

2002 Orchardgrass Report

R. Spitaleri, J.C. Henning, T.D. Phillips, G.D. Lacefield, and D.C. Ditsch

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 Princeton (2000), Lexington (2001), and Quicksand (2001). The soils at Princeton (Crider), Lexington (Maury), and Quicksand (Nolin) 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 ft x 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 Princeton, Lexington, and Quicksand are presented in Table 1. After a wet spring, the 2002 summer was the fourth hottest and driest on record. This resulted in lower than normal yields.

Table 1. Temperature and rainfall at Princeton, Lexington, and Quicksand, Kentucky, in 2002.

	Princeton				Lexington				Quicksand			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	41	+7	3.79	-0.01	38	+7	2.12	-0.74	41	+10	3.84	+55
FEB	42	+4	2.40	-2.03	38	+3	1.28	-1.93	39	+6	1.27	-2.33
MAR	49	+2	8.18	+3.24	45	+1	7.93	+3.53	47	+6	7.81	+3.47
APR	63	+4	5.72	+0.92	58	+3	4.19	+0.31	60	+7	3.84	-.26
MAY	66	-1	9.04	+4.08	61	-3	4.36	-0.11	62	0	5.12	+64
JUN	77	+2	1.88	-1.97	74	+2	2.45	-1.21	74	+4	4.61	+79
JUL	81	+3	2.13	-2.16	78	+2	1.10	-3.90	77	+3	5.14	-.11
AUG	80	+3	2.06	-1.95	77	+2	0.95	-2.98	76	+3	1.83	-2.18
SEP	74	+3	5.90	+2.57	72	+4	4.90	+1.70	71	+5	6.26	+2.74
OCT	59	0	6.12	+3.07	55	-2	5.61	+3.04	58	+4	6.47	+3.56
NOV	47	0	2.49	-2.14	43	-2	3.76	+0.37	45	+3	3.81	-.07
AVG	61.7	+2.5	4.5	+3.62	58.1	+1.6	3.5	-0.2	59.1	+4.6	4.6	+0.6

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

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 high-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 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

Authors

- R. Spitaleri, Research Specialist, Forages, UK Department of Agronomy
- J.C. Henning, Extension Professor, Forages, UK Department of Agronomy
- T.D. Phillips, Associate Professor, Tall Fescue Breeding, UK Department of Agronomy
- G.D. Lacefield, Extension Professor, Forages, UK Department of Agronomy
- D.C. Ditsch, Extension Associate Professor, Feed Production, UK Department of Agronomy

Table 2. Dry matter yield (tons/acre) of orchardgrass and prairie brome (*Bromus wildenowii*) varieties sown September 21, 2000, at Princeton, Kentucky.

Variety	Total 2001	Maturity ¹ May 30, 2002	2002 Harvests			Total 2002	2-yr Yield
			May 30	Jul 8	Oct 22		
Commercial Varieties — Available for Farm Use							
Bronc	5.01	65	2.62	0.70	0.50	3.81	8.82*
Boone	4.41	67	2.92	0.65	0.50	4.07	8.48*
Udder	4.52	65	2.74	0.64	0.45	3.83	8.35*
Haymate	4.59	66	2.64	0.60	0.34	3.59	8.18*
Benchmark	4.41	66	2.53	0.50	0.51	3.54	7.95
Prairie	3.90	67	2.58	0.74	0.53	3.85	7.74
Renegade	4.01	64	2.75	0.50	0.46	3.70	7.72
Experimental Varieties — Not Available for Farm Use							
K5633d (prairie brome)	4.87	74	3.06	0.71	0.32	4.09	8.95*
K5632m (prairie brome)	4.84	71	2.74	0.72	0.34	3.79	8.63*
KYO7G23-335	4.28	66	2.80	0.59	0.56	3.94	8.22*
OG9705g	4.30	68	2.72	0.46	0.50	3.68	7.98
CASMG24	3.84	65	2.47	0.54	0.43	3.45	7.29
CASEG23	3.55	64	2.63	0.54	0.42	3.60	7.15
K5568k	3.58	66	2.08	0.48	0.38	2.94	6.52
Mean	4.29	67	2.66	0.60	0.45	3.71	8.00
CV, %	14.92	3.43	8.93	17.16	20.39	7.58	7.77
LSD, 0.05	0.92	3.27	0.34	0.15	0.13	0.41	0.89

* Not significantly different from the highest 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, 58 = complete emergence of inflorescence, 62 = beginning of pollen shedding.

Table 3. Dry matter yield (tons/acre) of orchardgrass varieties sown September 7, 2001, at Lexington, Kentucky.

Variety	Vigor ¹ Nov 2, 2001	Maturity ² May 5, 2002	2002 Harvests				Total 2002
			May 5	Jun 5	Jul 18	Nov 8	
Commercial Varieties — Available for Farm Use							
CAS-EG33	4	46	2.22	2.55	0.90	1.47	7.14*
Takena	5	42	2.20	2.30	1.00	1.30	6.78*
Athos	4	41	1.90	2.30	0.90	1.60	6.68*
Hallmark	5	49	2.20	2.10	0.90	1.50	6.66*
Prairie	5	46	2.10	2.10	0.90	1.50	6.55
Albert	4	44	2.00	2.20	1.10	1.20	6.54
Mammoth	5	53	2.10	2.20	0.80	1.30	6.51
Amba	4	46	2.00	2.50	0.90	1.10	6.41
Megabite	3	45	2.00	2.10	0.90	1.40	6.35
Eastwood	3	33	0.90	1.70	0.70	1.60	4.85
Experimental Varieties — Not Available for Farm Use							
OG 9204	4	43	2.30	2.40	0.90	1.40	6.92*
BAR 98-4	3	42	2.20	2.20	1.00	1.30	6.60*
OG 9701	4	51	2.10	2.20	0.90	1.40	6.58*
OG 9501	5	49	2.20	1.90	0.90	1.40	6.42
OG 9503	4	45	1.90	2.20	1.00	1.30	6.40
OG 9202	4	51	2.10	2.10	0.80	1.30	6.35
OG 9705G	2	53	2.10	2.00	0.90	1.30	6.32
CIS OG-9	3	36	1.80	2.20	1.00	1.30	6.27
Mean	3.9	45	2.01	2.17	0.91	1.37	6.46
CV, %	16.14	5.23	11.00	10.74	16.34	10.26	6.42
LSD, 0.05	0.88	3.35	0.31	0.33	0.21	0.20	0.59

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

¹ scale of 1 to 5 with 5 being the most vigorous.

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

Table 4. Dry matter yield (tons/acre) of orchardgrass and perennial ryegrass varieties sown September 18, 2001, at Quicksand, Kentucky.

Variety	Maturity ¹ May 16, 2002	2002 Harvests				Total 2002
		May 16	Jul 12	Aug 6	Nov 14	
Commercial Varieties — Available for Farm Use						
Crown Royale	31	1.10	1.90	0.55	1.27	4.82*
CAS-EG33	31	1.06	1.84	0.51	1.40	4.80*
Takena	29	0.91	2.00	0.56	1.20	4.67*
Mammoth	34	1.18	1.62	0.55	1.25	4.60*
Prairie	32	1.02	1.86	0.49	1.15	4.52*
Athos	30	0.93	1.76	0.45	1.33	4.46*
Hallmark	32	1.02	1.51	0.52	1.34	4.40*
Haymate	32	1.06	1.49	0.51	1.21	4.27*
Albert	32	0.89	1.54	0.51	1.28	4.21*
Tekapo	27	0.56	1.69	0.58	1.26	4.09
Eastwood	28	0.43	1.54	0.45	1.49	3.91
Quartet (PRG)	26	1.53	1.33	0.38	0.67	3.91
Amba	29	0.74	1.36	0.41	0.94	3.45
Experimental Varieties — Not Available for Farm Use						
CIS OG-9	31	0.80	1.86	0.51	1.12	4.30*
Mean	30	0.95	1.67	0.50	1.21	4.32
CV, %	7.04	16.84	17.68	15.14	13.78	10.29
LSD, 0.05	3.04	0.23	0.42	0.11	0.24	0.64

* Not significantly different from the highest 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, 58 = complete emergence of inflorescence, 62 = beginning of pollen shedding.

Table 5. Performance of orchardgrass, prairie brome, and perennial ryegrass (PRG) varieties across years and locations.

Variety	Proprietor/KY Distributor	Princeton		Lexington	Quicksand
		2000 ¹		2001	2001
		01 ²	02	02	02
Commercial Varieties — Available for Farm Use					
Albert	University of Wisconsin				*
Amba	DLF-Jenks				
Athos	DLF-Jenks			*	*
Benchmark	FFR/Southern States	*			
Boone	University of Kentucky/Public Variety	*	*		
Bronc	Grassland West Company	*	*		
CAS-EG33	Cascade International Seed			*	*
Crown Royale	Donley Seed Co.				*
Eastwood	Ampac Seed Company				
Hallmark	James VanLeeuwen			*	*
Haymate	FFR/Southern States	*	*		*
Mammoth	DLF-Jenks				*
Megabyte	Turf-Seed Inc.				
Prairie	Turner Seed Company				*
Quartet (PRG)	Ampac Seed Company				
Renegade	Grassland West Company				
Takena	Smith Seed Services			*	*
Tekapo	Ampac Seed Company				
Udder	Improved Forages	*	*		
Experimental Varieties — Not Available for Farm Use					
BAR 98-4	Barenbrug			*	
CASEG23	Cascade International Seed				
CASMG24	Cascade International Seed				
CIS OG-9	Cebeco International Seeds, Inc				*
K5568k	Ampac Seeds				
K5632m (prairie brome)	Ampac Seeds	*	*		
K5633d (prairie brome)	Ampac Seeds	*	*		
KYO7G23-335	KY Agric. Exp. Sta/Experimental	*	*		
OG 9202	Forage Genetics International				
OG 9204	Allied Seed, L.L.C.			*	
OG 9501	FFR Cooperative				
OG 9503	Forage Genetics International				
OG 9701	FFR Cooperative			*	
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.

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.

