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Barley report: A look back at the ‘heart of beer’

By **Dave Kuske**
Briss Malt & Ingredients Co.

In the past ten years or so the U.S. barley market, and to some extent the Canadian barley market, has been undergoing something of an extreme makeover which has been reflected in the volatile prices of malt for brewing. In this article we'll take a look at barley, what the market used to be, what it is today and the many factors affecting the crop that's the "heart of beer."

First, barley. In the United States, barley acreage is driven mostly by the needs of the domestic beer industry. Barley that does not meet strict malting barley quality

Your partner in brewing

This issue marks the Briss debut in Craft Beer Quarterly, and we thank White Labs and Hopunion for making us their malt partner in this informative and well-done publication. CBQ is a unique publication because its purpose is to educate the brewing community not only about our companies and our products, but also about the many aspects of the great craft of brewing beer.

We look forward to this opportunity to share information with you that might help you solve a problem, improve efficiencies, help you sleep better at night, spark a creative idea that turns into your next big hit or simply keeps you tuned into what's new at Briss. If there's a topic you'd like to see us tackle in a future issue of CBQ, send us an email at info@brewingwithbriss.com.

For more on malt and Briss, turn to pages 2 and 3.

requirements is sold as feed barley at a substantially lower price. Unlike other major barley growing countries, the U.S. is not a significant exporter of feed barley, and is a very minor exporter of malting barley. In

addition, the U.S. feed industry has changed from being a fairly large consumer of barley to an opportunistic market that uses barley only when alternate feed grain prices become disproportionately high.

Next, what the U.S. market used to be. About 10 years ago the U.S. barley market was an open market with generally ample feed and malting barley supply. See "Barley report," page 2

D. Edgar on beer: Make it funky!

White Labs contributor Edgar writes on maximizing consistency in brettanomyces fermented beers

Editor's note: The following story about wild beers coincides with a similarly themed event at the Craft Brewers Conference. CBQ partners will host "Beers Gone Wild" at a San Francisco eatery on the Saturday afternoon of CBC week. The event is by invitation only and space is limited, so if you are interested stop by one of the CBQ partner booths during the convention.

By **David Edgar**
White Labs contributor

I spoke with eight craft brewers who create

Brettanomyces-fermented beers, to try to unravel some of the mystery – get under the pellicle, so to speak – of fermenting with "Brett," along with its frequent co-conspirators, the bacterial cultures "Lacto" (lactobacillus) and "Pedio" (pediococcus). (One other brewer that is becoming well known for Belgian-inspired ales, Ron Gansberg at Cascade Brewing in Portland, Ore., said he doesn't use Brett at all, just a lactobacillus they have from their own culture.)

See "Make it funky," page 4

The Perfect Storm

An overview of hop industry dynamics

By **Don Bryant**
CEO, Hopunion

As Charles Dickens once said, "It was the best of times and it was the worst of times." Although he probably wasn't talking about the hop industry, it would fit the situation we have today.

Over the last 2 years, the world market for hops has developed into a global glut as growth in the beer industry has softened or declined in most major producing nations. This glut is heavily

See "Hops 2011," page 6

Style Matters: Tips for making Dark American Lagers

In each issue, CBQ spotlights a particular beer style and provides tips from an ingredient and fermentation perspective. In this issue we examine Dark American Lagers.

Hop Notes:

When asked about Dark American Lagers, I describe them as a slightly sweeter, fuller-bodied version of the Standard American Lager we are all used to drinking. This beer style is brewed worldwide, and

the biggest distinction over standard lagers is the enhanced body and flavor that comes from the light use of caramel and darker malts. The color can range from deep amber to dark brown and is usually packaged with higher levels of carbonation and in brilliant clarity. Dark American Lagers have a very light malt aroma consisting of chocolate, roast, and caramel notes. The hop aroma in these beers is usually very subdued and, in some cases, not present. The hop aroma can be spicy and fruity; al-

though fruitiness usually comes from fermentation by-products. Hop bitterness is low to medium, so hopping rates should be kept low to let the slightly sweet malt profile emerge.

Since lager beer in America stems from German and Czech origins, the use of Noble hop varieties would have historically dominated this style. While the use of imported Noble hops (German Tradition,

See "Styles," page 5

Briess wins 2010 Wisconsin manufacturer award

Briess Industries has been awarded the 2010 Wisconsin Manufacturer of the Year-medium category award. Briess was one of 23 nominees in the medium company size category for companies with 100–299 employees. The award was presented to Company President Gordon Lane on Thursday, Feb. 25, at The Pfister Hotel in Milwaukee.

“We’re proud and honored to have received this prestigious award,” said Chief Executive Officer Monica Briess. “And we’re equally proud to be a member of the Wisconsin business community. We take great pride in being a family owned business and being a company that is a family. This recognition honors us all. We will continue to strive for excellence and provide our customers with innovative and quality products.”

MOTY officials cited a number of practices and accomplishments that Briess has achieved to earn the award. “Briess Industries is a perfect example of a successful company,” they stated. The officials cited the strategic plan Briess articulated eight years ago that doubled sales and



helped

position Briess to meet increasing market demands. Also cited was Briess’ diverse product portfolio which provides a competitive edge even when external issues affect its markets. “They are proactive in their community, and have low employee turnover and high commitment to training. Briess encourages their customers’ demand to spur new product innovation,” MOTY official concluded.

“We have a great work force that goes out of the way to do whatever it takes to delight our customer base,” added Lane. “To help keep our personnel highly trained

we work with local Fox Valley Technical College to provide training and resources. Internally we utilize a program of ‘train the trainers’ who can then roll out the latest information and procedures tailored to the operational areas of our company.”

Briess Industries, Inc. is a leading supplier of specialty malts to the beer industry and industrial ingredients to the food and beverage industries. It produces more types of specialty malt than any malting company in the world, and is the only malting company in North America dedicated to the small-scale production of specialty malts for American craft brewers. Founded in 1876 in Czechoslovakia, Briess remains one of the few family-owned malting companies in the world.

In its 23rd year, the MOTY program recognizes manufacturers of all sizes and industries for their contributions to Wisconsin. The accounting and advisory firm of Baker Tilly, the law firm of Michael Best & Friedrich LLP, and the business association Wisconsin Manufacturers and Commerce sponsor the MOTY awards program.

Barley Report

From Page 1

plies available for spot purchasing. In years when the malting barley premium to feed was high enough, growers could easily be convinced to plant malting varieties rather than feed varieties.

The winds of change began to blow when major railways started focusing capital investments on lines servicing the corn and wheat growing areas due to the overwhelmingly high volume and return on investment potential to move these grains to the coasts for consumption by feed lots and for exports. These changes made the price of corn delivered to the west coast disproportionately lower than feed barley, and the large feed lots quickly switched rations from barley to corn.

At about the same time, genetically engineered corn and soybean varieties began emerging that not only rapidly increased the yield per acre for corn and beans but also allowed for their growth in regions that were previously off limits due to dry conditions and shorter growing seasons. This barrage of punches of rapidly declining demand for barley, new choices for producers to grow competing crops with better returns and less quality risk in traditional barley country, and higher yield growth for these competitor crops have lead barley acreage down a steeply declining slope.

The emergence of Fusarium Head blight in and around the Red River Valley in Minnesota and North Dakota around 2002 added yet another risk factor for growing malting barley and pushed barley acres further west and north.

As this year’s planting season approaches, U.S. maltsters have estimated the amount of acres needed to meet the demands of the domestic beer market and have negotiated and are still negotiating with growers to plant enough barley to meet the demands of the industry.

Fast forward to the past 3 years.

Continuing world population growth and improved standards of living in third world nations along with government mandates to reduce dependency on foreign oil through the use of bio-fuels escalated demand for small grains. In 2007, the amount of all grains carried over as a buffer at the end of the crop year (known as stocks to use ratios) dropped below pipeline levels in early 2008.

Panic circled the globe, grain embargos were issued, and prices rose to historic levels. In 2008 and 2009, excellent growing conditions and record harvests both in terms of quality and quantity worldwide dramatically increased stocks while at the same time the global economic crisis reduced demand.

Prices dropped dramatically and planted acreage worldwide was significantly reduced. Along came the growing seasons of 2010 and Mother Nature dealt crushing blows to nearly all major grain producing nations — unprecedented

drought in Russia and Eastern Europe, drought and harvest rain in Europe, record rainfalls and flooding in Canada, harvest rain in the U.S. and now drought and flooding in Australia. The net result has been a return to near 2008 stocks to use levels and another ride up the pricing rollercoaster.

U.S. Barley 2011. As we enter 2011, we see that the open barley market in the United States is a thing of the past and barley has turned into a specialty, custom contracted crop for the production of malt for beer.

As this year’s planting season approaches, U.S. maltsters have estimated the amount of acres needed to meet the demands of the domestic beer market and have negotiated and are still negotiating with growers to plant enough barley to meet the demands of the industry. When determining needed acreage, maltsters need to build in a “safety net” to account for lower-than-anticipated yields and quality rejection rates that may result from grow-



The author, Dave Kuske, left, is Director of Malting Operations for Briess Malt & Ingredients Co.

ing conditions.

There is a serious battle being waged in the U.S. and globally on competition for acreage and a return to historically high prices for corn, wheat and soybeans is driving this battle. Corn prices have risen 89% in that past 12 months and wheat and soybeans are not far behind.

These options are weighing heavily on grower’s decisions about what crop to plant, especially in areas where these competing crops are now easily grown.

The one negotiating chip still held for maltsters is that barley is good in a crop rotation, but the lure of possible huge returns from the competing crops is firmly planted (no pun intended) in the grower’s minds. I have heard it said many times by a close personal friend in the industry that the most expensive barley (and malt) is no barley at all.

As maltsters, we are paying extremely close attention to the markets and are consistently in discussions and negotiations with our growers to ensure an adequate supply of malting barley for the coming 2011 crop year.

Technical advice: Foam stabilization using wheat

By Rich Ellis

Division Manager - East

The grains you select to brew with have a direct impact on how your customer perceives your beer. Your grist bill affects your beer's color, flavor, and foam.

Foam is a major component of how your customers perceive your product. A pint of headless beer relays the message of flat and unappealing. Lipids are the major cause of foam degradation. Although lipids are a naturally occurring compound in yeast and malt, any additional controls over their effect should be exercised. You have also worked hard in the brewhouse and cellar to protect your beer's



ability to maintain a good solid head.

Unfortunately, you have less control over what happens when your beer is put into a glass by the consumer. Any residual lipid from soaps, oils, and even lipstick can destroy beer foam. Any protection that you can provide in your brewery for beer being released to the trade is worth considering. One ingredient that will help protect foam is wheat.

Beer foam is comprised of two hydrophobic (water hating) compounds. The proteins found in malt, and the iso-alpha acids from hops combine to make the surface active materials which stabilize the bubble walls in your foam. Lipids work to destabilize these components and lead to weak bubble walls, and collapsed head.

Lipid binding proteins originating from malt and

wheat will reduce lipid destabilization of foam in beer. Wheat will promote foam by providing additional hydrophobic polypeptides (proteins). Wheat possesses LBP and will counteract the foam degrading properties for lipid introduced to your beer.

Wheat also helps foam stability by increasing beer viscosity. The effect is smaller bubble size in foam which leads to a creamier and denser head. The effects of wheat on the promotion of foam is greater in higher gravity beer.

The components that lead to good foam are already prevalent in craft beer. Combining a percentage of wheat based on style with the other quality ingredients you are already using to brew great beers will help protect the rich creamy head your customers desire.

Visit Briess at CBC to try its 'uncommon' common beer

The lure was just too much for Briess Division Manager Dave Richter. When asked to come up with a "Briess" beer for the annual Craft Brewers Conference in San Francisco March 23-26, he immediately thought of the other San Francisco treat—Anchor Steam®.

"In a nod to the brewing tradition in San Francisco I designed a 'California Common' style beer with a twist by an addition of our new Midnight Wheat malt to darken it up," Dave said.

"The beer also leans on our clean Pilsen Malt for the base, a touch of Bonlander® Munich and some Caramel 40L for the malts as well as using Magnum, Northern Brewer and a blend of Aurora and Experimental hop G44 to finish in the hop back."

Midnight Wheat Malt is the darkest colored malt Briess produces. It tips the scale at 550° but has no bitter, astringent, dry flavors or aftertaste.

Starting slightly sweet, it delivers mild roasted, chocolate, coffee flavors and finishes exceptionally clean.

Scott Jennings, R&D Brewer at Sierra Nevada Brewing Co., had told Dave that everyone on his staff loves this new malt. And, since the beer was to be brewed on Sierra Nevada's pilot brewery, everything fell into place.

Brewed by the duo on February 22, the finished "Black California Common" will be on tap at the CBC Welcome Reception and Briess-Hopunion beer station at the BrewExpo.

The beer station will be in Booth

#904, between the Briess and Hopunion booths.

Thanks to Scott and his crew for their help with this project!

Briess is a proud cosponsor of the CBC Welcome Reception which will be held at California Academy of The Sciences on Wednesday, March 23.

Last year's Welcome Reception, held at the Chicago Field Museum (see accompanying photo), was a smash hit with attendees.

That's a tough act to follow but the California Academy of the Sciences certainly looks up to the task. The Welcome



Reception at the Academy is open only to attendees of the Craft Brewers Conference.

We hope to see you there!

2011 Malt and Brew Workshop features in-depth tours, speakers

Briess received such positive response to last year's Malt & Brew Workshop (held in conjunction with the CBC in Chicago) that we decided to offer it again this year. Based on recommendations from a post-event survey of last year's participants, we're adding topics, a more in-depth tour of the iconic Briess Malthouse plus guest presentations by John Mallet of Bell's Brewery, Michael Lewis, Ph.D., UC-Davis professor emeritus of brewing science, and barley market expert Don Grambsch.

Briess' Director of Malting Operations Dave Kuske and Technical Services Manager Bob Hansen will also present, as will Division Managers Rich Ellis, Penny Pickart and Dave Richter.

The workshop has been expanded to two days and will be held Wednesday and Thursday, August 10-11, in Chilton, Wis., just prior to the Great Taste of the Midwest in Madison, Wis.

Sessions will be held on malting and the art of handcrafting specialty malts, the flavor and color charac-



teristics of specialty malts to craft beer, using specialty malts to hit your target flavor, a sensory session to identify flavors contributed by specialty malts, formulating and brewing with specialty malts and the barley market.

Pre-registration is required and is limited to 30 participants currently working in a licensed commercial brewery or in a brewing-related capacity.

Cost is \$125.00 which includes the cost of all meals. Transportation and lodging is not included.

There are two hotels in Chilton, one with a discounted rate for this event. Registration requires signing a visitor agreement.

Recommended travel is to arrive by 6 p.m. on Tuesday for a buffet dinner, social and introductory presentation by Briess President Gordon Lane, and return travel on Friday morning.

Chilton is located about 90 miles north of Milwaukee, 35 miles south of Green Bay and 35 miles southeast of Appleton.

Visit www.BrewingWithBriess.com for more information.

Yeastbank news and notes: Looking for homeruns

By Mike White

White Labs contributor

**** New home:** White Labs is in the beginning phases of updating its website. The site will be the first major update in many years. Although I update the pages regularly, changes are necessary. The overall design is outdated (just ask our younger workers, who have given me an earful). Plus a drawback has been navigating the site. With the update you'll find most of what you want directly from the front page. We want to hear from you if you have any suggestions for what you want from the new site. Write me at the address below.

**** Yeastman and Big QC Day:** Many of our customers used our Yeastman tracking and ordering system for the first time recently. That is because as part of the 5th Annual Big QC Day in March, customers were invited to enter the information for their beer samples via Yeastman. This replaced the handwritten notes, which while convenient could lead to mistakes if the writing was illegible or the styles did not match one of the recognized parameters. Anyway, the cool part of entering the sample information into Yeastman was that customers could access their test results via the same system, thus quickening the time it took to get the results to them. So while it may have been a pain for some to log into the system, the ensuing benefits will

hopefully be a plus. Using Yeastman also gave customers an opportunity to see what they can get out of it and return to it in the future if they like. For instance, brewers can see when exactly each strain will be available, or at least the earliest time the strain would be available pending QC testing. But you don't have to be part of Big QC Day to log into the system. If you order from us, you have an account. Just go to whitelabs.com and follow the links to ordering.

**** As for Big QC Day,** as of this writing the testing is still under way. We will post overall results soon on our website.

**** As for other ongoing projects,** as of this writing the crew of White Labs was busy getting ready for the Craft Brewers Conference in San Francisco in late March. This publication will be distributed at the festival as well as via the normal mailing process. If you pick it up at the festival, come by and say hello. We have information about new yeast strains and other fermentation help. We prepared an ad for this festival called "Pitch it to win it" (see accompanying image) in part to commemorate our history as the first company to distribute fully pitchable yeast, now an industry standard. It also gives a nod to the San Francisco Giants, winners of the World Series, of course. We really do believe if

you pitch with White Labs yeast, you will have a better chance of winning whatever beer trophy you are seeking. The idea for the ad came to me when a brewer told me about his disappointing contest results. His beer got placed in a category he did not intend, thus eliminating any chance he had of winning. He didn't pitch White Labs.

**** MBAA News:** At the Northern California chapter meeting of the Master Brewers Association of the Americas, Chris White of White Labs and Jamil Zainasheff discussed their book, *Yeast: The Practical Guide to Beer Fermentation*, and took questions from the audience. The meeting was held Feb. 10 at Sudwerk Brewery in Davis, Calif. Sudwerk is home to White Labs' research and develop laboratory. Lisa White of White Labs spoke at the MBAA Rocky Mountain District meeting on Feb. 9 on the subject of yeast handling and storage. The meeting was held at Asher



Brewing Co. in Boulder, Colo.

**** RMMS:** John Carroll and David Edgar from our Colorado customer service and sales office attended the Mountain Microbrewers Symposium in Colorado Springs, CO, in February.

**** San Francisco Beer Week:** SF beer week featured significant bookend events and a whole bunch of activities in between. The beauty of the week is that most breweries and beer bars have events, and these events draw a mix of neighbors and out-of-towners, often for the first time. I discovered Beer Revolution in Oakland, a big name but a fairly small place, particularly during beer week when it was shoulder-to-shoulder, at times. Another event featured a match between San Francisco and East Bay brewers. There must have been a hometown advantage, because the East Bay won big, and it was no small wonder because the event was held in Oakland. Drake's, which won the most awards, took home the trophy. If next year's contest is in the city, there is little doubt over which side of the Bay will win, if the most recent competition is any indication.

Mike White is communications director for White Labs, and among his duties is managing the websites for White Labs and editing this newsletter. Write him at mwhite@whitelabs.com.

Make it funky

From Page 1

Regarding the unique and unusual flavors found in Brettanomyces-fermented beers, here are two quotes about Belgian Lambics from the late beer writer Michael Jackson, to help answer the question of "Why?" Why make it funky, why riskfunking up your brewery?

"In their 'wildness' and unpredictability, these are exciting brews. At their best, they are the meeting point between beer and wine. At their worst, they offer a taste of history."

-and-
"There is no more enigmatic drink."
-Michael Jackson

The following brewers generously share their recommendations for consistent Brettanomyces fermentations and also their perspective on the role of lactobacillus and pediococcus, used in combination with Brett.

Tomme Arthur, Lost Abbey Brewing Co./Port Brewing

First Brett is a yeast so treat it as such and make sure you have a large enough starter that is viable. Second, if you're doing just a refermentation with Brett, make



David Edgar, through his own company, Mountain West Brewery Supply, Inc., represents White Labs, Hopunion, Rastal glassware and Chrislan Ceramics tap handles. He enjoys drinking all styles of flavorful beer, and listening to many different styles of good music. He wrote about extra flavorful low-hopped beers (during the "hop crisis") in the Fall 2008 issue of *The Quarterly*.

sure you have ample sugars for them to work with. For us, we achieve this with a low residual extract (low final gravity) ensuring we don't have a runaway bottle referment and therefore gushing/exploding bottles. But the Brett needs something to work with so we add fresh sugar. You can also use fresh fruit (sucrose) as a source of nutrition. 100% Brett fermentations are fast (typically less than a month if pitched properly) while secondary or tertiary Brett ferments (barrel type) take 6-9 months to manifest true Brett flavors.

Jason Perkins, Allagash Brewing

Two of our core beers, Interlude and Confluence, are produced using Brettanomyces. It is our own proprietary strain, discovered here at the brewery. For

Interlude, we start with a saison at beginning of primary, and halfway through, inoculate it with Brett. After the saison yeast slows down, we throw in Brett to finish it from there.

For Confluence we pitched Brett at the beginning together with our house Belgian ale yeast – but wanted to ferment in tandem as opposed to [adding Brett] at the end. We found we basically had to take a volume of Brett, grow it up using O₂ and a low-hopped wort about 4 days before the brew – keep feeding it with O₂, at kind of a high krausen rate, to make it happy. We added it with our Belgian wheat beer house strain.

Also for limited release beers using barrel aging: we add Brett to a barrel with

beer in it, or just refill a barrel that previously held a Brett beer. Confluence is 100% aged in stainless steel. Interlude is 20% aged in oak.

Phil Markowski, Southampton Publick House

I've only used Brett in a secondary fermentation. I know that some brewers have used it in a primary ferment but I've not tried that to date. I tend to like the Brett character more subtle and in conjunction with conventional fermentation character. One of these days I might try an "all Brett" fermentation.

TIME: When I'm planning a Brett beer I budget 3-6 months for the desired character to emerge. Having patience is key. The amount of Brett you pitch will certainly influence how much time you require to get the desired level of Brett in the beer. Frankly, I've never had the ability to measure the cell count when pitching a Brett culture so my approach has not been as scientific as I might like.

TEMPERATURE: I like to maintain a temperature in the range of 65-75 de-

See "Make it Funky (2)," page 8

White Labs closes on new building for headquarters

White Labs is in the process of acquiring a new building. As of this writing we just closed on the purchase. This will be our third location in our 16-year history, and the first property we have owned.

The good news is the new building will give us five times the yeast producing capacity, with a bigger workshop area and an expanded lab. For the first time, our analytical lab will be separated physically from our microbiology lab. Among other benefits, this will allow us to expand yeast production and Siebel Institute analytical testing.

The move is also good news for our employees. It will provide a more modern building with vastly improved infrastructure and it is located in the same San Diego neighborhood as our current facility, thus preventing anyone from having to commute longer distances. Indeed, the new building is closer to the freeways.

While this is good news for us and our customers, it is worth taking a moment and reflecting on what a move and expansion can entail. We have worked with many brewery clients who have expanded their space and added new equipment over the years. Generally it is greeted with enthusiasm because such actions have been years in the making (as is the case with us). However, the new brewers find out that things don't automatically go as



Letter from
the President
Chris White

smoothly in the new facility. We have often worked closely with brewers to try to get their new equipment to produce the same flavor of beer as in their old facility, for instance.

How will we insure that we will deliver the same level of quality in our new building? Part of our confidence lies in not having to bring in new equipment as would be necessary if it were a new brewhouse. What we are getting is more floor space, not new bottling lines or chillers, for instance. Additionally we will be working with some of the top contractors in the San Diego area, including some who helped build the most modern pharmaceutical labs in the area as well as the Petco baseball park.

If they can build Petco (one of the newest and most loved baseball parks in the country) to stringent government and fan standards, they can build White Labs.

I am proud of the people at White Labs and our customers for making this happen. I think it also under-

scores that the U.S. is better in manufacturing than people give it credit for (I promise this will have a beer angle shortly). Indeed, our small business won't show up as a major employer in our area. However, companies like ours are often ignored when people talk about the poor state of manufacturing in this country. While indeed many large companies, such as those in the auto sector and computers (like IBM, where my father worked until he retired many years ago), have seen jobs go overseas, many smaller companies with new ideas and practices have taken their place. A company like ours may be small but we have a worldwide reach, and we will be seeking to continue those relationships in our new home.

The good news is that the money is there for companies like ours, even if it takes a lot of time and effort. We have secured our second Small Business Administration loan, and we couldn't have grown our business to the extent we have without such support.

I will keep you abreast of our progress in future editions of *The Quarterly*.

Chris White is President of White Labs Inc. He has a Ph.D in biochemistry from the University of California, San Diego. Feel free to write him at cwhite@whitelabs.com about this column.

Styles

From Page 1

Tettnang, Hallertau Mittelfrüh and Czech Saaz) would be sufficient, I recommend that you utilize American Noble hops such as US Saaz, US Tettnang, US Hallertau and US cultivars that have been bred from the Noble lineages of Liberty, Vanguard, Mt. Hood, and Santiam.

The benefit of these newer hop cultivars is that they add a more complex spicy and/or fruity character to the beer.

Commercial examples for this style include, but are not limited to, Dixie Blackened Voodoo, Shiner Bock, San Miguel Dark, Baltika #4, Beck's Dark, Saint Pauli

Girl Dark, Warsteiner Dunkel, Heineken Dark Lager, and Crystal Diplomat Dark Beer.

— Will Harrison, Hopunion LLC

See "Styles 2," page 6

From the Lab

White Labs Enzymes

Last year White Labs introduced enzymes for its brewery and homebrew customers using DSM technology. DSM is most widely known in the beer world for its popular Brewers Clarex enzyme, which is sold in Europe and elsewhere. (White Labs repackages this product as Clarity Ferm in sizes that better fit the craft beer market in North America).

Below are some questions and answers we have addressed regarding these enzymes.

Q: What are enzymes?

A: Enzymes are usually bacterial or fungal-derived proteins that catalyze a reaction. Most of the chemical reactions that occur in brewing are catalyzed by enzymes, which are in malt and yeast. Enzymes exist that are not normally found in malt and yeast, and these enzymes, while not required for brewing, can have a helpful

impact.

Enzymes are active at very specific temperatures, and they can be denatured (unfold) very easily when the temperatures is too high for optimal activity. Once unfolded, they will *not* reform into an active enzyme.

Q: How can they help with beer production?

A: They optimize production. Many of the processes that happen during the mash and during fermentation could not take place without them and can lead to various problems such as chill haze, filter blockage, and low efficiency in the brewhouse. Enzyme activity is essential in every brew, as amylases work during the mash to break down starch from malted barley (or corn and other adjuncts) and convert them into smaller, fermentable sugar molecules.

Q: Will enzymes change the flavor of

my beer?

A: No, enzymes are very specific and therefore will not change the flavor of the beer.

Q: What will each White Labs enzyme do?

Amino-Quik - Reduce chill haze
Clarity-Ferm - Reduce chill haze
Ultra-Ferm - Break down sugars not normally fermentable by yeast
Opti-Mash - Break down starches from adjuncts
Visco-Buster - Increase yield of fermentable extract, prevents blockage of filters

As for when to add the enzymes, optimal temperatures, and recommended dosage, visit whitelabs.com and follow the links to enzymes.

For more information about White Labs enzymes, visit whitelabs.com or call 888-5-Yeast-5.

Craft Beer Quarterly

The purpose of CBQ is to provide information and tips about brewing from an ingredient perspective — malt, hops and yeast. CBQ is sent each quarter to thousands of professional brewers. CBQ is sponsored by Briess Malt, Hopunion LLC and White Labs Inc.

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Hops 2011

From Page 1

driven by the decline of macro brewers and lager-style producers world-wide. As publically owned companies, many large producers have altered their recipes and made ingredient changes based on cost savings rather than quality optimization. These alterations have affected most every brewing component, however the affect on the hop industry has been more significant than others. The use of processed isomerized extracts has dramatically increased while the average IBU's has been reduced. Ultimately, the greatest affect is a change in acreage. Over the last 2-3 years, 12,000 acres of high alpha hops and 4,000 acres of aroma hops have been idled, mostly as a result of ABInbev's decision to replace the Willamette hop. Over 65% of the worlds hop acreage is based around the high alpha varieties that drive the production of extract. In fact, in the United States, high alpha drives closer to 81% of the total hop acreage.

While the macro world is spiraling in surplus, the exact opposite situation exists in the craft world. In one of the most difficult economic backdrops in the last 75 years, the craft brewing industry is growing faster than ever. In fact, the growth is accelerating. It is estimated that craft beer volume grew by +11% in 2010 when the total beer business declined by -1%. The effect that this has had on the aroma hop availability has been significant. Many growers have idled acres, based on the over-supply of alpha varieties, while some have even idled their entire acreage, regardless of the demand for aroma varieties, due to the need for less alpha varieties. The styles that are the driving force behind craft growth such as IPAs and pale ales are almost non-existent in the macro brewing world. These hoppier styles do not rely on pure alpha resin content. Instead, IPA requires unique aroma characteristics — the “paint palate for the craft brewing artist”. The hop varieties that provide these unique characteristics such as Simcoe®, Amarillo®, Citra® and Centennial are mostly non-existent in the macro brewer world. These IPA style varieties are typically very low yield, require more care from the grower and are grown on significantly fewer acres than their high alpha counterparts that can yield 2-3 times as many pounds.

Aroma varieties are also more sensitive to harvest windows as the grower must consider oil content, aroma, and color in addition to alpha. Typically, alpha growers are paid only on poundage and alpha, regardless of all other attributes.

Historically, when craft was a small part of the brewing business, only the hops that were not selected by large brewers were available to the micro industry. Today though, the shoe is definitely on the other foot. The craft brewer dominates the usage of IPA style varieties.

Current consumption of many aroma varieties is growing at 100% or more per year. Larger brewers are also adding to the strain as they try to create beers to compete

with the success of the craft brewers IPA styles. In a crop year like 2010, where crops yields were significantly less and demand is growing faster than ever, all of these components have created shortages in many of these varieties.

A key component going forward is recognizing that hop suppliers have separated into those that support the macro brewing segment, and those that support craft brewers, like Hopunion. Because of our position, we are able to work with premium growers to have the acreage planted in each variety be more closely aligned with the craft brewer needs. It is also important to recognize that the demands on the hop grower to increase both volume and selection are enormous. It can cost growers as much as \$2,000/acre to make this transition, in addition to no expected revenue for 1-2 years. Given the expense to rip out unneeded varieties and replant acreage for booming IPA style varieties, growers are reluctant to invest without forward contracting.

Given that growers also experience a 2-year delay between new plantings and effective yields (up to 3 years for Oregon growers), the communication between the brewer and Hopunion is now more critical than ever in regards to projections or contracts. In an effort to help ease the strain on both brewers and growers alike, Hopunion has taken a very proactive approach with our growers/owners, providing them with a 5 year view of projected brewer needs. With the brewer's help in developing long term projections, we can avert risk of important varietal shortages for the long term.



Above, the photo depicts idle Willamette hops acreage. Below, Mt. Adams as seen from the perspective of a hops farm.



Styles 2

From Page 5

Yeast and Fermentation Notes:

For this style we suggest WLP830 German Lager Yeast or WLP840 American Lager Yeast.

These strains will allow the malt to show through with low sulfur and clean results. We recommend to reduce VDK to below 50ppb total VDK because the combination of dark malt and diacetyl is detrimental to the beer. Reviewers on

whitelabs.com have also recommended WLP833 German Bock Lager Yeast for this style, noting its cleanliness and versatility.

While this section is generally dedicated to yeast and fermentation, we cannot ignore the interplay of yeast and malt. When making dark lagers, the dark malt is key, obviously. If you use too much dark malt the lager yeast will create unpleasant

astringencies (unsweetened dark chocolate flavor). De bitterized black malt works great. Even dark crystal can give astringent flavors. Caramel malts are best to give a little sweetness (60 L or less). A higher mash temperature (154 °F) will contribute some un-fermentable sugar, leaving some sweetness, too.

— White Labs staff members

Malt Notes:

While there's a wide variety of dark roasted malts available, choosing the right one is key to formulating a great Dark American Lager.

That's because, while this style is dark in color, it should be free of acrid, burnt, strong roast flavors. Once you've selected a dark roasted malt, formulating the rest will be determined by your target flavor.

See “Styles 3,” page 7

Falconer's Flight: Great hop for great cause

By Melody Meyer, Hopunion

In a time when the demand for premium craft beers is expanding and the supply of unique aroma varieties is tight, Hopunion recognizes the increasing importance of offering brewing solutions and varietal options that continue to promote each customer's success.

As part of the solution, Hopunion LLC has released Falconer's Flight™, an exclusive proprietary pellet blend comprised of many of the Northwest's most intriguing aroma hop varieties. With contributions from Citra®, Simcoe®, Sorachi Ace and a handful of other varieties, Falconer's Flight™ is the perfect substitute or addition to your premium craft brew.

Since December 2010, innovative breweries throughout the United States and Canada have been experimenting with Falconer's Flight™. The feedback has been tremendous, with numerous breweries such as Hop Valley in Springfield, OR complimenting the complexity of the hop and its strong citrus/pine aromatic tones. Maui Brewing Co. has even referred to the hop as "the full floral bouquet of flavors." This complexity allows Falconer's Flight™ to successfully function as the sole variety in a single hop brew or as a substitute to one of the highly favored aromatic varieties. For Hop Valley Brewing Co., Falconer's Flight™ has been used as a substitute for Simcoe®, while Maui Brewing Co. has used it



as a replacement for the Amarillo™ in their IPA. Regardless of its use, breweries agree that Falconer's Flight™ is an ideal blend for both big, hop forward beers and balanced beers alike.

In addition to its versatility, Falconer's Flight™ supports a great cause. It was created in honor of Northwest

brewing legend, Glen Hay Falconer, and is designed to support the Glen Hay Falconer Foundation and its mission "to contribute to the Northwest craft brewing community by providing opportunities for professional and aspiring brewers to further their knowledge and expertise." In honor of Glen, breweries throughout the country are reaching across competitive lines and brewing innovative collaborative brews. Maui Brewing Co. is leading this charge by bringing together members from Hopunion LLC, Brewer's Supply Group and Maui Brewing Co. to brew "Flying Hi.P.Hay." This brew will mark the first time that competitive breweries and vendors have come together in support of one great cause. As an added benefit, both Maui Brewing and Hopunion LLC will be donating a substantial portion of the beer and hop proceeds to the Glen Hay Falconer Foundation.

To help support Falconer's Flight™ and the Foundation, look for the numerous great beers being brewed with Falconer's Flight™. From the Legacy Brew collaboration beer, to Maritime Pacific's Seattle Beer Week 2011 beer, Hop Valley's Alpha Centauri and Maui's Flyin' Hi.P.Hay, there is no shortage of premium craft beers featuring Falconer's Flight™. We are thankful to all of the breweries who have supported this great cause and look forward to celebrating Glen at the 2011 Sasquatch Brew Fest.

Featured hop – Centennial gaining popularity

Proving itself to be one of the trendiest hops in the Northwest, Centennial is a dual purpose variety that will not be crossed off of the craft brewer's wish list for many years to come. It is grown solely in Washington State, and gaining immense popularity with craft brewers throughout the country. In 2006, Centennial had a 101 acre increase (doubling the total acreage from the previous year), and is well on its way to doubling once again (Barthhaasgroup.com). Production for 2009 registered at nearly 300 acres. Because of this growth and popularity among

the craft brewing community, Centennial hops have earned the second place listing on the Brewer's Association's "Top Craft Brewer Hops" for the past four years — second only to Cascade.

Bred in 1974, and selected from a cross between Brewer's Gold and a selected USDA male, the Centennial variety was released to the public in 1990. Deriving its name from the Washington State Centennial Celebration, this hop initially encountered a lack of interest by the major breweries of that time. Although the growth of this hop was initially fairly slow,

the sudden boom of the craft brewing industry led more and more brewers to gravitate towards its distinct brewing characteristics. Generating dense, medium-sized cones, Centennial delivers a pungent, citrus and floral aroma, while proving to be slightly more bitter and vaguely less floral than the Cascade hop variety.

Containing an alpha-acid content of 9.5 – 11.5% and co-humulone levels generally around 29-30%, Centennial is an extremely balanced hop, and has even received the title of "Super-Cascade." Named as one of the defining hops of the

West Coast IPA style, including its presence in Elysian's The Immortal IPA and Green Flash's West Coast IPA, Centennial has proven itself quite versatile in an array of other beer styles. Pizza Port in Carlsbad, CA, uses Centennial to construct Shark Bite Red Ale, while Southern Tier Brewing Company of New York uses it in the boil and for dry-hopping in their Imperial Summer Wheat Beer, übersun. For more information on the Centennial hop variety, please visit our website at www.hopunion.com. **-Scott Bryant, Hopunion LLC**

Styles 3

From Page 6

Dark roasted malts fall into several categories:

Chocolate

- o Chocolate 350°
- o 2-Row Chocolate 350°
- o Dark Chocolate 420°

Black

- o Black 500°
- o 2-Row Black 500°

Hulless Black

- o Midnight Wheat Malt ... 550°
- o Blackprinz® Malt 500°

Chocolate Malt will not contribute acrid, burnt flavors and will add some

nice roasted malt flavor.

All three styles produced by Briess can be successfully formulated into this beer, especially if you're aiming for a lighter "dark."

An excellent choice would be Dark Chocolate Malt because of its additional color and exceptionally smooth, rich coffee notes.

If you prefer to use Black malt, we recommend using very low percentages because it can add those acrid, burnt notes considered a defect in this style.

Contributing color without acrid,

burnt notes or bitter aftertaste is the job of Hulless Black Malts. As the darkest malt in the Briess portfolio, Midnight Wheat Malt will contribute all the color needed. But because it has such a soft palette, it will not contribute much in the way of a discreet roast character that this beer style needs.

Blackprinz® Malt, on the other hand, has hints of toasted malty flavor with no acrid, burnt notes or bitter aftertaste and is an excellent choice for this style.

My recommendation for building this beer is to use Briess Pilsen or 2-Row Malt

as the base for a clean, lager taste.

You can use some corn or rice to help develop moderate crispness.

A small percentage of Munich and Caramel Malts will contribute to the low to moderate sweetness desirable in this style.

And a small percentage of Dark Chocolate and/or Blackprinz® Malt will contribute a subtle roast or hint of coffee flavor.

See "Styles 4," page 8



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Attention brewer

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Styles 4 From Page 7

My American Dark Lager Grist Bill:
Pilsen or 2-Row 80%
Bonlander® Munich Malt 5-8%
Caramel 20L or 40L 3-10%
Dark Chocolate and/or Blackprinz® Malt ... 3-5%
— Penny Pickart, Division Manager-Central, Briess
(Pictured at right)



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Make it Funky (2) From Page 1

grees F to allow the Brett to work in a timely fashion. (Although I don't know the official temperature optimum for Brett, I assume it is in that range or slightly higher.)

EXTRACT: I like to inoculate with Brett when I know there is an appreciable amount of extract (dextrin, not maltose or a simple sugar) still in the brew. For

instance, I prefer an all-malt or very low adjunct rate when planning on a secondary fermentation with Brett.

MINIMAL COMPETITION: By that I mean I wait until the initial yeast used to ferment the brew has settled out fairly completely before I inoculate with Brett (I have never added Brett to the initial ferment, I've only put it into a fully

fermented beer with dextrins remaining. I feel that adding Brett to a beer with minimal yeast remaining aids in the Brett getting started. Not sure if it is really true.)

WOOD: Theoretically Brett prefers a touch of oxygen (it is a "microaerophile") so the slight air exchange through a wood barrel seems to give it the proper dose of O₂. Although I've had successful anaero-

bic Brett ferments (in kegs) it does seem to work a bit faster in the wood environment. Wood is certainly more romantic and of course, adds complexity.

To be continued in the next issue of CBQ

More Briess news: Country Malt Group joins Briess distributor network

CHILTON, WISCONSIN—Briess Malt & Ingredients Co. has named The Country Malt Group as a new, authorized distributor of its entire line of brewing ingredients effective immediately.

"We're excited about this partnership and what it means to the American craft brewing industry," stated Briess Vice President of Sales & Marketing Robert O'Connell.

"In a relatively short period of time, The Country Malt Group has grown into

a respected and trusted full service distributor by staying focused on the customer's needs.

"That makes them an excellent fit with our business model and our mission which has been, and remains, to provide quality products and superior service to the craft brewing industry," O'Connell continued.

"Briess has built its reputation on delivering high quality, innovative products that meet our customer's specific needs" stated The Country Malt Group's Presi-

dent, Bryan Bechard. "We are incredibly excited to bring the entire Briess product line to our existing customers and look forward to further building the Briess brand."

Providing easy access to Briess products is critical, O'Connell continued.

"The Country Malt Group's warehouses are strategically located throughout the United States which complements our existing distributor network, further providing the brewing community with

higher service levels" added O'Connell.

The Country Malt Group, headquartered in Champlain, NY, operates six distribution warehouses in the United States with locations in Champlain, NY, Vancouver, WA, Hayward, CA, Aurora, CO, South Holland, IL, and Hickory, NC.

For more information visit BrewingWithBriess.com or email info@BrewingWithBriess.com.