

Small Grains Variety Evaluation at the Maricopa Agricultural Center, 1995 (Preliminary)

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Introduction

Small grain varieties were tested at the Maricopa Agricultural Center as part of the on-going effort to assess variety productivity and characteristics. Barley, durum, and wheat experimental and commercial cultivars were tested. The purpose of the annual tests at Maricopa is to characterize new varieties in a general way in terms of yield potential, relative maturity, quality, and other characteristics. The variety trials at Maricopa 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 Maricopa Agricultural Center on Field 2, borders 19-21. The soil type was a Casa Grande sandy loam. The field was in cotton the previous summer. Preplant soil nitrate was 18 ppm NO₃-N and preplant soil phosphate was 18 ppm P. Seed was planted into dry soil on November 28 and 29, 1994, and a germination irrigation was applied on November 30. The seed was planted with a cone planter in six rows spaced 11 inches apart. The seeding rate was 20 seeds per foot of row or approximately 87 pounds of seed per acre. The plots were 6 ft. x 20 ft. The experimental design was a randomized complete block design with 6 replications and 18 barley entries, 30 durum entries, and 22 wheat entries.

The plots were irrigated on January 30, March 3, March 20, April 5, April 14. Urea ammonium nitrate solution (32-0-0) was applied in the irrigation water at a rate of 105 lbs N/A on January 30, 75 lbs N/A on March 3, and 30 lbs N/A on April 5 for a total of 205 lbs N/A. The plots were harvested with a small plot combine on the following dates: wheat on May 16, durum on May 23, and barley on May 30. The following data was collected: grain yield, plant height, lodging, heading date, anthesis date, and physiological maturity date (defined when glumes turn color). Wheat quality will be analyzed by the USDA Wheat Quality Lab in Fargo, ND and durum quality by the California Wheat Commission Lab in Woodland, CA.

Discussion

Yield and plant characteristics are presented in Table 1. This trial represents one set of conditions. No definite conclusions are intended to be made from this data since varieties are known to be greatly affected by environmental conditions. The environmental conditions for this test were unique as usual. Minimum temperatures rarely dropped below freezing. Temperature during the grain fill period were relatively cool. Nitrogen fertility levels appeared to be adequate based on yields and lack of yellow berry but symptoms of nitrogen deficiency were noted at early growth stages on the leaves. The wheat and durum did not tiller well, but grain yields were not depressed possibly due to the cool spring. The barley tillered very well, but yields were down due to lodging and shattering from late harvest. The results of this trial are useful when combined with data from other years.

Acknowledgments

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Table 1. Small grain variety yield results from Maricopa, 1995.

Entry	Source ^a	Grain Yield ^b lbs/acre	Plant Height inches	Lodging %	Anthesis ^c	Physiological
						Maturity ^d
<u>Barley</u>						
Max	FMC	6287	33	8	03/20	05/02
BA7128	FMC	5940	33	8	03/15	04/29
7001	APB	5828	31	15	03/13	04/23
BA8055	FMC	5754	30	3	03/12	04/24
7002	APB	5539	29	37	03/10	04/24
Gustoe	WPB	5470	31	22	03/16	04/25
BA1129	FMC	5272	32	5	03/10	04/21
BA8017	FMC	5234	31	45	03/21	05/03
DA587-124	WPB	5148	32	48	03/11	04/21
BA8063	FMC	5148	33	17	03/20	05/01
DA592-47	WPB	4900	33	52	03/13	04/24
DA587-170	WPB	4776	35	52	03/14	04/24
BA7139	FMC	4628	31	18	03/19	04/27
UC337	UC	4418	39	63	03/13	04/26
UC476	UC	4046	37	25	03/18	04/21
Fiesta	WPB	3960	32	15	03/04	04/19
BA7026	FMC	3960	33	78	03/11	04/21
Barcott	WPB	3911	33	48	03/02	04/11
AVERAGE		5012	33	31	03/13	04/24
<u>Wheat</u>						
906WR	APB	8642	29	5	03/13	04/29
PH989-80W	WPB	8001	33	0	03/16	04/26
DA992-130	WPB	7978	31	0	03/14	04/25
DA989-20	WPB	7885	31	0	03/14	04/29
BR1283	FMC	7873	34	10	03/18	04/24
BR8631-1	FMC	7769	33	0	03/14	04/28
BR1235	FMC	7745	29	0	03/17	04/23
PH991-87	WPB	7652	32	0	03/14	04/26
BR8631	FMC	7570	32	0	03/14	04/24
BR1231	FMC	7570	33	12	03/13	04/22
DA990-15	WPB	7524	35	5	03/11	04/21
Cavalier	FMC	7524	32	5	03/14	04/26
BR9216	FMC	7291	35	0	03/14	04/25
BR1434	FMC	7233	31	0	03/12	04/22
9003 WR	APB	7175	32	5	03/14	04/25
Poco red	FMC	7163	28	0	03/12	04/23
BR1153	FMC	7151	35	15	03/14	04/21
Yecora rojo	UC	7070	30	20	03/11	04/21
BR9118	FMC	7070	31	0	03/10	04/22
BR1277	FMC	7058	34	20	03/15	04/25
BR7073B	FMC	6801	33	0	03/11	04/23
BR7073	FMC	6022	41	43	03/06	04/20
AVERAGE		7444	32	6	03/13	04/24

Table 1 (con'd). Small grain variety yield results from Maricopa, 1995.

Entry	Source ^a	Grain Yield ^b lbs/acre	Plant Height inches	Lodging %	Anthesis ^c	Physiological
						Maturity ^d
<u>Durum</u>						
D8940A	FMC	7664	33	0	03/17	04/27
Duraking	FMC	7594	37	0	03/17	04/29
8001	APB	7489	36	0	03/18	05/1
D1856	FMC	7372	37	8	03/18	04/28
Aldura	NK	7308	34	0	03/19	05/01
8011	WPB	7210	38	0	03/15	05/02
D1405	FMC	7140	34	0	03/20	05/02
6004	APB	7116	36	0	03/17	05/01
Cortez	WPB	7105	37	0	03/24	05/05
D5318B1	FMC	7081	38	15	03/20	04/30
D8869	FMC	7046	37	12	03/14	04/28
Turbo	WPB	7023	41	13	03/25	05/05
D5317B	FMC	7011	36	8	03/18	04/29
D1128	FMC	7000	40	0	03/25	05/05
Aconchi	CIMMYT	6860	37	18	03/23	05/02
D1268	FMC	6778	35	0	03/11	04/26
8012	WPB	6627	36	0	03/15	04/30
D2505	FMC	6581	37	0	03/19	05/02
Bravadur	FMC	6557	37	0	03/19	05/01
Aruba	WPB	6476	35	0	03/27	05/06
Minos	APB	6289	38	62	03/17	04/30
Reva	FMC	6277	37	20	03/18	04/27
8010	WPB	6191	37	38	03/15	04/30
D1636	FMC	6103	35	0	03/13	04/27
8009	WPB	6080	39	8	03/12	04/23
Kofa	WPB	5823	36	18	03/14	04/30
WeatBred 881	WPB	5753	36	17	03/14	04/28
8013	WPB	5742	34	28	03/10	04/28
Durex	FMC	5718	38	0	03/14	04/30
AVERAGE		6725	37	9	03/17	04/30

^a Source: APB = Arizona Plant Breeders, CIMMYT = International Maize and Wheat Improvement Center, FMC = Farmers Marketing Corporation, NK = Northrup King, UC = University of California, and WPB = Western Plant Breeders

^b Grain yield: LSD (5%) = 835, 662, and 599 lb/acre and cv = 14.4, 8.6, and 7.0% for barley, durum, and wheat, respectively.

^c Anthesis = first day of pollen shed

^d Physiological maturity defined as when glumes turn brown.