

2003 Orchardgrass Report

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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 (2001), Quicksand (2001), 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. Seedlings 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 80 lb/A of

actual N in March (60 lb/A for newly seeded stands) and 60 lb/A of actual N after the first 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, a shaded area indicates that the variety was not in that particular test (labeled at the top of the column), while a clear block means that the variety was in the test. 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

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Table 1. Temperature and rainfall at Quicksand, Lexington, and Princeton in 2003.

	Quicksand				Lexington				Princeton			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	29	-2	1.89	-1.4	26	-5	0.96	-1.90	31	-3	2.19	-1.61
FEB	34	+1	7.90	+4.3	32	-3	3.59	+0.38	35	-3	7.45	+3.02
MAR	51	+10	1.44	-2.9	47	+3	2.09	-2.31	50	+3	2.46	-2.48
APR	59	+6	5.15	+1.05	57	+2	3.14	-0.74	60	+1	6.99	+2.19
MAY	63	+1	5.49	+1.01	63	-1	6.68	+2.21	67	0	4.81	-0.15
JUN	68	-2	7.53	+3.71	69	-3	4.85	+1.19	71	-4	5.05	+1.20
JUL	74	0	3.45	-1.80	74	-2	2.68	-2.32	79	+1	4.75	+0.46
AUG	75	+2	5.08	+1.07	75	0	5.26	+1.33	79	+2	2.05	-1.96
SEP	66	0	4.26	+0.74	65	-3	4.22	+1.02	69	-2	6.17	+2.84
OCT	58	+4	2.33	-0.58	56	-1	1.61	-0.96	60	+1	3.73	+0.68
NOV	52	+10	5.47	+1.59	50	+5	4.63	+1.24	53	+6	5.85	+1.22
Total			49.99	+6.79			39.71	-0.86			51.50	+5.41

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

Table 2. Dry matter yields (tons/acre) of orchardgrass varieties sown September 7, 2001, at Lexington, Kentucky.

Variety	Vigor ¹	Total 2002	Maturity ² May 12, 2003	2003 Harvests				Total 2003	2-yr Total
				May 12	Jun 24	Sep 15	Oct 21		
Commercial Varieties—Available for Farm Use									
Takena	5	6.78	51	2.62	1.89	1.15	0.44	6.10	12.88*
Megabite	3	6.35	55	2.88	1.72	1.26	0.41	6.28	12.62*
Albert	4	6.54	55	2.40	1.78	1.23	0.43	5.84	12.38*
Mammoth	5	6.51	59	2.71	1.62	1.04	0.46	5.82	12.33*
Hallmark	5	6.66	61	2.67	1.41	0.99	0.51	5.58	12.24*
Prairie	5	6.55	58	2.49	1.62	1.03	0.47	5.61	12.16*
Athos	4	6.68	49	2.14	1.65	0.94	0.43	5.16	11.84
Amba	4	6.41	56	2.37	1.49	0.88	0.37	5.12	11.53
Eastwood	3	4.85	56	2.45	1.54	1.04	0.43	5.46	10.31
Experimental Varieties									
OG 9204	4	6.92	52	2.92	1.65	1.12	0.38	6.06	12.98*
OG 9701	4	6.58	60	2.84	1.59	1.16	0.50	6.09	12.67*
'CAS-EG33'	4	7.14	54	2.26	1.60	0.99	0.50	5.35	12.49*
OG 9202	4	6.35	58	3.05	1.61	1.06	0.39	6.11	12.46*
OG 9503	4	6.40	53	2.78	1.68	1.19	0.37	6.01	12.41*
OG 9501	5	6.42	57	2.56	1.74	1.10	0.52	5.92	12.34*
OG 9705G	2	6.32	58	2.72	1.61	1.09	0.52	5.93	12.25*
BAR 98-4	3	6.60	44	2.54	1.77	0.97	0.31	5.59	12.19*
CIS OG—9	3	6.27	52	2.29	1.59	1.02	0.39	5.29	11.57
Mean	4	6.46	55	2.59	1.64	1.07	0.44	5.74	12.20
CV, %	16	6.42	5	10.85	9.47	11.58	20.41	7.09	5.83
LSD, 0.05	1	0.59	4	0.40	0.22	0.18	0.13	0.58	1.01

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

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

² Maturity rating: 37=flag leaf emergence, 45=boot swollen, 50=beginning of inflorescence, 58=complete emergence of inflorescence, 62=beginning of pollen shedding.

Table 3. Dry matter yields (tons/acre) of orchardgrass and perennial ryegrass (PRG) varieties sown September 18, 2001, at Quicksand, Kentucky.							
Variety	Total 2002	Maturity ¹ May 30, 2003	2003 Harvests			Total 2003	2-yr Total
			May 30	Jul 25	Oct 6		
Commercial Varieties—Available for Farm Use							
Crowne Royal	4.82	69	2.07	0.91	0.98	3.96	8.78*
Takena	4.67	59	2.02	0.93	0.99	3.94	8.61*
Albert	4.21	66	2.42	1.05	0.77	4.25	8.46*
Athos	4.46	41	2.04	0.87	1.03	3.94	8.40*
Mammoth	4.60	72	1.98	0.76	1.02	3.75	8.35*
Haymate	4.27	55	2.15	0.87	1.03	4.05	8.33*
Prairie	4.52	70	1.90	0.91	0.82	3.63	8.15*
Hallmark	4.40	71	1.86	0.88	0.94	3.68	8.08*
Tekapo	4.09	70	1.72	0.80	0.75	3.27	7.36
Eastwood	3.91	55	1.34	0.71	0.77	2.82	6.73
Quartet (PRG)	3.91	51	1.63	0.56	0.62	2.82	6.72
Amba	3.45	69	1.75	0.59	0.61	2.95	6.40
Experimental Varieties							
'CAS-EG 33'	4.80	55	2.15	0.94	0.97	4.06	8.86*
CIS OG 9	4.30	50	1.64	0.86	0.89	3.39	7.68
Mean	4.32	60.88	1.91	0.83	0.87	3.61	7.92
Cv, %	10.29	12.75	15.70	21.06	20.19	10.03	7.44
LSD, 0.05	0.64	11.10	0.43	0.25	0.25	0.52	0.84
* Not significantly different from the highest value in the column, based on the 0.05 LSD. ¹ Maturity rating: 37=flag leaf emergence, 45=boot swollen, 50=beginning of inflorescence, 58=complete emergence of inflorescence, 62=beginning of pollen shed.							

Table 4. Dry matter yields (tons/acre) of orchardgrass varieties sown September 25, 2002, at Princeton, Kentucky.

Variety	Maturity ¹ May 15, 2003	2003 Harvests				Total 2003
		May 15	Jun 18	Jul 30	Sep 24	
Commercial Varieties—Available for Farm Use						
Takena	40	2.49	1.39	0.45	0.30	4.64
Crown Royale Plus	35	2.49	1.43	0.32	0.31	4.54
Benchmark	44	2.33	1.18	0.43	0.52	4.46
Benchmark Plus	40	2.50	1.25	0.35	0.31	4.41
Hallmark	40	2.52	1.25	0.30	0.27	4.36
Prairie	40	2.33	1.33	0.29	0.30	4.25
Haymate	40	2.34	1.27	0.30	0.33	4.23
Uncertified Potomac	44	2.42	1.12	0.31	0.29	4.14
Udder	41	2.50	1.10	0.21	0.24	4.05
Certified Potomac	38	2.40	1.05	0.29	0.31	4.05
Abertop	38	2.30	1.17	0.21	0.14	3.82
Crown	43	2.45	0.94	0.17	0.21	3.77
Niva	30	2.39	0.77	0.19	0.12	3.47
Experimental Varieties						
Og-1	35	2.52	1.36	0.18	0.22	4.28
Og 9701	31	2.35	1.24	0.27	0.33	4.18
Mean	38.6	2.42	1.19	0.28	0.28	4.18
CV, %	19.37	6.67	8.91	54.15	39.63	7.43
LSD, 0.05	10.82	0.23	0.15	0.22	0.16	0.44
* Not significantly different from the highest value in the column, based on 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 5. Performance of orchardgrass and perennial ryegrass (PRG) varieties across years and locations.						
		Lexington		Quicksand		Princeton
		2001 ¹		2001		2002
Variety	Proprietor/KY Distributor	02 ²	03	02	03	03
Commercial Varieties—Available for Farm Use						
Abertop	Pennington Seed, Inc.					
Albert	University of Wisconsin		*	*	*	
Amba	DLF-Jenks					
Athos	DLF-Jenks	*		*	*	
Benchmark Plus	FFR/Southern States					*
Benchmark	FFR/Southern States					*
'CAS-EG33'	Cascade International Seed	*		*		
Crown	previously by Scott Seed Co.					
Crowne Royal	Donley Seed Co.			*	*	
Crown Royale Plus	Donley Seed Co.					*
Eastwood	Ampac Seed Company					
Hallmark	James VanLeeuwen	*		*		*
Haymate	FFR/Southern States			*	*	*
Mammoth	DLF-Jenks		*	*	*	
Megabyte	Turf-Seed Inc.		*			
Niva	DLF-Jenks					
Potomac, certified	public					
Potomac, uncertified	public					
Prairie	Turner Seed Company			*		*
Quartet (PRG)	Ampac Seed Company					
Takena	Smith Seed Services	*	*	*	*	*
Tekapo	Ampac Seed Company					
Udder	Improved Forages Inc.					
Experimental Varieties						
BAR 98-4	Barenbrug USA	*				
'CAS-EG33'	Cascade International Seed			*	*	
CIS OG-9	Cebeco International Seeds, Inc			*		
GA-OG1	Pennington Seed, Inc.					*
OG 9202	Forage Genetics International		*			
OG 9204	Allied Seed, L.L.C.	*	*			
OG 9501	FFR Cooperative		*			
OG 9503	Forage Genetics International		*			
OG 9701	Allied Seed	*	*			
OG9705g	FFR Cooperative		*			
¹ Establishment year. ² Harvest year. * Not significantly different from the highest yielding variety in the test. Shaded boxes indicate that the variety was not in the test. Open boxes indicate the variety was in the test but yielded significantly less than the top-ranked variety in the test.						

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