HARD RED SPRING WHEAT QUALITY EVALUATION
MARICOPA AGRICULTURAL CENTER, 1984

David K. Parsons, Instructional Specialist, John Harper, Pinal County Agriculture Agent, Michael J. Ottman, Extension Agronomist, Vernon L. Young, Research Leader, Spring and Durum Wheat Quality Research Laboratory, North Dakota

Quality is an important factor to consider when choosing a hard red spring or bread wheat variety. Wheat may be discounted if quality standards are not met or a premium may be paid for exceeding quality standards. Hard spring wheat quality is influenced by the variety and by growing conditions during the season.

Hard red spring wheat varieties were grown at the Maricopa Agricultural Center in 1984. Crop history and yield are listed below. At harvest, samples of each variety were sent for analysis to the Spring and Durum Wheat Quality Research Laboratory in Fargo, North Dakota. The quality data are listed below followed by an explanation of the symbols used in the report.

Major deficiencies existed for all varieties in wheat protein and flour protein. Nitrogen was applied late in the season to ensure adequate protein levels in this test, but rainfall and heavy applications of water may have caused the nitrogen levels to be insufficient. Protein levels in Arizona grown wheats are normally higher than indicated in this report. Many minor deficiencies and some major deficiencies in quality occurred in various categories for various varieties. Under the conditions of this test, the variety with the best quality or the most desirable characteristics was Oslo.

Crop History

Location:	Maricopa Agricultural Center, Maricopa, Arizona
Elevation:	1500 feet
Previous Crop:	Cotton
Plot Size:	518 x 20 feet
Seeding Rates:	175 lbs/acre (wheats) 165 lbs/acre (barleys)
Planting Dates:	December 21, 1983 (wheats) December 22, 1983 (barleys)
Herbicide:	None
Insecticide:	Penncap M - 2 pints/Acre, flown on 3/21/84; 3 gal. mis Omni Applicators - Aphids.
Irrigations:	7 for 29.52 acre inches.
Rainfall:	Rainfall contributed an additional 3.81 inches.
Fertilizer:	4 applications of Trian fertilizer - 216.5 lbs N per acre

12/27/83	51 lbs N/A
02/05/84	74.5 lbs N/A
02/29/84	70 lbs N/A
03/31/84	21 lbs N/A

Yield:

Entry	Yield 1/ 2/ (lbs/A)
CIMMYT-INIA Yecora Rojo	5878.6 a
H & H Seed Co. Oslo	5696.2 ab
Northrup King ProBrand 771	5497.0 bc
CIMMYT-INIA Genaro	5481.4 bcd
CIMMYT-INAI Hermosillo	5363.4 cde
Western Plant Breeders WestBred 911 3/	
Western Plant Breeders WestBred 906R	4695.7 f

1/ All yields have been adjusted to a 10% moisture content.
2/ Yields followed by the same letter are not significantly different at the .05 level by the Duncan's Multiple Range Test.
3/ WestBred 911, originally in test, was removed because it required different management practices to achieve representative yields.

Abbreviations:

TW = Test Weight
KW = 1,000 Kernel Weight
LG = Large Kernels
SM = Small Kernels

WM = Wheat Mineral
WP = Wheat Protein
EX = Flour Extraction
M65 = Mineral at 65% Flour Extraction

FP; FLR PRO = Flour Protein
MC; MLG CHAR = Milling Characteristics
MLG PER = Milling Performance
MIX ABS = Mixograph Absorption

MX; MIX PAT = Mixograph Pattern Score
BA; BAKE ABS = Actual Bake Absorption
MT; MIX TIME = Actual Dough Mixing Requirements

DC; DOUGH CHAR = Dough Handling Characteristics
CC; CRUMB COLOR = Example = 100 5
100 = Score received for brightness of the crumb grain
5 = Creamy-the color characteristic of that particular loaf (only the second score is faulted).

CG; CRUMB GRAIN = Example - 86 5
86 = Score received for crumb grain
5 = Open-or characteristic of that loaf′s crumb grain (only the second score is faulted).

LV; LOAF VOL = Loaf Volume

Footnotes:

Column Heading	Footnote
TEST WT	Clean dry - Subtract 1 lb/bu for dockage-free TW.
WHT ASH, WHT PRO, ASH @ 65%, FLR PRO, BAKE ABS (100 g loaf)	14% Moisture basis.
MILL CHAR	5 = Normal. 4 = Normal-soft. 3 = Soft-normal. 2 = Soft. 1 = Gritty. 0 = Very soft.
MIX PAT	Refer to reference mixograms for numerical curve pattern. (1 = Very weak - - - 11 = Very strong).
DOUGH CHAR	9 = Elastic. 8 = Slightly elastic. 7 = Slightly pliable. 6 = Pliable. 5 = Very pliable. 4 = Very elastic. 3 = Bucky. 2 = Very, very pliable. 1 = Extremely pliable. 0 = Dead.
CRUMB COLOR	First column: A realistic score of brightness compared with a 1984 ND standard score as 100. Second Column: 9 = Bright white. 8 = White. 7 = Normal. 6 = Slightly creamy. 5 = Bright creamy. 4 = Creamy. 3 = Very creamy 2 = Gray. 1 = Very gray. 0 = Dull.
CRUMB GRAIN	First column: A relative overall crumb grain score as compared with a 1984 ND standard scored as 90. Second column: 12 = Normal. 11 = Slightly irregular. 10 = Slightly open. 9 = Slightly irregular and slightly open. 8 = Slightly open and slightly irregular. 7 = Irregular. 6 = Open. 5 = Irregular and slightly open. 4 = Open and slightly irregular. 3 = Irregular and open. 2 = Open and irregular. 1 = Harsh. 0 = Soggy.

QUALITY DATA OF SPRING WHEAT SAMPLES 1984 CROP

STATE=ARIZONA STATION=PINAL CO. NURSERY=FIELD PLOTS

VARIETY	STD	BAKE ABS %	MIX TIME MIN	DOUGH CHAR	CRUMB COLOR	CRUMB GRAIN	LOAF VOL CC	BAKE SCORE ***	GENERAL SCORE ***	DEFICIENCIES TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MT	DC	CC	CG	LV
GENARO		60.0	3.50	5	101 4	88 7	725	1	1.0		MJ		MJ	MI		MJ			MJ		MI	MI	MI	MI
HERMOSILLO		65.7	3.25	7	103 5	89 7	875	4	2.3				MJ	MI		MJ						MI	MI	
OSLO	S	62.6	3.25	5	101 4	87 7	815	4	2.7		MI		MJ			MJ					MI	MI	MI	
YECORA ROJO	S	62.7	5.50	7	99 7	85 3	805	3	2.3				MJ			MJ		MI					MJ	
NK 771		61.0	5.50	6	100 7	88 11	785	3	2.0				MJ	MI		MJ		MI	MI		MI			
WPB 906		63.5	4.00	8	100 7	87 7	840	4	2.3				MJ	MI		MJ							MI	
WPB 911		60.2	5.50	5	99 7	87 4	725	1	1.3		MI		MJ	MJ		MJ			MJ		MI		MJ	MI

DEFICIENCIES	TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MIX TIME (MT)		DC	CC	CG	LV
MINOR FAULTING VALUES	57.9	40.3	8	13.9	69.6	.47	12.9	3	2.7.8	61.9	5.75-8.00	2.00-2.75	6	6	8	755
MAJOR FAULTING VALUES	56.9	37.3	18	12.9	67.6	.51	12.4	2	1.9-11	60.4	UNDER 1.75	OVER 8.00	4	3	4	705

*** 1=NO PROMISE 2=LITTLE PROMISE 3=SOME PROMISE 4=GOOD PROMISE.