

# Surveying Wheat Quality

Accurate results and reports are critical to milling industry.

It is that time of year again when the wheat milling industry turns its attention to the U.S. winter wheat harvest. Wheat buyers, production managers, and quality assurance departments for

flour milling companies around the world spend countless hours and dollars examining harvest reports and collecting samples as early as possible to assess the quality of this year's wheat crop.

So, why is it so important to survey the quality of the crop, and why do we need this information so quickly? The short answer is simply because the quality of the wheat harvested is different from one year to the next due to environmental conditions during the growing season, as well as new varieties of wheat that are being widely accepted and grown.

To explain the importance of the crop quality survey further, a better understanding of its purpose and the process is required.

## The Purpose and Process

Delivering a consistent product to customers is crucial for both the flour miller and the baker. The time of transition between old crop and new crop is critical, since millers and bakers want to minimize the impact of real or perceived quality changes to

their customers.

Millers must make adjustments to the wheat blends and mill flow to maximize extraction and minimize the difference in quality to the bakers.

The bakers must adjust blends and formulations to accommodate changes in absorption, mixing time, and a multitude of other variables to maintain the quality of their products and production efficiencies.

In most cases, millers and bakers prefer to transition from old crop wheat to new crop in stages to minimize the impact of the crop change.

However, in years where the carry-over of old crop wheat is smaller than usual, or in the event the new crop presents quality improvements, this



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transition may be accelerated.

Understanding changes in the new crop wheat quality as soon as possible provides a competitive advantage to millers and bakers who are trying to secure wheat supplies from regions where the quality is found to be optimal in meeting quality needs.

Wheat flour is used to produce a wide variety of finished products. The broad range of end-use products requires a wide range of different quality characteristics from the wheat.

Identifying where these quality traits are located, or even if they exist at all, is vital to maintaining a consistent product for customers.

If the quality of the wheat is changed significantly, it may be necessary for millers to work with bakers to adjust the quality characteristics of the flour requirements, so that both parties can benefit economically.

For example, in years where protein content is lower than average, it may be possible to use a lower protein content flour for certain baked goods. This can save the miller and baker the cost of sourcing more expensive, high-protein wheat.

## Early sampling is critical for maximum effectiveness of wheat quality surveys.

- Mark Fowler, associate director,  
IGP, KSU

### Wheat Harvesting Period

On the average, the United States produces more than 2.2 billion bushels (60 million metric tons) of wheat each year and is one of the leading world exporters, making the quality and quantity of the harvest an event of global interest (see Figure 1 on page 32 for major wheat growing areas).

Harvesting hard red winter (HRW) wheat normally begins in the southern part of Texas toward the end of May and continues through August, as producers complete harvesting the crop in the northwest part of the country.

Harvesting soft red winter (SRW) wheat normally begins around the same time in the southeast part of the United States and is completed in July. The majority of the winter wheat crop is harvested in June and July.

The large geographical area, wide

range of environmental conditions, and long harvest season make it difficult to assess the quality of the HRW harvest in a timely manner.

Much of the wheat harvested in Texas by mid-June is in transit to export customers or being processed already by domestic flour mills, before the HRW crop in Montana, Idaho, and the Pacific Northwest is harvested.

For this reason, many harvest surveys are broken down into regional areas covering a portion of a state to allow faster evaluation of the wheat quality. These regions are defined according to location, as well as similar growing and environmental conditions that may impact quality.

### Sampling is Critical

Early sampling is critical for maximum effectiveness of wheat quality surveys.

Due to the large areas to be sampled and the need for samples to be processed quickly, most companies conducting quality surveys employ one or more individuals dedicated to traveling in order to follow the progression of harvesting.

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## U.S. Wheat Crop Survey



Figure 1. This map shows the key wheat-growing regions by class in the United States. Map courtesy of: Copyright© 1996 CII Laboratory Services, Kansas City, MO.

distances to visit country elevators at the peak of harvest. They collect representative samples of the wheat delivered to the elevators and then send them to the lab as quickly as possible.

Each wheat sample is tested rapidly to determine and assess quality characteristics such as grade, moisture, test weight, protein, thousand kernel weight,

and falling number.

Results are posted and distributed daily to satisfy those individuals looking for information. Milling performance and flour quality characteristics require more time and a larger sample size to evaluate effectively.

Individual samples are blended together into composite samples by region in predetermined protein ranges for further testing to determine these other quality characteristics.

### Quality Factors

The wide range of end-use products requires many different tests to define the quality characteristics of wheat for millers and bakers.

Once individual samples are blended into a larger composite sample, it is milled in an experimental mill to determine an estimated flour yield, as well as to produce flour for further testing.

In addition to the standard moisture, ash, protein, color, and falling number testing performed on the flour, a range

of flour quality tests to determine dough and mixing properties also are conducted.

The farinograph, alveograph, and mixograph are the most requested dough rheology tests. These tests record flour and dough properties important to the baker, such as water absorption, stability, and mixing tolerance. Once again, it is the wide variety of end-use product characteristics that require such extensive testing of the flour.

The farinograph and mixograph are widely considered the preferred tests to determine mixing time, stability, and water absorption rates for the flour. The alveograph is the test preferred for bakers concerned with elasticity and extensibility of the dough.

There are a number of other tests used to determine flour quality. It is nearly impossible for wheat surveys to perform every test for every wheat region and class; however, many laboratories will perform further testing as requested.

### The Surveys

While results of surveys conducted by independent milling companies are confidential and used to gain a competi-

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tive advantage in the market, there are a few surveys that are available publicly.

For example, the U.S. Wheat Associates (USW), in cooperation with several public universities, state wheat commissions, and the U.S. Department of Agriculture, publishes a comprehensive annual Crop Quality Report covering all six classes of U.S. wheat. As part of their survey, updates on crop quality and harvest progress are posted weekly by class on the USW's website ([www.uswheat.org](http://www.uswheat.org)) beginning in early June.

USW is committed to helping buyers of all classes of wheat produced in the United States make the best possible purchasing decisions based on current wheat quality information throughout the harvest season. More information about this survey can be found on the USW's website.

State and regional wheat marketing organizations also publish independent crop quality reports that are class-specific. Plains Grains, Inc. (PGI) is a private, non-profit cooperative which conducts and publishes a HRW wheat crop quality report in partnership with several state wheat commissions.

The quality survey completed by PGI

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- Mark Fowler

covers the entire HRW wheat-producing region extending from Texas through the Great Plains states to the Pacific Northwest production region. More information on this survey can found at [www.plainsgrains.org](http://www.plainsgrains.org).

The Northern Crops Institute, Fargo, ND, and the Wheat Marketing Center, Portland, OR facilitate and publish class-specific reports for Soft White, Hard Red Spring, and Durum wheat classes

CII Laboratory (CII) conducts the largest and most extensive crop quality survey available to its subscribers. The annual CII wheat quality surveys include HRW wheat, SRW wheat, and Hard Red Spring wheat.

Survey results are available on CII's

website and from email distribution to companies and organizations that support the cost of the survey by subscribing to this service.

This partnership allows larger companies a confirmation of the results for their surveys. It also allows smaller companies and exporters access to early information, which many do not have the time and resources to collect on their own.

Information regarding the CII survey can be found on its web site at [www.ciilab.com/cropsurv.htm](http://www.ciilab.com/cropsurv.htm)

So as the U.S. winter wheat harvest begins, keep informed about its progress and the harvest quality. Help maintain the competitive advantage of your company by identifying the changes in the wheat quality early.

The quality of the wheat harvested varies annually, and understanding these changes and their potential impact can make a significant difference for a company and its customers.

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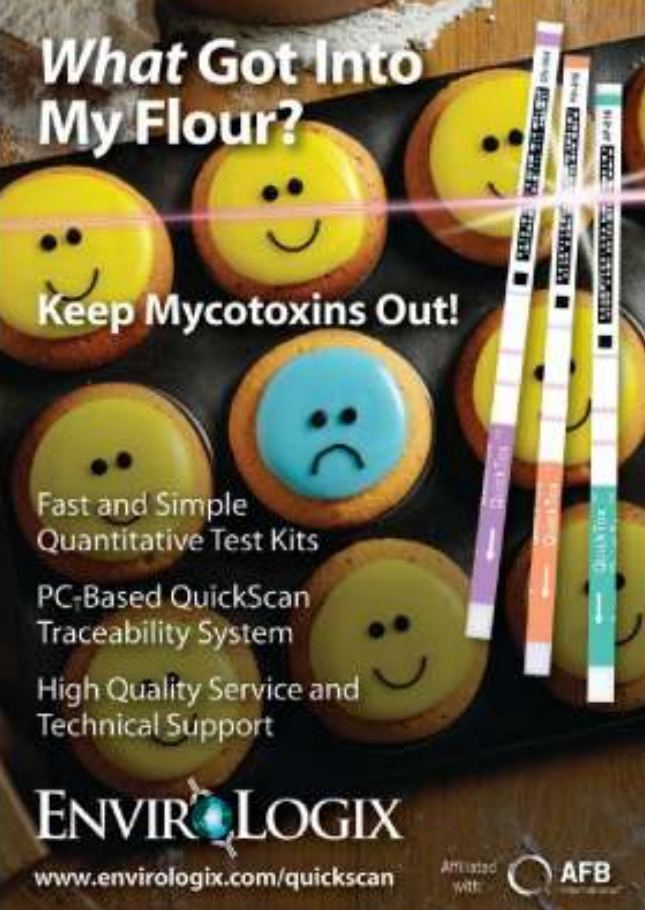
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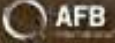
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