

The 1998 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 are reported. Orchardgrass varieties were sown in Lexington (1996, 1997), Princeton (1996), and Quicksand (1996). The soils at Lexington (Maury), Princeton (Crider), and Quicksand (Pope) 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 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 weight samples were taken at each harvest to calculate percent dry matter production. 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. In general, the 1998 growing season could be characterized as being unseasonably wet for the first half and hot and dry for the latter half.

Ratings for 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 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

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Table 1. Temperature and Rainfall at Quicksand, Lexington, and Princeton in 1998.

MON	Quicksand				Lexington				Princeton			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	43	+12	2.98	-0.31	41	+10	3.96	+1.10	44	+10	2.95	-0.85
FEB	44	+11	3.06	-0.54	41	+6	2.54	-0.67	45	+7	3.43	-1.00
MAR	47	+6	2.30	-2.04	46	+2	3.40	-1.00	50	+3	2.29	-2.65
APR	56	+3	8.28	+4.18	54	-1	6.20	+2.32	59	-0	6.10	+1.30
MAY	67	+5	6.91	+2.43	67	+3	6.14	+1.67	72	+5	3.81	-1.15
JUN	73	+3	10.05	+6.23	73	+1	10.81	+7.15	77	+2	12.62	+8.77
JUL	75	+1	3.77	-1.48	75	-1	7.98	+2.98	80	+2	6.49	+2.20
AUG	74	+1	2.15	-1.86	76	+1	0.29	-3.64	78	+1	1.40	-2.61
SEP	72	+6	2.57	-0.95	74	+6	0.61	-2.59	77	+6	0.26	-3.07
OCT	59	+5	1.96	-0.95	58	+1	2.41	-0.16	63	+4	3.20	+0.15

¹Dep is departure from the long-term average for that location.

Table 2. Dry Matter Yields (Tons/acre) of Orchardgrass Varieties Sown 23 August 1996 at Lexington, Kentucky.							
Variety	1997 Total	1998 Harvests				1998 Total	2-yr Total
		May 21	Jul 10	Aug 17	Oct 29		
Commercial Varieties - Available for Farm Use							
Benchmark	7.65 *	2.6	1.6 *	0.3 *	0.26 *	4.75 *	12.40 *
Potomac	6.24 *	2.49	1.46 *	0.30 *	0.21 *	4.46	10.71 *
Hallmark	5.96 *	2.48	1.47 *	0.32 *	0.24 *	4.51	10.46 *
Haymate	5.57	2.75 *	1.51 *	0.25	0.22 *	4.73 *	10.30 *
Progress	6.05 *	2.03	1.46 *	0.33 *	0.25 *	4.08	10.13
Tekapo, Fndn	5.88 *	2.22	1.32	0.30 *	0.20 *	4.03	9.91
Profile	5.65	2.26	1.34 *	0.26 *	0.21 *	4.08	9.73
Experimental Varieties - Not Available for Farm Use							
Tall Oatgrass	7.20 *	2.42	1.73 *	0.22	0.29 *	4.66 *	11.87 *
OG9201	5.72 *	3.15 *	1.44 *	0.34 *	0.29 *	5.23 *	10.95 *
Mow Tol Gray	6.54 *	2.36	1.47 *	0.27 *	0.19 *	4.30	10.83 *
OG8703	5.97 *	2.79 *	1.50 *	0.30 *	0.22 *	4.81 *	10.77 *
Mow Tol 85II	5.95 *	2.71 *	1.44 *	0.31 *	0.25 *	4.71 *	10.67 *
KYOG2	5.45	2.97 *	1.67 *	0.34 *	0.18	5.15 *	10.61 *
9007238	5.19	2.36	1.34	0.36 *	0.26 *	4.32	9.51
Mean	6.07	2.54	1.48	0.30	0.24	4.56	10.63
CV, %	22.80	13.04	19.04	23.64	32.01	9.69	14.76
LSD, 0.05	1.98	0.47	0.40	0.10	0.11	0.63	2.24

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

Table 3. Dry Matter Yields (Tons/acre) of Orchardgrass Varieties Sown 20 August 1996 at Princeton, Kentucky.

Variety	Maturity ¹ April 28, 1998	1997 Total	1998 Harvests		1998 Total	2-yr Total
			May 8	Jun 25		
Commercial Varieties - Available for Farm Use						
Comet	42.00	4.99 *	1.88 *	0.89	2.77 *	7.76 *
Bronc	39.25	4.60 *	2.13 *	1.01 *	3.14 *	7.74 *
Haymate	36.75	4.77 *	2.05 *	0.91	2.96 *	7.73 *
Takena	36.25	4.82 *	1.98 *	0.88	2.87 *	7.69 *
Benchmark	48.75*	4.76 *	2.03 *	0.77	2.81 *	7.56 *
Crown	42.75	4.65 *	2.03 *	0.72	2.75 *	7.40 *
Potomac	41.50	4.94 *	1.73	0.71	2.44	7.38 *
Condor	36.75	4.93 *	1.68	0.73	2.41	7.33 *
Mammoth	42.25	4.53	2.01 *	0.70	2.70	7.24 *
Renegade	46.25*	4.45	1.82 *	0.70	2.52	6.97 *
Stampede	38.75	4.32	1.84 *	0.76	2.60	6.92
Hallmark	48.50*	4.43	1.80 *	0.68	2.48	6.91
Hawkeye	37.75	4.33	1.74	0.82	2.56	6.89
Arctic	33.00	3.63	1.94 *	0.91	2.86 *	6.48
Baridana	39.00	3.88	1.88 *	0.66	2.54	6.42
Bengal	37.25	4.36	1.41	0.52	1.93	6.29
Experimental Varieties - Not Available for Farm Use						
Tall Oatgrass	49.50*	4.78 *	1.88 *	1.18 *	3.07 *	7.84 *
KYOG2	40.75	4.89 *	1.76	0.98 *	2.74 *	7.64 *
KYOG9303	36.75	5.23 *	1.59	0.73	2.32	7.55 *
OG9001	46.50*	4.79 *	2.02 *	0.66	2.69	7.48 *
OG-1A	41.50	4.59 *	2.01 *	0.85	2.86 *	7.45 *
OG8703	45.50	4.84 *	1.87 *	0.72	2.59	7.43 *
9007238	48.75*	4.78 *	1.90 *	0.74	2.64	7.42 *
WVPB-OG-89-40	36.50	4.57 *	1.83 *	0.71	2.53	7.10 *
KYOG9302	42.25	4.62 *	1.90 *	0.58	2.48	7.10 *
LG9	34.75	4.56	1.81 *	0.64	2.45	7.01 *
WXO-422-5	35.50	3.84	1.90 *	0.78	2.68	6.52
WX30466	33.75	3.85	1.69	0.72	2.41	6.26
Mean	40.77	4.56	1.86	0.77	2.64	7.20
CV, %	6.86	10.28	13.11	18.85	11.55	8.85
LSD, 0.05	3.93	0.70	0.34	0.21	0.43	0.90
* Not significantly different from the highest numerical value in the column based on the 0.05 LSD.						
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						

Table 4. Dry Matter Yields (Tons/acre) of Orchardgrass Varieties Sown 5 September 1996 at Quicksand, Kentucky.

Variety	1997 Total	1998 Harvests			1998 Total	2-yr Total
		Jun 2	Jul 23	Nov 5		
Commercial Varieties - Available for Farm Use						
Takena	5.91 *	2.63 *	0.52	1.33 *	4.48	10.39
Haymate	5.81 *	2.70 *	0.57	1.29 *	4.56	10.37
Udder	5.90 *	2.71 *	0.55	1.18 *	4.44	10.34
Stampede	5.73 *	2.42	0.63	1.29 *	4.34	10.07
Baridana	5.52	2.29	0.63	1.39 *	4.30	9.83
Benchmark	5.57	2.20	0.60	1.39 *	4.19	9.76
Potomac	5.78 *	2.00	0.50	1.36 *	3.86	9.64
Hallmark	5.48	2.06	0.69	1.20 *	3.95	9.42
Experimental Varieties - Not Available for Farm Use						
Tall Oatgrass	6.28 *	2.76 *	1.06 *	1.35 *	5.17 *	11.44 *
BV13	5.87 *	2.63 *	0.72	1.22 *	4.57	10.44
KYOG9303	6.06 *	2.28	0.65	1.37 *	4.30	10.36
OG9001	6.12 *	2.05	0.63	1.29 *	3.97	10.09
KYOG2	6.02 *	2.23	0.50	1.31 *	4.04	10.06
KYOG9302	5.83 *	2.27	0.57	1.08	3.92	9.75
9007238	5.89 *	1.89	0.56	1.32 *	3.76	9.65
Mean	5.85	2.34	0.63	1.29	4.26	10.11
CV, %	7.13	7.79	23.02	15.43	8.19	5.63
LSD, 0.05	0.60	0.26	0.21	0.28	0.50	0.81
* Not significantly different from the highest numerical value in the column based on the 0.05 LSD.						

Table 5. Dry Matter Yields (Tons/acre) of Orchardgrass Varieties Sown 12 September 1997 at Lexington, Kentucky.					
Variety	1998 Harvests				1998 Total
	May 6	Jun 19	Jul 22	Oct 29	
Commercial Varieties - Available for Farm Use					
Udder	1.81 *	1.22	0.89	0.60	4.53 *
Warrior	1.40	1.43 *	0.87	0.79 *	4.48 *
Benchmark	1.38	1.15	1.17 *	0.65	4.36 *
Summergreen	1.33	1.29 *	0.89	0.75 *	4.27 *
Stampede	1.40	1.30 *	0.89	0.66	4.25 *
Crown	1.38	1.18	1.02 *	0.60	4.18 *
Takena	1.20	1.27 *	0.95	0.66	4.08
Condor	1.21	1.19	0.98 *	0.63	4.00
Haymate	1.13	1.37 *	0.88	0.61	3.99
Ambrosia	1.22	1.21	0.96	0.49	3.88
Experimental Varieties - Not Available for Farm Use					
OFI93M	1.54	1.38 *	1.00 *	0.71 *	4.63*
OFI93E	1.38	1.25	1.05 *	0.68	4.36 *
OG8703	1.43	1.22	0.91	0.70 *	4.26 *
WVPB89-40	1.33	1.35 *	0.86	0.62	4.16 *
KYOG2	1.21	1.23	1.03 *	0.66	4.13
OG9001	1.19	1.29 *	0.92	0.66	4.07
AV61	1.37	1.10	0.99 *	0.56	4.02
WXC-402	1.21	1.11	0.82	0.56	3.70
OFI93L	1.00	1.13	0.77	0.49	3.39
Mean	1.33	1.24	0.94	0.63	4.15
CV, %	12.05	9.90	15.93	11.62	8.56
LSD, 0.05	0.22	0.17	0.21	0.10	0.50
* Not significantly different from the highest numerical value in the column based on the 0.05 LSD.					

Table 6. Performance of orchardgrass varieties across years and locations.		Quicksand		Lexington			Princeton	
		1996 ¹		1996	1997	1996	1996	
Variety	Proprietor/KY Distributor	97 ²	98	97	98	98	97	98
Commercial Varieties - Available for Farm Use								
Ambrosia	Pennington Seeds							
Arctic	Willamette Seed Company							*
Baridana	Barenbrug Research							
Benchmark	FFR/Southern States			*	*	*	*	*
Bengal	Cascade International Seed							
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	*			*		*	*
Mammoth	Cascade International Seed							
Potomac	USDA/Public	*		*			*	
Profile	J. W. Jenks Seed/Scott Seed							
Progress	J. W. Jenks Seed/Scott Seed			*				
Renegade	Grassland West							
Stampede	J&M Seed	*				*		
Summergreen						*		
Takena	Smith Seed	*					*	*
Tekapo, Fndn	Modern Forage Systems/Oldfields Seed			*				
Udder	D.L.F. Trifolium	*				*		
Warrior	Olsen-Fennel Seeds Inc.					*		
Experimental Varieties - Not Available for Farm Use								
9007238	NRCS/USDA	*					*	
AV-61	Western Production Inc.							
BV13	Cascade International Seed	*						
KYOG9302	KY Agric. Exp. Sta/Experimental	*					*	
KYOG9303	KY Agric. Exp. Sta/Experimental	*					*	
KYOG2	KY Agric. Exp. Sta/Experimental	*			*		*	*
LG9	Cascade International Seed							
Mow Tol 85 II	International Seeds, Inc.			*	*			
Mow Tol Gray	International Seeds, Inc.			*				
OFI93E	Olsen-Fennel					*		
OFI93L	Olsen-Fennel							
OFI93M	Olsen-Fennel					*		
OG8703	Fine Lawn Research/Geo.W. Hill			*	*	*	*	
OG9001	J&M Seed	*					*	
OG9201	J&M Seed			*	*			
OG1A	Pure Seed Testing						*	*
Tall oatgrass	NRCS/USDA	*	*	*			*	*
WVPB-OG-89-40	Production Service International, Inc.					*	*	
WX30466	Willamette Seed Company							
WXC-402	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.



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