

QUALITY OF YUMA COUNTY GROWN WHEATS

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The quality of Yuma wheats is often questioned. Those unfamiliar with the types and classes of wheat grown in Yuma probably would accept Yuma wheats if they knew more about them.

WHAT IS WHEAT QUALITY? The Agronomy Monograph #13 published by the American Society of Agronomy on Wheat and Wheat Improvement has the following discussion and definition on wheat quality.

"Physical and chemical differences are strikingly great between different lots and varieties of wheat. These differences have far-reaching effects and become the basis for what is loosely referred to as quality whether the problem relates to testing and evaluating, cereal chemistry research, processing, or economics. Actual quality of wheat is the summation effect of soil, climate, and seed stock on the wheat plant and the kernel components, particularly gluten protein.

Before the quality of several hundred pounds, 3 to 4 pounds, or only a few ounces of wheat can be evaluated, quality must be defined and then measured by suitable methods. The basic definition of wheat quality usually varies from one class of wheat to another and is dependent on the wheat's suitability for a given product. For example, the quality of a soft winter or white wheat variety is defined in terms of its suitability for soft wheat milling and for the production of cakes, cookies, and crackers. The quality of a durum wheat is defined in terms of its suitability for semolina and macaroni production. Hard red winter and spring wheat quality is defined in terms of specific milling and baking properties that determine the suitability of a wheat for hard wheat milling and bread production. Thus, quality of any kind of wheat cannot be expressed in terms of a single property, but depends on several milling, baking, processing, and physical dough characteristics, each important in the production of bread or pastry products. Similarly, quality of durum wheat depends on certain semolina and macaroni properties."

With this type of background, what type of data is available to classify wheats grown in Yuma? Probably everyone has concentrated more on yield and neglected quality. Even University of Arizona tests have concentrated on yield more than quality. There, however, is some Yuma data that can be summarized to provide quality type information.

HARD RED WINTER WHEAT: Cajeme 71 wheat has averaged a bushel weight of 62.6 lbs. in 12 different Yuma County variety trials in 8 years. The range in bushel weight has been from a high of 64 to a low of 60. Protein content, measured less frequently than bushel weight, because of the cost of conducting such a test has averaged 13.3% in 7 different trials during this same period. Lowest protein content was 11.3% and ranged as high as 14.6%. When the Cajeme wheat was classed in all but one case it was classed Hard Red Winter wheat. In 2 milling and baking trials with Cajeme from Yuma it has averaged about 65% flour extraction with flour protein averaging 11.0%. Overall baking scores for Cajeme were only slightly less desirable than the existing variety in use. All of these factors seem to indicate that Cajeme may not be superior to wheats grown in the so called "wheat belt". Cajeme is close enough in quality that it should and has been fairly well accepted as a Hard Red Winter wheat suitable for milling. Table #1 lists quality characteristics for other Yuma grown Hard Red Winter wheats. Data for these wheats, although less abundant than Cajeme, indicates that some can be as good as Cajeme. The predominant variety of HRW wheat grown in Yuma has changed 4 times in 12 years. A variety usually has only lasted about 3 years which makes quality determinations obsolete by the time they are established. When prices for HRW milling wheat have not been good most Yuma growers have found little difficulty in marketing their wheat by exporting or in local feedlots.

DURUM WHEAT: The quality of durum is judged differently in some respects than HRW because of its ultimate use in making pasta products. Quality data for Yuma durums is even less abundant than that for HRW wheats. More data is available for Produra, a Northrup King proprietary variety. Produra has averaged a bushel weight of 63.0 lb. in 6 trials. The range has been from a low of 59.5 to a high of 64.7 for Produra. Three protein determinations averaged 13.6% for Produra with a range from 12.4% - 14.6%. Produra has usually been classed as Hard Amber Durum with an average in 3 trials of 90.9% hard and vitreous kernels. Produra was also rated almost equal to North Dakota durum in 1 quality evaluation by the North Dakota State University Department of Cereal Chemistry. Available data for other durum is presented in Table 2. From these data it appears that Yuma durum does have fairly good quality and it has been accepted at times into the durum market successfully.

Obviously additional tests would help prove the quality of Yuma wheats even more. More determinations will ultimately be made and Yuma wheats will be more widely accepted. Quality factors alone cannot determine which variety or class of wheat a grower decides to plant. It is important, however, from a marketing standpoint that they plant a variety accepted by the market he intends to access. Only that market, whether a wheat miller, pasta maker, or cattle feeder can actually tell the grower if a variety is acceptable. Growers are therefore encouraged to contact a market before they plant their wheat.

TABLE 1: YUMA HARD RED WINTER WHEATS QUALITY FACTORS

	Bushel Weight Lbs.			Protein %			Predominant Class 1/	# Times Classed
	Av.	# Trials	Range	Av.	# Tests	Range		
Inia 66	63.4	5	61.5-64.8	-	-	-	-	-
Sonora 64	62.8	3	62-63.5	-	-	-	-	-
Cajeme	62.6	12	60-64	13.3	7	11.3-14.6	HRW	4 out of 5
Yecora Rojo	63.2	6	62.9-63.7	13.6	5	11.9-15.0	HRW	4 out of 5
Probred	62.7	6	61.9-63.1	13.3	5	12.5-14.4	HRW	4 out of 5
Atm	63.6	4	61.6-64.4	13.2	4	11.9-14.3	HRW	3 out of 4
Zaragosa	61.6	5	60.1-62.6	12.0	5	10.8-12.8	HRW	4 out of 5
Germaines W444	64.4	2	63.4	13.9	1	13.9	HRW	2 out of 2
Tanori	62.8	3	61.8-63.4	12.8	1	12.8	HRW	1 out of 1
WS 13	59.7	2	56.5-62.8	WHITE WHEATS			SWW	1 out of 1
				11.2	2	9.9-12.5	WW	1 out of 1
Siete Cerros	61.4	8	58.0-63.0	-	-	-	-	-

1/ HRW = Hard Red Winter Wheat, SWW = Soft White Wheat, WW = White Wheat

TABLE 2: YUMA DURUM QUALITY CHARACTERISTICS

	Bushel Weight Lbs.			Protein %			Predominant Class 1/	# Times Classed	Av. % Hard & Vitreous
	Av.	# Trials	Range	Av.	# Tests	Range			
Procura	63.0	6	59.5-64.7	13.6	3	12.4-14.6	HAD	2 out of 3	90.9
Cocorit	62.3	4	61.7-62.6	13.2	1	13.2	D HAD	1 Time 1 Time	Less than 60 97.3
Mexicali	62.8	5	61.1-63.6	12.5	4	11.0-13.6	HAD	3 out of 5	83.5
Jori	63.4	2	62.8-64.0	15.7	1	15.7	HAD	1 Time	99.5
WPB1000D	60.5	4	59.2-61.5	13.1	4	11.1-14.2	HAD	3 out of 4	82.3
Aldura	62.4	1	62.4	13.4	1	13.4	HAD	1 Time	94.6
Crane 56M	62.4	4	61.7-63.3	13.8	2	13.8	HAD	2 out of 2	99.3

1/ HAD = Hard Amber Durum Class (75% + Hard Vitreous Kernels), D = Durum Class (60% or less Hard & Vitreous Kernels)