

# Wheat Variety Trials on the Safford Agricultural Center, 1994

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## **Abstract**

*Thirteen varieties of wheat were tested at the Safford Agricultural Center in 1994. An experimental variety, BR6053 was the highest yielding variety in the trial with a yield of 4453 pounds per acre.*

## **Introduction**

Wheat is a potential alternative crop in the Graham county area. Low prices over the past several years, however, have limited the production. Some interest was generated this year due to higher than normal prices, because of this interest, this trial was initiated.

## **Methods and Materials**

Thirteen varieties of wheat were obtained from the breeders and seed companies that have an interest in wheat being grown in Arizona. Most of these same varieties were grown by Mike Ottman on the Maricopa Agricultural Center. A small plot, replicated field trial was developed for the comparison of these varieties. Plots were planted using a John Deere Van Brunt grain drill, seeding in 6 inch rows. The following crop history indicates the important features of the study.

### **Crop History:**

Previous crop: Cotton

Soil type: Pima clay loam variant

Planting date: 16 December 1993

Seeding rate: Approximately 150 lbs/ac

Fertilizer: 200 lbs/ac of 16-20-0 broadcast pre-plant, 110 lbs/ac urea on 11 February and again on 18 March

Herbicide: None

Insecticide: None

Irrigation: Furrow, watered up and 7 irrigations (approximately 40 acre inches)      Rainfall: 1.57 inches

Plot size: 2 rows (6 feet) wide by 35 feet long

Harvest date: 12 July

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 an electronic hanging scale and samples were taken to determine moisture and bushel weight and for further quality analysis. Plant height and stand counts were taken just prior to harvest.

AZSCHED irrigation scheduling software was used to schedule irrigations on these plots using the following values:

Rooting zone: 3.5 feet

Water holding capacity of the rooting zone: 5.75 inches of water

Management allowed deficiency: 50%

Irrigation efficiency: 75%

## Results and Discussion

The yields and other agronomic characteristics of the wheat varieties tested are found in Table 1. Four experimental wheat varieties yielded higher than any of the registered varieties, which is encouraging. BR6053, from FMC, had the highest yield of the varieties tested with a yield of 4453 pounds per acre. Yields were better than normal at this site, but still lower than desired. Unfortunately, a standard wheat variety was not included in the trial for comparison purposes.

Plant heights were generally lower than normal, so crop management method were evaluated to see if these were less than optimal. AZSCHED was used to predict irrigations so calculated percent soil water depletion levels were abstracted from the historical summary and plotted in Figure 1. It is noted that around 90 days after planting the depletion level was allowed to rise above 60%, this was during the rapid growth time for wheat and could well be responsible for the shorter plant heights. Over the next 40 day period, more water was applied than called for by AZSCHED resulting in negative depletion values or leaching to occur. This provided more than enough water for the plants but may have removed some nutrients due to leaching. AZSCHED calculated a leaching loss of 8.39 inches. After 135 days the percent depletion was allowed to rise to 55% twice, this was during grain fill and may have lowered the final yields below their optimal values.

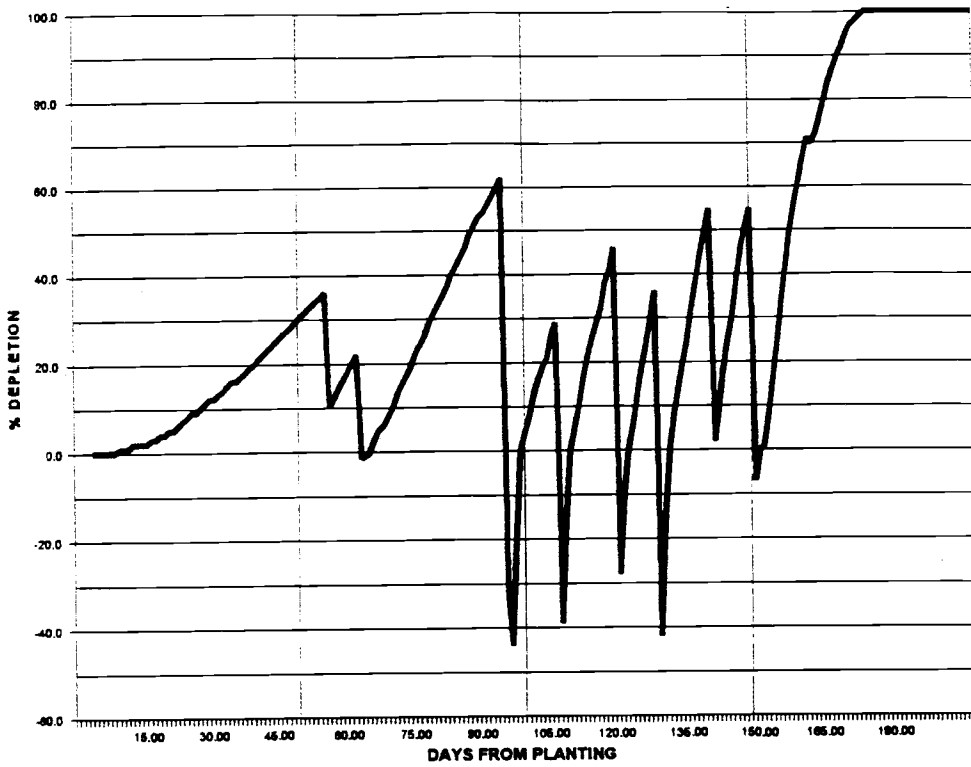
Variations are seen in the seeding rates. The planter was set to deliver approximately 150 pounds of seed per acre for Delano variety and all of the varieties were planted at that same setting. Differences in rates are then related to seed size and weight. There was not a close correlation between the number of seeds planted and the number of heads counted per square foot at harvest time which determined the plant population. This indicates that all of the varieties tillered to fill in the available space.

## Acknowledgements

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**Table 1. Yields and other agronomic characteristics of wheat varieties grown on the Safford Agricultural Center, 1994.**

Variety	Yield (lbs/ac)	Bushel Weight	Plant Height	Seeding Rate	Plant Population
BR6053	4452.8 a	60.0 a	25.5 cd	174	838530 a
PH988-131	4242.0 ab	60.0 a	27.0 bc	158	805860 abc
PH991-71	4019.4 abc	59.3 a	27.0 bc	151	805860 abc
BR8631	3960.7 abc	59.5 a	26.3 cd	149	816750 ab
Cavalier	3937.1 abc	58.5 a	25.8 cd	163	784080 abcd
Poco Rojo	3727.2 abc	57.5 a	21.8 e	167	740520 cde
BR1235	3639.6 abc	52.3 a	24.5 d	194	827640 a
BR7073	3593.0 bcd	56.5 a	26.3 cd	206	751410 de
PH989-80W	3527.7 bcd	58.5 a	25.0 d	153	827640 a
Delano	3441.1 bcd	57.0 a	26.3 cd	149	686070 e
PH990-335	3357.4 cd	58.5 a	24.5 d	162	718740 de
DA990-15	3293.6 cd	60.0 a	29.8 a	154	794970 abc
Express	2796.8 d	59.0 a	28.5 ab	140	784080 abcd
Mean	3691.4	58.2	26	163.1	783242
LSD(05)	734.9	6.51	1.73		64504
CV(%)	17.3	7.66	8.51		7.67



**Figure 1. Percent depletion during the growing season from AZSCHED software calculations.**