

Small Grain Variety Comparisons at the Maricopa Agricultural Center, 1988

M. Sheedy, M. Ottman, and T. Ramage

At the Maricopa Agricultural Center, a small grains experiment compared the yields of several cultivars of barley, durum, and wheat. Eighteen varieties or experimental lines of each crop were planted in fall 1987 and harvested in spring 1988. Comparative yields are presented in Tables 1, 2, 3.

As in previous years, a 6X6 Latin square design was used to compare differences in grain yields. Each Latin square consisted of 4 varieties or experimental lines and 2 check varieties. Gustoe and Sunbar 409 were the check varieties for comparing barley grain yields (Table 1). Aldura and Westbred 881 (Table 2) and Probred and Yecora Rojo (Table 3) were the check varieties for comparing the durum and wheat yields, respectively.

The previous crop on the planting site was a green manure crop of Sudan grass. The seedbed was prepared and 100 lbs. per acre of N was applied prior to a preplant irrigation. Crop seed was planted November 18 in a moist seedbed at the rate of 80 lbs. per acre for all three crops. Seedlings emerged 11 days later. An additional 50 lbs. of N per acre was applied with the first and second post-plant irrigations - January 29 and March 3. Four more irrigations were scheduled during the growing season on March 22, April 4, April 15, and April 28. Soil moisture was monitored with a neutron probe.

The size of each plot was 5.5 feet wide by 19 feet long and consisted of 6 rows spaced 11 inches apart. The four middle rows were harvested with a "Hege" plot combine.

The field was sprayed once to control an infestation of aphids. Greenbug was the predominant aphid. Russian wheat aphids were present, but they were not a problem in the field this year.

With the exception of experimental lines 5068 and 5120, Gustoe consistently outperformed all varieties and experimentals. The results of the barley yield trials are presented in Table 1. Sunbar 409, on the other hand, had much lower yields than most other varieties and experimental lines.

Durum yield comparisons are presented in Table 2. Aldura has been the check variety in previous years; it still performs well with the other varieties and experimental lines. Turbo and Aldente (a blend of Turbo and 881) were the only two entries to yield greater than Aldura. The yields of 881, as in previous years, were lower than most other entries.

The grain yields of Probred were statistically as high or higher than most other varieties and experimental lines, as presented in Table 3. Westbred 911 and four experimentals (PH983-83, 5758, 5778, PH984-75) had a greater yield than Probred. Yecora Rojo was among the lowest yielding entries this year.

Table 1. Yield comparisons of commercial barley varieties and experimental lines.

Variety	Source	Maturity Date	Plant Height in.	% Lodging	Weight lbs/bu	Grain Yield		
						lbs/A*	% of Gustoe	% of 409
Latin Square 1 (C.V.=12.2%)								
Gustoe	WPB	4-25	20.5	0	53	7565 a	100	129
Columbia	Germaines	4-16	22.5	0	51.5	6294 b	83	108
X-1558	NK	4-14	26	0	49.5	6156 b	81	105
Fiesta	WPB	4-10	23.6	0	52.5	6037 b	80	103
Sunbar 409	NK	4-12	23.6	0	49.5	5848 b	77	100
Barcott	WPB	4-4	20.5	0	50.5	5691 b	75	77
Latin Square 2 (C.V.=9.4%)								
Gustoe	WPB	4-22	21.6	0	52.5	7168 a	100	132
Prato	Public	4-12	34.6	100	50	6315 b	88	116
Sunbar 409	NK	4-12	33.8	0	49	5426 b	76	100
Signal	Public	4-12	38.2	100	52	5315 b	74	98
Arivat	Public	4-12	41.3	100	48.5	5211 b	73	96
Poco		3-29	19.6	0	49.5	4487 c	63	83
Latin Square 3 (C.V.=5.5%)								
Gustoe	WPB	4-23	19.6	0	53	8021 a	100	136
Gus	WPB	4-14	23.6	0	52.5	6489 b	81	110
BB82-2	NK	4-15	27.5	0	49	6363 b	79	108
6-23-2	USDA	4-15	17.7	0	50.5	6298 bc	78	107
Sunbar 400	NK	4-11	23.6	0	49	6205 bc	77	105
Sunbar 409	NK	4-12	26.4	0	49.5	5883 c	73	100
Latin Square 4 (C.V.=4.6%)								
Gustoe	WPB	4-24	21.6	0	53.5	8373 a	100	138
5068	FMC	4-28	20.5	0	52.5	8304 a	99	137
5120	FMC	4-28	21.6	0	51.5	8041 ab	96	132
5041	FMC	4-20	23.6	0	50.5	7699 bc	92	127
5072	FMC	4-29	19.7	0	52.5	7581 c	90	125
Sunbar 409	NK	4-12	31.5	0	49.5	6074 d	72	100

Table 2. Yield comparisons of commercial Durum varieties and experimental lines.

Variety	Source	Maturity Date	Height in.	% Lodging	Test Weight lbs/bu	Grain Yield		
						lbs/A*	% of Aldura	% of 881
Latin Square 1 (C.V.=6.9%)								
Aldente	WPB	5-5	30.9	40	65	6744 a	109	127
Turbo	WPB	5-5	29.3	40	65	6634 ab	107	125
Aldura	NK	5-4	27.5	40	65.5	6169 bc	100	116
Gem	H&H	4-30	32.3	40	65.5	6053 c	98	114
881	WPB	4-26	28.9	20	64	5306 d	86	100
Yavaros	CIMMYT	4-24	31.5	0	65	5239 d	85	98
Latin Square 2 (C.V.=12.5%)								
1000D	WPB	5-10	27.5	0	63	6264 a	105	117
Aldura	NK	5-4	23.6	0	65.5	5983 ab	100	111
Imperial	WPB	5-5	28.3	60	63.5	5410 abc	90	100
881	WPB	4-26	31.5	0	65	5365 bcd	90	100
Mexicali	CIMMYT	4-26	27.5	70	64	5117 bcd	85	95
Altar 84	CIMMYT	5-1	33.5	70	66.5	4516 d	75	84

*Variety yields within each latin square followed by the same letter are not significantly different at .05% probability level using Duncan's Multiple Range Test.

Table 2. Yield comparisons of commercial Durum varieties and experimental lines.

Variety	Source	Maturity Date	Height in.	% Lodging	Test Weight lbs/bu	Grain Yield		
						lbs/A*	% of Aldura	% of 881
Latin Square 3 (C.V.=8.0%)								
PH884-32	WPB	5-5	25.6	0	65	6251 a	106	117
Aldura	NK	5-5	23.6	0	65	5873 ab	100	110
D5087	FMC	4-30	27.5	50	65	5627 b	96	105
881	WPB	4-26	31.5	0	64	5343 bc	91	100
PH885-9	WPB	4-18	29.5	30	64.5	4693 cd	80	88
D5172	FMC	4-25	27.5	0	64.5	4197 d	71	78
Latin Square 4 (C.V.=7.6%)								
D5318	FMC	4-28	27.5	0	65	5968 a	102	117
Aldura	NK	5-3	25.6	10	66	5841 a	100	115
PH884-11	WPB	4-28	27.5	10	64	5739 a	98	113
D5081	FMC	4-28	23.6	20	64.5	5532 ab	95	109
D5317	FMC	4-26	25.6	10	65	5426 ab	93	107
881	WPB	4-26	27.5	20	64	5082 b	87	100

Table 3. Yield comparisons of commercial wheat varieties and experimental lines.

Variety	Source	Maturity Date	Height in.	% Lodging	Test Weight lbs/bu	Grain Yield		
						lbs/A*	% of Probred	% of Yecora Rojo
Latin Square 1 (C.V.=7.0%)								
911	WPB	5-9	23.6	0	63.5	7149 a	110	125
Probred	NK	4-25	22.4	30	64	6493 b	100	113
Klasic	NK	4-24	21.6	30	65.5	6321 bc	97	110
Topaz	H&H	4-19	24	40	63	5887 cd	90	102
Yecora Rojo	Public	4-21	22	30	65	5726 d	88	100
Baker	WPB	4-24	22	30	65	5481 d	84	96
Latin Square 2 (C.V.=7.9%)								
Siete Cerros	CIMMYT	5-7	23.6	0	63.5	6615 a	109	122
Super X	Public	5-7	25.6	0	64	6517 a	108	121
Oslo	H&H	4-26	31.5	40	64.5	6337 a	105	117
Probred	NK	4-25	23.6	10	64	6046 a	100	112
Yecora Rojo	Public	4-23	23.6	30	65	5393 b	89	100
906R	WPB	4-25	21.6	10	65	5301 b	87	98
Latin Square 3 (C.V.=7.1%)								
5758	FMC	4-29	21.6	10	64.5	6169 a	113	127
5778	FMC	4-30	25.6	0	62	6066 a	112	125
PH984-75	WPB	4-20	23.6	0	64	6049 a	111	125
Probred	NK	4-24	23.6	10	64.5	5427 b	100	112
5715	FMC	4-25	21.6	40	63	5325 b	98	110
Yecora Rojo	Public	4-18	23.6	30	65	4838 c	89	100
Latin Square 4 (C.V.=10.8%)								
PH983-83	WPB	5-3	21.6	0	63	7189 a	119	126
5761	FMC	5-1	21.6	0	64.5	6508 ab	108	114
5742	FMC	5-2	19.6	0	63.5	6226 b	103	109
DA984-129	WPB	5-4	29.5	20	64	6147 b	102	108
Probred	NK	4-26	21.6	20	64	6018 b	100	106
Yecora Rojo	Public	4-24	21.6	20	65	5677 b	94	100

*Variety yields within each latin square followed by the same letter are not significantly different at .05% probability level using Duncan's Multiple Range Test.