



NEWS

NORTHERN GRAIN GROWERS ASSOCIATION

**To Encourage and
Support the Production,
Processing, and
Marketing of Grains
in Vermont and the
surrounding areas.**

Head Blight Alert!

*Dr. Heather Darby, UVM Extension Agronomist
Erica Cummings, UVM Crops & Soils Technician*

High levels of Fusarium head blight (FHB or scab) infection have been reported throughout New England. Fusarium head blight is a destructive disease of wheat and other small grains in warm and humid cereal growing



Figure 1. The premature bleaching of wheat spikes and spikelets.

regions. Fusarium head blight epidemics can occur when there is persistent moisture during flowering all the way up to grain fill. Given the weather we experienced this summer it is no surprise that we have received so many reports of FHB. The disease is very destructive and causes yield loss, low test weights, low seed germination and contamination of grain with mycotoxins. A vomitoxin called deoxynivalenol (DON) is considered the primary mycotoxin associated with FHB.

Symptoms of FHB:

In the Northeast, Fusarium head blight is predominantly caused by the species *Fusarium graminearum*. The spores are usually transported by air currents but can also survive on crop residues as well as in the soil. The primary symptom of the disease is bleaching of some of the florets in the head before maturity (fig. 1). Other symptoms include tan to brown discoloration at the base of the head and pink or orange colored mold at the base of the florets under moist conditions (fig. 2). Lastly, once the grains are harvested, infected kernels will be pink, white, chalky and/or shriveled (figure 3). Visible expression of FHB is observed in heads during the soft to hard dough growth stage as premature ripening accompanied by dark brown discoloration of the peduncle and shriveled kernels with a chalky (tombstone) appearance (fig. 3).



Figure 2. The pink or orange colored molds on grain heads.

FHB & Mycotoxins:

Since FHB can produce mycotoxins, it can be a potential health risk to both humans and animals. It is extremely important to evaluate your grains before consuming or feeding to your animals. Look through the grain for pink or shriveled kernels as these are all signs of FHB infection. If you see this type of seed we strongly encourage you to have it tested for mycotoxins. Eating contaminated grain can cause severe gastrointestinal distress.

Once you have the grains tested, the lab will provide you with a level of mycotoxin deoxynivalenol (DON). If the DON value is greater than 1 ppm

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the grain is considered unsuitable for human consumption (FDA, 1993). However, the grain still might be suitable for livestock feed. In livestock the recommended use for DON contaminated feed depends on the animal; swine 5 ppm, ≤ 20% of ration, cows and chickens 10 ppm, ≤ 50% of ration, and all other species 5 ppm, ≤ 40% of diet (FDA, 1982 & 1993).



Figure 3. Healthy kernels on left and FHB infected kernels on right.

There are several labs that will test grains for mycotoxins. You will need to send approximately one cup of threshed grain and make sure you write down that you want DON analysis done on your sample(s). The cost ranges from \$35 to \$65 and the turnaround time is anywhere from 1 to 14 days depending on the lab.

Below is a list of testing labs used by producers:

Neogen Corp.; www.foodsafety@neogen.com
or by calling 1-800-234-5333.

Dairy One; www.dairyone.com or 1-800-496-3344

Cumberland Valley Analytical Services;
www.foragelab.com or 1-800-282-7522

Baking Tests of Vermont and Kansas Wheat

By Jeffrey Hamelman, Certified Master Baker

To date I have made four test bakes with Vermont-grown wheat, between February and April 2009. Wheat varieties included AC Morley and Harvard. Tests were done using unsifted 100% whole wheat flour, and on flour that was sifted once prior to mixing. I have also made comparison bake tests using Turkey Red, an heirloom landrace whole wheat flour from Kansas.

All the doughs were made using only natural sourdough for leavening (no commercial yeast was used). Formulation for the doughs was as follows:

Vermont wheat	50%
Organic white bread flour	50%
Water	75%
Salt	1.9%

20% of the overall flour was used in the sourdough phase. Final dough mixing was done in a manner consistent with current baking standards—use of the autolyse-repos technique, and reasonably gentle mixing (between 130 and 170 mixing hook revolutions on second speed). Bulk fermentation lasted 2.5 hours, with



Unsifted, 50-50 whole wheat and organic white.

one folding of the dough at the halfway point. After dividing, the loaves were shaped round and had a final proofing of between 1 hour 15 minutes and 1 hour 25 minutes. Bake temperature was hot at the outset (about 450°F), and the temperature gradually receded to about 420°F.

The breads made with sifted Vermont whole wheat flour had better volume and aspect than the unsifted breads. Neither style of bread made with Vermont-grown flour was equal to the Kansas wheat in terms of volume or crumb structure. The flavor of the Vermont breads was good, although the loaves were on the heavy side and had a somewhat dense interior, which did affect eating quality.



Sifted, 50-50 whole wheat and organic white.

I was able to get some lab results on the Vermont flour (and was provided with test results on the Turkey Red wheat from the mill). It was clear from the results that the protein level was (barely) adequate for bread making (10%), but the falling number was low (204), and no doubt this resulted in an elevated level of amylase activity in the dough, which ultimately contributed to its density and relatively poor performance. My conclusion, as a baker and not a miller, crop scientist, or farmer, was that the potential exists in Vermont to raise wheat of suitable quality for bread making, but that without reli-





Vermont wheat, unsifted and sifted

able wheat testing (at a minimum, testing for protein quantity and falling number, and ideally being able to obtain farinograph information as well), wheat quality, amylase activity, and overall suitability for bread making will always be a guessing game.

A Hand Held Combine!

Heather Darby, UVM Extension Agronomist

I have to say that I am extremely excited about our latest equipment purchase! Most farmers love to talk shop and compare notes on new steel. Well, I like my equipment too except that it often comes in much smaller packages.



Combining wheat with the minibatt

Our latest find (thanks to Dorn Cox) was a hand held combine. Yes folks, a mini combine that runs off a 14- volt battery (similar to a power tool). It is light weight and works just like a full size combine. The machine is called **mini-batt** and is sold in the United States through a

company called Reichardt Electronic Innovations located in West Fargo, ND).

It costs around \$800 for the machine that comes equipped with concaves for wheat, barley, and oats. It also includes 2 sample cups, 2 rechargeable batteries, and a charger. Oh yeah, most importantly, it comes in a real snazzy metal carrying case and includes a *minibatt* hat to wear as you combine your crop!

The *minibatt* was designed for use in Europe. It is primarily used to take samples to determine moisture content prior to harvesting. It is cost saving for farmers as they no longer have to break out the combine to get these samples.

I have used the *minibatt* primarily for our small scale field trials. However it has also come in handy to help farmer's determine moisture content prior to harvesting their fields. Recently, we decided to accessorize the *minibatt* and ordered the canola-kit (\$250). Since our team was experimenting with canola I figured we must buy the canola-kit.



Canola-kit attached to the minibatt. The grains are fed into the thresher through the hopper.

It turns out the canola-kit has actually made the *minibatt* even more useful to our team. The canola-kit is a hopper that the *minibatt* can attach to. The plants are placed in the hooper and slowly lowered into the mouth of the *minibatt* for threshing. It is also perfect to thresh small amounts of wheat or most any grain out of the field.

The "*minibatt*" can thresh one pound of grain every 3-4 minutes. According to the manufacturer it can also be used to combine herb and flower seed. This tool might be very handy for a small scale grain grower or specialty seed producer.

Grants Available for Farmers!

The Northeast Sustainable Agriculture Research and Education (SARE) program offers grants for projects that explore new ideas in sustainable food and fiber production. SARE's Farmer Grant Program is for commercial farmers who would like to explore a new practice or idea, often by conducting an experiment, trial or on-farm demonstration. Projects can explore a wide range of topics such as pest management, soil health, marketing, and/or new production techniques.

Funds can be used to pay for the farmer's time and for materials specific to the project. This year, the maximum amount of each grant application can be up to \$15,000. The application deadline is December 8, 2009 with awards announced in March 2010.

A number of farmers in our region have recently received farmer grants to learn more about grain production aspects including Jack Lazor, Brent Beidler, Paul Boivin, Bob Foulkes, Dorn Cox, Henry Perkins, Mia Morrison, and Ted Grembowicz (and more—the list is getting lengthy!)

If you have an idea for a farmer grant, applications for the grant program is posted on the Northeast SARE web site at www.nesare.org, or you can call 802.656.0471 to request a printed copy. Also, feel free to contact Deb Heleba, VT SARE coordinator, at debra.heleba@uvm.edu or 802.656.4046.

Grain Aerators

Brent Beidler

In our New England climate it is quite common that grain needs to be harvested with a moisture content higher than what will be required for safe long term storage. Some times grain which was once dry enough in the field also can gain moisture through the process of harvesting and high humidity conditions. Moving air through the grain can be a simple way to remove moisture. Homestead-scale grain batches can be "micro-managed" by sun drying and simple fan systems.

For larger batches of grain, however, a very useful tool is an aerator built by B&W Manufacturing. The aerator screws into a pile of grain and a small exhaust fan moves air throughout the pile. It is also helpful to keep grain as free of debris and green material as possible



when aerating as these block air flow and can contribute moisture to the grain. Therefore it is sometimes advisable to clean grain before attempting to dry it with an aerator.

Screw-in aerators cost about \$280.00 with shipping and can be purchased directly from the manufacturer at:

B&W Manufacturing
3211 E 23rd ST
Columbus NE 68601
Phone : (402) 564-3032

CLASSIFIEDS

Seed for Sale: certified organic winter rye, soft white winter wheat, hard red winter wheat, and spelt. Butterworks Farm : (802) 999-7722 or butterworksfarm@pshift.com.

For Sale: Dry bean harvesting equipment. Butterworks Farm: (802) 999-7722 or butterworksfarm@pshift.com

Looking for **used grain equipment** from the Midwest? Sam Lincoln can source many types of used equipment from a reputable source in Iowa. For more information contact Sam at: 802-793-1206 or sam@swlincoln.com.



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