Wheat, Barley, and Durum and Advanced Lines Test, Gila Bend, AZ, 1996

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Introduction

Field trials with both commercial cultivars and advanced lines were grown under low desert conditions to compare yield and quality on the Paloma Ranch west of Gila Bend, AZ. The long range goal is to identify cultivars with both high yield and superior quality. It is hoped that the cultivars can be identified and brought to commercial release through this type of testing.

Methods and Materials

The field trial was established after seedbed preparation following the previous cotton crop. Cone planters were used to insure uniform seeding rates. Each plot consisted of 7 rows on 8 inch spacing. Seeding rate was 97 lb./ac on 20 ft plots that were trimmed to 16 ft. All rows were harvested and weighed in the field. The experimental design was a random complete block with 6 replicates. SAS Proc GLM (SAS Institute, 1989) was used for data analysis. Check varieties were included for barley (Gustoe), durum (WestBred 881), and wheat (Yecora rojo). Plots were planted on 18 December 1995 and watered 31 December. Irrigations were applied at regular intervals (31 December, 13 & 24 January, 17 & 29 February; 18 & 30 March; and 18 & 30 April and 6 May). Nitrogen fertilizer was applied once in January (24th, 30 lb.) twice in February (92 lb. total) and one application on the 18th of March (60 lb.) Data collected for this report includes grain yield, plant height, test weight, kernel weight, HVAC (or yellow berry), and grain protein. Test weight was determined using a standard 1 quart container. Kernel weight and yellow berry were determined from 10 grams of hand picked kernels. Grain protein was determined using a NIR analyzer and expressed on a 12% moisture basis.

Results and Discussion

Yield, test weight, kernel weight, hard vitreous amber count or yellow berry, and grain protein content for the barley, durum, and wheat entries are presented in Tables 1-3. This trial was planted later than many of the other trials reported in the past. The trial was fairly uniform and no lodging was observed. This was not a particularly good year for growing wheat possibly to the dry winter and hot spring. We will not draw any definte conclusions from this trial since varietal performance varies annually. The results from this trial will be most useful when combined with data from other years.

Acknowledgments

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Citation

SAS InstituteInc., SAS/STAT User's Guide, Ver. 6, 4th Ed., Vol. 1, Cary, NC:SAS Institute Inc. 1989. 943 pp.

Table 1. Yield and kernel characteristics of commercial barley varieties and experimental lines.

Entry	Source[a]	Grain yield[b]	Plant height	Test weight	1000 Kerne' weight
		lb/acre	inches	lb/bu	grams
7001	APB	5347	28.0	51.8	43.8
7005	APB	5731	26.0	48.1	36.0
B713	APB	5868	24.5	49.3	40.6
BA1129	SW	5757	28.5	52.3	43.0
BA2391	SW	5518	28.5	52.1	45.6
BA7032	SW	5834	25.0	49.5	40.1
BA7128	SW	5189	27.0	51.3	41.9
BA8055	SW	4986	25.5	50.2	41.1
Barcott	WPB	5441	30.5	51.4	42.9
DA587-124-c	WPB	6056	25.5	53.2	40.1
DA593-078	WPB	5441	22.5	51.2	32.1
DA592 47	WPB	5859	30.0	53.5	46.3
Gustoe	WPB	5205	26.0	53.2	44.2
Max	SW	5689	26.0	52.1	45.5
Mucho	APB	5407	25.0	50.8	46.5
AVERAGE		5555	26.6	51.3	42.0

[a] Source: APB = Arizona Plant Breeders, SW = Seeds West, and WPB = Western Plant Breeders.

[b] Grain yield: LSD (5%) = 768 lbs/acre and cv = 11.2%.

Table 2. Yield and kernel characteristics of commercial varieties and experimental lines of durum.

Entry	Source[a]	Grain yield[b]	Plant height	Test weight	1000 kernel weight	Hard vitreous amber count	Grain protein[c]
		lbs/acre	inches	lbs/bu	grams	%	%
8009	WPB	5246	33.0	64.7	48.9	98	12.0
8010	WPB	5346	30.5	64.2	52.4	99	12.4
8011	WPB	5445	31.0	65.0	53.7	100	13.2
8013	WPB	5039	29.0	64.9	56.5	100	13.8
8014	WPB	5381	31.5	65.5	50.0	99	13.2
Aconchi	CIMMYT	5310	31.0	65.7	50.4	97	12.4
Aldura	NK	5367	28.0	64.8	49.9	99	12.7
Cortez	WPB	5139	31.5	63.5	49.3	100	14.0
D1405	SW	4555	28.0	62.6	43.8	98	13.4
D1856	SW	5509	31.0	64.2	51.3	99	13.2
D2620	SW	5331	31.5	64.0	51.2	99	13.7
D2659	SW	4819	28.5	64.4	44.7	98	12.7
D3178	SW	4840	30.0	64.4	43.0	95	12.9
D3215	SW	4847	27.5	63.8	47.2	100	13.0
D3240	SW	5125	33.0	63.7	54.8	99	12.9
D3294	SW	5139	31.0	65.4	52.5	98	12.7
D872	APB	5367	30.0	63.2	45.3	87	12.6
D873	APB	4826	30.0	64.4	44.9	99	13.1
D875	APB	5648	30.5	64.8	49.6	99	12.8
D9430	SW	4769	29.0	64.0	45.1	100	12.6
DOI933	SW	5189	29.5	64.4	56.6	90	12.9
Duraking	SW	5563	31.5	64.5	49.3	98	13.0
Durex	SW	5196	31.0	63.6	56.4	100	13.6
Eddie	SW	5381	32.0	63.7	50.8	99	13.6
Kofa	WPB	5189	31.0	64.2	57.7	99	13.8
Kronos	APB	4605	30.0	62.6	49.1	99	11.9
Minos	APB	5584	33.0	65.1	51.0	100	13.1
Ocotillo	APB	5175	33.5	64.3	51.2	99	13.6
Reva	SW	4762	30.5	63.6	50.0	99	13.7
Ria	SW	5018	30.5	63.7	47.5	99	13.4
Turbo	WPB	4947	34.0	63.5	54.2	99	13.3
Unidur	SW	4990	29.0	64.0	45.6	100	12.4
WestBred 881	WPB	5285	32.5	63.8	50.3	98	13.5
AVERAGE		5149	30.7	64.2	50.1	98	13.1

[a] Source: APB = Arizona Plant Breeders, CIMMYT = International Maize and Wheat Improvement Center, NK = Northrup King, SW = Seeds West, and WPB = Western Plant Breeders.

[b] Grain yield: LSD (5%) = 427 lbs/acre and cv = 7.3%.

[c] Grain protein expressed on a 12% moisture basis.

Table 3. Yield and kernel characteristics of commercial varieties and experimental lines of wheat.

Entry	Source[a]	Grain yield[b]	Plant height	Test weight	1000 kernel weight	Yellow berry	Grain protein[c]
		lb/acre	inches	lb/bu	grams	%	%
Seri 82	CIMMYT	5048	32.0	62.3	44.8	1	12.6
AZ Red	Don Lindahl	4714	32.0	63.9	41.9	8	12.6
Brooks	WPB	5082	28.0	64.9	47.9	3	12.5
Delano	APB	4493	23.5	64.0	45.2	1	12.2
9003WR	APB	4775	25.5	63.5	43.6	5	12.4
DA992-130	WPB	4612	24.0	63.3	43.4	3	12.7
9006WR	APB	4997	23.5	63.4	37.7	16	11.6
W692	APB	5108	25.0	65.5	42.9	3	11.8
DA989–20	WPB	4911	25.0	63.9	41.3	1	13.1
Yecora rojo	Public	4641	24.8	64.2	43.0	1	12.9
PH989-80W	WPB	4954	26.0	64.1	40.3	0	12.8
Cuyama	WPB	5296	30.0	64.2	42.9	1	12.7
BR1235	SW	4518	24.5	63.4	42.9	1	12.6
Rich	SW	5093	26.0	63.6	43.4	1	12.6
BR5904	SW	4723	25.5	63.9	44.8	3	12.9
BR7073B	SW	4920	27.5	63.1	47.0	2	13.2
BR6428	SW	4911	29.0	62.8	43.9	2	12.4
Cavalier	SW	3211[d]	24.0	63.0	45.7	1	13.7
BR8631–1	SW	4851	27.5	63.5	42.7	1	12.9
BR7997	SW	5381	30.5	63.9	43.3	2	12.4
BR1283	SW	4901	28.5	62.3	42.3	4	12.4
BR5246	SW	4869	25.0	63.9	41.2	2	12.9
BR2222	SW	5103	31.5	61.7	39.3	6	13.0
BR1231	SW	5005	26.0	63.8	41.1	3	11.9
BR1434	SW	4330	33.0	63.0	40.7	0	14.1
AVERAGE		4818	27.1	63.6	42.9	3	12.7

[a] Source: APB = Arizona Plant Breeders, CIMMYT = International Maize and Wheat Improvement Center, NK = Northrup King, SW = Seeds West, and WPB = Western Plant Breeders.

[b] Grain yield: LSD (5%) = 462 lbs/acre and cv = 7.8%.

[c] Grain protein expressed on a 12% moisture basis.

[d] Very poor emergence was obtained with seed of this variety and is responsible for the low yield reported.