

Barley Matters...

.....In Beer Flavor (?)

September 2, 2014



Wort sensories in progress. Nielsen group. Sierra Nevada. Chico, CA

The 3 x 3 experiment (Full Pint, Klages, Metcalfe) from Oregon, Minnesota, Saskatchewan. 2013 crop.

The ball is rolling: Dustin spent the week of August 18 with Tom and colleagues at Sierra Nevada. Wort sensories are completed; wort analysis (GC, GC-O, GC-MAS) is underway, and data analyses are continuing. Here are some key results from the wort sensory assessment, using the following key.

1.0 = Excellent, Superior:

2.0 = Above Average, Very Good:

3.0 = Average, Good:

4.0 = Fair, Needs Improvement:

Malty, Sweet, Clean, No off flavor

SL Malty, SL Sweet, Weak, SL Grainy, SL Husky

SL Bitter, Dusty, Grainy, Papery, Chaffy

SL Earthy, SL Musty, SL Green, SL Grassy

Source	Mean Squares	Variety	AVG	Aroma	Taste	Unique features
Variety	1.15	Full Pint	2.54	Malty, Clean	Nutty, Grainy	Chocolate Milk, Banana
Location	2.17*	Klages	2.57	Grassy, Earthy	Fruity, Sour	Spicy, Grapenuts, Banana
Variety x Location	3.81**	Metcalfe	2.55	Malty, Grassy	Sweet, Malty	Biscuit, Bread crust
Replication	2.18	CHK1	2.53	Roasted, Woody	Malty	Jam, Chocolate
Error	0.74	CHK2	2.54	Malty, Grassy	Sweet, Malty	Banana Pudding, Beans
Mean	2.48	Mean	2.55			
R2	0.29	Location				
CV%	34.56	Minnesota	2.54			
		Oregon	2.54			
		Saskatchewan	2.56			
		Mean	2.55			

Bottom line: Based on the numerical ratings, varieties were all above average (sounds like Lake Woebegone?) but not significantly different from each other; locations were significantly different (sorry Saskatoon); and varieties behaved differently across locations (lots to dig into on this one). There's much more to be gleaned from the aroma, taste, and unique features assessments. Stay tuned.

What's next? Wort analysis at Sierra Nevada; nano-brewing at New Glarus; and sensory analysis of nano-brews at New Glarus.

The Herb Farm collection:

The following varieties were grown at the Herb Family Farm near Lebanon, Oregon and here are the grain stats:

Variety	Seed available for malting (lbs)	Seed set aside for planting (lbs)	Grain Protein	% plump (6/64)	Malting
Full Pint	80	5.5	12.1	96.7	CMBTC
Copeland	80	5.5	10.9	96.9	CMBTC
Klages	80	5.5	10.4	92.7	CMBTC
Bojo	74	5.5	11.0	97.1	Briess?
Brunnus	88	5.5	9.3	98.3	Briess?
Explorer	92	5.5	10.3	96.2	Briess?
Prunnella	87	5.5	9.8	99.1	Briess?
Barke	7	5.5	10.6	94.4	?
Steina	6	5.5	11.7	94.4	?
Steffi	6	5.5	11.4	96.8	?
Vila	12	5.5	10.8	98.1	?
Violla	5	5.5	11.7	96.0	?

The plan:

1. Full Pint, Klages, and Copeland 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, or perhaps in a joint session somewhere this Fall?
2. The beers will also be on tap at the 2015 Barley Improvement Conference, where flavor will be a hot topic.
3. Discussions are underway with Dave Kuske about malting Bojo, Brunnus, Exolorer, and Prunella. Suggestions for Barke, Steina, Steffi, Vila, and Violla?
4. The current plan is to plant all varieties again at the Herb Farm in 2015, and to produce even more grain for more malting and more beer sensory in 2015.

Full Pint:

2014 crop update.

Top yield reported to date: 170 bu/acre at 10.5% protein. Madras, Oregon. Klann Farms/Mecca Grade malt

New potential varieties with potentially flavorful parents in the OSU program

Here's an update on one of the interesting prospects the Oregon Promise population:

1. The parents: Full Pint (mother) Golden Promise (father).
2. The kids: 200 of them – all potential varieties with the unique flavors of Full Pint and Golden Promise + the agronomics of Full Pint. All “kids” are doubled haploid: completely homozygous, true-breeding lines. For more on doubled haploids, follow this [link](#). For more information on the genetic analysis of this population, follow this (different) [link](#).

The 200 doubled haploids (and parents) were grown at Corvallis, Oregon and Dundee Scotland. All agronomic traits were measured.

The plan forward: A special experiment with the USDA-ARS Malt Lab at Madison, WI is in the works involving:

1. Micro-malting of samples from Oregon and Scotland
2. Malt analysis
3. Nano-brew at New Glarus
4. Nano-brew sensory assessment
5. Result? Genes that drive flavor!!!!
6. Can we get you involved?

A subset of selected doubled haploids will be grown in yield trial starting spring of 2015.

Result? **One or more varieties with excellent malt profiles, special flavor attributes, and superior agronomic performance. INTERESTED?**

Comments/insights/suggestions welcome – as always. Send an email to [Pat](#) or better yet use “reply to all” on the email to which this report was attached.