

**Washington Grain Commission
Wheat and Barley Research Annual Progress Reports and Final Reports**

Project #:

Final Report Year: 1 of 1

Title: **Evaluation of alternative technologies for determining Falling Number: The Chopin ‘Amylab FN’, and ‘Testogram’ quick method**

Cooperators: Craig Morris, Alecia Kiszonas, Doug Engle

Executive summary: Falling Number per se is not a wheat or flour quality problem. Falling Number attempts to *predict* flour quality performance in various end-products. However, the Falling Number test is deeply entrenched in our marketing and grading system, especially for export. The current Falling Number technology was developed in 1961, and has received minor improvements over the years in hardware and protocol. Chopin Technologies has developed a new instrument that emulates and attempts to improve on the Perten Falling Number. Key features include: 1) no glass tubes, these are replaced with a stainless steel tube that opens at the bottom for easy clean out, 2) no boiling water, the sample tube is heated with solid state direct heat, and 3) no external cooling system required. Two testing protocols are the ‘traditional’ Hagberg-Perten Falling Number, and a quick 90-second ‘Testogram’. The Testogram results are aimed at predicting the Falling Number.

Impact: New technologies may help growers and marketers obtain more accurate and timely assessment of sprout and LMA. This project is evaluating the new Chopin AmyLab with a standard and rapid ‘Testogram’ tests.

Deliverables: A robust, objective evaluation of the AmyLab and quick Testogram assays compared to traditional Perten Falling Number.

Outputs and Outcomes:

The 500 samples (250 in replicate) were processed through the Perten Falling Number (FN), Chopin AmyLab Falling Number (AmyLab), and Chopin Testogram (Testogram) assays. The samples were also analyzed for moisture and protein. The FN, AmyLab, and Testogram were all analyzed within one week of a sample being ground with the Perten grinder (0.8 mm screen size).

The original dataset had calculated correlations as follows:

FN vs. AmyLab $R^2 = 0.78$

FN vs. Testogram $R^2 = 0.25$

AmyLab vs. Testogram $R^2 = 0.18$

The FN vs. AmyLab FN test were not particularly promising, and the quick Testogram assay was particularly poor. We have been in communication with Chopin, and using our data, their engineers developed a new algorithm to try and better relate the Testogram results. The new correlations were as follows:

FN vs. New Testogram $R^2 = 0.24$

AmyLab vs. New Testogram $R^2 = 0.22$

Clearly, there was little improvement. Chopin is in the process of making hardware/firmware changes and are releasing a new AmyLab/Testogram instrument. We continue to work with Chopin as the instrument 'evolves'. Because the study was performed on an instrument/protocol that essentially no longer exists (due to the changes Chopin is making), the results will not be submitted for publication as originally planned.

WGC project number: new proposal

WGC project title: Evaluation of alternative technologies for determining Falling Number: The Chopin 'Amylab FN', and 'Testogram' quick method

Project PI(s): Craig Morris

Project initiation date: 1-Jul-18

Project year: 1

| Objective | Deliverables | Progress | Timeline | Communication |
|-------------------------------------------|----------------------------------------------------|--------------------------------------|----------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Evaluate Chopin AmyLab | Precision, reproducibility, ease of use assessment | New project, will communicate to WGC | We will begin as soon as funding becomes available | WGC, Wheat Life, regional/national wheat industry; we plan to publish the results in peer-reviewed journal |
| Compare AmyLab with Perten Falling Number | Correlation, prediction power | New project, will communicate to WGC | We will begin as soon as funding becomes available | WGC, Wheat Life, regional/national wheat industry; we plan to publish the results in peer-reviewed journal |

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|---------------------------------------|-------------------------------------------------|--------------------------------------|----------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Evaluate 'Testogram' 90-sec procedure | Correlation with FN, precision, reproducibility | New project, will communicate to WGC | We will begin as soon as funding becomes available | WGC, Wheat Life, regional/national wheat industry; we plan to publish the results in peer-reviewed journal |
|---------------------------------------|-------------------------------------------------|--------------------------------------|----------------------------------------------------|------------------------------------------------------------------------------------------------------------|