

Feed Wheat Variety Demonstration in Graham County, 1989

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ABSTRACT

Two wheat varieties were grown in Graham county as a follow-up to a previous field demonstration. AC79-97, a red wheat developed by the University of Arizona for the Safford area, yielded 6719 pounds per acre, compared with 6359 pounds per acre for Super-X. The protein differential made the crop values even more important than the yield comparison. AC79-97 produced \$454 per acre, compared to \$423 for Super-X. Using two year's data, AC79-97 produced 85 more pounds of protein per acre than Super-X, with a protein supplement replacement value of \$28 per acre.

INTRODUCTION

In 1988, a field demonstration was performed to aid several farmers, who are end users of their grain, to select the most valuable wheat variety for them. AC79-97 outyielded the other varieties in the test; in 1989, it was compared with Super-X a second time to check on the consistency of its yielding patterns.

MATERIALS AND METHODS

The test was performed on the Tommy Clont's farm at the extreme east end of the Safford valley.

Crop History

Elevation: 3100 feet above sea level
Soil type: Grades from Grabe clay loam to Comoro sandy loam
Planting date: 20 Dec 1988 Rate: approximately 200 lbs/ac
Fertilizer: 200 lbs N ripped in and 200 lbs 11-53-0 preplant
 150 lbs N water run in 3 applications
Herbicide: None
Insecticide: None
Harvest date: 6 June 1989
Experimental design: Paired strips, 3 replications
Plot size: 12 feet by 2200 feet

The plots were planted using a conventional 12 foot International grain drill. One variety was placed on one half of the hopper and the other variety on the other half. Twelve foot strips were created as the planter went back and forth across the field. Small furrows were pulled by shovels mounted on the grain drill to facilitate irrigation. The plots were harvested at maturity with an International combine. Individual plots were weighed separately using electronic truck scales and samples were taken for moisture determination, bushel weights and percent protein.

RESULTS AND DISCUSSION

Table 1. Yield and other agronomic data from wheat varieties on the Clonts farm in Graham county, 1989.

Variety	Plant Height (in)	Moisture (%)	Bushel Weight (lbs)	Yield* (lbs/ac)	Protein (%)
AC79-97	31	11.5	62	6719	14.3
Super-X	33	12.4	61	6359	13.6
Diff	2	0.9	1	360	0.7
Std Dev	2.24	1.22	0.7	320.27	-

* Yields are corrected to 10% moisture.

Table 1 shows that AC79-97 is slightly shorter, matures slightly more quickly, yields more and has a higher protein content than Super-X. All of these serve to corroborate the findings of the previous year (1). The yield differential was greater last year, but the percent protein differential was greater this year.

To determine the bottom line values for the crop, two different approaches may be taken. One is to look at the cash value of the crop applying a premium for additional protein content. The other method is to calculate the extra protein produced per acre by AC79-97 and the value of the additional supplemental feed it replaced. Table 2 supplies grain values at different protein levels from a 'rule of thumb' formula provided by Glenn Nitchals (2).

Table 2. Value per hundredweight of wheat over a range of base wheat values and percent protein.

Base Value	Percent Protein						
	13.00%	13.25%	13.50%	13.75%	14.00%	14.25%	14.50%
	----- Value per cwt -----						
\$6.00	6.00	6.05	6.10	6.15	6.20	6.25	6.30
\$6.25	6.25	6.30	6.35	6.40	6.45	6.50	6.55
\$6.50	6.50	6.55	6.60	6.65	6.70	6.75	6.80
\$6.75	6.75	6.80	6.85	6.90	6.95	7.00	7.05
\$7.00	7.00	7.05	7.10	7.15	7.20	7.25	7.30

If we select a base value of \$6.50 per cwt wheat, then the Super-X, with a protein content of 13.6%, would be valued at \$6.60 per cwt. The AC79-97, with a protein content of 14.3%, would be valued at \$6.75 (note the bold faced figures in Table 2). Using these values, AC79-97 produced \$453.52 per acre compared with Super-X's \$422.87, a difference of \$30.65.

To determine the protein replacement value of the wheat, multiply the total yield of wheat by its percent protein; then compare the protein produced per variety. The difference is the extra protein produced by the variety that can replace the supplemental soybean meal, which has a protein content of 48% (Table 3).

Table 3. Computations of protein content of AC79-97 and Super-X for the 1988 and 1989 seasons.

Variety	1988			1989			Avg T Prt lbs/ac
	Yld* lbs/ac	%Prt*	Tot Prt* lbs/ac	Yld lbs/ac	%Prt	Tot Prt lbs/ac	
AC79-97	6192	13.9	861	6719	14.3	961	911
Super-X	5703	13.8	787	6359	13.6	865	826
Difference			74			96	85

* yld = yield, Prt = Protein, Tot Prt = Total Protein

This 85 pounds of additional protein per acre provided by AC79-97 is equivalent to 177 pounds of soybean meal. At a price of \$320 per ton, this is worth \$28.33 per acre.

A fairly consistent difference of around \$30 is found by both methods, both in favor of the AC79-97 variety of wheat.

REFERENCES

1. Clark, L.J. and R.E. Cluff. 1988. Feed wheat variety and rate of planting demonstration in Graham county, 1988. Forage and Grain, A College of Agriculture Report, University of Arizona, Tucson, AZ. Series P-74, pp. 61-3.
2. Personal communication with Glenn Nitchals of Valley Seed Company, Casa Grande, AZ.