Wheat and Barley Variety Demonstration - 1986
TLM Farms - Yuma, Arizona

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ABSTRACT

On-farm variety demonstrations are conducted by the Cooperative Extension Service to demonstrate the commercial potential of new and established varieties of wheat and barley when grown under various environmental and management conditions. As part of an ongoing variety demonstration program conducted in Yuma County, Arizona for the past 20 years, this study was conducted at TLM Farms on the south Yuma Mesa on extremely coarse-textured sandy soils under sprinkler irrigation. Five hard red spring wheat, six durum and four barley varieties were evaluated under TLM Farms management using 13 ft x 275 ft randomized plots with four replications. Statistically significant yield differences were measured that suggest, when compared to previous and other studies, that variety performance on coarse textured, sprinkler-irrigated soils is different than on finer textured flood-irrigated soils.

INTRODUCTION

Public and private organizations are continuously developing new varieties of wheat and barley. These varieties are developed under the controlled conditions of the experiment station and greenhouse and must be tested under commercial conditions, with differing environmental factors and management practices, and compared to established varieties, to demonstrate their commerical potential. The Cooperative Extension Service has long conducted on farm variety demonstrations to meet this need.

Previous studies and demonstrations have indicated that the yield and quality potential of barley and wheat varieties is strongly influenced by several factors including environmental conditions, farmer management and the physical characteristics of the field in which they are grown.

The Yuma County Cooperative Extension Service has conducted wheat and barley variety demonstrations for the past 20 years in which new and established varieties have been evaluated under several different physical and managerial conditions. While variety performance has rarely been consistent from year to year or location to location, over time the suitability of available varieties to certain physical conditions and management practices has been demonstrated.

The demonstration reported here was part of the ongoing on farm variety demonstration program and included 11 established and commonly grown varieties of wheat and barley and 4 selections that were new, commercially available varieties.

MATERIALS AND METHODS

Randomized strip plots, 13 ft. x 350 ft., were planted with a 13-foot grain drill and replicated four times. The grain drill was manually cleaned between each variety.

Five hard red wheat, six Durum and four barley varieties were included in this demonstration and were separately randomized within each of the four replications.

This demonstration was managed by TLM Farms. The crop history and management practices follow:

Planted:	12/18/85
Harvested:	5/6/86
Seedling rate:	Wheat 115 lbs/A
	Barley 100 lbs/A
Irrigation:	Center pivot, self propelled hydraullically driven.
	Thirty-eight inches applied in 75 irrigations.
Fertilizer:	347 lbs N, 39 lbs P_2O_5 and 3.5 lbs sulfur applied
	through the irrigation system.
Previous crop:	Potatoes
Herbicide:	MCPA - 1 pint/A
Insecticide:	None
Soil Type:	Superstition sand

Plots were harvested separately with the grower's combine and weighed in an Arkfield weigh wagon. Samples of each plot were collected at harvest and analyzed according to standard procedures for protein, yellowberry, moisture and bushel weight. Heading date and lodging were evaluated visually in the field and height was measured in the field.

RESULTS AND DISCUSSION

Significant differences in yield were found within the red wheat, durum and barley varieties included in this demonstration. Probrand 775 significantly out-performed all the other red wheat varieties in yield while differences between the durum and barley varieties were less distinct. No yellowberry and only slight lodging in one barley variety were measured.

It is rare for barley to out-yield wheat in Arizona, although under the conditions present in this demonstration, barley out- performed durum and red wheats in terms of yield.

Variety	Heading Date	Height (Inches)	Lodging (%)	Protein (%)	Yellow berry (%)	Bushel Weight (lbs.)	Yield (Lbs/Plot) *					Lbs/ Acre 1/
							Rep. 1	Rep. 2	Rep. 3	Rep. 4	Average	
Red Wheat												
Probrand 775	3-3	25.25	0	12.23	0	63.25	250.97	395.69	432.57	345.00	356.06	4337 a
Probred	3-14	23.25	0	13.06	0	62.00	191.48	340.45	404.78	316.75	313.37	3829 b
Westbred 911	3-14	24.75	0	13.76	0	62.25	237.79	347.28	358.28	299.85	310.86	3786 b
Yecora Rojo	3-2	23.75	0	13.30	0	62.50	201.56	322.49	394.08	314.86	308.25	3754 b
Topaz	3-1	25.25	0	13.42	0	63.00	201.24	311.21	356.18	306.19	293.71	3577 b
Durum Wheat												
Gem	3-11	29.50	0	-	0	61.25	247.92	297.50	290.32	320.56	289.08	3521 a
Westbred 881	3-5	30.00	0	13.63	0	62.25	220.81	300.30	330.93	270.99	280.76	3420 ab
Aldura	3-5	25.25	0	13.98	0	61.50	200.47	320.32	322.73	260.58	276.03	3362 ab
Yavaros	3-14	29.75	0	13.62	0	61.00	265.44	272.71	264.21	292.15	273.63	3333 ab
Mexicali	3-3	29.50	0	14.70	0	57.50	215.84	249.08	352.76	253.22	267.73	3260 ab
Westbred Turbo	3-14	31.75	0	12.81	0	53.00	194.42	225.67	232.49	235.94	222.13	2706 b
Barley												
Westbred Barcott	3-15	24.75	0	13.71	0	43.00	403.30	419.11	477.99	415.35	428.94	5224 a
Westbred Gustoe	3-14	25.25	0	12.87	0	48.50	407.60	406.40	450.79	426.30	422.77	5149 ab
Westbred Gus	3-14	27.50	0	13.00	0	45.25	361.39	409.05	426.90	407.20	401.14	4886 b
Columbia	3-14	29.50	0	12.57	0	25.00	336.27	378.22	422.06	358.17	373.68	4551 c

* corrected to 10% moisture.

1/ numbers followed by same letter are not significantly different at the 5% level.