



Cereal Grain Quality Evaluation Sample Report Form

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Lab ID	Sample Description	Grain Moisture	Test Weight	Starch	Crude Protein	Falling Number	DON
		%	lbs/bu	%	%	seconds	ppm
C3656	Redeemer	13.1	60.2	58.45	11.70	339	<0.5

Starch and crude protein reported 'as-is' moisture content.

According to the USDA, DON values over 1 ppm are NOT considered safe for human consumption. Results with >5.0 ppm could be much higher than 5 ppm. Aflatoxin values over 20 ppm are NOT considered safe for human consumption.

Please note: results are representative of the submitted sample only.

For information about our testing procedures please see the reverse side. Questions? Please contact Hillary Emick at hillary.emick@uvm.edu or Heather Darby at heather.darby@uvm.edu.

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Interpreting Your Cereal Grains Quality Test Results

The purpose of this page is to provide supplemental information about the results of the sample(s) you submitted to the NWCS Quality Testing Laboratory. An explanation of the quality testing parameters and methods follow.

Grain and Flour Moisture (%): Determining moisture content is an essential step in analyzing flour quality since this data is used for other tests, namely falling number and protein, and is an indicator of grain storability. Whole grains and flour with high moisture content (greater than 14.5%) attracts mold, bacteria, and insects, all of which cause deterioration during storage. In the lab, we use a Dickey-John mini-GAC Moisture and results are reported in percent.

Test Weight (lbs/bu): Test weight is a measure of the density or weight recorded in pounds per bushel of a grain at a standardized moisture level. In the lab, we use a Dickey-John mini-GAC to determine test weight. The test weight is a general indicator of grain quality; higher test weight generally means higher quality grain. The acceptable test weight for bread wheat is 56-60 lbs per bushel.

Minimum test weights for US Grade 1 grains include:

- Wheat = 60 lbs/bu
- Barley = 48 lbs/bu
- Oats = 32 lbs/bu
- Rye = 55 lbs/bu
- Corn = 56 lbs/bu

Protein and Starch (%): The lab uses a Perten Inframatic 9500 NIR Grain Analyzer to analyze grains for protein and starch content. Protein content is a crucial for determining grain quality. In general, higher protein indicates higher quality wheat. Protein content is a key specification for wheat and flour buyers as it can affect flour processing properties like water absorption, gluten strength, texture, and appearance.

Falling Number (seconds): The determination of falling number (AACC Method 56-81B, AACC Intl., 2000) is measured on the Perten FN 1500 Falling Number Machine. The falling number is measured by the amount of time, in seconds; it takes for a plunger to fall through a slurry of flour and water to the bottom the sample tube. This value gives an indication of the amount of sprout damage and the resulting increases in alpha amylase activity that has occurred within a wheat sample. In general, a falling number of 350 seconds or longer indicates low enzyme activity and sound wheat. As the amount of enzyme activity increases, the falling number decreases. Falling numbers below 200 seconds indicate high levels of enzyme activity and much sprouting damage. The falling number results are reported on a 14% moisture basis.

DON (ppm): Deoxynivalenol (DON), also referred to as vomitoxin, is a mycotoxin that can be produced in grain infected by *Fusarium* Head Blight. DON concentrations are analyzed using Veratox DON 2/3 Quantitative test from the NEOGEN Corp. The results are expressed in parts per million (ppm). The U.S. Food and Drug Administration (FDA) has established DON advisory levels to provide safe food and feed – human food products are restricted to a 1 ppm level; 10 ppm level is set for grains destined for cattle older than 4 months and for poultry (provided it does not exceed 50% of the diet); and 5 ppm level is set for grains destined for swine (not to exceed 20% of the diet) and other animals (not to exceed 40% of the diet).

*All small grain samples are ground into flour using the Perten LM3100 Laboratory Mill. Corn is ground in an Udy Cyclone Sample Mill.