



The 1999 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 in Lexington (1996, 1997) and Princeton (1998). The soils at Lexington (Maury) and Princeton (Cridler) are well-drained silt loams and are well-suited to orchardgrass production. Seedlings were made at the rate of 20 lb/A into a pre-

pared 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 Lexington and Princeton are presented in Table 1. 1999 was a drought year with above-normal temperatures. Plant growth was significantly affected.

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 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 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 2-4).

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 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

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 1. Temperature and rainfall at Lexington and Princeton in 1999.

MON	Lexington				Princeton			
	Temp		Rainfall		Temp		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	36	+5	5.64	+2.78	40	+6	8.82	+5.02
FEB	40	+5	2.32	-0.89	46	+8	2.22	-2.21
MAR	40	-4	3.27	-1.13	46	-1	4.07	-0.87
APR	56	+1	1.87	-2.01	63	+4	5.85	+1.05
MAY	65	+1	1.35	-3.12	68	+1	3.34	-1.62
JUN	74	+2	3.89	+0.23	76	+1	4.52	+0.67
JUL	80	+4	1.00	-4.00	82	+4	4.61	+0.32
AUG	75	0	1.31	-2.62	79	+2	1.00	-3.01
SEP	69	+1	1.03	-2.17	73	+2	0.72	-2.61
OCT	57	0	1.91	-0.66	62	+3	3.45	+0.40
NOV	51	+6	1.70	-1.69	57	+10	3.22	-1.41

Dep 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	Maturity ¹ May 6, 1999	1997 Total	1998 Total	1999 Harvests		1999 Total	3-yr Total
				May 10	Jul 9		
Commercial varieties - available for farm use							
Benchmark	51.63 *	7.65 *	4.75 *	1.75 *	0.54	2.29 *	14.69 *
Potomac	50.13	6.24 *	4.46	1.57 *	0.49	2.06	12.77 *
Hallmark	51.38 *	5.96 *	4.51	1.47	0.55 *	2.03	12.49 *
Haymate	45.38	5.57	4.73 *	1.39	0.49	1.88	12.18
Progress	47.50	6.05 *	4.08	1.32	0.61 *	1.93	12.06
Profile	49.13	5.65 *	4.08	1.43	0.47	1.91	11.63
Tekapo	43.88	5.88 *	4.03	1.23	0.46	1.69	11.60
Experimental varieties - not available for farm use							
OG9201	48.88	5.72 *	5.23 *	1.58 *	0.68 *	2.27 *	13.22 *
OG8703	50.50 *	5.97 *	4.81 *	1.72 *	0.60 *	2.31 *	13.09 *
KYOG2	49.75	5.45	5.15 *	1.75 *	0.56 *	2.30 *	12.91 *
Mow Tol 85 II	48.63	5.95 *	4.71	1.52	0.55 *	2.07 *	12.74 *
Mow Tol Gray	46.63	6.54 *	4.30	1.34	0.49	1.82	12.66 *
9007238	51.75 *	5.19	4.32	1.68 *	0.48	2.15 *	11.66
Mean	48.86	5.99	4.55	1.52	0.54	2.06	12.59
CV,%	2.10	23.73	9.86	10.40	19.02	8.33	13.17
LSD, 0.05	1.47	2.04	0.64	0.23	0.15	0.25	2.38
* 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 3. Dry matter yields (tons/acre) of orchardgrass varieties sown 11 September 1997 at Lexington, Kentucky.							
Variety	Maturity ¹ May 5, 1999	1998 Total	1999 Harvests			1999 Total	2-yr Total
			May 7	Jul 2	Nov 18		
Commercial varieties - available for farm use							
Udder	46.88	4.53 *	1.67 *	0.36	0.18 *	2.22 *	6.75 *
Warrior	44.50	4.48 *	1.49 *	0.53 *	0.25 *	2.27 *	6.75 *
Summer Green	49.00	4.27 *	1.62 *	0.49 *	0.28 *	2.39 *	6.66 *
Stampede	49.50	4.25 *	1.74 *	0.48 *	0.15	2.38 *	6.64 *
Benchmark	51.75 *	4.36 *	1.59 *	0.39	0.20 *	2.18 *	6.54 *
Crown	50.50 *	4.18 *	1.65 *	0.35	0.21 *	2.20 *	6.38 *
Takena	45.13	4.08	1.37	0.46 *	0.26 *	2.08	6.16
Haymate	44.13	3.99	1.49 *	0.52 *	0.15	2.16 *	6.15
Condor	46.13	4.00	1.51 *	0.36	0.09	1.96	5.97
Ambrosia	39.50	3.88	1.15	0.36	0.09	1.59	5.47
Experimental varieties - not available for farm use							
OFI93M	46.13	4.63 *	1.55 *	0.54 *	0.17 *	2.26 *	6.89 *
OFI93E	52.50 *	4.36 *	1.80 *	0.39	0.28 *	2.47 *	6.83 *
OG8703	50.38 *	4.26 *	1.81 *	0.39	0.21 *	2.41 *	6.67 *
WVPB89-40	44.88	4.16 *	1.64 *	0.50 *	0.15	2.29 *	6.45 *
OG9001	50.88 *	4.07	1.75 *	0.35	0.26 *	2.36 *	6.43 *
KYOG2	49.88 *	4.13	1.62 *	0.43 *	0.18	2.24 *	6.36 *
AV61	47.88	4.02	1.44	0.34	0.26 *	2.03	6.05
WXC-402	49.75 *	3.70	1.54 *	0.38	0.14	2.06	5.76
OFI93L	41.88	3.39	1.09	0.36	0.15	1.60	4.99
Mean	47.58	4.15	1.56	0.42	0.19	2.17	6.31
CV,%	4.37	8.55	14.49	19.25	46.98	13.28	8.19
LSD, 0.05	2.91	0.5	0.32	0.11	0.13	0.40	0.72
* 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 12 October 1998 at Princeton, Kentucky.						
Variety	Maturity ¹ May 20, 1999	1999 Harvests				1999 Total
		May 20	Jun 16	Jul 20	Nov 11	
Commercial varieties - available for farm use						
Shiloh	34.75 *	1.04	1.15 *	1.11 *	0.58 *	3.88 *
Crown	34.50 *	0.90	1.12 *	1.18 *	0.51 *	3.71
Hallmark 1970 ²	33.75 *	0.90	1.08 *	1.09 *	0.55 *	3.62
Hallmark 1996 ²	33.00 *	0.83	1.00 *	1.03 *	0.66 *	3.52
Boone	33.00 *	0.66	1.04 *	1.23 *	0.42	3.35
Benchmark	32.75 *	0.59	1.02 *	1.08 *	0.64 *	3.33
Haymate	33.00 *	0.66	0.85	0.96	0.24	2.71
Spanish-pink	30.50	0.29	0.70	0.86	0.23	2.08
Experimental varieties - not available for farm use						
Ampacpp2	36.75 *	2.10 *	1.02 *	0.93	0.41	4.46 *
Kyo7g23-335	33.50 *	0.81	1.07 *	1.04 *	0.50 *	3.43
Iowa-OG-6	33.00 *	0.85	1.08 *	1.16 *	0.29	3.39
Iowa-OG-1	34.00 *	0.91	1.05 *	1.11 *	0.32	3.39
KYOG 9303	26.25	0.73	1.00 *	1.17 *	0.49 *	3.39
OG 9501	34.00 *	0.85	0.85	1.04 *	0.46	3.20
OG 8703	34.25 *	0.78	1.00 *	1.01 *	0.39	3.19
Mean	33.13	0.86	1.00	1.07	0.44	3.38
CV, %	12.03	21.15	16.03	15.62	29.81	12.26
LSD, 0.05	5.68	0.26	0.23	0.24	0.19	0.59
<p>* Not significantly different from the highest value in the column based on the 0.05 LSD.</p> <p>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.</p> <p>² Seed for this test came from fields planted on dates indicated.</p>						

Table 5. Performance of orchardgrass varieties across years and locations.		Lexington					Princeton
		1996 ¹		1997		1998	
Variety	Proprietor/KY Distributor	97 ²	98	99	98	99	99
Commercial varieties - available for farm use							
Ambrosia	Pennington Seeds						
Benchmark	FFR/Southern States	*	*	*	*	*	
Boone	University of Kentucky						
Condor	Hansford Seed Co.						
Crown	Scott Seed Co./Sphar Seed Co.				*	*	
Hallmark 1996 ³	James VanLeeuwen	*					
Hallmark 1970 ³	James VanLeeuwen						
Haymate	FFR/Southern States		*			*	
Potomac	USDA/Public	*					
Profile	J. W. Jenks Seed/Scott Seed						
Progress	J. W. Jenks Seed/Scott Seed	*					
Shiloh	Green Seed Co.						*
Spanish Pink	International Seeds, Inc.						
Stampede	J&M Seed				*	*	
Summer Green					*	*	
Takena	Smith Seed						
Tekapo	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			*			
Ampacpp2	Ampac Seed Co.						*
AV-61	Western Production Inc.						
Iowa OG 1	International Seeds, Inc.						
Iowa OG 6	International Seeds, Inc.						
KYO7G23-335	KY Agric. Exp. Sta/Experimental						
KYOG9303	KY Agric. Exp. Sta/Experimental						
KYOG2	KY Agric. Exp. Sta/Experimental		*	*		*	
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	*	*	*			
OG9501	FFR Cooperative						
Tall oatgrass	NRCS/USDA						
WVPB-OG-89-40	Production Service International, Inc.				*	*	
WXC-402	Willamette Seed Company						

* 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.

¹ Establishment year
² Harvest year
³ Seed for this test came from fields planted on dates indicated.

