

## **Some Wheat Growers Receive Discounts for Low "Falling Number"**

The Idaho Wheat Commission has recently been contacted by a handful of growers who have received a discounted price this year due to something called low "falling numbers." Many farmers have reported being unfamiliar with the Falling Numbers Test, which is not surprising: The last time growing conditions in Idaho caused falling numbers to be such a widespread problem was nearly 15 years ago. The Falling Number test measures the effects of sprout damage. This issue of the Idaho Wheat Newsletter will focus solely on falling numbers and protein problems experienced in this year's crop.

Falling numbers and protein problems affect Soft White Wheat this year in both northern and southern Idaho.

### **Why is a Falling Number Value Important?**

The level of enzyme activity measured by the Falling Number Test affects product quality. Wheat with a low falling number has lower test weight and results in less flour yield for the miller. It also impacts baking quality. The flour absorbs less water, which affects bread yield. Crust strength and crumb texture are inferior and shelf life is shorter. Product can be sticky and gummy. The grain handler or miller will need to blend low falling numbers wheat with a higher quality wheat to reach flour spec. That is why discounts are being applied at point of purchase.

### **What is the Falling Numbers Test?**

The Falling Numbers Test indicates that sprout damage may have occurred. It means that changes to the physical properties of the starch portion of the wheat kernel has already happened.

- The falling number instrument analyzes viscosity by measuring the resistance of a flour and water paste to a falling plunger. The time (in seconds) for this to happen is known as the falling number.
- Falling number results are recorded as an index of enzyme activity in a wheat or flour sample and results are expressed in time as seconds.
- A high falling number (for example, above 300 seconds) indicates minimal enzyme activity and sound quality wheat or flour.
- ***A low falling number (for example, below 250 seconds) indicates substantial enzyme activity and sprout-damaged wheat or flour.***

### **What Causes Low Falling Numbers?**

Some growing regions in northern Idaho were adversely impacted by rain at harvest. These weather conditions can lead to sprout damaged wheat, resulting from kernels that have initiated the germination process and activated enzymes that begin to break down starch and protein.

In southern and eastern Idaho, wheat kernels with low falling numbers were likely caused by frost at some of the higher elevations or by cool growing conditions that lingered for a prolonged period. Cold weather that keeps the wheat kernel from ripening and going dormant seems to cause chemical changes to the starch in the kernel, and results in low falling numbers. This characteristic is called late maturing alpha-amylase.

Late maturing alpha-amylase has not been widely selected against in US breeding programs, and expression of this characteristic is often found in varieties not adapted to high elevation growing conditions. Varieties released for production in other areas may have a tendency toward sprout damage, or may actually have late maturity alpha-amylase activity, when grown in higher elevation in eastern Idaho. The Idaho Wheat Commission will put additional emphasis on research to determine environmental and varietal influence on sprout and alpha-amylase characteristics.

### **Why is My Wheat Being Tested This Year?**

Overseas customers are aware of the rains that occurred at harvest in N. Idaho and in portions of Washington. They have expressed their concerns to exporters about sprouted wheat, which has resulted in specs written for a minimum 300 falling number and maximum 0.2% sprout damage. Exporters are now requiring local elevator operators, who will be shipping wheat for export to sample and test for low falling numbers. Domestic millers have also voiced their concern, which is why wheat in eastern Idaho, designated for domestic use, is also being tested.

### **Is the Sampling Done at the Elevator Accurate?**

Producers should be aware of the regulations that require elevators and warehouses to properly sample and grade the crop on a "per-conveyance" (eg., truckload delivery) basis. The Federal Crop Insurance (FCIC) policies for grains and most oilseeds require samples to be graded under the authority of the U.S. Grain Standards Act or the U.S. Warehouse Act. For more information on the U.S. grain grading see the GIPSA-FGIS Web site at <http://www.usda.gov/gipsa/>

To ensure that producers receive the maximum quality loss adjustments available, each sample grading certificate needs to list all weather-related crop damage and quality factors that result in a grade that qualifies for quality loss adjustment. Low-test weight, frost, shrunken and broken kernels, scab and sprouted kernels are examples of weather-related damage. Keep in mind that weather-related damage does not include heat damage caused by the improper drying of wet grain.

To qualify for quality loss adjustments, the samples must be taken by a certified loss adjuster or a disinterested third-party upon delivery to the elevator, not the insurance agent or the producer. In addition, if the grain is stored on-farm, the grain cannot be commingled with grain from other fields. Contact your crop insurance provider if you have any questions about your particular situation.

### **Protein Discounts on 2009 Wheat Crop**

Although protein is positive in the hard wheat classes, Asian customers seek Soft White Wheat that is between 8.5 and 10.5 percent protein. Protein levels over 11.0% are out-of-spec and occur about every twelve years or so, on average. Protein levels this year averaged 11.2%. As a result, some exporters have begun imposing a two-tiered schedule with wheat under 10.5 percent receiving a premium and that over 10.5 percent receiving a discount.

Soft White customers use the wheat for cookies and crackers. The low protein needs to deliver a soft bite as in cakes, or a crisp bite as in cookies. When the protein gets too high the product is hard to bite. It may be chewy or overly dense (tough to bite).

As highlighted in our last Idaho Wheat Newsletter, some overseas customers are paying extra to get Soft White Wheat at 8.5% protein. We encourage growers with any Soft White Wheat under 11.0% to keep it segregated and search for the best market possible.

***In surveying Idaho elevators, very few are discounting for high protein soft white, and none to date are offering a premium for low protein soft white.***

Ongoing updates from the Idaho Wheat Commission can be found at the IWC website, shown on the link below: