

## **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*

Brewer's Association	\$ 32,000
OSU: Food Science and Technology	\$ 30,000
OSU: College of Agriculture	\$ 15,000
OSU: Crop and Soil Science	\$ 10,000
Carl Casale:	\$ 25,000
Sierra Nevada Brewing	\$ 5,000
Firestone-Walker Brewing	\$ 5,000
Russian River Brewing	\$ 5,000
Bob Grover:	\$ 5,000
Total pledged	\$132,000
<i>To be raised:</i>	\$ 38,000

**For more information, please contact:**

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