

Small Grains Variety Evaluation at Yuma, 1999

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Summary

Small grain varieties are evaluated each year by industry and University of Arizona personnel. The purpose of these tests is to characterize varieties in terms of yield and other attributes. Variety performance varies greatly from year to year and several site-years are necessary to adequately characterize the yield potential of a variety. The results contained in this report will be combined with results from previous years in a summary available from Arizona Cooperative Extension.

Introduction

Small grain varieties were tested as part of the on-going effort to assess variety productivity and characteristics. Barley, durum, and wheat commercial cultivars were tested. The purpose of these tests were to characterize new varieties in terms of yield potential, relative maturity, quality, and other characteristics. Small plot variety trials do not substitute for localized on-farm testing of new varieties. Varieties are known to differ in their response to specific management regimes and weather conditions. A summary of small grain variety trials conducted by the University of Arizona is available from your local Cooperative Extension office.

Procedure

Barley, durum, and wheat varieties were evaluated at the Yuma Valley by Western Plant Breeders. The seed was planted with a cone planter in seven rows spaced 7 inches apart and about 20 ft long. The seeding rate was approximately 100 pounds of seed per acre for wheat and durum varieties and 85 lbs/acre for barley varieties. The experimental design was a randomized complete block design with 4 replications and a variable number of entries depending on the crop. The soil type was a clay loam. Seed was planted on January 6, 1999. Preplant fertilizer was applied at a rate of 90 lbs N/acre and 50 lbs P₂O₅/acre. Nitrogen as NH₃ was applied at rates of 50, 50 and 40 lbs N/acre at scheduled irrigations throughout the growing season. Plots were harvested June 7, 1999. Collected data included: grain yield, grain protein, test weight, kernel weight, HVAC, plant height, lodging, and heading date. Grain was harvested with a small plot combine and yields are expressed on an "as is" moisture basis. Kernel weight and HVAC were determined from 10 g of hand picked seed. Grain protein was determined with a NIR whole grain analyzer and expressed on a 12% moisture basis. Abbreviations for the sources of varieties are: APB = Arizona Plant Breeders, UC = University of California, WPB = Western Plant Breeders, WWW = World Wide Wheat.

Discussion

Growing season weather is presented in Table 1. The average monthly maximum and minimum temperatures were above normal in January and February, near normal in March and May, and below normal in April. Precipitation was insignificant as usual throughout the growing season except for April when above-normal precipitation was recorded. Yield and plant characteristics of the varieties are presented in Table 2. Several locations and years are needed to accurately assess variety performance. Contact your local Cooperative Extension for a summary of small grain trials in Arizona. The results of this trial are most useful when combined with data from other years.

Acknowledgments

Financial support for this project was received from the Arizona Crop Improvement Association and the Arizona Grain Research and Promotion Council. Kim Shantz of Western Plant Breeders conducted this trial.

Table 1. Climatic data for the Yuma Valley for the 1999 growing season compared to the long-term average.

Climate variable	Year	Jan	Feb	Mar	Apr	May
Max Temp. (°F)	1999	72	74	77	79	92
	Avg. ‡	68	73	78	86	93
Min Temp. (°F)	1999	41	44	46	49	58
	Avg. ‡	38	41	45	51	57
Ppt. (in)	1999	0.00	0.53	0.00	1.01	0.00
	Avg. ‡	0.35	0.27	0.26	0.12	0.01

‡Averages based on data summarized by Western Regional Climate Center from 1930-1992.

Table 2. Small grain variety yield results from **Yuma Valley (WPB)**, 1999.

Entry	Source	Grain Yield ^a lbs/acre	Grain Protein ^b %	Test Weight lbs/bu	1000		Lodging %	Heading	Plant Height in
					Kernel Weight g	HVAC %			
<u>Barley</u>									
BD 11	APB	7042	---	52.6	---	---	65	---	34
Baretta	APB	8436	---	55.3	---	---	15	---	34
Mucho	APB	7681	---	54.0	---	---	3	---	29
Nebula	WPB	7304	---	56.2	---	---	8	---	35
Gustoe	WPB	8494	---	55.9	---	---	3	---	31
BA 2391	WWW	7289	---	51.9	---	---	83	---	29
Max	WWW	8930	---	55.1	---	---	13	---	32
Patti	WWW	8698	---	55.7	---	---	25	---	32
<u>Durum</u>									
D95-241	APB	7442	13.4	60.4	46.4	99	83	2-Apr	36
Ocotillo	APB	7351	15.0	63.2	49.5	100	5	5-Apr	41
Kronos	APB	7605	14.4	62.7	54.6	100	85	31-Mar	38
D95-434	APB	7042	14.5	62.9	47.4	100	85	2-Apr	38
YU895-130	WPB	8258	14.8	63.3	41.9	99	70	3-Apr	39
Kofa	WPB	6752	14.8	62.4	54.4	99	53	4-Apr	39
YU894-15	WPB	7278	14.5	63.9	58.2	100	53	4-Apr	40
Tacna	WPB	7296	15.6	63.3	50.3	100	13	30-Mar	38
YU895-89	WPB	8313	15.5	61.7	52.7	99	8	9-Apr	38
Mohawk	WPB	7187	14.0	62.1	50.3	100	73	3-Apr	37
Cortez	WPB	8331	14.1	63.2	48.8	100	18	7-Apr	39
Platinum	WWW	7986	14.0	62.1	41.8	99	73	5-Apr	37
Ria	WWW	7677	14.2	62.7	43.8	100	50	7-Apr	41
Crown	WWW	8149	14.5	60.4	47.4	100	15	6-Apr	41
Duraking	WWW	7278	13.9	62.6	43.7	99	8	7-Apr	37
Reva	WWW	7786	14.5	63.7	50.0	100	43	5-Apr	38
Deluxe	WWW	7750	14.9	62.8	48.3	100	23	5-Apr	39
Topper	WWW	8785	12.9	63.5	42.1	99	10	9-Apr	41
Utopia	WWW	7460	14.3	62.7	54.5	100	48	1-Apr	38
<u>Wheat</u>									
Yecora Rojo	UC	6498	15.1	61.8	39.8	---	0	6-Apr	36
Brooks	WPB	7187	14.9	62.3	39.8	---	43	4-Apr	39
BR5246	WWW	6353	15.0	60.5	35.8	---	33	9-Apr	38
Cavalier	WWW	6953	14.8	61.1	41.5	---	63	4-Apr	35
Rich	WWW	6933	14.7	60.9	39.5	---	58	5-Apr	36

^a Grain yield (reported on an "as is" moisture basis): LSD (5%) = 829, 695 and 695 lbs/acre and CV = 7, 7, and 7% for barley, durum and wheat, respectively.

^b Reported on a 12% moisture basis.