

# Small Grain Variety Trials Safford Agricultural Center, 2000

*L.J. Clark and E.W. Carpenter*

## **Abstract**

*Small plot replicate trials were established to test thirteen durum wheat varieties, seven varieties of bread/feed wheat and nine varieties of barley. Platinum was the leading durum wheat variety with a yield of 4550 pounds per acre and Experimental BR 4836 from World Wide Wheat the highest yielding bread/feed wheat variety with 5893 pounds per acre. Patti was the highest yielding barley variety with a yield of 4724 pounds per acre.*

## **Introduction**

The durum wheat, bread/feed wheat and barley variety testing program has continued through the years, except for the 1997 crop year when wheat was not grown on the Agricultural Center. This is done to provide current varietal evaluations for farmers who are able to fit small grains into their crop rotation. Crop rotations remain desirable instead of the cotton mono-culture used by many farmers in the county, but economics have precluded the use of small grains from most farmer's cultural practices.

## **Materials and Methods**

Experimental plots were rowed-off and firmed with a roller prior to planting the variety trials so seed placement would be somewhat consistent from top of beds to bottom of furrows. Plots were planted with a six-foot Van Brunt grain drill with fertilizer attachment, over two 36" beds. The cultural practices applied are described below in the crop history.

### *Crop History:*

Previous crop: Cotton

Soil type: Pima clay loam variant

Planting date: 20 December 1999

Watered up: 22 December 1999

Seeding rate: Wheat 165 lbs/ac, Barley 200 lbs/ac

Fertilizer: 200 lbs/ac of 16-20-0 at planting

200 lbs/ac urea side dressed on 9 February and 29 March

Herbicide: 2-4,D applied on 3 April to control broad-leafed weeds

Insecticide: None

Irrigation: Furrow, watered up and 9 irrigations applied at 45% soil water depletion (from AZSCHED)  
(approximately 34.5 acre in)

Rainfall during the growing season: 0.36 inches

Plot size: 2 rows (6 feet) wide by 45 feet long

Harvest date: Barley 7 June, Wheat 13 June 2000

Heat Units (40/81°F) from watering-up to maturity: 3260 HU

The plots were harvested using a Gleaner Model L combine, catching the grain from each plot in a 5 gallon bucket in the grain bin. These buckets were weighed using a hanging scale and samples were taken to determine moisture and bushel weight.

## **Results and Discussion**

Conditions were extremely dry throughout this study with only 0.36 inches of rain recorded from planting to harvest. The majority of the water used for irrigation came from the well on the property. An analysis of the water showed a pH of 8.3 and electroconductivity (Ec) of 2.4 (or salinity near 1500 parts per million of soluble salts). Water of this quality is not directly detrimental to wheat nor barley, but the salt tends to concentrate in the tops of the beds with evaporation after each irrigation and the resulting salinity can decrease grain yields.

Yield results for the durum wheat variety study are available in Table 1 together with data on grain quality and other agronomic variables. Platinum, a variety from World Wide Wheat, was the highest yielding variety with a yield of 4550 pounds per acre. This variety was the fourth highest in yield in our study in 1999 (1) and yielded nearly 8000 pounds per acre in the Yuma study (2). Bushel weights and 1000 kernel weights were slightly lower than last year as were the plant heights. So, even though the yields were higher in 2000 than in 1999, more water would probably have produced taller plants with fuller grains and probably higher yields.

Table 2 contains the yield and agronomic information for the bread and feed wheat variety study. BR 4836, an experimental variety from World Wide Wheat produced the highest yield at 5893 pounds per acre. Stander, the highest yielding variety in 1999 was at the bottom of the list in 2000. This is not as bad as it seems when one considers that the lowest yield in this year's study yielded 400 pounds per acre more than the average yield for last year. Bonus, a variety from Resources Seeds International, was in second place for both years of the study. As in the durum wheat study, bushel weights, 1000 kernel weights and plant heights were lower than in the study the year before.

Information on the barley variety study is found in Table 3. Yields were lower compared with the 1999 season and Patti was the highest yielding variety with a yield of 4724 pounds per acre. Max, the highest yielding variety in 1999 came in the middle of this study with a yield of 1200 pounds per acre less than the previous year. Gustoe came in second place, yield wise, both years of the trial and like Max produced nearly 1200 pounds per acre less grain than in the year before. It is interesting to note that the wheat varieties yielded better in 2000 where the barley varieties yielded lower.

## **References**

1. Clark, L.J. and E.W. Carpenter. 1999. Small grain variety trials, Safford Agricultural Center, 1999. Forage and Grain, A College of Agriculture Report, The University of Arizona, Tucson, AZ. Series P-118, pp. 107-110.
2. Ottman, M.J. and M.T. Rogers. 1999. Small grain variety evaluation at Yuma, 1999. Forage and Grain, A College of Agriculture Report, The University of Arizona, Tucson, AZ. Series P-118, pp. 111-113.

**Table 1. Yield and other agronomic data from the durum wheat variety trial, Safford Agricultural Center, 1999-2000.**

Variety		Yield per acre @ 10% M	Bushel Weight	% Moisture	% Protein	1000 Kernel Weight	Plant Height	Stems per SqFt
Platinum	www	4549.7 a	59.5 a	8.00 ab	13.4	35	26.9 ab	42.3 a
Kofa	wpb	4506.4 a	59.0 ab	7.80 ab	13.8	44	25.4 abc	39.1 a
Topper	www	4499.4 a	60.0 a	9.14 a	13	35	28.6 a	45.5 a
Matt	apb	4044.5 a	61.0 a	7.80 ab	13.9	41	25.5 abc	39.3 a
Ria	www	3894.0 a	59.8 a	7.48 b	14.3	38	27.4 ab	44.1 a
Kronos	apb	3890.3 a	58.8 ab	8.70 ab	13.6	46	23.8 bc	37.1 a
Bravadur	www	3845.7 a	59.0 ab	8.83 ab	13.8	39	26.6 ab	46.6 a
Duraking	www	3831.6 a	59.3 a	7.65 ab	13.5	37	25.5 abc	39.6 a
YU 894-24	wpb	3781.2 a	61.3 a	7.88 ab	14.1	40	22.5 c	35.9 a
Mohawk	wpb	3781.2 a	59.5 a	8.25 ab	14.7	42	25.4 abc	38.3 a
Deluxe	www	3755.7 a	60.0 a	8.80 ab	13.8	46	26.1 abc	41.1 a
Crown	www	3412.1 a	55.8 b	7.37 b	14.6	35	26.0 abc	37.0 a
Tacna	wpb	3284.8 a	57.8 ab	7.45 b	14.6	44	25.9 abc	41.9 a
Average		3929	59.3	8.09	13.9	40.2	25.8	40.6
LSD (05)		1112	3.03	1.3	--	--	3.4	10.2
CV (%)		19.7	3.57	11.24	--	--	9.18	17.5

1. Values followed by the same letter, within a column, are not significantly different at the 95% level of confidence using Duncan's Multiple Range test.

**Table 2. Yield and other agronomic data from the wheat variety trial, Safford Agricultural Center, 1999-2000.**

VAR		Yield/acre @10% M	Bushel Weight	% Moisture	% Protein	1000 kernel wt	Plant Height	Stems per SqFt
BR 4836	www	5892.6 a <sup>1</sup>	60.8 ab	7.35 ab	14.3	33	24.3 a	51.0 b
Bonus	rsi	5885.2 a	60.5 ab	7.18 ab	14.4	32	25.8 a	64.5 a
Cavalier	www	5760.0 a	60.0 ab	6.75 b	14.3	34	25.6 a	56.8 ab
RSI 5	rsi	5674.5 a	60.8 ab	7.33 ab	13.6	33	24.6 a	56.5 ab
Yecora Rojo	uc	5632.0 a	61.8 a	7.33 ab	14.7	38	24.5 a	56.5 ab
YU995-214	wpb	5548.5 a	60.3 ab	6.95 b	14.2	32	24.8 a	54.8 ab
Stander	rsi	5437.3 a	57.5 b	8.13 a	14.3	29	26.6 a	50.0 b
Average		5690	60.2	7.29	14.3	33	25.2	55.7
LSD (05)		1037	2.95	0.98	--	--	2.84	9.06
CV (%)		12.7	3.3	9.07	--	--	7.58	10.9

1. Values followed by the same letter, within a column, are not significantly different at the 95% level of confidence using Duncan's Multiple Range test.

**Table 3. Yield and other agronomic data from the barley variety trial grown on the Safford Agricultural Center, 1999-2000.**

Variety		Yield/ac @ 10% M	Bushel Weight	Percent Moisture	1000 kernal weight	Plant Height
Patti	www	4723.7 a <sup>1</sup>	47.8 d	9.53 b	35.0	24.4 ab
Gustoe	wpb	4103.4 ab	49.8 bcd	9.83 b	37.0	23.8 b
Nebula	wpb	3567.8 abc	52.0 a	9.30 b	38.5	27.1 a
Horizon	www	3549.2 abc	48.5 cd	10.98 ab	36.5	22.8 b
Max	www	3525.1 abc	50.0 abc	13.98 a	38.5	23.6 b
Baretta	apb	3450.2 bc	51.3 ab	10.25 b	40.0	25.0 ab
Mucho	apb	3342.8 bc	51.3 ab	10.40 b	41.0	22.3 b
Commander	www	3291.7 bc	49.8 bcd	12.00 ab	35.0	24.5 ab
Caliber	www	2465.2 c	50.0 abc	11.93 ab	37.0	26.8 a
Average		3557.7	50.1	10.91	37.6	24.5
LSD(05)		1116.4	1.95	3.02	--	2.7
CV(%)		21.5	2.67	19	--	7.57

1. Values followed by the same letter, within a column, are not significantly different at the 95% level of confidence using Duncan's Multiple Range test.