

2004 Orchardgrass Report

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

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 higher yields, quality, and long stand life. It produces an open, bunch-type sod, making it very 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.

Important Considerations in Selecting an Orchardgrass Variety

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 that is 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.

Seed Quality. Buy high-quality seed that is 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) and the level of germination and other crop and weed seed. Order seed well in advance of planting time to assure that it will be available when needed.

Description of the Tests

Data from three studies are reported. Orchardgrass varieties were sown at Lexington (2003), Quicksand (2003), and Princeton (2002). The soils at Lexington (Maury), Quicksand (Nolin), and Princeton (Crider) are well-drained silt loams and are well suited to orchardgrass production. Seedings were made at the rate of 20 lb/A into a prepared seedbed with a disk drill. Plots were 5 by 15 ft in a randomized complete block design with four

replications. Nitrogen was topdressed at 60 lb/A of actual N in March, after the second cutting and again in late summer. 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 Quicksand, Lexington, and Princeton are presented in Table 1.

Ratings for maturity and dry matter yields (tons/acre) are reported in Tables 2 through 4. Yields are given by cutting date and as total annual production. Varieties are listed by descending total 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 LSD (Least Significant Difference) 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 5 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, while commercial varieties can be purchased through dealerships. In Table 5, 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 top-yielding variety in that study. 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 2 through 4).

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.

- AGR-1 Lime and Fertilizer Recommendations
- AGR-18 Grain and Forage Crop Guide for Kentucky
- AGR-26 Renovating Hay and Pasture Fields
- AGR-58 Orchardgrass
- AGR-64 Establishing Forage Crops
- AGR-103 Fertilization of Cool-Season Grasses

Authors

- G.L. Olson, Research Specialist, Forages, UK Department of Plant and Soil Sciences
- T.D. Phillips, Associate Professor, Tall Fescue Breeding, UK Department of Plant and Soil Sciences
- G.D. Lacefield, Extension Professor, Forages, UK Department of Plant and Soil Sciences
- D.C. Ditsch, Extension Associate Professor, Feed Production, UK Department of Plant and Soil Sciences
- S.R. Smith, Extension Associate Professor, Forages, UK Department of Plant and Soil Sciences

Table 1. Temperature and rainfall at Lexington, Princeton and Quicksand, Kentucky in 2004.

	Lexington				Princeton				Quicksand			
	Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	30	-1	3.14	+0.28	36	+2	4.12	+0.32	34	+3	4.48	+1.19
FEB	36	+1	1.32	-1.89	39	+1	2.44	-1.99	39	+6	3.45	-0.15
MAR	47	+3	3.43	-0.97	53	+6	4.28	-0.66	49	+8	3.84	-0.5
APR	55	0	3.06	-0.82	59	0	5.32	+0.52	51	+4	4.84	+0.74
MAY	68	+4	9.79	+5.32	72	+5	7.34	+2.38	68	+6	11.22	+6.74
JUN	72	0	3.13	-0.53	74	-1	3.4	-0.45	71	+1	6.19	+2.37
JUL	73	-3	7.65	+2.65	75	-3	4.87	+0.58	75	+1	2.3	-2.95
AUG	71	-4	2.91	-1.02	73	-4	3.02	-0.99	72	-1	1.37	-2.64
SEP	68	0	2.61	-0.59	71	0	0.2	-3.13	69	+3	6.8	+3.28
OCT	58	+1	5.65	+3.08	64	+5	4.03	+0.98	61	+7	4.19	+1.29
NOV	49	+4	6.29	+2.90	53	+6	6.94	+2.31	51	+9	3.56	-0.032
Total			48.98	+8.41			45.96	-0.13			53.09	+9.04

DEP is departure from the long-term average for that location.

Variety	Maturity ¹ May 10, 2004	Yield(tons/acre)					
		Total 2003	2004 Yields			Total 2004	Total 2-yr
			May 10	Jun 14	Jul 21		
Commercial Varieties—Available for Farm Use							
Benchmark Plus	60.0	4.41	3.58	0.48	0.37	4.43	8.84*
Crown Royale Plus	56.0	4.54	3.33	0.52	0.37	4.22	8.76*
Benchmark	59.5	4.46	3.34	0.42	0.45	4.21	8.67*
Prairie	57.5	4.25	3.36	0.53	0.44	4.33	8.59*
Uncertified Potomac	57.0	4.14	3.26	0.48	0.42	4.16	8.46*
Takena	48.5	4.64	2.88	0.45	0.42	3.76	8.40*
Crown	57.5	3.77	3.74	0.27	0.44	4.46	8.35*
Hallmark	59.5	4.36	3.07	0.36	0.38	3.81	8.17*
Haymate	52.5	4.23	2.67	0.53	0.50	3.70	8.13*
Udder	57.5	4.05	3.10	0.42	0.32	3.84	7.97*
Certified Potomac	56.5	4.05	3.05	0.45	0.40	3.90	7.95*
Niva	49.5	3.47	2.87	0.43	0.28	3.59	7.06
Abertop	58.0	3.82	2.58	0.32	0.12	3.02	6.81
Experimental Varieties							
GA OG-1	60.0	4.28	3.26	0.42	0.36	4.04	8.43*
OG 9701	60.0	4.18	3.49	0.34	0.40	4.22	8.41*
Mean	56.6	4.18	3.19	0.43	0.39	4.01	8.25
CV, %	4.5	7.43	17.80	20.21	27.97	10.12	7.68
LSD, 0.05	3.9	0.44	0.89	0.14	0.17	0.88	0.99

* 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.
Note-due to a dry September, a fourth harvest was not taken.

Variety	Vigor ¹ Oct. 31, 2003	Maturity ² May 13, 2004	Yield(tons/acre)				
			2004 Yields				Total 2004
			May 13	Jun 11	Jul 28	Oct 8	
Commercial Varieties—Available for Farm Use							
Persist	4.0	54.5	1.66	0.73	1.72	1.23	5.34*
Intensiv	5.0	38.0	1.84	0.82	1.59	0.89	5.14*
Udder	2.0	51.0	1.41	0.70	1.60	1.05	4.76
Takena II	4.5	41.0	1.57	0.78	1.56	0.78	4.69
Hallmark	2.0	59.5	1.48	0.75	1.38	0.81	4.43
Vision	3.5	52.0	0.35	0.79	1.62	1.13	3.89
Experimental Varieties							
KYDG9801	5.0	50.5	1.46	1.00	1.74	1.22	5.43*
CIS-OG 4	4.8	44.5	1.54	0.83	1.83	1.09	5.28*
KYDG9701	3.0	57.0	1.67	0.67	1.73	1.08	5.15*
ECF30	4.5	53.5	1.68	0.83	1.56	1.06	5.13*
DP65-4928	3.5	39.8	1.46	0.86	1.66	1.07	5.04*
KYDG9303	4.5	43.0	1.59	0.88	1.60	0.83	4.89*
Mean	3.9	48.7	1.47	0.80	1.63	1.02	4.93
CV, %	9.1	11.1	15.81	15.08	13.04	23.18	9.24
LSD, 0.05	0.5	7.8	0.34	0.17	0.31	0.34	0.66

* 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 shed.

Table 4. Dry matter yields(tons/acre) of orchardgrass varieties sown October 9, 2003 at Quicksand, Kentucky.					
Variety	2004 Yields				Total 2004
	May 21	Jul 12	Aug 24	Oct 25	
Commercial Varieties—Available for Farm Use					
Persist	0.59	2.11	1.59	1.68	5.96*
Benchmark Plus	0.62	2.07	1.51	1.72	5.93*
Vision	0.04	2.89	1.85	1.00	5.77*
Tekapo	0.27	2.04	1.81	1.52	5.65*
Prairie	0.58	2.05	1.44	1.49	5.55*
Udder	0.18	2.40	1.73	1.22	5.52*
Crown Royale Plus	0.70	1.96	1.41	1.38	5.45*
Takena II	0.44	2.03	1.48	1.49	5.45*
Haymate	0.24	1.90	1.50	1.20	4.84*
Hallmark	0.48	1.68	1.16	1.29	4.62
Experimental Varieties					
ECF30	0.37	1.85	1.48	1.46	5.16*
KYDG9701	0.39	1.94	1.48	1.30	5.10*
Mean	0.41	2.08	1.54	1.40	5.41
CV, %	43.25	8.89	17.67	10.97	9.22
LSD, 0.05	0.25	0.27	0.39	0.22	0.72
*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.					

Table 5. Performance of orchardgrass varieties across years and locations.

Variety	Proprietor/KY Distributor	Princeton 2002 ¹		Lexington 2003	Quicksand 2003
		03 ²	04	04	04
Commercial Varieties—Available for Farm Use					
Abertop	Pennington Seed, Inc.	X	X		
Benchmark Plus	FFR/Southern States	*	*		*
Benchmark	FFR/Southern States	*	*		
Crown	Donley Seed	X	*		
Crown Royale Plus	Donley Seed	*	*		*
Hallmark	James VanLeeuwen	*	*	X	X
Haymate	FFR/Southern States	*	*		X
Intensiv	Barenbrug USA			*	
Niva	DLF-Jenks	X	*		
Persist	Smith Seed Services			*	*
Potomac, certified	public	*	*		
Potomac, uncertified	public	*	*		
Prairie	Turner Seed Company	*	*		*
Takena	Smith Seed Services	*	*		
Takena II	Smith Seed Services			X	*
Tekapo	Ampac Seed Company				*
Udder	Improved Forages, Inc	*	*	X	*
Vision	Cropmark Seeds LTD			X	*
Experimental Varieties					
CIS OG-4	Cebeco International Seeds			*	
DP65-4928	DLF International Seeds			*	
ECF30	Radix Research, Inc			*	*
GA OG-1	Pennington Seed, Inc.	*	*		
KYDG9303	KY Agric. Exp. Station			*	
KYDG9701	KY Agric. Exp. Station			*	*
KYDG9801	KY Agric. Exp. Station			*	
OG 9701	Allied Seed	*	*		

¹ Establishment year.

² Harvest year.

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

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.



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.