WHEAT VARIETY PERFORMANCE EVALUATION

Texas AgriLife Extension Service

Nueces County

Cooperator: Texas AgriLife Research Center

Authors: Jeffrey R. Stapper, County Extension Agent -AG/NR

Robert W. Duncan, Extension Agronomist

J.R. Cantu, Demonstration Assistant

Summary

This test was located on the Texas AgriLife Research & Extension Center Farm on Hwy 44, just west of Corpus Christi. Soil moisture conditions at planting were good at planting depth, and rainfall was above normal in the growing season. Eleven spring wheat varieties were evaluated and the grand mean yield for this test was 50.9 bushels per acre, while numerically the top performing variety was Expresso at 58.6 bushels per acre, although not statistically significant from Albany, Faller, Express, and Dinero.

Objective

To evaluate commercially available spring wheat varieties growing under Nueces County conditions in a replicated test.

Materials and Methods

Wheat varieties were planted in a replicated, randomized complete block. Each variety consisted of five rows 23 feet in length. Seed was planted using a grain drill. Soil moisture conditions at planting were good at planting depth. Rainfall in the season was above normal and rainfall occurred as follows; January = 2.39 inches, February = 4.25 inches , March = 1.12 inches, and April = 0.28 inch, for a total of 8.04 inches in the growing season.

Rust rating were taken on March 31 by randomly selecting ten leaves out of each plot (the first leaf below the flag leaf) and then scoring each leaf as recorded in Table 2.

Wheat has hand harvested on May 13 and May 14, with the plot size harvested being 12 square feet per plot. The wheat was then thrashed with machine and weighed on gram scales.

Table 1: Agronomic data for spring wheat variety demonstration, Research & Extension Center, Nueces County, Texas, 2009.

Planting Date: 1/12/2010	**Rows/Plot:** 5	**Row Width:** 9 inch
Fertility: 57-40-0-0.8 Zn on 11/5/09		**Previous Crop:** Failed canola - drought
Planting Rate: 90 lbs/acre	**Soil Type:** Clareville loam	**Rainfall:** (inches) Jan = 2.39 Feb = 4.25 Mar = 1.12 Apr = 0.28

Results and Discussion

Table 2. Comparison of percent heading, percent rust, percent incidence between spring varieties, Research & Extension Center, Nueces County, TX, 2010.

Variety	Seed Source	Heading (%) 3/30/10	Percent Rust[2] 3/31/10	Percent Incidence[2] 3/31/10
Expresso	Atkison's Seed & Supply Co.	83.8 a	0.48 d	27.5 b
Express	Atkison's Seed & Supply Co.	65.0 b	6.83 cd	95.0 a
Banton	Douglas King Seed Co.	4.5 de	6.90 cd	90.0 a
Verde	Douglas King Seed Co.	90.0 a	7.95 cd	100 a
Howard	NDSU	25 c	8.10 cd	90.0 a
Freyr	Atkison's Seed & Supply Co.	20 cd	11.95 bcd	100 a
Goliath	Atkison's Seed & Supply Co.	1.0 e	13.45 bcd	97.5 a
Faller	NDSU	1.3 e	15.60 abc	95.0 a
Albany	Douglas King Seed Co.	1.0 e	24.13 ab	95.0 a
Norm	Douglas King Seed Co.	81.3 ab	27.10 a	100 a
Dinero	Douglas King Seed Co.	77.5 ab	28.18 a	100 a
LSD (P=.05)		16.59	13.465	16.89
P>F		0.0001	0.0020	0.0001

[1]Percent Incidence is percentage of leaves evaluated that contain the rust from ten leaves randomly selected from the first leaf below the flag leaf

[2]Percent Rust is estimate of rust covering ten randomly selected leaves, one below the flag leaf.

Table 3. Comparison of percent moisture, bushel weight and yield per acre between wheat varieties, Research & Extension Center, Nueces County, TX, 2010.

Variety	Seed Source	Moisture (%)	Bu Weight (Lbs.)	Yield per Acre[1] (Bu)
Expresso	Atkison's Seed & Supply Co.	15.2 a	57	58.64 a
Albany	Douglas King Seed Co.	15.2 a	58	57.57 a
Faller	NDSU	15.9 a	57	55.23 ab
Express	Atkison's Seed & Supply Co.	15.4 a	51	54.90 ab
Dinero	Douglas King Seed Co.	15.8 a	56	54.70 ab
Freyr	Atkison's Seed & Supply Co.	15.8 a	55	52.67 abc
Goliath	Atkison's Seed & Supply Co.	15.0 a	53	47.97 bcd
Verde	Douglas King Seed Co.	15.6 a	57	46.97 bcd
Norm	Douglas King Seed Co.	15.7 a	54	46.67 bcd
Banton	Douglas King Seed Co.	16.1 a	54	44.10 cd
Howard	NDSU	15.9 a	45	41.20 d
LSD (P=.05)		1.153		8.196
Std Dev		0.672		4.778
CV		4.3		9.38
Grand Mean		15.6		50.96

[1]Yield per acre is from three replicates and adjusted to 13.5% moisture.

Means followed by same letter do not significantly differ (P=.05, Walter-Duncan k=100)

Three replicates were treated for leaf rust on April 1, 2010 with 14 oz/acre of Quilt. The fourth replicate was not treated for rust, and data for this fourth replicate was not included in Table 3 for yield data. The yields for the fourth replicate (not treated for rust) were 5 to 13 bu/ac lower than the treated replicates.

Conclusions

Using the market price at harvest ($4.90 per bu), the top yielding variety had a value of $287 per acre, while the least productive variety was valued at $202 per acre, a difference of $85 per acre. This significant difference between varieties illustrates the need to continue to evaluate varieties for their production performance under local conditions.

Acknowledgements

The cooperation and support of James Grichar of Texas AgriLife Research for planting this demonstration is appreciated and the support of seed companies by providing seed is also appreciated. The support of Dan Fromme, Extension Agronomist for assistance in evaluating leaf rust and Daniel Hathcoat, Extension Assistant for statistical analysis of yield data is also appreciated.