

**Barley Matters...**  
**.....In Beer Flavor (?)**  
**Oktoberfest (November 1, 2014)**



*Cheers to the next generation: OSU winter barley plots. Corvallis, Oregon. October 30, 2014*

**Taste the Flavor:**

Oregon-grown Full Pint, Klages, and Copeland grain arrived at the Canadian Malting Barley Technical Center for malting.

To re-cap:

1. Full Pint, Klages, Copeland (and a Metcalfe check supplied by the CMBTC) will be malted at CMBTC and brewed by Tom and Dan. The goal is to have all 6-pack members participate in sensory assessment of these beers in-house.
2. The beers will also be on tap at the 2015 Barley Improvement Conference (<http://ambainc.org/events/view/12/amba-barley-improvement-conference>) where flavor will be a hot topic.
  - a. Banquet speaker and speech: **Joseph Hertrich**, Anheuser-Busch, Retired Group Director of Brewing Materials, "**One Brewer's Observations on Malt Flavor**".
  - b. I will have provided Joe with an appetizer - *Barley: Bursting with Flavor?* – earlier in the day.
3. The 3 varieties, plus others you are interested in, will be planted again at the Herb Farm in 2015 to produce even more grain for more malting and more beer sensory in 2015.
4. The 3x3 experiment (Full Pint, Klages, and Metcalfe grown at 3 locations) is still in progress. Wort sensory and analytical data from Sierra Nevada, and nano-brew sensory data from New Glarus, are being compiled for analysis. We are building your thirst for new knowledge about flavor....

## **Full Pint:**

### **2014 crop update:**

- First prize still goes to Klann Farms/Mecca Grade malt: 170 bu/acre at 10.5% protein. Madras, Oregon.
- Dave Kuske's report on the 2014 Briess production in Wyoming: "sub 11 protein and good yields." That was for all samples, except the two that came in at 14.3% and 14.9% protein from the Plain Vista Dairy. Maybe those fellows figured "I betcha that lil' half-pint can live knee deep in cow shit, yield like a sombitch and give us no trouble with lodging." Sure enough. Only problem was the yield potential got maxed out and the rest of the nitrogen went to protein. Moral of the story: nitrogen management in malting barley is crucial, and particularly so with semi-dwarf varieties.
- There are rumblings about Full Pint yields not being competitive with current varieties. Could be - but wouldn't you expect a 10 year old Maserati to have some unique, classy features but to lag a bit compared to the latest Fords? All the more reason to nail down flavor: if Full Pint has it, can it compensate for yield? If it has flavor, can we breed a Fuller Pint that tops the yield charts?
- Looking ahead to the 2015 crop, Sierra Nevada has an acre of Full Pint, organic, at Chico.

## **New potential varieties with potentially flavorful parents in the OSU program**

### **Latest on the Oregon Promise:**

1. 34 agronomic selections (best yields, stripe rust resistant, leaf rust resistant, and over 90% plump) + parents (Full Pint and Golden Promise) + 14 random selections sent to USDA-ARS Cereal Crops Research Unit in Madison, WI for micro-malting.
2. Dan Carey will nano-brew with these malts. Cynthia Henson and Stan Duke will study osmolyte concentration.
3. The agronomic selections + parents will go into yield trials at as many locations as we have seed for in 2015.
4. The goal: Varieties with 2X flavor and performance, as well as a gateway to the genes that drive flavor.

### **The OSU Malt Lab**

1. You've all been contacted by Todd Bastian (OSU Foundation) about a special donation to help bring the OSU malt lab to life. A full prospectus of that endeavor follows.
2. Todd suggested \$5,000, but anything you can do would be appreciated. We fully appreciate that many of you have given all that you can this year to the flavor project. Thanks for your past and continued support.
3. Todd was also suggesting a continuing commitment of \$5,000 for each of four years. Those funds would be for the flavor project - as it evolves. I would really appreciate the surety and continuity of multi-year funding. If you have any questions/suggestions about the fundraising, please don't hesitate to call (541-737-5878) or email [patrick.m.hayes@oregonstate.edu](mailto:patrick.m.hayes@oregonstate.edu)).

## The OSU Malt Lab - Prospectus

### **Rationale:**

There is increasing appreciation for the contributions that different barley varieties, and growing environments, can make to beer flavor. Clearly, barley production practices, the malting process, the maltster, and the brewer all make critical contributions to beer flavor. However, if the genetic architecture of a barley variety and the interactions of this architecture with the environment can make important contributions to flavor, this presents opportunities to create new beers with new markets. It will also allow breeders to be more efficient in breeding varieties with specific flavor profiles. Capitalizing on these opportunities will require building a pipeline from grain to glass, with a key step being the making of malt. There is currently a gap between micro-malting and industrial production. The proposed facility will assist in closing this gap.

We are proposing the establishment of a facility at OSU to produce research pilot malts from 100 – 300 lbs of grain in order to produce sufficient malt for making research beers using typical pilot brewing facilities. Beers made in these pilot plants will be more representative of actual production beers. The pilot malt lab will, once operating, be available to the brewing community on a cost-recovery basis. Malts can be used for brewing experimental beers in the OSU Fermentation Sciences Pilot Brewing facility or by brewer cooperators. The OSU Fermentation Sciences program also has the downstream capabilities of sensory analysis and flavor chemistry.

We built a pilot malting unit (<http://osuminimalter.weebly.com/>) designed to produce 100 – 300 lbs. of malt – via a partnership between the OSU Barley Project, the OSU Fermentation Sciences program, and the OSU School of Mechanical, Industrial, and Manufacturing Engineering. Pending development of a dedicated space for operating the unit, it is on loan to Grain Millers, Inc., a local company interested in developing methods for sprouting grain. Grain Millers has implemented the final modifications needed for optimum moisture and temperature control and will return the unit to OSU in January of 2015. A suitable space for the mini-malter, with requisite steam, water, drainage, and ventilation has been assigned to the OSU Barley Project and Fermentation Sciences program. The estimate for remodeling this space, provided by the CAS architect Lowell Fausett, is \$110,000.

### **Objectives:**

Our objectives are to create the OSU Malt Lab and demonstrate its utility for research and teaching. We will update the mini-malter website and provide open-source access to design and construction information. In addition to the remodeling costs, we are budgeting for the purchase of equipment for malt analysis, the production of test malts, the analysis of test malts, and test brews at OSU. Our rationale for developing capacity for malt analysis is to be able to integrate malting and malt analysis into the research and training programs in Barley Breeding and Fermentation Science at OSU.

**Deliverables, Outcomes, and Impacts:**

Deliverables will be: an operating malt facility, access to malting unit design and construction data, pilot malts, and pilot beers. These deliverables will lead to the target outcome of a facility for producing research malts in sufficient quantities for the brewing community to assess barley variety and environment contributions to beer flavor.

The anticipated impacts include: rigorous definition of the contributions of barley varieties to beer flavor, the establishment of a process for flavor early in the barley variety development process, and the development of new and novel beers with exciting flavor profiles. As has been demonstrated for the wine industry, development of unique flavor profiles yields marketing opportunities (niche and broader markets), greater sales volumes and higher valued crops.

**Budgets:***Expenses*

Renovation and remodeling	\$110,000
Malt analysis equipment	\$30,000
Installation of malt unit	\$10,000
Pilot runs, brews, and analyses	\$20,000
Total	\$170,000

*Income*

OSU Building Use Credits application	\$50,000
Crop and Soil Science/ Fermentation Science	\$15,000
Crop and Soil Science royalty funds	\$10,000
Brewer's Association grants program application	\$60,000
Fund raising in progress with OSU Foundation	\$35,000
Total	\$170,000

**For more information, please contact:**

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