

# Small Grains Variety Evaluation at Arizona City, Maricopa, and Yuma, 2003

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## Summary

*Small grain varieties are evaluated each year by 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. A summary of small grain variety trials conducted by the University of Arizona can be found online at <http://ag.arizona.edu/pubs/crops/az1265.pdf>.*

## Introduction

Small grain varieties were tested as part of the on-going effort to assess variety productivity and characteristics. Barley and durum commercial cultivars and experimental lines were tested. The purpose of these tests is to characterize 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 or online at <http://ag.arizona.edu/pubs/crops/az1265.pdf>.

## Procedure

Barley and durum varieties were evaluated at the following locations: Arizona City by Arizona Plant Breeders, Maricopa by the University of Arizona, Maricopa by World Wide Wheat, and Yuma by Western Plant Breeders. The seed was planted with a cone planter in seven rows spaced 7 inches apart and 15-20 ft long. The seeding rate was approximately 100 lbs/acre for durum varieties and 85 lbs/acre for barley varieties. The experimental design was a randomized complete block with 4 replications (3 in Yuma), and a variable number of entries depending on the crop and location. Growing conditions at each site are listed in Table 1. The following data was collected: grain yield, test weight, kernel weight, plant height, lodging, heading, flowering (Maricopa, UA only), physiological maturity (Maricopa, UA only), grain protein, and HVAC. Grain was harvested with small plot combines 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. Flowering is defined as when about half of the heads are shedding pollen. Physiological maturity is noted when the glumes turn brown. Abbreviations for the sources of varieties are: APB = Arizona Plant Breeders, UA = University of Arizona, WPB = Western Plant Breeders, WWW = World Wide Wheat, Allstar = Allstar Seed Company, El Centro, and AC = Anderson Clayton.

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## Discussion

The average maximum and minimum temperatures for January were among the highest on record (Table 2). Consequently, the crop grew very quickly early in the season, especially the barley. April was cooler than average, which promoted a long growing season. Every month of the growing season from December through May received below average rainfall except for February, where rainfall was above average. The weather was very favorable for growth of barley and durum.

Yield and plant characteristics of the varieties are presented for the various locations in Tables 3-6 and a summary of the grain yields at all locations is presented in Table 7. Several locations and years are needed to accurately assess variety performance. The results of this trial are most useful when combined with data from previous years. A summary of small grain variety trials conducted by the University of Arizona can be found online at <http://ag.arizona.edu/pubs/crops/az1265.pdf>.

## Acknowledgments

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Table 1. Cultural practices for the small grains variety trials at the various locations.

Cultural information	Arizona City (APB)	Maricopa (U of A)	Maricopa (WWW)	Yuma (WPB)
Previous crop	Fallow	Barley	Alfalfa	Cotton
Soil texture	Clay loam	Sandy clay loam	Sandy clay loam	Clay
Planting date	07 Dec 02	26 Nov 01	28 Nov 02	12 Dec 02
Irrigations	8	7	5	6
Nitrogen (lbs/a)	300	272	300	230
Pesticides	None	None	Buctril	Raxil MD Extra & Gaucho (Barley)
Harvest date	10 June 03	28 May 03	20 June 03	03 June 03

Table 2. Climatic data from AZMET for Eloy (near Arizona City), Maricopa, and Yuma Valley during the 2003 growing season ranked and compared to the long-term average. The rankings of the months are from low to high.

Climate variable	Unit	Year(s)	Dec	Jan	Feb	Mar	Apr	May	Dec-May
<u>Eloy</u>									
Max Temp.	Rank of 16	2003	5	15	6	7	6	11	12
	°F	2003	64	75	69	76	83	96	77
	°F	1987-2003	66	68	71	76	84	94	77
Min Temp.	Rank of 16	2003	12	14	10	8	5	11	12
	°F	2003	35	38	40	43	47	59	44
	°F	1987-2003	34	35	39	43	49	57	43
Ppt.	Rank of 16	2003	7	4	9	6	7	1	7
	inches	2003	0.42	0.11	1.28	0.46	0.17	0.00	2.44
	inches	1987-2003	1.03	0.75	1.09	0.78	0.31	0.12	4.00
<u>Maricopa</u>									
Max Temp.	Rank of 18	2003	6	18	6	6	4	13	11
	°F	2003	64	73	68	76	82	95	76
	°F	1987-2003	65	66	70	76	85	94	76
Min Temp.	Rank of 18	2003	14	16	14	6	4	12	14
	°F	2003	37	39	42	43	48	60	45
	°F	1987-2003	35	36	40	44	51	59	44
Ppt.	Rank of 18	2003	10	9	12	7	9	1	10
	inches	2003	0.43	0.51	1.18	0.24	0.16	0.00	2.52
	inches	1987-2003	0.82	0.79	0.97	0.94	0.33	0.18	3.98
<u>Yuma</u>									
Max Temp.	Rank of 18	2003	11	18	5	9	2	10	9
	°F	2003	68	76	71	78	81	94	78
	°F	1987-2003	67	69	73	79	86	94	78
Min Temp.	Rank of 18	2003	4	17	10	7	3	7	8
	°F	2003	40	45	45	47	52	59	48
	°F	1987-2003	41	42	45	48	54	60	48
Ppt.	Rank of 18	2003	1	6	17	8	1	1	10
	inches	2003	0.00	0.03	1.15	0.10	0.00	0.00	1.28
	inches	1987-2003	0.48	0.39	0.42	0.45	0.16	0.05	1.92

Table 3. Small grain variety yield results from **Arizona City (APB)**, 2003.

Entry	Source	Grain	Test	1000	Plant	Lodging	Headed on	Grain	HVAC	
		Yield <sup>a</sup>	Weight	Kernel wt	Height		3/27	Protein		
		lbs/acre	lbs/bu	grams	inches	%	%	%	%	
<u>Barley</u>										
Barcott	WPB	6026	52.7	39.1	26	0	100	---	---	
Baretta	APB	7296	52.8	45.4	29	0	10	---	---	
Commander	WWW	6316	51.3	46.9	26	0	5	---	---	
Max	WWW	5627	54.0	46.0	25	0	0	---	---	
Mucho	APB	6244	52.2	48.0	28	0	100	---	---	
Nebula	WPB	7151	53.7	48.3	32	0	10	---	---	
B99-268	APB	5844	51.4	34.6	34	10	60	---	---	
B00-149	APB	5009	53.3	42.1	30	0	20	---	---	
B00-219	APB	7115	54.1	43.6	32	0	100	---	---	
PH593-078	WPB	6389	52.8	39.5	26	0	0	---	---	
PH595-096	WPB	6607	53.0	40.9	30	0	100	---	---	
YU500-011	WPB	6607	53.9	47.7	38	5	100	---	---	
BA8017	WWW	6244	51.4	45.1	30	0	0	---	---	
BA4545	WWW	6389	51.5	48.5	38	0	5	---	---	
BA9013	WWW	6788	53.3	48.9	34	0	50	---	---	
Patti	WWW	6861	50.9	45.1	31	0	60	---	---	
AVERAGE		6407	52.6	44.4	31	1	45	---	---	
<u>Durum</u>										
Alamo	WPB	5518	65.5	51.5	36	50	50	12.2	100	
Bravadur	WWW	6970	64.3	49.5	36	30	10	11.9	96	
Crown	WWW	7187	62.1	48.4	40	0	5	11.8	92	
Duraking	WWW	7333	65.2	47.9	36	0	20	11.4	91	
Kofa	WPB	6425	64.8	54.1	40	30	60	12.2	100	
Kronos	APB	7768	64.4	53.4	40	80	90	11.4	94	
Matt	APB	6280	64.6	53.1	42	60	100	12.2	99	
Mohawk	WPB	7659	64.7	55.3	38	40	90	11.5	96	
Ocotillo	APB	6244	64.9	47.0	39	20	90	12.5	98	
Orita	WPB	7442	63.4	51.9	34	0	5	11.6	89	
Platinum	WWW	6389	65.0	61.1	32	10	10	11.1	94	
Sky	APB	6534	63.7	46.4	32	20	70	11.4	100	
WPB881	WPB	6607	64.4	53.0	39	40	70	11.7	96	
D990D-394	APB	7405	64.6	48.9	38	20	50	10.9	87	
D990D-425	APB	7877	65.2	49.7	32	0	40	10.0	91	
D99-233	APB	6752	65.4	49.7	35	0	80	10.7	94	
D999D-213	APB	6643	64.3	49.2	38	5	80	10.5	97	
D1138	WWW	6933	66.0	50.0	41	0	60	11.0	92	
D2515	WWW	6679	65.7	56.4	45	5	40	10.9	77	
D6523	WWW	7115	64.0	52.8	37	20	30	11.5	97	
YU895-130	WPB	7224	65.4	48.5	39	5	90	10.5	91	
YU897-44	WPB	7224	64.8	54.5	35	0	50	11.1	96	
YU899-170	WPB	7115	64.5	51.3	36	5	30	11.5	92	
YU899-32	WPB	6861	64.8	57.3	36	0	90	12.3	99	
AVERAGE		6924	64.7	51.7	37	18	55	11.4	94	

<sup>a</sup> Grain yield: LSD (5%) = 949 and 824 lbs/acre and cv = 10.4 and 8.4% for barley and durum, respectively.

Table 4. Small grain variety yield results from **Maricopa (UA)**, 2003.

Entry	Source	Grain Yield <sup>a</sup> lbs/acre	Test Weight lbs/bu	1000 kernel wt grams	Plant Height inches	Lodging %	Heading	Flower- ing	Maturity %	Grain Protein %	HVAC %
<u>Barley</u>											
Barcott	WPB	5791	47.6	41.6	35	19	2/22	3/01	4/16	---	---
Baretta	APB	6732	50.0	43.9	36	13	3/08	3/14	4/30	---	---
Commander	WWW	6531	50.4	41.4	34	0	3/11	3/17	4/29	---	---
Max	WWW	6556	51.1	44.6	33	0	3/08	3/17	5/02	---	---
Mucho	APB	5387	49.6	43.9	31	0	2/24	3/01	4/24	---	---
Nebula	WPB	6899	51.5	47.2	36	0	3/04	3/11	4/25	---	---
B99-268	APB	6149	48.1	36.2	37	31	3/01	3/09	4/25	---	---
B00-149	APB	6374	49.2	40.8	32	0	3/03	3/08	4/25	---	---
B00-219	APB	7053	49.5	42.2	35	0	3/02	3/07	4/22	---	---
PH593-078	WPB	6715	50.4	37.4	32	0	3/05	3/11	4/27	---	---
PH595-096	WPB	6992	49.7	38.0	33	13	2/26	3/06	4/20	---	---
YU500-011	WPB	6288	51.0	43.5	40	0	3/04	3/10	4/24	---	---
BA8017	WWW	6222	50.6	39.7	30	0	3/14	3/21	4/30	---	---
BA4545	WWW	6589	50.0	42.6	37	19	3/05	3/12	5/05	---	---
BA9013	WWW	6363	49.6	42.6	36	19	3/07	3/12	4/29	---	---
Poco	AC	4486	46.6	37.2	27	0	---	---	4/03	---	---
AVERAGE		6320	49.7	41.4	34	7	3/04	3/10	4/24	---	---
<u>Durum</u>											
Alamo	WPB	7565	64.4	54.7	38	0	3/10	3/21	5/05	14.6	100
Bravadur	WWW	8009	63.5	51.4	38	0	3/08	3/22	5/07	14.1	100
Crown	WWW	7933	62.0	55.4	38	0	3/11	3/22	5/09	14.2	100
Duraking	WWW	8208	64.6	50.8	38	0	3/09	3/21	5/05	13.8	99
Kofa	WPB	7771	63.4	56.4	38	0	3/09	3/21	5/10	14.4	100
Kronos	APB	7740	63.5	56.5	38	0	3/07	3/18	5/05	14.2	100
Matt	APB	7774	63.5	52.2	39	0	3/08	3/21	5/09	14.3	100
Mohawk	WPB	8530	64.2	56.4	38	0	3/08	3/21	5/07	13.5	99
Ocotillo	APB	7641	63.9	52.3	40	0	3/08	3/20	5/05	14.7	99
Orita	WPB	8516	62.9	55.6	37	0	3/11	3/23	5/08	14.4	99
Platinum	WWW	7887	63.8	50.0	34	0	3/07	3/21	5/05	13.6	98
Sky	APB	7973	63.1	51.1	36	0	3/07	3/20	5/07	14.0	100
WPB881	WPB	7608	63.5	56.8	36	0	3/07	3/22	5/09	14.1	100
D990D-394	APB	8528	63.8	53.2	37	0	3/07	3/21	5/09	13.8	99
D990D-425	APB	8271	63.8	53.0	33	0	3/07	3/22	5/07	12.8	99
D99-233	APB	8028	64.1	55.2	37	0	3/08	3/20	5/08	14.3	99
D999D-213	APB	8854	63.7	54.1	37	0	3/10	3/21	5/09	14.0	99
D1138	WWW	7778	64.6	52.6	40	0	3/07	3/20	5/05	14.9	100
D2515	WWW	6746	64.9	56.2	41	0	3/11	3/20	5/11	14.4	100
D6523	WWW	8086	63.0	53.4	38	0	3/10	3/21	5/10	14.2	98
YU895-130	WPB	8318	64.5	49.5	38	0	3/07	3/21	5/05	14.5	99
YU897-44	WPB	8678	63.9	56.5	36	0	3/09	3/21	5/07	14.0	98
YU899-170	WPB	8635	63.5	56.9	37	0	3/06	3/18	5/06	14.3	100
YU899-32	WPB	7701	64.6	59.0	38	0	3/03	3/18	5/06	15.0	100
AVERAGE		8032	63.8	54.1	38	0	3/08	3/20	5/07	14.2	99

<sup>a</sup> Grain yield: LSD (5%) = 1160 and 1091 lbs/acre and cv = 12.9 and 9.6% for barley and durum, respectively.

Table 5. Small grain variety yield results from **Maricopa (WWW)**, 2003.

Entry	Source	Grain Yield <sup>a</sup> lbs/acre	Test Weight lbs/bu	1000	Plant Height inches	Lodging %	Heading	Grain Protein %	HVAC %
				Kernel Weight grams					
<u>Barley</u>									
Barcott	WPB	5068	48.4	40.8	34	90	3/01	---	---
Baretta	APB	5222	53.2	46.5	30	40	3/14	---	---
Commander	WWW	5594	51.7	44.8	36	30	3/19	---	---
Max	WWW	6124	53.2	43.5	33	50	3/17	---	---
Mucho	APB	4873	52.9	47.8	31	5	3/01	---	---
Nebula	WPB	4795	51.4	47.1	32	50	3/13	---	---
B99-268	APB	5611	50.2	36.5	33	90	3/08	---	---
B00-149	APB	6017	51.5	44.5	33	30	3/15	---	---
B00-219	APB	5469	53.2	46.1	34	0	3/10	---	---
PH593-078	WPB	6016	53.2	39.5	31	5	3/11	---	---
PH595-096	WPB	5905	52.2	38.2	35	85	3/01	---	---
YU500-011	WPB	4726	53.6	48.5	33	0	3/08	---	---
BA8017	WWW	6908	51.2	42.1	31	30	3/23	---	---
BA4545	WWW	6564	52.5	45.8	33	80	3/19	---	---
BA9013	WWW	5463	50.9	45.8	33	50	3/15	---	---
Poco	AC	4460	52.1	41.3	21	0	2/15	---	---
Patti	WWW	5900	53.3	39.5	36	5	3/17	---	---
AVERAGE		5571	52.0	43.4	32	38	3/10	---	---

Table 5. (Con'd) Small grain variety yield results from **Maricopa (WWW)**, 2003.

Entry	Source	Grain Yield <sup>a</sup> lbs/acre	Test Weight lbs/bu	1000	Plant Height inches	Lodging %	Heading	Grain Protein %	HVAC %
				Kernel Weight grams					
<u>Durum</u>									
Alamo	WPB	5306	65.5	52.1	37	0	3/18	14.2	99
Bravadur	WWW	5815	64.5	52.0	39	5	3/24	13.4	99
Crown	WWW	6705	63.3	53.8	40	0	3/20	13.7	98
Duraking	WWW	6790	66.2	51.5	37	0	3/21	12.7	100
Kofa	WPB	5307	64.7	59.2	38	50	3/21	14.3	100
Kronos	APB	5497	64.7	55.1	37	0	3/19	13.7	100
Matt	APB	5584	64.4	49.8	36	0	3/16	14.2	100
Mohawk	WPB	5625	65.6	59.3	38	20	3/20	13.6	99
Ocotillo	APB	5873	64.7	52.1	39	10	3/18	14.6	99
Orita	WPB	5649	64.5	55.8	34	0	3/23	14.5	99
Platinum	WWW	6390	65.8	49.1	36	0	3/21	12.7	100
Sky	APB	6097	63.3	46.5	37	20	3/21	12.7	100
WPB881	WPB	5141	64.3	57.2	39	0	3/18	13.8	100
D990D-394	APB	6067	65.3	56.2	38	10	3/18	12.9	100
D990D-425	APB	6459	65.3	50.7	33	80	3/19	11.7	95
D99-233	APB	5812	65.0	53.7	36	0	3/19	13.6	100
D999D-213	APB	6258	64.7	53.6	33	0	3/18	13.6	99
D1138	WWW	6229	65.8	53.9	41	0	3/21	14.2	100
D2515	WWW	5449	65.2	58.8	41	0	3/20	14.6	100
D6523	WWW	6104	64.3	55.4	39	0	3/20	14.0	100
YU895-130	WPB	6454	66.0	46.9	39	0	3/19	14.4	98
YU897-44	WPB	5687	65.4	56.1	36	20	3/19	14.0	100
YU899-170	WPB	5934	65.2	55.8	38	0	3/20	13.5	100
YU899-32	WPB	5174	65.0	58.9	36	40	3/16	14.7	100
Ria	WWW	6578	65.5	46.9	39	0	3/20	12.5	99
Iride	Allstar	6914	67.2	50.7	36	0	3/20	11.6	97
Meridiano	Allstar	6613	65.9	56.1	39	30	3/24	11.8	92
Ionio	Allstar	5895	64.7	53.5	38	0	3/26	13.5	100
Libeccio	Allstar	5721	65.2	57.1	36	0	3/24	14.4	99
GD007	Allstar	6070	65.7	53.1	39	0	3/20	15.1	100
AVERAGE		5973	65.1	53.7	37	10	3/20	13.6	99

<sup>a</sup> Grain yield: LSD (5%) = 403 and 383 lbs/acre and cv = 5.1 and 4.6% for barley and durum, respectively.

Table 6. Small grain variety yield results from **Yuma (WPB)**, 2003.

Entry	Source	Grain Yield <sup>a</sup> lbs/acre	Test Weight lbs/bu	1000	Plant Height inches	Lodging %	Heading	Grain Protein %	HVAC %
				Kernel Weight grams					
<u>Barley</u>									
Barcott	WPB	6833	47	41.6	34	60	---	---	---
Baretta	APB	7209	50	47.8	36	100	---	---	---
Commander	WWW	7328	51	47.3	37	100	---	---	---
Max	WWW	6799	52	46.6	34	100	---	---	---
Mucho	APB	7277	51	53.6	31	50	---	---	---
Nebula	WPB	6116	51	50.5	37	80	---	---	---
B99-268	APB	6577	49	41.6	35	100	---	---	---
B00-149	APB	6731	50	43.7	32	100	---	---	---
B00-219	APB	7738	51	47.4	34	10	---	---	---
PH593-078	WPB	8080	52	40.1	31	10	---	---	---
PH595-096	WPB	7431	50	40.9	34	80	---	---	---
YU500-011	WPB	7516	51	47.7	32	80	---	---	---
BA8017	WWW	6662	50	41.5	32	100	---	---	---
BA4545	WWW	6884	51	48.8	39	100	---	---	---
BA9013	WWW	6389	50	47.6	35	100	---	---	---
Poco	AC	6371	49	37.6	25	50	---	---	---
AVERAGE		6996	50.3	45.3	34	76	---	---	---

Table 6. (Con'd) Small grain variety yield results from **Yuma (WPB)**, 2003.

Entry	Source	Grain Yield <sup>a</sup> lbs/acre	Test Weight lbs/bu	1000	Plant Height inches	Lodging %	Heading	Grain Protein %	HVAC %
				Kernel Weight grams					
<u>Durum</u>									
Alamo	WPB	6901	65.5	54.1	38	6	3/21	12.1	97
Bravadur	WWW	6355	64.1	51.7	33	4	3/22	11.2	87
Crown	WWW	7602	60.8	51.3	38	0	3/24	12.4	97
Duraking	WWW	7807	63.8	49.3	34	1	3/22	10.8	87
Kofa	WPB	6320	63.8	55.3	34	7	3/22	12.5	97
Kronos	APB	6286	63.6	55.7	34	8	3/20	11.5	91
Matt	APB	6184	64.0	52.1	36	6	3/20	11.8	97
Mohawk	WPB	7192	63.3	52.6	34	5	3/20	11.2	97
Ocotillo	APB	6355	63.4	54.3	37	2	3/20	12.1	91
Orita	WPB	7328	62.6	55.8	35	1	3/27	11.8	91
Platinum	WWW	7653	64.2	47.2	32	1	3/22	10.7	91
Sky	APB	6406	59.9	43.5	32	7	3/21	11.7	98
WPB881	WPB	6355	62.8	54.6	36	4	3/22	12.3	96
D990D-394	APB	7311	62.8	52.2	39	2	3/23	10.8	78
D990D-425	APB	6748	62.8	47.7	30	0	3/21	10.4	86
D99-233	APB	7123	64.6	53.8	33	2	3/22	11.3	98
D999D-213	APB	7414	63.0	50.5	36	5	3/21	11.6	95
D1138	WWW	7226	65.5	53.0	38	1	3/23	11.0	93
D2515	WWW	6064	64.5	56.5	37	7	3/24	11.9	90
D6523	WWW	6636	63.1	52.3	36	5	3/24	12.1	98
YU895-130	WPB	7089	65.1	47.6	33	6	3/21	11.5	93
YU897-44	WPB	7294	64.0	56.3	31	3	3/22	11.2	92
YU899-170	WPB	7345	64.2	53.0	34	2	3/22	10.5	82
YU899-32	WPB	7499	65.4	60.2	34	2	3/19	12.1	100
Ria	WWW	6645	63.9	45.5	34	5	3/23	10.3	78
Iride	Allstar	7670	66.1	56.4	34	2	3/20	10.1	66
Meridiano	Allstar	7567	64.2	54.8	37	3	3/23	10.5	62
Ionio	Allstar	6730	63.6	53.1	37	3	3/24	11.3	75
Libeccio	Allstar	6440	64.3	58.0	33	7	3/30	11.1	78
GD007	Allstar	7345	66.4	54.3	39	5	3/21	11.4	98
AVERAGE		6963	63.8	52.8	35	4	3/22	11.4	89

<sup>a</sup> Grain yield: LSD (5%) = 1028 and 752 lbs/acre and cv = 8.8 and 6.6% for barley and durum, respectively.

Table 7. Summary of small grain variety yield results for 2003 from Arizona City (APB), Maricopa (U of A), Maricopa (WWW), and Yuma (WPB) for entries common across locations.

Entry	Source	Grain yield (% of location average for these entries)				Mean	Standard Deviation
		Arizona City (APB)	Maricopa (U of A)	Yuma (WPB)	Maricopa (WWW)		
<u>Barley</u>							
Barcott	WPB	94	90	97	90	93	14
Baretta	APB	114	104	102	93	104	9
Commander	WWW	99	101	104	99	101	7
Max	WWW	88	102	97	109	99	16
Mucho	APB	98	84	103	87	92	11
Nebula	WPB	112	107	87	85	99	14
B99-268	APB	92	95	93	100	95	12
B00-149	APB	79	99	96	107	95	16
B00-219	APB	112	109	110	97	107	8
PH593-078	WPB	100	104	115	107	106	9
PH595-096	WPB	104	109	106	105	106	8
YU500-011	WPB	104	98	107	84	97	14
BA8017	WWW	98	97	95	123	104	15
BA4545	WWW	100	102	98	117	105	10
BA9013	WWW	106	99	91	97	99	10

Table 7. (Con'd) Summary of small grain variety yield results for 2003 from Arizona City (APB), Maricopa (U of A), Maricopa (WWW), and Yuma (WPB) for entries common across locations.

Entry	Source	Grain yield (% of location average for these entries)				Mean	Standard Deviation
		Arizona City (APB)	Maricopa (U of A)	Yuma (WPB)	Maricopa (WWW)		
<u>Durum</u>							
Alamo	WPB	80	94	100	90	90	12
Bravadur	WWW	101	100	92	99	98	10
Crown	WWW	104	99	110	114	106	10
Duraking	WWW	106	102	113	115	109	11
Kofa	WPB	93	97	91	90	93	7
Kronos	APB	112	96	91	93	99	10
Matt	APB	91	97	89	95	93	9
Mohawk	WPB	111	106	104	95	104	9
Ocotillo	APB	90	95	92	100	94	10
Orita	WPB	107	106	106	96	104	8
Platinum	WWW	92	98	110	108	102	11
Sky	APB	94	99	92	103	98	8
WPB881	WPB	95	95	92	87	92	8
D990D-394	APB	107	106	105	103	105	4
D990D-425	APB	114	103	97	110	106	14
D99-233	APB	98	100	103	99	100	5
D999D-213	APB	96	110	107	106	105	8
D1138	WWW	100	97	104	106	102	6
D2515	WWW	96	84	87	92	90	10
D6523	WWW	103	101	96	104	101	8
YU895-130	WPB	104	104	102	110	105	6
YU897-44	WPB	104	108	105	97	103	8
YU899-170	WPB	103	108	106	101	104	7
YU899-32	WPB	99	96	108	88	97	9