

2013 Orchardgrass Report

G.L. Olson, S.R. Smith, T.D. Phillips, G.D. Lacefield, and D.C. Ditsch, Plant and Soil Sciences

Introduction

Orchardgrass (*Dactylus glomerata*) is a high-quality, productive, cool-season grass that is well-adapted to Kentucky conditions. This grass is used for pasture, hay, green chop, and silage, but it requires better management than tall fescue for greater yields, higher quality, and longer stand life. It produces an open, bunch-type sod, making it compatible with alfalfa or red clover as a pasture and hay crop or as habitat for wildlife.

This report provides current yield data on orchardgrass varieties included in yield trials in Kentucky as well as guidelines for selecting orchardgrass varieties. Table 9 shows a summary of all orchardgrass varieties tested in Kentucky for the last 10-plus 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.

Important Selection Considerations

Maturity. Orchardgrass varieties will range in maturity from early to late, based on the date of heading. In this report, early-maturing varieties will in general have higher first-cutting yields than later-maturing varieties because they are more mature at the date of first cutting. Orchardgrass typically matures earlier in the spring than red clover or alfalfa. Later-maturing varieties are preferred for use with red clover or alfalfa because they are at a more optimal stage of maturity when the legume is ready for cutting.

Local adaptation and seasonal yield. Choose a variety adapted to Kentucky, as indicated by good performance across years and 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.

Table 1. Temperature and rainfall at Lexington, Kentucky, in 2011, 2012, and 2013.

	2011				2012				2013 ²			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	29	-2	2.10	-0.76	38	+7	4.80	+1.94	38	+7	4.50	+1.64
FEB	39	+4	6.34	+3.13	40	+5	5.39	+2.18	36	+1	1.78	-1.43
MAR	47	+3	4.76	+0.36	56	+12	5.64	+1.24	39	-5	5.47	+1.07
APR	58	+3	12.36	+8.48	56	+1	3.26	-0.62	55	0	4.46	+0.58
MAY	64	0	6.72	+2.25	69	+5	4.02	-0.45	65	+1	5.23	+0.76
JUN	74	+2	2.61	-1.05	73	+1	2.42	-1.24	72	0	7.32	+3.66
JUL	80	+4	6.29	1.29	81	+5	2.50	-2.50	72	-4	9.33	+4.33
AUG	75	0	2.89	-1.04	75	0	1.68	-2.25	72	-3	3.68	-0.25
SEP	66	-2	5.52	+2.32	67	-1	6.40	+3.20	67	-1	2.21	-0.99
OCT	55	-2	4.10	+1.53	55	-2	2.00	-0.57	55	-2	8.10	+5.53
NOV	50	+5	9.53	+6.14	43	-2	1.81	-0.65				
DEC	41	+5	5.58	+1.60	42	+6	9.57	+4.94				
Total			68.80	+24.25			49.49	+4.94			52.08	+14.90

¹ DEP is departure from the long-term average.

² 2013 data is for the ten months through October.

Table 2. Temperature and rainfall at Princeton, Kentucky, in 2010, 2011, and 2012.

	2011				2012				2013 ²			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	32	-2	2.35	-1.45	40	+6	3.01	-0.79	38	+4	6.31	+2.51
FEB	40	+2	5.71	+1.28	54	+6	1.73	-2.70	39	+1	3.09	-1.34
MAR	50	+3	5.54	+0.60	60	+13	3.27	-1.67	42	-5	4.34	-0.60
APR	61	+2	16.15	+11.35	60	+1	0.62	-4.18	57	-2	5.72	+0.92
MAY	66	-1	7.22	+2.26	71	+4	1.36	-3.60	66	-1	4.26	-0.70
JUN	77	+2	4.60	+0.75	74	-5	2.38	-1.47	74	-1	7.55	+3.70
JUL	81	+3	2.98	-1.31	83	+5	1.40	-2.89	75	-3	4.44	+0.15
AUG	77	0	3.95	-0.06	77	0	4.27	+0.26	75	-2	5.59	+1.58
SEP	68	-3	3.86	+0.53	69	-2	5.45	+1.82	71	0	5.37	+2.04
OCT	57	-2	1.35	-1.70	57	-2	2.94	-0.11	59	0	4.04	+0.99
NOV	51	+4	9.12	+4.49	45	-2	2.11	-2.52				
DEC	42	+3	6.13	+1.09	45	+6	4.77	-0.27				
Total			68.96	+17.83			33.01	-18.12			50.71	+9.25

¹ DEP is departure from the long-term average.

² 2013 data is for the ten months through October.

Table 3. Temperature and rainfall at Quicksand, Kentucky, in 2011, 2012, and 2013.

	2011				2012				2013 ²			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	32	+1	2.63	-0.66	40	+9	4.60	+1.31	38	+7	5.61	+2.37
FEB	42	+9	3.94	+0.34	42	+9	3.49	-0.16	38	+5	1.81	-1.79
MAR	48	+7	4.66	+0.32	57	+16	3.34	-1.40	40	-1	4.55	+0.21
APR	60	+7	11.65	+7.55	56	+3	2.02	-2.08	56	+3	3.55	-0.55
MAY	65	+3	6.49	+2.01	69	+7	4.29	-0.19	64	+2	3.98	-0.50
JUN	73	+3	3.73	-0.09	71	+1	0.82	-3.00	73	+3	6.44	+2.62
JUL	78	+4	4.92	-0.33	78	+4	5.20	+0.45	75	+1	5.24	-0.01
AUG	75	+2	4.09	+0.08	74	+1	3.82	-0.19	73	0	5.85	+1.84
SEP	67	+1	3.52	0	67	+1	10.05	+6.53	68	+2	1.71	-1.81
OCT	55	+1	4.16	+1.25	55	+1	4.21	+1.30	58	+4	2.07	-0.84
NOV	50	+8	5.15	+1.27	44	+2	0.77	-3.11				
DEC	42	+9	4.25	+0.11	44	+11	5.71	+1.57				
Total			59.19	+11.85			48.77	+1.43			40.81	+1.49

¹ DEP is departure from the long-term average.

² 2013 data is for the ten months through October.

Seed quality. Buy premium-quality seed high in germination and purity and free from weed seed. Buy certified seed or proprietary seed of an improved variety. An improved variety is one that has performed well in independent trials. Other information on the label will include the test date (which must be within the past nine months), the level of germination, and the percentage of other crop and weed seed. Order seed well in advance of planting time to assure it will be available when needed.

Description of the Tests

Data from five studies are reported. Orchardgrass varieties were sown at Lexington (2011 and 2012), Princeton (2010 and 2012), and Quicksand (2010). The soils at Lexington (Maury), Princeton (Crider), and Quicksand (Nolin) are well-drained silt loams and are well suited to orchardgrass production. Seedlings were made at the rate of 20 pounds per acre into a prepared seedbed with a disk drill. Plots were 5 feet by 20 feet in a randomized complete block design with four replications with a harvest plot area of 5 feet by 15 feet. Nitrogen was top-dressed at 60 pounds per acre of actual nitrogen in March, after the first cutting, and again in late summer, for a total of 180 pounds per acre per season. The tests were harvested using a sickle-type forage plot harvester to simulate a spring cut hay/summer grazing/fall stockpile management system. Fresh weight samples were taken at each harvest to calculate percent dry matter production. Management practices for establishment, fertility, weed control, and harvest timing were in accordance with University of Kentucky recommendations.

Results and Discussion

Weather data for Lexington, Princeton and Quicksand are presented in tables 1, 2, and 3.

Ratings for maturity (see Table 4 for maturity scale), stand persistence, and dry matter yields (tons per acre) are reported in tables 5 through 8 and Table 10. Yields are given by cutting date for 2013 and as total annual production. Stated yields are adjusted for percent weeds; therefore, tonnage given is for crop only. Varieties are listed by descending total

Table 4. 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.

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

yield. Experimental varieties, listed separately at the bottom of the tables, are not available commercially.

Statistical analyses were performed on all data (including experimentals) to determine if the apparent differences are truly due to varietal differences or just to chance. In the tables, the varieties not significantly different from the

top variety in that column are marked with one asterisk (*). To determine if two varieties are truly different, compare the difference between them 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 the given locations. The

Coefficient of Variation (CV), which is a measure of the variability of the data, is included for each column of means. Low variability is desirable, and increased variability within a study results in higher CVs and larger LSDs.

Table 11 summarizes information about distributors and yield performance across locations for all varieties currently included in tests discussed in this publication. Varieties are listed in alphabetical order, with the experimental varieties at the bottom. Remember that experimental varieties are not available for farm use; commercial varieties can be purchased through distributors. In Table 11, 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 top-yielding variety in that study, based on the 0.05 LSD. It is best to choose a variety that has performed well over several years and locations. Remember to consider the distribution of yield across the growing season when evaluating productivity of orchardgrass varieties (tables 5 through 8 and Table 10).

Table 9 is a summary of yield data from 1998 to 2013 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 percent—varieties with percentages over 100 yielded better than average, and varieties with percentages less than 100 yielded lower than average. Direct, statistical comparisons of varieties cannot be made using the summary Table 9, 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 stable performance; others may have performed well in wet years or on particular soil types. These details may influence variety choice, and the information can be found in the yearly reports. See the footnote in Table 9 to determine to which yearly report to refer.

Table 5. Dry matter yields, seedling vigor, maturity and stand persistence of orchardgrass varieties sown September 16, 2010, at Princeton, Kentucky.

Variety	Seedling Vigor ¹ Nov 19, 2010		Maturity ²				Percent Stand						Yield (tons/acre)						3-year Total				
	2012		2013		2010		2011		2012		2013		2011		2012		2013		2013		Total		
	Apr 18	May 14	Nov 19	Nov 19	Apr 8	Oct 24	Mar 21	Oct 29	Mar 19	Oct 25	Mar 19	Oct 29	Mar 19	Oct 25	Mar 19	Oct 25	May 14	Jun 19	Aug 14	Oct 25	Total	Total	
Commercial Varieties—Available for Farm Use																							
Persist	2.0	29.5	59.0	94	94	99	99	97	94	94	94	94	94	94	94	94	2.93	0.70	0.58	0.71	4.92	9.79*	
Extend	4.8	29.0	56.5	100	100	100	100	98	97	97	97	97	97	97	97	97	2.60	0.94	0.57	0.88	4.99	9.77*	
Profit	3.6	29.5	54.5	99	100	100	100	100	94	95	95	95	95	95	95	95	2.47	0.90	0.59	0.71	4.66	9.51*	
Benchmark Plus	3.9	29.5	58.5	99	99	99	99	97	94	94	95	94	95	95	95	95	2.53	0.85	0.66	0.81	4.85	9.47*	
Potomac	3.6	30.0	58.5	99	100	100	100	99	97	97	97	97	97	97	97	97	2.51	0.87	0.58	0.72	4.69	9.43*	
Prairie	3.6	29.5	57.5	99	99	100	100	96	97	97	97	97	97	97	97	97	2.60	0.83	0.64	0.75	4.82	9.23*	
RAD-LCF25	3.6	29.0	52.5	99	98	99	99	96	95	95	95	95	95	95	95	95	2.32	0.90	0.63	0.67	4.52	9.21*	
Tucker	3.9	29.0	58.0	99	100	100	100	99	95	93	93	93	93	93	93	93	2.38	0.80	0.59	0.56	4.32	8.93	
Tekapo	4.0	30.3	55.5	99	98	100	99	98	97	97	97	97	97	97	97	97	2.25	0.87	0.57	0.62	4.31	8.63	
Experimental Varieties																							
OG 0404	4.6	30.0	58.5	99	100	100	100	99	97	97	97	97	97	97	97	97	2.71	0.80	0.57	0.90	4.98	9.87*	
IS-OG53	1.0	29.5	52.0	5	8	79	87	83	80	80	80	80	80	80	80	80	2.67	0.95	0.63	0.67	4.93	9.50*	
Dg83R01	3.3	29.0	52.0	98	95	98	99	92	84	85	84	85	85	85	85	85	2.12	1.14	0.61	0.71	4.58	9.18*	
Dg12R01	4.8	29.5	52.0	100	100	100	100	100	97	94	94	94	94	94	94	94	2.42	0.93	0.64	0.76	4.75	8.98	
B-9.1476	2.6	29.5	52.5	97	91	95	96	81	70	74	70	74	74	74	74	74	1.83	1.03	0.62	0.75	4.22	8.54	
Mean	3.6	29.5	55.5	92	91	98	98	94	92	92	92	92	92	92	92	92	2.45	0.89	0.60	0.73	4.68	9.29	
CV%	23.5	2.9	1.9	3	3	3	2	3	5	5	5	5	5	5	5	5	8.54	9.72	18.99	16.46	6.23	6.24	
LSD0.05	1.3	1.2	1.5	4	3	4	3	5	6	6	7	7	7	7	7	7	0.29	0.12	0.16	0.17	0.42	0.83	

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 4 for complete scale.

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

Table 6. Dry matter yields, seedling vigor, maturity and stand persistence of orchardgrass varieties sown September 24, 2010, at Quicksand, Kentucky.

Variety	Seedling Vigor ¹ Nov 11, 2010	Maturity ²	Percent Stand						Yield (tons/acre)				3-year Total
			2011	2010	2011		2012		2013	2011	2012	2013 ³	
		May 11	Nov 11	Mar 29	Nov 8	Mar 20	Nov 1	Mar 15	Total	Total	May 9	Total	
Commercial Varieties—Available for Farm Use													
Prairie	3.3	57.5	98	100	99	99	94	90	4.87	2.23	2.14	2.14	9.25*
Profit	3.5	50.3	100	100	100	100	98	96	4.91	2.25	1.69	1.69	8.85*
Extend	3.8	51.5	100	100	100	99	85	81	4.46	2.10	1.75	1.75	8.30
Persist	1.3	59.5	91	93	96	96	95	93	3.67	2.12	2.08	2.08	7.87
RAD-LCF25	2.6	40.3	99	98	96	95	83	70	4.17	2.26	1.43	1.43	7.86
Benchmark Plus	2.5	59.5	99	100	100	100	98	94	3.67	1.83	1.79	1.79	7.29
Potomac	4.3	49.8	100	100	100	100	85	84	3.73	1.95	1.58	1.58	7.26
Tucker	2.4	39.0	99	99	98	98	89	76	3.56	1.65	1.37	1.37	6.58
Tekapo	2.6	51.0	98	98	96	97	94	91	3.24	1.66	1.32	1.32	6.22
Experimental Varieties													
OG 0404	4.5	57.5	100	100	100	100	96	94	4.88	2.46	2.26	2.26	9.60*
IS-OG 51	3.0	52.8	100	100	100	100	89	83	3.88	2.35	2.09	2.09	8.33
B-9-NIC4	2.5	55.5	100	100	100	98	94	93	3.70	1.74	1.64	1.64	7.07
Dg12R01	4.4	39.0	99	100	100	99	96	95	3.53	2.13	1.38	1.38	7.05
IS-OG 53	0.5	37.0	43	28	58	75	61	56	3.24	2.04	1.58	1.58	6.85
Dg83R01	2.3	37.0	100	98	86	92	76	66	4.20	1.81	0.73	0.73	6.74
B-9.1476	2.0	37.0	96	97	86	90	64	64	3.71	1.72	0.94	0.94	6.36
Mean	2.8	48.4	95	94	95	96	87	83	3.96	2.02	1.61	1.61	7.59
CV,%	22.4	8.3	4	3	10	5	15	17	13.11	14.30	19.03	19.03	10.03
LSD,0.05	0.9	5.7	5	4	13	7	18	20	0.74	0.41	0.44	0.44	1.08

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 4 for complete scale.

³ After the May harvest, the orchardgrass stands regrew very little; therefore there were no other harvests in 2013.

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

Summary

Selecting a good orchardgrass 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 orchardgrass management. They are available from your

county Extension office and are listed in the "Publications" section of the UK Forage Web site, www.uky.edu/Ag/Forage:

- Lime and Fertilizer Recommendations (AGR-1)
- Grain and Forage Crop Guide for Kentucky (AGR-18)
- Renovating Hay and Pasture Fields (AGR-26)
- Orchardgrass (AGR-58)
- Establishing Forage Crops (AGR-64)
- Forage Identification and Use Guide (AGR-175)
- Rotational Grazing (ID-143)

About the Authors

G.L. Olson is a research specialist and S.R. Smith and G.D. Lacefield are Extension professors in Forages. T.D. Phillips is an associate professor in Tall Fescue Breeding, and D.C. Ditsch is an Extension professor in Feed Production.

Table 7. Dry matter yields, seedling vigor, maturity and stand persistence of orchardgrass varieties sown September 14, 2011, at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct 11, 2011	Maturity ²		Percent Stand				Yield (tons/acre)					2-year Total	
		2013	2011	2012		2013		2012	2013					
		May 23	Oct 11	Mar 21	Oct 24	Mar 22	Oct 22	Total	May 23	Jun 26	Aug 5	Oct 22		Total
Commercial Varieties—Available for Farm Use														
Persist	4.8	62.5	100	100	100	100	100	2.83	2.93	0.84	0.93	1.16	5.86	8.69*
Extend	5.0	61.5	100	100	100	100	100	2.94	2.43	0.93	0.71	1.06	5.13	8.07*
Prairie	5.0	62.0	100	100	100	100	100	2.67	2.43	1.01	0.85	1.05	5.33	8.00*
Benchmark Plus	4.6	62.5	100	100	100	100	100	2.65	2.48	1.00	0.83	1.04	5.34	7.99*
Haymaster	5.0	62.0	100	100	100	100	100	2.70	2.51	0.86	0.72	0.96	5.05	7.75*
Profit	4.9	58.0	100	100	100	100	100	2.91	2.12	0.84	0.70	1.01	4.67	7.58*
Potomac	5.0	62.0	100	100	100	100	100	2.65	2.00	0.94	0.64	1.10	4.68	7.33*
Tucker	4.8	62.0	100	100	100	100	100	2.68	2.03	0.92	0.62	1.02	4.59	7.28
Tekapo	4.5	59.5	100	100	100	100	100	2.23	2.00	0.76	0.65	0.78	4.19	6.42
Experimental Varieties														
PPG-OG 102	5.0	59.5	100	100	100	100	100	3.11	2.39	1.01	0.80	1.25	5.44	8.56*
XLFOG	4.4	62.0	100	100	100	100	100	2.77	2.62	0.91	0.73	1.24	5.50	8.27*
PPG-OG 103	4.8	58.0	100	100	100	100	100	3.00	2.18	1.03	0.63	0.92	4.76	7.77*
PPG-OG 101	5.0	62.0	100	100	100	100	100	2.74	2.19	0.93	0.62	0.97	4.72	7.46*
Mean	4.8	61.0	100	100	100	100	100	2.76	2.33	0.92	0.72	1.04	5.02	7.78
CV,%	7.0	1.5	0	0	0	0	0	9.92	15.22	14.62	24.37	23.44	15.97	12.61
LSD,0.05	0.5	1.3	0	0	0	0	0	0.39	0.51	0.19	0.25	0.35	1.15	1.41

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 4 for complete scale.

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

Table 8. Dry matter yields, seedling vigor, maturity and stand persistence of orchardgrass varieties sown September 7, 2012, at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Oct 15, 2012	Maturity ²		Percent Stand		Yield (tons/acre)				
		2013	2012	2013		2013				
		May 20	Oct 15	Mar 20	Oct 22	May 20	Jun 28	Aug 6	Oct 24	Total
Commercial Varieties—Available for Farm Use										
Prairie	4.1	60.5	100	100	100	2.22	1.42	0.64	1.18	5.46*
Checkmate	4.1	57.5	100	100	100	2.13	1.38	0.71	1.14	5.37*
Profit	4.0	57.0	100	100	100	2.03	1.43	0.64	1.15	5.25*
Persist	3.4	62.0	100	100	100	2.15	1.22	0.63	1.14	5.13*
Prodigy	2.8	57.0	100	100	100	1.71	1.34	0.63	1.09	4.76*
Benchmark Plus	3.1	62.0	100	100	100	1.79	1.28	0.60	1.05	4.72*
Potomac	4.3	62.0	100	100	100	1.81	1.27	0.59	0.92	4.59*
Tekapo	3.0	56.0	100	100	100	1.36	1.20	0.64	1.01	4.20
Elise	3.4	55.0	99	98	99	1.44	1.24	0.57	0.93	4.17
Experimental Varieties										
PPG-OG 101	3.8	60.5	100	100	100	2.12	1.37	0.70	1.14	5.33*
OG 0201	4.0	58.5	100	100	100	2.28	1.21	0.58	1.10	5.16*
PPG-OG 103	3.9	55.5	100	100	100	1.74	1.55	0.63	1.10	5.02*
PPG-OG 102	3.6	56.0	100	100	100	1.68	1.36	0.60	1.15	4.80*
PPG-OG 106	3.5	54.5	100	100	100	1.37	1.41	0.60	1.23	4.61*
Mean	3.6	58.1	100	100	100	1.84	1.33	0.63	1.09	4.90
CV,%	27.0	2.7	1	1	1	19.71	16.06	24.65	15.79	16.15
LSD,0.05	1.4	2.3	1	2	1	0.52	0.31	0.22	0.25	1.13

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 4 for complete scale.

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

Table 9. (continued)

Variety	Proprietor	Lexington										Princeton										Quicksand					Mean ³ (#trials)
		1999 ^{1,2} 2-yr ⁴	2001 2-yr	2003 3-yr	2006 4-yr	2007 3-yr	2009 3-yr	2011 2-yr	1998 2-yr	2000 2-yr	2002 3-yr	2004 3-yr	2006 3-yr	2008 3-yr	2010 3-yr	1999 2-yr	2001 2-yr	2003 3-yr	2005 4-yr	2010 3-yr							
Spanish Pink	DLF International Seeds	101						82							94												
Spanish Red	DLF International Seeds																										
Takana	Smith Seed	107		110	102				100							108											
Tekona II	Smith Seed									109							106	104									
Tekapo	Ampac Seed	88			91	81	82	84				98	86	92	94	92	105	91	81								
Tucker	Oregro Seeds							95				96	102	96					85								
Udder	Improved Forages			100	107						102																
Vaillant	Proseeds Marketing					96																					
Vision	Cropmark Seeds			63																67							

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 1999 was harvested 2 years, so the final report would be "2001 Orchardgrass Report" archived in the KY Forage website at <www.uky.edu/Ag/Forage>.
 3 Mean only presented when respective variety was included in two or more trials.
 4 Number of years of data.

Table 10. Dry matter yields, seedling vigor, maturity and stand persistence of orchardgrass varieties sown September 12, 2012, at Princeton, Kentucky.

Variety	Seedling Vigor ¹ Oct 29, 2012	Maturity ²		Percent Stand		Yield (tons/acre)					
		2013 May 14	2013 Oct 25	2012 Oct 29	2013 Mar 19	2013		2013		2013	
Commercial Varieties—Available for Farm Use											
Benchmark Plus	3.5	59.0	99	98	98	2.46	1.70	1.27	1.19	6.62*	
Checkmate	3.4	56.5	100	100	100	2.49	1.61	1.18	1.14	6.41*	
Profit	5.0	55.5	100	100	100	2.68	1.53	1.04	1.12	6.37*	
Prodigy	4.1	58.0	100	99	99	2.32	1.61	1.19	1.12	6.23*	
Prairie	3.4	59.0	100	99	99	2.67	1.49	1.04	0.97	6.17	
Persist	3.6	58.0	100	100	100	2.64	1.41	1.06	0.98	6.09	
Potomac	4.1	59.0	99	99	99	2.35	1.54	1.13	1.06	6.08	
Elise	2.6	54.5	98	96	96	2.26	1.56	1.11	1.15	6.08	
Tekapo	2.9	55.5	98	97	97	1.53	1.25	1.04	1.16	4.99	
Experimental Varieties											
PPG-OG 102	4.1	55.5	98	98	98	2.87	1.64	1.29	1.17	6.97*	
PPG-OG 103	3.4	53.0	100	100	100	2.66	1.78	1.10	1.29	6.83*	
PPG-OG 101	3.8	56.5	100	100	100	2.53	1.64	1.14	1.10	6.41*	
OG0201	3.6	56.0	100	100	100	2.68	1.46	1.20	1.02	6.36*	
PPG-OG 106	2.9	53.0	100	97	97	2.19	1.72	1.22	1.18	6.31*	
Mean	3.6	56.4	99	99	99	2.45	1.57	1.14	1.12	6.28	
CV,%	19.6	2.5	1	2	2	12.27	7.32	14.21	13.12	8.25	
LSD,0.05	1.0	2.0	2	2	2	0.43	0.16	0.23	0.21	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 4 for complete scale.
 *Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Table 11. Performance of orchardgrass varieties across years and locations.

Variety	Proprietor/KY Distributor	Princeton				Lexington			Quicksand		
		2010 ¹			2012	2011		2012	2010		
		11 ²	12	13	13	12	13	13	11	12	13
Commercial Varieties—Available for Farm Use											
Benchmark Plus	FFR/Southern States	*	*	*	*	x ³	*	*	X	X	X
Checkmate	Seed Res. of Oregon/Pickseed				*			*			
Elise	PureSeed				X			X			
Extend	Farm Service Genetics/Allied	*	*	*		*	*		*	*	*
Haymaster	FFR/Southern States					X	*				
Persist	Smith Seed Services	*	*	*	*	*	*	*	X	*	*
Potomac	Public	*	*	*	*	X	X	*	X	X	X
Prairie	Turner Seed Company	*	*	*	*	X	*	*	*	*	*
Prodigy	Caudill Seed				*			*			
Profit	Ampac Seed Company	*	*	*	*	*	X	*	*	*	X
RAD-LXCF25	Radix Research	*	*	X					*	*	X
Tekapo	Ampac Seed Company	*	X	X	X	X	X	X	X	X	X
Tucker	Oregro Seeds, Inc.	*	X	X		X	X		X	X	X
Experimental Varieties											
B-9.1476	Blue Moon Farms	X	*	X					X	X	X
B-9-NIC4	Blue Moon Farms								X	X	X
Dg12R01	Barenbrug	*	*	*					X	*	X
DG83R01	Barenbrug	*	*	*					*	X	X
IS-OG51	DLF International Seeds								X	*	*
IS-OG53	DLF International Seeds	*	*	*					X	X	X
OG 0201	BrettYoung Seed				*			*			
OG 0404	FFR/Southern States	*	*	*					*	*	*
PPG OG 101	Mountain View Seeds				*	*	*	*			
PPG-OG 102	Mountain View Seeds				*	*	*	*			
PPG-OG 103	Mountain View Seeds				*	*	*	*			
PPG-OG-106	Mountain View Seeds				*			*			
XLF OG	ProSeeds Marketing					*	*				

¹ Establishment year.

² Harvest year.

³ x in the box indicates the variety was in the test but yielded significantly less than the top ranked variety in the test. Open box indicates the variety was not in the test.

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



Mention or display of a trademark, proprietary product, or firm in text or figures does not constitute an endorsement and does not imply approval to the exclusion of other suitable products or firms.