

Laboratory Wheat Milling

Method

1. A sample of wheat is cleaned and the moisture content is determined.
2. Water is added to condition (temper) the wheat overnight prior to milling. Soft wheat requires less water and less time than hard wheat.
3. The tempered wheat sample is run through the mill the following day.
4. The mill fractions, such as flour streams, bran, and shorts, are weighed and recorded.

Results

- Wheat samples are milled to evaluate wheat milling properties, including flour extraction and the amount of non-flour components produced, such as bran and shorts.
- Laboratory flour mill results are generally expressed as the weight of flour, bran, and shorts. Often, flour extraction is reported as a percentage of flour compared to the total output of other mill products; however extraction could be reported as the percentage of flour from the sample of wheat milled.
- Flour produced can be used for other tests.

Why is this important?

Laboratory flour milling tests indicate milling properties on small wheat samples. Commercial flour mills can use this information to adjust mill settings and optimize flour extraction.

Small samples of wheat can be milled on a number of different laboratory mills to produce flour. This flour is used to evaluate properties, such as ash and protein content, and in gluten strength tests, such as the farinograph. The most common laboratory mills are the Brabender Quadramat Flour Mills and the Buhler Laboratory Flour Mill.

The Brabender Quadramat is available in two models, the Quad Jr. and the Quad Sr. Both mills use a series of three rolls to grind the wheat. The main difference between the two models is the Quad Jr. is a single pass machine and the Quad Sr. has a double pass grinding flow.

- **Laboratory-scale flour mill**
- **Determines flour yield and makes flour for other tests**



Buhler MLU-202 laboratory mill.

Both models are best used for as micro-milling or the milling of very small samples.

Micro-milling is important for wheat breeding programs. Early generation wheat varieties need to be tested for milling and baking qualities, but very small samples are available for testing. Samples as small as 50 grams can be processed using either of the Quadramat milling systems.

The normal sample size is 100 grams to produce enough flour for further analysis.

The Buhler Laboratory Flour Mill is the most common laboratory mill used by milling companies and grain quality