

The 1997 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 four studies will be reported. Orchardgrass varieties were sown in Lexington (1995, 1996), Princeton (1996), and Quicksand (1996). The soils at Lexington (Maury), Princeton (Crider), and Quicksand (Pope) were well-drained silt loams. All 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 4' x 15' 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 weights were measured in the field and converted to dry matter production using long-term averages for percent dry matter of orchardgrass or actual dry matter values taken from a representative sample. Management goals for establishment, fertility, weed control, and harvest management were to limit the factors affecting yield to variety and environment.

Results and Discussion

Weather data for Quicksand, Lexington, and Princeton are presented in Table 1.

Ratings for percent stand and maturity and dry matter yields (tons/acre) are reported in Tables 2 through 5. Yields are given by cutting date and as total annual production. Varieties are listed by descending maturity rating, if taken; otherwise, they are listed by descending total yield. Experimental varieties are listed separately at the bottom of the tables and 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 random 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 6 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 6, shaded areas indicate that the variety was not in that particular test (labeled at the top of the column), while clear blocks mean 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 2-5).

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 Agricultural Extension publications related to orchardgrass management. They are available from your local 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
- ASC-16 Beef: Grass Tetany in Beef Cattle
Seed Tags: What They Reveal

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Table 1. 1997 Average temperature and rainfall at Quicksand, Lexington, and Princeton.

	Quicksand				Lexington				Princeton			
	Avg Temp		Rainfall		Avg Temp		Rainfall		Avg Temp		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
MON	37	6	1.95	-1.34	31	0	2.9	0.08	35	1	2.7	-1.06
FEB	44	11	2.15	-1.45	41	6	2.6	-0.59	44	6	3.8	-0.6
MAR	50	9	6.79	2.45	46	2	13.	8.66	52	5	13.	8.17
APR	52	-1	1.34	-2.76	49	-6	1.4	-2.48	54	-5	3.9	-0.86
MAY	59	-3	5.13	0.65	58	-6	6.1	1.67	63	-4	5.3	0.4
JUN	70	0	4.52	0.7	70	-2	6.2	2.54	74	-1	5.0	1.24
JUL	75	1	2.22	-3.03	75	-1	3.3	-1.68	79	1	1.9	-2.39
AUG	72	-1	2.98	-1.03	72	-3	3.0	-0.91	77	0	2.0	-1.95
SEP	67	1	2.42	-1.1	66	-2	1.4	-1.73	71	0	3.8	0.56
OCT	63	9	0.81	-2.1	56	-1	1.9	-0.65	68	9	0.8	-2.17

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

Table 2. Dry matter yields (tons/acre) of orchardgrass varieties sown 6 September 1995 at Lexington, Kentucky.

Variety	1996 Total	1997 Harvests			1997 Total	2-yr Total
		May 22	Jul 2	Nov 12		
Commercial Varieties - Available for Farm Use						
BRONC	2.93 *	1.16	1.95 *	0.76 *	3.87 *	6.80 *
SHILOH	2.67 *	1.51 *	1.70 *	0.77 *	3.97 *	6.65 *
TAKENA	2.66 *	1.26	1.81 *	0.78 *	3.85 *	6.51 *
PIZZA	2.08	1.31	2.01 *	0.73 *	4.05 *	6.13 *
POTOMAC	2.39	1.62 *	1.41	0.68 *	3.70 *	6.09 *
LUPRE	0.09	0.92	1.35	0.48	2.75	2.84
Experimental Varieties - Not Available for Farm Use						
OG1A	2.87 *	1.55 *	1.65 *	0.77 *	3.96 *	6.84 *
OG1	2.92 *	1.40 *	1.73 *	0.53 *	3.65 *	6.57 *
B23	2.53 *	1.19	1.80 *	0.73 *	3.72 *	6.24 *
BAR-O51	2.10	1.45 *	1.48	0.67 *	3.59 *	5.70
BAR-5USF	2.07	1.20	1.59	0.64 *	3.44 *	5.51
BAR-4871	0.32	0.52	1.39	0.73 *	2.64	2.96
MEAN	2.14	1.26	1.66	0.69	3.60	5.74
CV, %	17.63	13.95	16.97	27.95	13.06	11.26
LSD, 0.05	0.54	0.25	0.4	0.28	0.68	0.93

* Not significantly different from the highest numerical value in the column.

Table 3. Dry matter yields (tons/acre) and maturity ratings of orchardgrass varieties sown 23 August 1996 at Lexington, Kentucky.

Variety	Maturity ¹ May 14	1997 Harvests			1997 Total	
		May 20	Jul 8	Aug 21		
Commercial Varieties - Available for Farm Use						
BENCHMARK	54.75 *	2.16	3.42 *	1.08 *	0.98 *	7.65 *
OATGRASS	51.00	3.16 *	2.33 *	0.72 *	1.00 *	7.20 *
POTOMAC	53.00	2.26	2.23 *	0.95 *	0.81 *	6.24 *
PROGRESS	49.50	2.14	2.17 *	1.00 *	0.73	6.05 *
HALLMARK	54.50 *	1.86	2.16 *	1.04 *	0.90 *	5.96 *
TEKAPO	48.50	0.77	3.59 *	0.97 *	0.55	5.88 *
PROFILE	52.00	2.05	2.11 *	0.89 *	0.59	5.65
HAYMATE	49.25	1.82	2.33 *	0.89 *	0.53	5.57
Experimental Varieties - Not Available for Farm Use						
MOW TOL GR	49.50	1.62	3.29 *	0.93 *	0.69	6.54 *
OG8703	53.25	2.09	2.21 *	1.01 *	0.66	5.97 *
MOW TOL 85II	51.75	2.07	2.20 *	0.95 *	0.73	5.95 *
OG9201	51.75	1.87	2.12 *	0.95 *	0.78 *	5.72 *
KYOG2	51.50	1.85	2.01 *	0.95 *	0.64	5.45
9007238	55.00 *	1.82	1.93 *	0.87 *	0.57	5.19
MEAN	51.8	1.97	2.44	0.94	0.73	6.07
CV, %	1.92	9.86	49.22	16.85	25.22	22.8
LSD, 0.05	1.43	0.28	1.72	0.23	0.26	1.98

* Not significantly different from the highest numerical value in the column.

¹ Maturity rating score: 37=flag leaf visible 45=boot swollen 50=beginning of inflorescence 58= complete emergence of inflorescence 62=beginning of pollen shedding

Table 4. Dry matter yields (tons/acre) and ratings for and percent stand of orchardgrass varieties sown 20 August 1996 at Princeton, Kentucky.

Variety	Stand ¹ Mar 27	1997 Harvests					1997 Total
		May 13	Jun 24	Aug 7	Sep 18	Nov 25	
Commercial Varieties - Available for Farm Use							
COMET	7.00	1.85	1.42	0.85 *	0.41 *	0.47	4.99 *
POTOMAC	7.00	1.74	1.52 *	0.77 *	0.39 *	0.53	4.94 *
CONDOR	6.75	1.78	1.47 *	0.76 *	0.43 *	0.50	4.93 *
TAKENA	6.25	1.79	1.61 *	0.70	0.29	0.43	4.82 *
OATGRASS	8.25 *	2.57 *	1.59 *	0.18	0.24	0.20	4.78 *
HAYMATE	6.75	1.91	1.63 *	0.61	0.27	0.35	4.77 *
BENCHMARK	6.75	1.76	1.44	0.67	0.36	0.54	4.76 *
CROWN	6.75	1.83	1.45	0.71	0.28	0.37	4.65 *
BRONC	6.00	1.51	1.56 *	0.75 *	0.33	0.45	4.60 *
MAMMOTH	7.50	1.71	1.47 *	0.62	0.26	0.46	4.53
RENEGADE	6.50	1.74	1.34	0.61	0.33	0.43	4.45
HALLMARK	7.00	1.60	1.45	0.56	0.28	0.53	4.43
BENGAL	6.50	1.69	1.41	0.58	0.27	0.41	4.36
HAWKEYE	5.75	1.60	1.43	0.69	0.32	0.29	4.33
STAMPEDE	5.75	1.57	1.45	0.63	0.30	0.36	4.32
BARIDANA	5.75	1.47	1.43	0.45	0.22	0.31	3.88
ARCTIC	5.25	1.09	1.49 *	0.57	0.29	0.18	3.63
Experimental Varieties - Not Available for Farm Use							
KYDG9303	8.00	1.82	1.58 *	0.96 *	0.41 *	0.46	5.23 *
KYOG2	8.00	1.83	1.48 *	0.79 *	0.35	0.45	4.89 *
OG8703	7.00	1.89	1.56 *	0.66	0.33	0.40	4.84 *
OG9001	7.00	1.72	1.39	0.76 *	0.41 *	0.51	4.79 *
9007238	8.50 *	1.84	1.29	0.74	0.36	0.54	4.78 *
KYDG9302	8.00 *	1.75	1.54 *	0.50	0.33	0.50	4.62 *
OG-1A	6.00	1.60	1.61 *	0.64	0.35	0.38	4.59 *
WVPB-OG-89-40	6.00	1.63	1.70 *	0.55	0.32	0.37	4.57 *
LG9	4.00	1.15	1.31	0.88 *	0.47 *	0.75 *	4.56
WX30466	5.00	1.23	1.34	0.68	0.32	0.28	3.85
WXO-422-5	6.00	1.36	1.32	0.50	0.26	0.39	3.84
MEAN	6.55	1.68	1.47	0.66	0.33	0.42	4.56
CV %	9.67	15.66	11.50	23.65	22.90	25.74	10.28
LSD, 0.05	0.89	0.37	0.24	0.22	0.11	0.15	0.66

¹ For stand rating: 0= no stand 9= densest stand.

* Not significantly different from the highest numerical value in the column.

Table 5. Dry matter yields (tons/acre) and maturity ratings of orchardgrass varieties sown 5 September 1996 at Quicksand, Kentucky.

Variety	Maturity ¹ May 23	1997 Harvests				1997 Total
		May 24	Jul 10	Aug 22	Dec 2	
Commercial Varieties - Available for Farm Use						
TAKENA	50.00	2.21	2.09 *	0.46	1.15 *	5.91 *
UDDER	50.00	2.21	2.02 *	0.58 *	1.08 *	5.90 *
HAYMATE	49.00	1.76	2.14 *	0.64 *	1.28 *	5.81 *
POTOMAC	57.00	2.15	2.00 *	0.63 *	1.01 *	5.78 *
STAMPEDE	51.50	1.86	2.05 *	0.62 *	1.20 *	5.73 *
BENCHMARK	58.75 *	1.92	2.04 *	0.50	1.11 *	5.57
BARIDANA	50.75	1.94	2.01 *	0.47	1.11 *	5.52
HALLMARK	58.25 *	1.87	1.92 *	0.62 *	1.07 *	5.48
Experimental Varieties - Not Available for Farm Use						
TALL OATGRASS	56.75	2.75 *	1.93 *	0.31	1.28 *	6.28 *
OG9001	58.50 *	2.17	2.13 *	0.59 *	1.23 *	6.12 *
KYDG9303	51.00	1.98	2.14 *	0.67 *	1.27 *	6.06 *
KYOG2	53.25	1.98	2.22 *	0.63 *	1.19 *	6.02 *
9007238	60.00 *	1.94	2.19 *	0.62 *	1.15 *	5.89 *
BV13	52.25	2.07	1.98 *	0.62 *	1.20 *	5.87 *
KYDG9302	54.75	2.09	2.03 *	0.62 *	1.09 *	5.83 *
MEAN	54.12	2.06	2.06	0.57	1.16	5.85
CV, %	2.31	12.24	10.02	16.71	18.67	7.13
LSD, 0.05	1.78	0.36	0.29	0.14	0.31	0.6

¹ Maturity rating scale: 37= flag leaf visible 45= boot swollen 50= beginning of inflorescence emergence 58= complete emergence of inflorescence 62= beginning of pollen shedding

* Not significantly different from the highest numerical value in the column.

Table 6. Performance of orchardgrass varieties across years and locations.		Quicksand	Lexington			Princeton
		1996 ¹	1995		1996	1996
Variety	Proprietor/KY Distributor	1997 ²	96	97	97	1997
COMMERCIAL VARIETIES - AVAILABLE FOR FARM USE						
Arctic	Willamette Seed Company					
Benchmark	FFR/Southern States				*	*
Bronc	ABT, Grasslands West/Scott Seed		*	*		*
Comet	Northrup King					*
Condor	Hansford Seed Co.					*
Crown	Scott Seed Co./Sphar Seed Co.					*
Hallmark	James VanLeeuwen				*	
Hawkeye	Pure Seed Testing					
Haymate	FFR/Southern States	*				*
Lupre	Barenbrug USA					
Pizza	Advanta Seeds West			*		
Potomac	USDA/Public	*	*	*		*
Pro-gress	J.W. Jenks Seed/Scott Seed					
Renegade	Grassland West					
Shiloh	Green Seed		*	*		
Stampede	J&M Seed	*				
Takena	Smith Seed	*		*		*
Tekapo	Modern Forage Systems/Oldfields Seed					
Udder	D.L.F. Trifolium	*				
EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE						
9007238	Soil Conservation Service	*				*
AV-61	Western Production Inc.					
B-23	Willamette Valley Plant Breeders			*		
BAR-4871	Barenbrug Research					
BAR-5USF	Barenbrug Research			*		
BAR H DGL 051	Barenbrug Research			*		
Baridana	Barenbrug Research					
Bengal	Cascade International Seed					
BV13	Cascade International Seed	*				
KYOG9302	KY Agric. Exp. Sta/Experimental	*				*
KYOG9303	KY Agric. Exp. Sta/Experimental	*				*
KYOG II	KY Agric. Exp. Sta/Experimental	*				*
LG9	Cascade International Seed					
Mammoth	Cascade International Seed					
Mowtol8					*	
Mowtol8gr					*	
OG8703	Fine Lawn Research/Geo.W. Hill				*	*
OG9001	J&M Seed	*				*
OG9201	J&M Seed				*	
OG-1	Pure Seed Testing		*	*		
OG1A	Pure Seed Testing		*	*		*
SC89-19	The Seed Connection					
WVPB-OG-89-40	Production Service International, Inc.					*
WX30466	Willamette Seed Company					
WXO-422-5	Willamette Seed Company					

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.

