

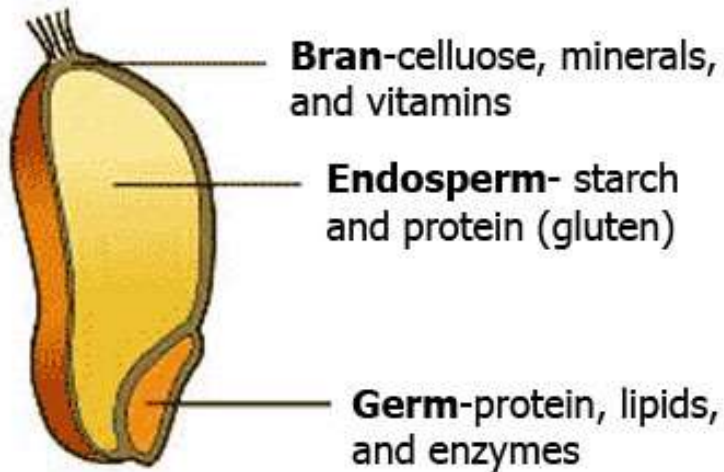
Grain Quality Testing

New services offered through UVM
Extension

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Grain Evaluation



Most common measures used by mills and bakers:

- Mycotoxin (DON) content
- % Moisture
- Test Weight
- Falling Number
- Grain Protein

% Moisture

- Moisture content is the essential first step.
- Determines time of harvest.
 - Subsample (minibatt)
 - Bite test



Moisture

- * % moisture is used for other grain quality tests.
- * Moisture content is crucial in grain storability.
- Wheat or flour with a moisture content higher than 14.5% attracts mold, bacteria, and insects.



Test Weight



- Test weight is recorded as pounds per bushel.

Standard bushel weights:

Wheat = 60 lbs/bu

Barley = 48 lbs/bu

Oats = 32 lbs/bu

Rye = 56 lbs/bu

- Test weight gives an indication of the milling yield
- A low test weight = lower volume of usable flour
- A high test weight = high flour extraction

Falling Number Machine



- Falling number analysis is an indicator of kernel germination (sprouting) and the resulting increases in alpha amylase activity.
- Alpha amylase an enzyme breaks down starch to sugar
- As the amount of enzyme activity increases, the falling number decreases.
- ↑ 300 seconds = good
- ↓ 200 seconds = bad

HOW THE FALLING NUMBER MACHINE WORKS

Effects of a Low Falling Number:

Bread

- It can reduce mixing strength
- Cause sticky dough
- Affect loaf volume and shelf life

Pasta

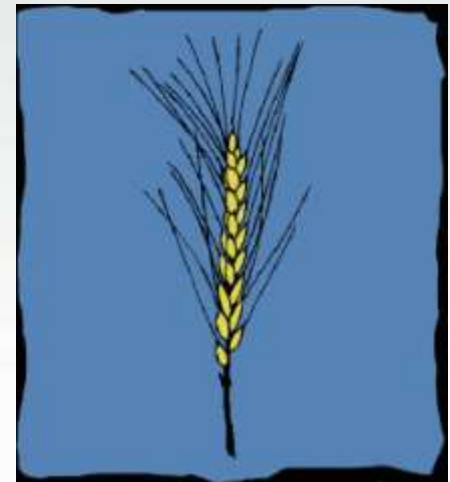
- Reduce shelf life
- Increase cooking loss
- Produce softer cooked pasta



Importance of Crude Protein

Protein content is a **KEY** specification for wheat and flour purchasers.

- Affects processing properties:
 - Water absorption
 - Gluten strength
 - Texture
 - Appearance



Testing Equipment

Elemental Analyzer (CHN)



Near Infrared Reflectance (NIR) Spectroscopy



Grain Crude Protein (CP)

* 8.5 - 10% CP = pastry & crackers

Soft wheat varieties

* 10 - 15% CP = pan & hearth breads

Hard wheat varieties

Sample Submission Form

Cereal Grain Quality Evaluation Sample Submittance Form

Cereal Grain Quality Laboratory
University of Vermont
James M. Jeffords Building
Carrigan Dr.
Burlington, VT 05405

Office: 802-524-6501
Fax: 802-524-6062
E-mail: cropsoilvt@gmail.com

* Testing period: July 1, 2010 thru December 1, 2010.

-Contact us about testing outside the dates above.

*Please submit one Sample Submittance Form with each sample to be analyzed

Farm/ Company Name: _____ Phone: _____
Contact: _____ Fax: _____
Address: _____ E-mail: _____
City, State: _____ Zip Code: _____

Are you a member of the Northern Grain Growers Association? YES or NO

Sample Description (circle one):

Spring Wheat Winter Wheat Durum Barley
Oats Triticale Rye Other (please specify): _____

Analysis Required	NGGA Member Cost per Sample (USD)	Non-Members Cost per Sample (USD)
<input type="checkbox"/> Test Weight (lbs/bu):	\$2.00	\$3.00
<input type="checkbox"/> Grain Moisture (%):	\$2.00	\$5.00
<input type="checkbox"/> Whole Grain Protein by NIR (%):	\$7.00	\$10.00
<input type="checkbox"/> Ash Content (%):	\$7.00	\$10.00
<input type="checkbox"/> Falling Number:	\$15.00	\$20.00
<input type="checkbox"/> All of the above:	\$30.00	\$45.00
<input type="checkbox"/> Mycotoxin (DON)	\$20.00	\$35.00

* Please submit 1 quart of whole grain for each sample submitted. Please do not send flour.

**Prices are based on analyzing a clean sample. Grain samples with stones and dirt will not be accepted.

Special instructions or comments: _____

Please make checks payable to UVM Extension.

Become a NGGA member today! For more information on becoming a member check out

www.northerngraingrowers.org

Prices are good through December 2010

QUESTIONS???