

A Look at 2005 Northern Wheat

Overall crop good despite worries about functionality and scab damage

Weather always causes concerns for farmers on the northern plains, and 2005 was no exception. Rain last May and June produced adverse moisture conditions and diseases, primarily

Northern U.S. Wheat



Sally Sologuk

Fusarium head blight or scab. A dry harvest aided the situation. On average, the 2005 northern U.S. wheat crop looks good, despite some concerns with functionality and scab damage.

“Although this year’s crop has overall good quality,

the functional performance in 2005 is not what buyers are used to or what we expected,” says Brian Sorenson, North Dakota State University (NDSU) wheat quality specialist and technical director at Northern Crops Institute, Fargo. “Many of our customers are interested in the crop’s functionality or gluten quality, and it appears that the gluten strength is weaker this year.”

Fifty-seven percent of the 2005 hard red spring (HRS) wheat crop graded No. 1 northern spring (NS) or better, according to the 2005 U.S. HRS Wheat Regional Quality Report. Average HRS test weight was 60.2 pounds per bushel. The average grade for the region’s 2005 durum was No. 1 hard amber durum (HAD), according to the 2005 U.S. Northern Durum report. Average durum test weight was 60.8 pounds per bushel.

HRS Milling and Baking Characteristics

HRS flour extraction, the proportion of the wheat kernel that can be milled into flour, is higher this year, at 70%, using a Buhler laboratory mill. This is good news for millers who depend on high extraction for profitability. Flour ash (mineral) content is higher in the 2005 crop; lower ash generally results in whiter flour with fewer bran specks.

As protein content increased in the 2005 crop, wet gluten and baking absorp-

tion improved. The crop produced an average flour protein content of 13.4%, higher than the five-year average of 13.2%. Average wet gluten was 35.2%, a reflection of higher average protein content. Falling number and amylograph peak viscosity averages for 2005 were up, due to dry conditions at harvest that resulted in little or no incidence of pre-harvest sprouting.

From a baking standpoint, the HRS quality is quite good, according to Sorenson. “What matters to bakers is how the flour bakes and how well it makes products that are traditionally made with HRS,” he comments.

Higher absorption results in higher moisture content and better quality bread. Average baking absorption (the amount of water needed to make a dough) for the four-state region is 64.1%, up from last year and the five-year average. Loaf volume appears to be similar to last year.

Durum Quality and Breeding

“We are definitely excited about a much higher quality durum crop this year,” says Sorenson. One of the major concerns in 2004 was the poor semolina and pasta color. The crop did not have the bright golden color that is associated with northern durum. This year, the color is much better than 2004 and the 5-year average.

Due to challenges of weather and crop disease, durum production acres have moved west during the past decade into western North Dakota and Montana. In response to this change, durum producers see a decrease in scab or Fusarium head blight (FHB) disease.

While HRS wheat breeders have been able to build disease resistance into their new varieties, durum varieties with FHB resistance are still in the developmental stages. Dr. Elias Elias, NDSU’s durum breeder, screened 7,000 durum wheat lines for scab resistance and found none.

He located a few durum lines from Tunisia that have moderate resistance to scab. Elias is in the process of transferring this resistance to North Dakota durum cultivars but notes that it is a lengthy process because of the poor agronomic and quality traits of the Tunisian lines.

That Old Nemesis... Scab

When the 2005 harvest began, scab (FHB) was found in some areas, causing alarm among milling companies. As the 2005 harvest progressed, scab caused the largest problems in the eastern and central parts of the growing region, resulting in a loss of yield and higher levels of DON or vomitoxin.

For bakers, scab can affect baking quality and gluten strength, making mixing characteristics weaker than normal and handling properties somewhat sticky. Enzymes found on a scabby kernel can break down protein and, consequently, reduce gluten strength and adversely affect the bread- and pasta-making properties of the flour.

"Fortunately, the levels of scab were low enough this year that most of the grain handlers and flour millers are able to pur-

HRS flour extraction is higher this year—which is good news for millers who depend on high extraction for profitability.

chase enough spring wheat to meet their needs," Sorenson says.

How do milling companies counteract scabby wheat? The spokesperson for one national milling company commented, "We source grain as needed from areas less affected with scabby wheat, just as we would for other problem factors in any given year.

"Since we produce many whole grain products, we are probably more adversely affected by wheat scab than are white flour producers," the spokesperson added. "To manage that concern, we source grain from the less affected areas, and we clean our grain harder (remove more material during cleaning) to essentially eliminate as many scabby kernels as possible. Obviously, these measures increase the cost of the raw materials and are more necessary in some years than others," he concluded.

Looking at Global Markets

Sorenson traveled with the U.S. Wheat Associates to present the 2005 HRS and Durum Crop Quality Seminars to importers in Hong Kong, Thailand, Malaysia, Philippines, Taiwan, Japan, Korea, China, Tunisia, Algeria, and Morocco.

"In Asia, the customers and government officials that we talked to are most interested in HRS wheat. Historically, this is an area where we have very strong mar-

kets and good repeat customers," says Sorenson. "They voiced a lot of concern over the gluten functionality data, which is the first test that millers look at when they are evaluating grain. Canadian wheat is also showing problems with gluten strength, so it is just another indication of weather problems," he says.

"In North Africa, many questions centered on durum quality, functional performance, and pasta quality, which appears to be consistent with past years. Algeria has already purchased some U.S. durum during this calendar year. They are

glad to see that the color of the durum crop has improved. North Africans are also very interested in HRS and hard red winter wheat quality."

2005 Regional Quality Reports are available from the U.S. Wheat Associates web site at <http://www.uswheat.org/cropquality-reports>. The reports are available in English, Chinese, French, and Spanish.

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