Caudill Seed Co.				*
Jonaton	Newfield Seeds Co/Caudill Seed Co.				*
Summit	Allied Seed, L.L.C.	*	*	*	
Tuukka	Ampac Seed Company	X		X	
Experimental Varieties					
KYPP9301	Ky Agric. Exp. Station	*	*	*	
KY Early	Ky Agric. Exp. Station	*	*	*	
¹ Establishment year ² Harvest year *Not significantly different from the highest yielding variety in the test. An open block indicates the variety was not in the test. An "x" in the block indicates the variety was in the test but yielded significantly less than the top yielding variety in the test.					

Table 9. Performance of Kentucky bluegrass varieties at Lexington and Princeton.						
Variety	Proprietor/KY Distributor	Lexington			Princeton	
		2003 ¹		2004	2002	
		04 ²	05	05	03	04
Commercial Varieties-Available for Farm Use						
Adam 1	Radix Research			*		
Ginger	Proseeds Marketing	*	X			
Kenblue	Public			*		
Slezanka	DLF International Seeds	*	*			
Experimental Varieties						
2RAD-28A	Radix Research			*		
HB95	DLF International Seeds	X	X			
HB96	DLF International Seeds	X	X			
KYPP9901	Ky Agric. Exp. Station	*	*	*		
S-22	Barenbrug USA				*	*
VB 5649	Barenbrug USA				X	*
¹ Establishment year ² Harvest year *Not significantly different from the highest yielding bluegrass in the test. An open block indicates the variety was not in the test. An "x" in the block indicates the variety was in the test but yielded significantly less than the top yielding bluegrass in the test.						



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