2008 Crop
Micro Milling and Baking Evaluation
Set 2008 M08

Southern Uniform Fusarium Head Blight Nursery
Ben Edge, Clemson University: Entries # 810676 - 810727

A total of 52 samples were grown by Clemson University in South Carolina for this regional cooperative nursery sponsored by the US Wheat and Barley Scab Initiative (USWBSI) and the North American Millers Association. Funding for the evaluation was provided by the USWBSI. The Fusarium head blight data included on the score sheet was provided by Paul Murphy based on the average of information provided by cooperators for the nursery. The standard quality data was compared to the "historical average" for the cultivar, and quality scores for all entries are adjusted to this average. The samples in this nursery were compared to entry Ernie. Of the 831 cultivars in the SWQL database of Allis-milled cultivars, Ernie ranks 722nd for Milling Score based on data from 8 millings. The following table compares two checks, Ernie and Truman, with their "historical data" from the Micro Milling databases. The samples had limited weathering of grain, no observed pre-harvest sprouting, and very limited kernels affected by Fusarium. In general, the two checks were within two standard deviations of the mean of their database average. The exception is the baking scores based on the sucrose SRC values. Ernie's sucrose SRC value was significantly greater than normal compared with the Advanced Milling database. However, its Baking Quality Score was similar to Allis Database. In this nursery, a cross-over between the checks occurred for expected performance for both Lactic acid and Sucrose SRC. The milling and softness equivalent ratings should be used as the primary selection criteria for evaluating the quality of a cultivar. The solvent retention capacity levels of cultivars in this trial may not be characteristics of the cultivar's performance in other environments and should be used as a secondary selection trait only.

Southern Uniform Winter Wheat Scab Nursery

SAMPLE NO.		ENTRY	MILLING QUALITY SCORE	BAKING QUALITY SCORE	SOFT. EQUIV. SCORE	TEST WT. LB/BU	ADJ. YIELD %	SOFT. EQUIV. %	FLOUR PROT. %	LACTIC ACID SRC	SUCROSE SRC %
		Nursery Average	66.9	72.1	68.2	62.2	69.7	49.9	10.96	86.8	90.40
		Allis Database - Ernie	54.6	75.8	75.7	60.1	75.9		8.89	99.0	
		Ernie	54.63	75.83	75.71	61.46	67.20	52.54	10.05	100.92	92.54
Database	Average	Ernie	55.9	64.3	67.6	60.2	68.3	55.0	8.8	87.4	84.1
Database	St. Dev	Ernie	4.3	14.7	10.5	1.7	0.8	2.5	0.6	11.1	3.3
		Tribute	68.03	76.70	67.04	63.81	69.87	49.50	10.49	97.51	89.12
Database	Average	Tribute	69.0	47.4	59.1	63.9	70.6	53.8	8.3	102.6	88.7
Database	St. Dev	Tribute	5.7	10.4	7.2	2.3	0.7	4.4	0.6	6.5	3.0

Milling yield is the most heritable of the traits that we evaluate. Ernie is generally considered poor for flour extraction. New cultivars with Fusarium resistance should have improved flour yield relative to Ernie. Lines with flour yield of 68% are likely to be cultivars with poor flour extraction. Lines with softness equivalent values below 50% are generally considered to be poor for a wide range of soft wheat products. They tend to be particularly poor for cakes. In this set the North Carolina samples with softness equivalents below 40% are likely true hard wheats.

Within this nursery the lines with the best combination of milling yield, softness equivalence, and sucrose SRC are: AR 97002-10-2, ARGE97-1047-2, D04*5546, GA031454-DH7, M03-3616B, M04*5109. The lines with very high softness equivalent (56% and greater) and low sucrose SRC (less than 90%) likely are well suited to cake applications. M04*5109 had good milling and flour quality with greater than normal gluten strength as measured by lactic acid SRC. This line may have some specialty applications for products such as crackers.

Coupling the Fusarium head blight index and severity information (Averaged across all locations) to the quality data will give an index for selecting crossing parents. Among the lines with FHB index and severity similar to Ernie, the following lines had the best milling and flour quality: AR 97002-2-1, LA01162D-131-8-B, NC05-21090, and M03-3616B. The milling and flour quality selection was based on adjusted flour yield and softness equivalent.

Please contact me if you have questions concerning these evaluations.

Best regards,
Edward Souza