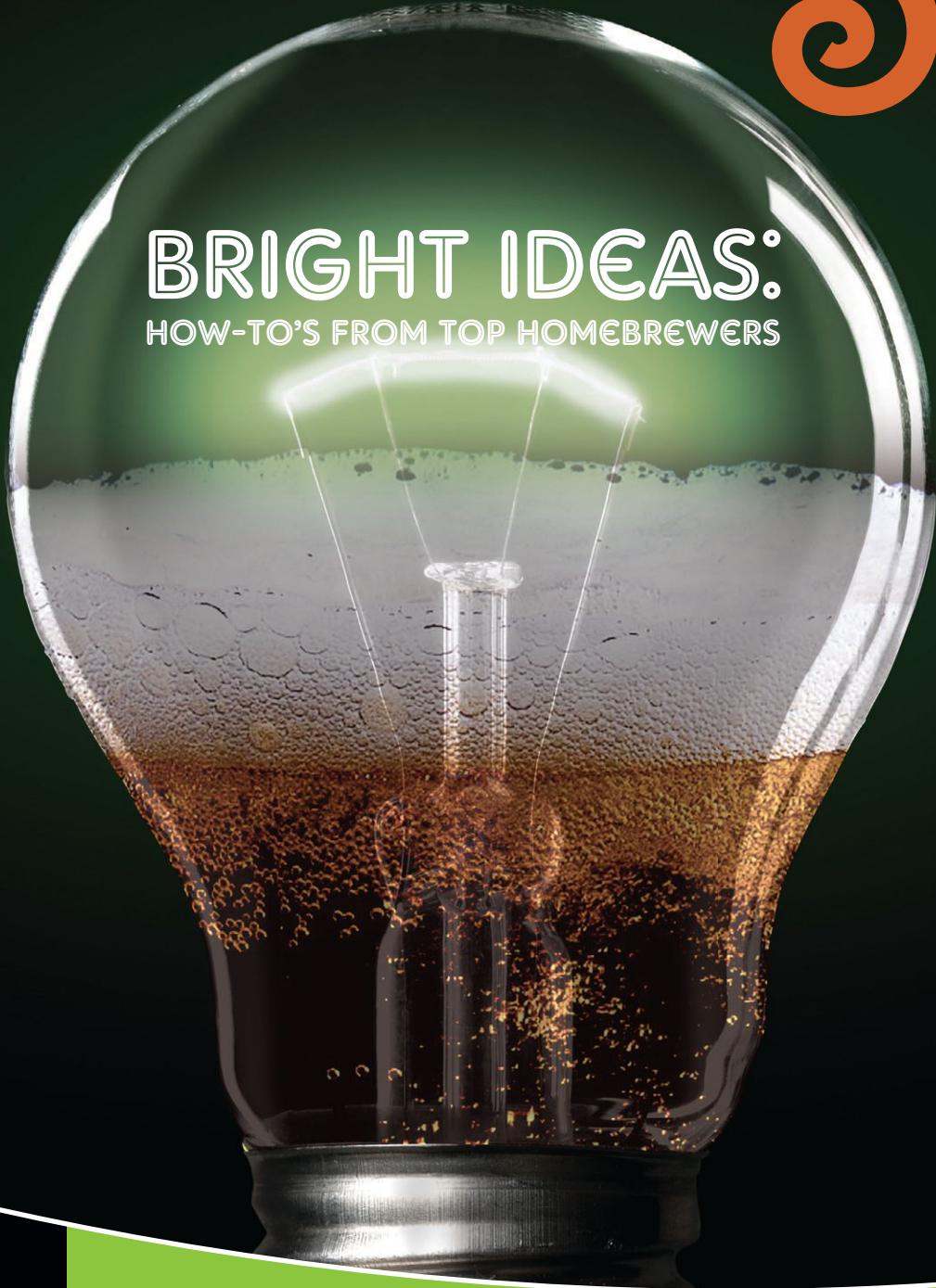


FOR THE **HOMEBREWER & BEER LOVER**

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The Journal of the American Homebrewers Association

BRIGHT IDEAS: HOW-TO'S FROM TOP HOMEBREWERS



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Brewers Gone Sour

In 2006, five American craft brewers took an epic trip to Belgium that forever changed their perspectives on brewing. (As a side note, I had the distinct pleasure of reading their trip journals and editing them into a cohesive article for *The New Brewer*, Zymurgy's sister publication for the craft brewing industry.)

Two of those brewers, Tomme Arthur of Port Brewing/The Lost Abbey and Avery Brewing's Adam Avery, referred back to that trip at the Big Beers, Belgians and Barleywines Festival January 6-8 in Vail, Colo.

"I came back from that trip with a vision of starting a sour program," said Avery, whose brewery now has about 220 barrels in its barrel-aging program.

Arthur is now running one of the largest domestic barrel-aging programs at The Lost Abbey, with 600 barrels, of which approximately 250 are devoted to sour beer.

It's been said that "sour is the new hoppy." Regardless of whether that holds true, Avery and Arthur are devoting considerable resources to their barrel-aging programs and are having a blast in the process. Avery Brewing even experimented with a "ghetto coolship" at one time, said Avery. "I had visions of doing it the way Cantillon does it," he said. "I wanted to see what the Colorado air could do for our beer."

Avery ages most of its beer in wine barrels, specifically its sour beer. Avery's Brettanomyces house strain was harvested from bottles of Drie Fonteinen that Avery brought back from Belgium.

"We are still totally in the learning process," said Avery, whose brewery launched the barrel-aging program two years ago and recently released the sixth beer in the series.

However, he said, "I can't say that I see sour ales being the next big thing. It's such a small niche already. I don't really see it exploding." It is a great draw, however, for bringing new craft beer drinkers into the fold. "With beers like this, you definitely will steal some wine drinkers," he said.

American brewers such as Avery, Arthur, Russian River's Vinnie Cilurzo and Allagash's Rob Tod (who were both also on the trip to Belgium) are bringing America's burgeoning barrel-aging scene to the forefront. What sets it apart from the Belgians, said Arthur, is that "the notion of sour beer in Belgium has no wood character." In fact, Arthur related the story of how Jean Pierre Van Roy of Cantillon tasted his award-winning Cuvee de Tomme and promptly looked for a place to spit it out.

The trip had far-reaching effects. Tod built a successful coolship at Allagash; Cilurzo has 500 barrels in his Russian River stash (100 percent devoted to sour beers) and plans to add up to 300 more; and the fifth brewer from that trip, Dogfish Head's Sam Calagione, built an enormous tank made of Palo Santo wood for aging Palo Santo Marron.

For homebrewers, procuring barrels and filling them can be a great homebrew club project. We also offer a "shortcut" sour beer technique in this Practical Solutions issue ("Funk with Less Fuss" on page 34).

Is sour the new hoppy? We'll see how it plays out, but in the meantime it's been a treat to sample such beers as Avery's Quinquepartite and The Lost Abbey's Veritas 008. Cheers!

Jill Redding is editor-in-chief of Zymurgy.

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By Ginger Johnson

To read this special, online-only feature, go to the *Zymurgy* page on HomebrewersAssociation.org.



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charlottecraftbeerweek.org

March 12
Kona Brewers Festival
 Kailua-Kona, HI
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March 26
Spring Craft Beer Festival
 Uniondale, NY
springcraftbeertest.com

April 1-2
Beer, Bourbon & BBQ Festival
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April 9
Breckenridge Beer Festival
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breckenridgebeerfestival.com

April 29-30
Oregon Garden Brewfest
 Silverton, OR
oregongardenbrewfest.blogspot.com

For more craft brewing events, go to craftbeer.com.

>> BREW NEWS: BEST BEERS IN AMERICA POLL

It's time once again for Zymurgy's Best Commercial Beers in America Survey!

As homebrewers and beer lovers, Zymurgy readers have the most educated and adventurous palates on the planet. So for the ninth year, we are asking you, "Who brews the best beers in the land?"

New this year: online voting! Just go to <http://bit.ly/BestBeers2011> and type in up to 20 of your favorite beers. You will need to have your AHA membership number handy. You can vote for both domestic and imported beers, but they have to be available in the United States. Voting ends March 11. We will tabulate the results and present them, along with clone recipes for some of the top beers, in the July/August issue of Zymurgy.

While you're voting, take a minute to review one of your top beers, in 150 words or fewer, and include that in the "Comments" field (this is appreciated but not mandatory.) We'll include some of your comments in the July/August issue as well as in the "You've Gotta Drink This" in future installments of Beeroscope.

Thanks for voting!



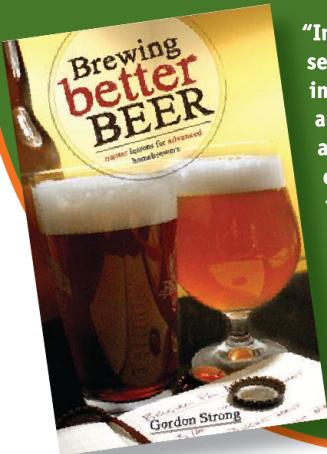
GREAT BOOK

WHAT'S NEW FROM BREWERS PUBLICATIONS

Brewing Better Beer: Master Lessons for Advanced Homebrewers by Gordon Strong

If you've been homebrewing for a while and are ready to take your beer to the next level, this is the book for you.

Written by Zymurgy's technical editor Gordon Strong, the only BJCP Grand Master V judge and three-time Ninkasi Award winner at the National Homebrew Competition, the book includes chapters on brewing philosophy, techniques, equipment, ingredients, beer evaluation, recipe formulations, troubleshooting, and more, plus several recipes.



"In addition to its relaxed and generous tone, what sets this book apart is its insistent focus on what's important for the homebrewer," said Randy Mosher, author of *Radical Brewing* and *Tasting Beer*. "Like a great beer it's extremely well-balanced—a mix of technical, practical and creative advice that, if taken to heart, will make your beer a whole lot better."

The book, which retails for \$17.95, has a scheduled release date of April 15. To order, go to <http://shop.beertown.org/brewers/>.

>> YOU'VE GOTTA DRINK THIS THREE FLOYDS DARK LORD

Dark as a starless sky in wintry New England. No cirrus clouds of foam. Just enveloping darkness. None more black.



Aromas waft and swirl around the lip of the glass. Dark chocolate brownie batter stirred vigorously in a bowl. Burnt molasses from the refinery down the road. Dry roasted espresso beans.

Layers and layers of flavor. Deep, dark, roasty Sumatra coffee touched with cream. Port-filled chocolate truffles. Dried fruit cocktail. Heady burn from the alcohol in the finish.

Ah, but the mouthfeel is where this beer really distinguishes itself. It coats the tongue and slides slowly down the throat. Thick, rich, and viscous from start to finish. A beer meant to be sipped and savored.

Take two and save one in the cellar for a special occasion.

Reviewed by Todd Russell, Manchester, NH

If you've had a beer you just have to tell the world about, send your description, in 150 words or fewer, to jill@brewersassociation.org.



>> THE LIST

5 TOP CRAFT BEER MILESTONES IN 2010

Craft beer made headlines again in 2010 as it continued to gain market share and fans. Julia Herz, craft beer program director of the Brewers Association, posted a year-end review at CraftBeer.com. Among the top events of 2010 she noted:

- **April 10, 2010** – The Brewers Association World Beer Cup® Gala Awards Dinner was the largest beer-paired dinner ever served. The 1,800 in attendance enjoyed a four-course meal prepared by The Homebrew Chef Sean Paxton.
- **August 13, 2010** – Tickets for the Great American Beer Festival (September 16-18) sold out faster than ever before, five weeks in advance. Records were set for most beers ever in the competition (3,523), and a record number of beer styles (133).
- **September 2010** – "I Am a Craft Beer Drinker" viral video was launched and viewed by tens of thousands within weeks of its release.
- **November 5-7, 2010** – The first Beer Bloggers Conference was held in Boulder, Colo. with 108 scrappy, savvy, and dedicated beer writers attending.
- **November 21, 2010** – Discovery Channel aired "Brew Masters" featuring rock star craft brewer Sam Calagione of Dogfish Head Craft Brewery.

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The Finer Points of Cider

Dear *Zymurgy*,

Regarding "Cider Rules the House" in the September/October 2010 *Zymurgy*, I'm always glad to see cider getting some attention, but here are several technical points.

1. Add pectic enzyme at the start, not after a week or more. The enzyme is denatured by alcohol, so the more alcohol produced in fermentation to that point, the less effective the enzyme will be. (BTW, dissolve the pectinase in water before adding, but don't heat or boil to dissolve it, since temps above 150° F or so break it down.)
2. Aeration is not necessary. Unlike a beer wort, which has had the oxygen boiled out of it, apple juice has plenty of oxygen. Along with this, realize that many cidermakers try for a slow start to fermentation, to give some natural yeasts (such as apiculate strains) a chance to work and add interesting flavor notes before they're killed off by increasing alcohol.
3. Home pasteurizing by bulk heating can give a "cooked" taste, which is why sulfiting is normally preferred. Also, sulfiting protects the cider from airborne contaminants that can enter during racking, etc.
3. The note on Campden tablets, "one tablet per 5 gallons," seems like a typo. Normal dose is one tablet per gallon, which gives 50 ppm SO₂. (Nit-picking: Campden tablets are sized for one per UK gallon to give 50 ppm, so it would actually be four tablets for 5 U.S. gallons.)

Dick Dunn
Hygiene, Colo.



Jazzing It Up

Dear *Zymurgy*,

I, like a lot of my fellow homebrewers, added a collar to my chest freezer to make serving beer easier. When I finished my project, I thought the freezer still looked awfully plain. I did some research and had this vinyl wrap (above) custom made and then applied it myself. I thought I would share. This chest freezer sits in my garage, and now that it looks so nice I am compelled to dress up that wall in the garage because it now looks too plain!

Cheers,
Brian Schoolcraft

Krausening Formula

Dear *Zymurgy*,

In reference to Kai Troester's informative article "Krausening" (For Geeks Only, September/October 2010), I find it inconvenient to estimate the krausen volume in order to ultimately derive its optimal

volume. To fix this, I rewrote the equation as stated in the article:

$$V_k = 1.95 * V_{pb} * c_k / (G_{Uk} - G_{Ub})$$

to:

$$V_k = 1.95 * (V_b + V_k) * c_k / (G_{Uk} - G_{Ub})$$

where:

V_b : Volume of unprimed beer (i.e. without the krausen addition)

and all other variables are as defined in the article. After solving for V_k , we have that:

$$V_k = V_b / ((G_{Uk} - G_{Ub}) / (1.95 * c_k) - 1)$$

And it's now possible to calculate the krausen volume needed without an initial estimate.

Take the example as presented in the

7-Year Itch Ale

EXTRACT WITH SPECIALTY GRAINS

(recipe submitted by Zymurgy reader Eddie Edwards of Greater Everett Beer League, Everett, Wash.)



INGREDIENTS

for 5 U.S. gallons (19 liters)
9.5 lb (4.3 kg) Light Malt Syrup or 7.625 lb (3.45 kg) Light DME (dry malt extract)
0.5 lb (226 g) Crystal 60L
0.5 lb (226 g) Belgian Special B
0.3 lb (136 g) Chocolate malt
1.75 oz (49 g) Nugget pellets, 14.2% a.a., 60 min (bittering hops)
1.0 oz (28 g) Kent Goldings pellets, 5.6% a.a., 10 min (flavoring hops)
0.5 oz (14 g) Cascade (homegrown), 4.3% a.a., 2 min (finishing hops)
0.5 tsp Irish moss (or 1 Whirlfloc tablet) 15 min.
5.0 oz (142 g) DME at bottling Wyeast 1056 American Ale

Original Gravity: 1.072

Final Gravity: 1.018

Alcohol: 7.2% ABV

Color: 26.9 SRM (Dark)

Bitterness: 76 IBUs

DIRECTIONS

Begin yeast starter. Bring water to 150° F (66° C). Steep specialty grains in water for one hour. Remove from heat and steep for additional 15 minutes. Remove the grains and add extract or syrup and bittering hops. Bring to a rolling boil for 60 minutes, start timing. Add hops and miscellaneous additions at intervals listed above. Cool wort to 75-80° F (24-27° C) and place in primary fermenter. Stir vigorously for a few minutes; pitch yeast.

Ferment for three-to-five days, then transfer to secondary until fermentation is complete. This is usually two days or until yeast stops popping. Dissolve 2.5 oz (71 g) priming sugar in 1 cup (237 ml) hot water. Cool to temperature of wort. Stir into wort. Transfer to bottling vessel.

For kegging, transfer directly to keg and force carbonate. Store bottles or keg at 65-70° F (18-21° C). For bottles, store for two weeks minimum.

All-Grain Version (75% efficiency): Substitute 12.67 lbs (5.75 kg) two-row malt for malt extract and mash all grains at 154 °F (68 °C) for 60 minutes. Increase boil length to 90 minutes, hopping per schedule.

article:

20 qt of 50° F beer needs to be primed and bottled. The beer's final gravity is 1.012 and the krausen's current gravity is 1.040. It is an American ale and the targeted carbonation level is 2.5 volumes of CO₂.

The beer's current CO₂ content is 1.2 volumes and the added krausen needs to create an additional 2.5 - 1.2 = 1.3 volumes."

To calculate the krausen volume we now have:

$$V_k = 20 / ((40 - 12) / (1.95 * 1.3) - 1) = 1.990967995 \text{ qt}$$

If we wish, we can check with Kai's stated formula and use this result as the "estimate:"

$$V_k = 1.95 * 21.990967995 * 1.3 / (40 - 12) = 1.990967995 \text{ qt}$$

The estimate exactly matches the calculation and confirms the krausen volume.

And I still think this modified formula is "simple."

Jean Gourd, Ph.D.

Assistant Professor of Computer Science
College of Engineering and Science
Louisiana Tech University

7-Year Itch Ale

Dear Zymurgy,

My inspiration for 7-Year Itch Ale came from the want to make something for the darker days and colder nights of winter. I wanted to stay true to the all-grain procedure, but knew I would have to add something else to give the ale more body, so that's where the light malt syrup or dry malt extract came in.

It turned out to be one of my best homebrews, and since really good things happen only once in a great while, like the movie, I decided to call it 7-Year Itch Ale. I even made a logo to go with it.

Eddie Edwards

Greater Everett Brewers League (GEBL)
Everett, Wash.

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Please cast your vote today!

Candidates

Please read candidate statements at HomebrewersAssociation.org and cast your ballot online. For the 2011 election, there are seven candidates running for six open seats on the Governing Committee.

Harold Gulbransen

Bob Kauffman

Ron Price

Susan Ruud

Tom Schmidlin

Roxanne Westendorf

Jamil Zainasheff

Election Guidelines

Balloting is done online. Go to HomebrewersAssociation.org, read the candidate statements, and cast your vote. Vote for up to six (6) candidates. You will need to include your name, member number and contact information. If you do not know your member number, would like to become a member or cannot vote online, call us toll free at 888-822-6273 or email info@brewersassociation.org.

All ballots must be submitted before midnight Pacific time, March 31, 2011.

All AHA members voting in the election are eligible for an additional entry in the Lallemand Scholarship drawing for Siebel Institute's two-week Concise Course. Check the appropriate box on the ballot to submit your entry into the drawing. The drawing will take place June 18, 2011 at the AHA National Homebrewers Conference in San Diego, Calif.

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AHA Pub Discount Program

by Professor Surfeit



A Case for Suds



Dear Professor,
I've been brewing for several years and am really enjoying it. A good friend is very anti-foam. In trying to argue for pouring a good head, I realized I didn't know why you ideally want a good head of foam (unless the style says otherwise). Can you enlighten me, and possibly make a convert of my friend?

Thanks,
Sue V

Hi back Sue V,
Could it be your friend has some genes from those in the UK who want to squeeze every last drop of beer into the pint glass they're paying for? English bitter zealots don't want to be cheated by foam instead of beer in their glass. But I must rebut. When I can find a

good pint of English bitter, I like about a quarter inch (let's say metric at 1 cm) of creamy suds atop my brew for a number of good reasons.

1. I think it's attractive.
2. The foam traps the aromatics of hops, malt and good ferment and slowly releases them as you enjoy each sip.
3. A good head of foam and the lace on the sides of the glass as you drink are indicative of a beer clean glass.
4. A good head of foam and the "brewer's lace" is indicative of the brewmaster having used quality ingredients and great attention to the brewing and fermentation process. His (or hers) is a deliberate effort to emphasize the extra quality that is usually reflected in aroma and flavor as well.
5. Rarely is beer inferior when it maintains a good head of foam throughout the experience.

If it isn't bitter, I love to pour beer into my glass and end with about a half- to one inch of foam atop. It captures the beauty of the effort behind the beer. And if it lasts, it has become for me a visual signal that what's in the glass is likely going to be a very favorable experience.

Many times I've seen beer foam quickly dissipate in filthy glassware or poured from dirty draft lines. Also a beer that has gone bacterial or has oxidized will not maintain a healthy head of foam.

But I must end with the truth that not all beers need a good head of foam to taste good. Perhaps I'm prejudiced, but in side-by-side comparisons—beer with a good head and one without—the beer with suds has a nicer mouthfeel/texture, is more balanced and simply has that indeterminate overall impression of being better. And it usually follows that if you track good beer to its origins, the brewmaster is more than just a good brewer. He

or she is a master.

Sudsmasterly yours,
The Professor, Hb.D.

The Heart of Honey

Dear Professor,

I am interested in putting honey into a Belgian wheat beer with coriander and chamomile. I was originally going to put it into the boil with 15 minutes left; however, the fermentable will be gone with the yeast when bottling and the flavor most likely will be brewed off.

When should the honey be added, i.e. during carbonation or boiling?

How can I produce a slightly smooth flavor profile with adding orange peel (or will the orange peel overpower the honey)?

Sincerely,
Kevin Cohoon

Hi Kevin,
Honey, wheat, coriander and chamomile sound like a great balance.

There are many different kinds of honey with a full range of flavor and aroma intensities. The sugar itself, yes, will ferment away in most beers of moderate alcohol strength. What is keen to pursue is finding honey with unique and desirable flavors and aromas and then figuring out the best way to preserve some of that character in the final brew.

Boiling any length of time degrades flavor and aroma. So short boils of 10 minutes or less are most desirable for helping to preserve character. For that matter, if you really want to preserve more, rather than less, adding honey at the end of the boil, effectively bringing the temperature of the wort down to about 160 to 170° F (71-76° C) and hold-

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ing for 15 minutes, will mostly pasteurize
the honey while further reducing flavor and
aroma loss.

Orange peel is citrusy and fruity. I'd aim for
a floral honey, rather than a deep, robust,
dark honey.

When accenting honey character, you might
want to ferment on the cool side of the ale
temperature range and minimize overpowering
fruity characters from yeasts that are
friendly to higher temperatures.

Better to get brewing and brew it,
The Professor, Hb.D.

Brewing with Birch Syrup

Dear Professor,

I'm fermenting a lightly smoked porter
with juniper berries and white pepper and
I'd like to add birch syrup since the whole
idea is to create a great après ski beer. The
only info I can find on using birch syrup
in beer (vs. making a birch beer) is that
the Dogfish Head/Sierra Nevada Life and
Limb collaboration added it at bottling,
which I assume helps prevent the birch
flavor from fermenting out. My mom is
going to send me some mid-run birch
syrup from Alaska, but I have no idea how
much to use for a 5-gallon batch.

Nicole Margeson
Denver, Colo.

Hello Nicole,

Life and Limb is a unique brew at 10-percent
ABV, a dark brew with the addition of maple
syrup in the ferment and, as you mention,
Alaskan birch syrup added at bottling in order
to provide sugar for natural carbonation/
bottle conditioning. The sugars in the birch
syrup ferment out, but there is a residual
flavor contributing to the overall complexity
of this "out of style" brew. I don't know that
I'd identify the flavor as "birch" but rather a
slightly woody, astringent complexity.

Birch syrup probably has no standard sugar
content. If you want to use it to carbonate
your beer, you want to add the equivalent
of about 0.75 cup sugar to a 5-gallon batch.
How would you figure that out? Dissolve 0.75
cup of sugar into 1 quart of water. Measure
the specific gravity. Then determine how
much birch syrup it takes to make one quart

of a water-and-birch-syrup solution with the same gravity. Add that amount of birch syrup at bottling. Add the experimental solution of birch syrup and water you put together to the boiling kettle.

A smoked porter with jumping juniper berries and white peppercorns sounds absolutely unzipped. Black diamond quality all the way.

A matter of life and limb,
The Professor, Hb.D.

Unwelcome Bitterness

Dear Professor,

I have been experiencing some major flavor fluctuations with various beers I've recently kegged. The beers always taste great at first. But, after a few days, I often notice a harsh bitter aftertaste at the back of the tongue. The unwelcome bitterness comes and goes away as the beer ages in the keg.

I keep the CO₂ tank with the keg in the chest freezer at about 40° F (4° C), but the temperature does fluctuate. I set the PSI of the CO₂ tank to the value in the table (usually ~15 PSI) that corresponds to the temperature and CO₂ volume setting recommended in the recipes. Usually, I think of sanitation issues when I get bad flavors. But I've had beers taste great, then taste awful, then taste good again. Also, the beers taste good when racked into the keg. Before I rack, I always take the keg completely apart and sanitize carefully with iodophor. Is it possible the harsh bitterness I'm seeing come and go is caused by some problem with the way I'm carbonating and/or storing my beer? Or do I just have a contamination problem that I have yet to track down?

Chris Harrop
Louisville, Colo.

Dear Chris,
I've had the same issues and just like you I was pretty frustrated, before I eventually figured out what was going on.

It's all about the cleaning of the corny keg draw tube. You need to get a small brush (available at better hardware stores) with an 18-inch or so wire handle and one to two inches of very short bristle. Wet the bristle and then roll it in Ajax, Comet, Bon Ami

or other chlorinated abrasive sink cleanser. Ream and scrub the inside of the tube from both ends and then rinse with hot water. Then dip the clean brush in grain alcohol or high proof vodka to get any remaining stubborn residue that has cemented itself to the inside of the tube. You'll be amazed at the color of the brush as you pull it out after cleaning. You can't get rid of this stuff by simply soaking. Do the same with any other parts or tubing you have access to in your draft system.

This residue not only builds up and contributes harsh phenolic flavors that eventually are compromised by good beer going through, but they can harbor bacteria.

Since I've been using this regime I always get great fresh-tasting beer at first draws and throughout the life of the keg. No more phenolic aroma and flavor from my tap—at least due to insufficient cleaning.

Esteamed and thermally yours,
The Professor, Hb.D.

Hey homebrewers! If you have a brewing-related question for Professor Surfeit, send it to "Dear Professor," PO Box 1679, Boulder CO 80306-1679; fax 303-447-2825; or e-mail professor@brewersassociation.org.



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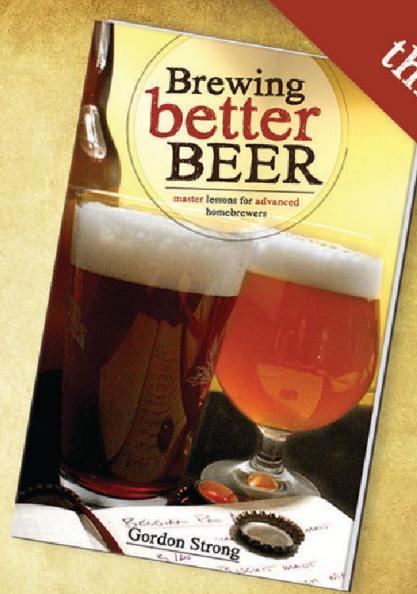
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by Amahl Turczyn Scheppach

The Malty Goodness of Bock



The original bock beer, now simply referred to as traditional bock, is an ancient German lager style that was made famous in Bavaria, specifically Munich, but originated in the Northern German city of Einbeck. After the 17th century, the beer became popular in Bavaria, and with the help of the Bavarian dialect, “Einbeck” was corrupted to “Bock.” Bock is also the German word for a male goat, so goats often adorn the labels of bock-style beers.

Several subcategories emerged from the original dark, strong, malty lager: a light version typically referred to as Maibock; a stronger version collectively known as doppelbock (which means “double bock,” even though a doppelbock’s strength ranges from only slightly higher than

a traditional bock’s starting gravity to not quite double its upper range); and a concentrated version called eisbock, created by freezing the fermented bock beer and removing the resulting ice. Each subcategory shares a few traits, namely a pronounced malty character, lager yeast fermentation and extensive conditioning at cold temperatures, subtle use of noble hops, and decoction mashing to bring out full malt flavors.

Helles bock, also called Maibock, is brewed to be light in color (which can be deep gold to light amber) but not strength. While these beers may exhibit more hop character, hop aroma should still be moderately low to none, with similarly restrained bitterness. Noble, preferably German variety hops, should be used.

Maibock/Helles Bock

This recipe is based on Angel Wings from *Brewing Classic Styles* by Jamil Zainasheff and John J. Palmer

INGREDIENTS

for 5.5 U.S. gallons (21 liters)	
2 cans	(6.6 lb or 3.0 kg) Coopers Light Malt Extract (7° L)
2.0 lb	(907 g) Coopers Light Dry Malt Extract (7° L)
2.0 lb	(907 g) Light Munich Malt Extract (10° L)
0.75 oz	(21 g) Magnum (or similar) hops, 14.0% alpha acid (60 min)
5 packages	Wyeast 2206 Bavarian Lager Yeast, or 5 vials White Labs WLP833 German Bock Lager Yeast, or 27 g Fermentis Saflager S-23, or make an appropriate sized yeast starter
	Coopers Brewery Carbonation Drops for bottling

Original Specific Gravity: 1.069

Final Specific Gravity: 1.017

IBU: 26.8

ABV: 7.1%

DIRECTIONS

Heat 2.5 gallons (9.5 liters) of water to boiling. Remove pot from heat and thoroughly stir in malt extract, then bring to a boil. Add bittering hops and boil for 60 minutes. Cool the wort, then pour into fermenter with enough cold water to make 5.5 gallons (21 liters). Aerate and pitch yeast when temperature drops to 50° F (10° C). Ferment at 50° F (10° C) for one or two weeks or until fermentation is complete. Bring to 70° F (21° C) for 48 hours, and then age in secondary fermenter for four weeks at 38° F (3° C). Prime with Coopers Brewery carbonation drops at bottling (at room temperature).

Double decoction mashing is still traditional, though boil time should not be as lengthy as in other bocks so as to avoid excessive caramelization in the kettle. Pilsner malt or Vienna malt should serve as the base, though Munich malt may be added in lesser amounts for malt flavor and aroma. Maibock is often associated with spring festivals, though if you choose to call it helles bock, you will have no such seasonal restrictions and may enjoy it year round. Original gravity ranges from 1.064 to 1.072, finishing somewhere between 1.011 and 1.018. Alcoholic strength from

this slightly-drier-than-traditional bock is 6.3 to 7.4 percent by volume.

Traditional bock beer places a much higher emphasis on melanoidin and toasty dark malt flavors and aromas, to mimic beers made with the darker, high-kilned base malts available to breweries two or three centuries ago. They are not rustic beers, however, and should be brewed with the goal of producing a very clean, deeply malty lager. Bock can be a light copper to brown color, with enriched color and flavor coming from Munich and

Vienna malts, long-boil caramelization, and decoction mashing. Hop aroma should be buried beneath the malt, and bitterness should only be sufficient to partially offset, rather than balance, sweetness. That said, bock is not a cloying beer, so use a clean, well-attenuating lager yeast that will bring the beer from an original gravity of 1.064 to 1.072 to a finishing gravity of 1.013 to 1.019. This will result in a bock of 6.3 to 7.2 percent alcohol by volume.

Doppelbock represents a bit of a tour de force for brewers of malty beers. While they can be very high in alcohol, clean malt flavors and aromas should always be the goal. Because of the extreme emphasis on malt, low levels of fruity aromas and flavors may emerge, not as a result of the yeast, but as malt by-products. Hints of chocolate are also acceptable, but roast or burnt flavors are out of character, so darker colored malts like Carafa should be used extremely sparingly, if at all. As in the Bock category, noble hops should be used only to partially balance malt sweetness, and attenuation should be sufficient to keep the beer from being cloyingly sweet. The “liquid bread” doppelbocks historically brewed by monks during Lent may have been sustaining, but modern versions exhibit a fine balance between full, smooth flavor and alcohol warmth that keeps them both drinkable and satisfying. Pale versions, as strong examples of the helles bock style, may accordingly have higher levels of noble hop aroma and be slightly drier in the finish. Original gravities can be from 1.072 to a whopping 1.112, and finishing gravities are around 1.016 to 1.024. This results in a slight overlap with traditional bock in terms of strength, with a resultant 7 to 10 percent alcohol by volume.

Eisbock is as much a brewing methodology as it is a subcategory of a beer style. The goal is to take a smooth, clean bock or doppelbock and remove some of the water content in order to concentrate the beer's strength. The resulting beer should be very smooth, alcoholic but not harsh, extremely malty but not cloying, with a rich emphasis on malt. Some pruny or grape-like fruit flavors may be present. Legs may form on the glass, as with a port wine, and alcohol content may also

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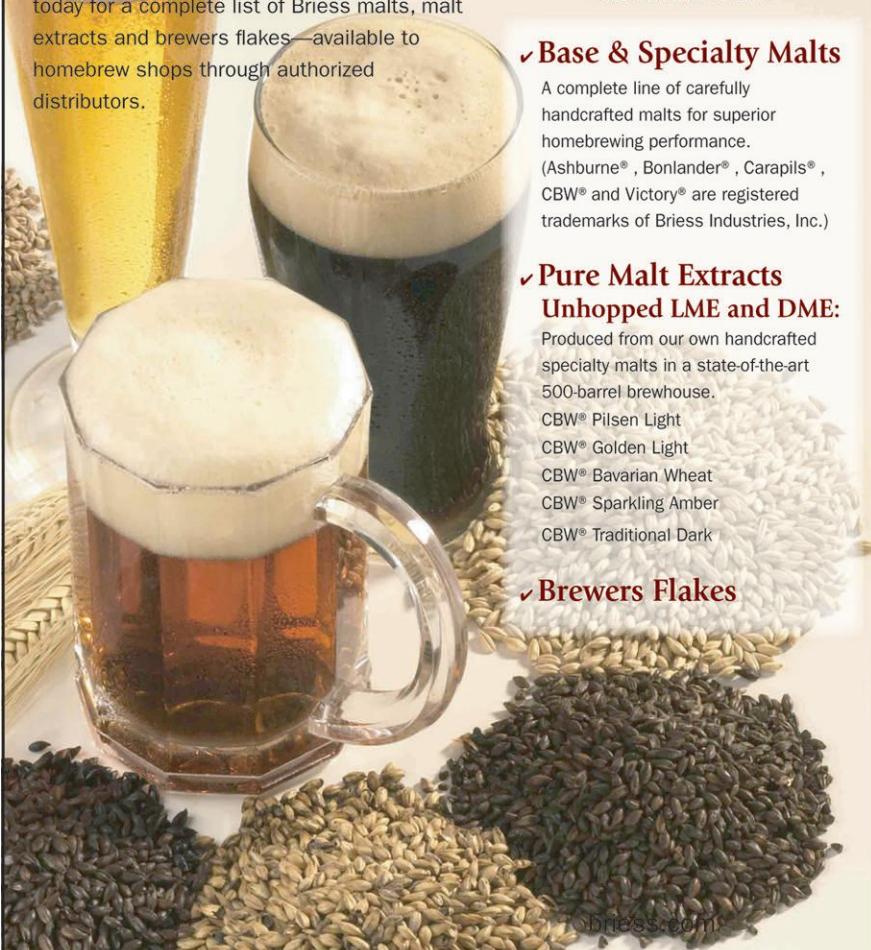
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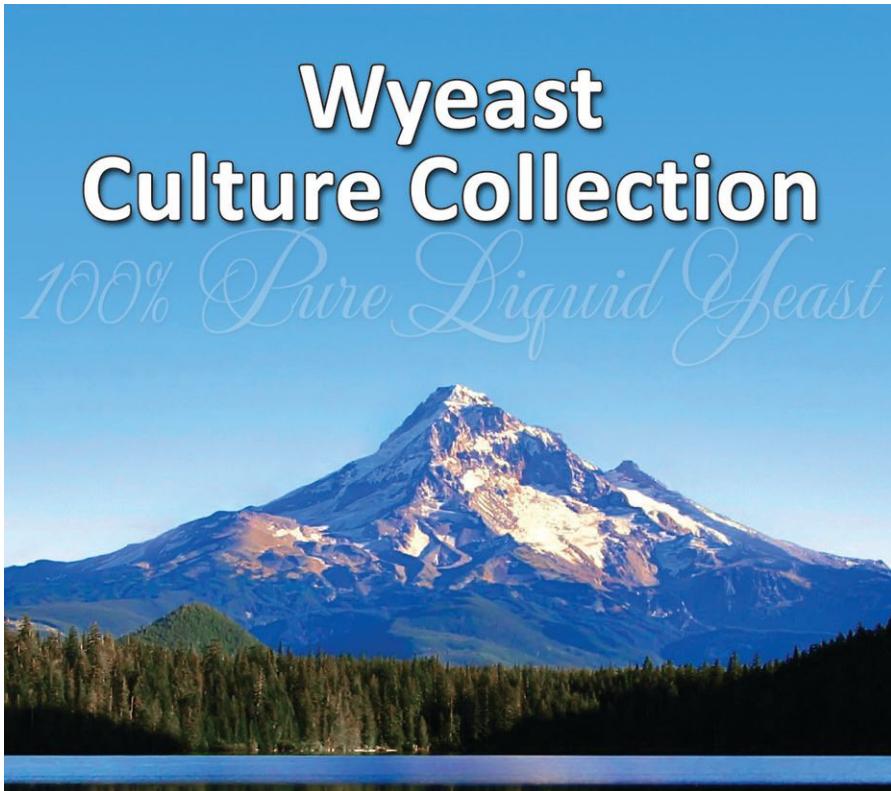
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negatively affect head retention. Again, original gravity has no upper limit, but is usually in the 1.078 to 1.120 range, and finishing gravity is usually around 1.020 to 1.035. Of course, it may take a few extra calculations to determine final alcohol content with a hydrometer after freezing and ice removal, but most homebrewed examples are in the 9 to 14 percent ABV range.

Commercially, however, there has in the past several years been a battle among breweries to produce the strongest beer, and freeze distillation has been the means of choice to this dubious end. Kleinbrauerei Schorschbräu, for example, has an eisbock that is 43 percent ABV, and Scottish brewery BrewDog has bottled a 55-percent ABV strong ale called End of History. At some point, however, the alcohol begins to completely dominate, and calling these concoctions "beer" starts to become a bit of a stretch. Eisbock brewers would do well to remember that any harshness or off-flavors in the original beer will be magnified by the freeze distillation, so hop bitterness, oak tannins, grain astringency and even water salts can result in glaring deficiencies after the beer is concentrated.

Amahl Turczyn Scheppach is a former craft brewer and associate editor for *Zymurgy*, and now brews at home in Lafayette, Colo.



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Practical Solutions:



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How To

Dry Hop Using Modern Methods

by Gordon Strong

Dry hopping is probably the most common post-boil brewing technique used by brewers. It is a cold-side method where fresh hops are added to the beer after primary fermentation has finished. The hops may be added in the primary fermenter, in the secondary, or even in the serving vessel (a traditional cask technique). Done correctly, it can add hop aroma with a very fresh quality, and might contribute to the perception of body. However, if done incorrectly, it can introduce harsh, grassy, or vegetal notes that can be offensive.

Many of the current best practices are traceable to the research, writings, and demonstrated excellence of Vinnie Cilurzo of Russian River Brewing Company and Matt Brynildson of Firestone Walker Brewing Company. For a homebrewer's perspective, I also turned to my good friend and National Homebrew Competition medalist Nathan Smith, who not only makes killer IPAs, but has also done his own research into getting the most from modern hops.

While there are many specific tips to improve dry hopping performance, they all can be categorized into three general areas: selecting proper hops, getting the best character from the hops, and avoiding the development of off-flavors and aromas.

Selecting Proper Hops

Dry hopping is all about extracting hop oils from the hops, since this is where the volatile aromatic compounds are contained. Selecting the best, freshest hops from the new crop year will give better results, as will looking for varieties that have a very high hop oil content. Look on the hop analysis data sheet for the variety and look for a "total hop oil" content of 2 percent or higher. Some of the modern super high alpha hops (Summit, Apollo, Bravo) have hop oil content of over 2.5 percent. Keep in mind that these hops can be extremely assertive, and can cover up or muddle other old-school dry hops such as Cascade and Centennial. Each hop you use in dry hopping should make a characteristic contribution; otherwise it will likely just get in the way of the other hops. Adjust proportions accordingly.

All hop forms can be used for dry hopping, although each has its own benefits

Dry hopping with wild Cascade hops from Portland, OR.

and risks. Fresh (wet) hops have the best aroma, but are only available at harvest time and can carry a bacteria load of their own. It's best to use these in higher alcohol beers (8 percent and up), and beers with a finished pH below 4.5. Fresh whole hops are a great choice, but can be limited in variety. They also tend to absorb more beer, so you can wind up with more loss. Pellet hops also work well, but they can be difficult to separate.

Getting the Best Hop Character

Some difference of thought exists among brewers about the optimal contact time for dry hops. Brynildson believes the contact time should be short (three to four days), while Cilurzo believes it should be moderate (seven to 14 days). Perhaps splitting the difference and keeping contact time around five days would be the

Nathan Smith's North Oakland Double IPA

INGREDIENTS

for 5 U.S. gallons (19 liters)

8.6 lb	(3.9 kg) Maris Otter pale malt
5.9 lb	(2.7 kg) U.S. pale two-row malt
1.5 lb	(680 g) Turbinado sugar
1.25 lb	(567 g) CaraPils® malt
1.0 lb	(454 g) German Pilsner malt
0.5 lb	(227 g) Corn Sugar
0.5 lb	(227 g) Crystal 40
1.0 oz	(28 g) Hallertauer 3.5% pellets (90 min)
0.5 oz	(14 g) Simcoe 13% pellets (45 min)
0.5 oz	(14 g) Summit 16% whole (30 min)
1.0 oz	(28 g) Centennial 8% whole (15 min)
1.0 oz	(28 g) Simcoe 10.4% whole (10 min)
1.0 oz	(28 g) Simcoe 10.4% whole (5 min)
1.0 oz	(28 g) Summit 16% whole (5 min)
1.0 oz	(28 g) Centennial 8% whole (5 min)
1.5 oz	(42 g) Centennial 8% whole (0 min)
0.75 oz	(21 g) Simcoe 10.4% whole (0 min)
2.5 oz	(71 g) Columbus 13% pellets (dry hop)
1.25 oz	(35 g) Centennial 8.5% pellets (dry hop)
1.25 oz	(35 g) Simcoe 11% pellets (dry hop)
Wyeast 1056 (2L starter)	

Original Gravity: 1.073

(50% efficiency due to no sparge)

Final Gravity: 1.011

SRM: 8.3

IBU: lots

best compromise. In any event, don't allow your dry hops to be in contact with the beer for over 14 days, as this can extract more of a grassy, vegetal character.

Multiple rounds of dry hopping can help give a bigger hop character while limiting the contact time. Use less hops at each stage, but dry hop more frequently. The

DIRECTIONS

Use 7 gallons (26.5 liters) strike water. Adjust mash water with 2.2 g CaSO₄ and 2.2 g CaCl₂, targeting 75-100 ppm Ca in the mash. Step mash: 30 minutes at 145 °F (63 °C), 60 minutes at 152 °F (67 °C), with a 15-minute mash out at 165 °F (74 °C). Raise temperature using boiling water infusions. Use No Sparge method, collect 6.5 gallons (24.6L) of wort at 1.057. Boil for 90 minutes. Ferment at 65-68 °F (18-20 °C). Divide the dry hop additions into two equal portions, and use each for 7 days, following procedure in the article.

EXTRACT VERSION: Substitute 8.1 lb (3.7 kg) pale liquid malt extract for the Maris Otter, two-row, and Pilsner malts. Steep Carapils® and Crystal malts at 158 °F (70 °C) for 30 minutes, strain, add malt extract and sugars, bring to boil, and proceed with recipe as shown.

combination of limited contact time and more rounds of dry hopping is probably the biggest change in modern dry-hopping technique for homebrewers to adopt.

Yeast and dry hopping don't mix well; the yeast can coat the hops and also absorb some of the character. Don't dry hop your beers in the primary fermenter, unless you use a conical and are able to pull the yeast first. Wait for the beer to drop bright, or crash cool it to help the yeast drop out. Maintain sanitary technique and avoid oxygen pickup during transfers. Purge receiving vessels with CO₂ before transferring and blanket your beer with CO₂ afterward.

Extraction of hop oils seems to work better at warmer temperatures, so it's best to dry hop at 60-68 °F (16-20 °C). Recirculating the beer through the dry hopping vessel or rousing the vessel will promote extraction of oils; however, oxygen must not be introduced at this stage. Hops can be put into a mesh bag (weighted if using whole hops) to help keep them in contact with the beer and to facilitate removal. Suspend the hop bag into the vessel with dental floss or monofilament fishing line.

Avoiding Off-Flavors and Aromas

Oxygen is not the friend of hops. Avoiding the staling effects of oxygen in both the hops themselves and in the beer while being dry hopped is the major concern for the brewer. If you have fresh hops, use them quickly. Keep your hops stored frozen, and purged with CO₂ or nitrogen. Use your freshest, newest hops on the cold side; save the older hops for the hot side.

One idea for avoiding oxygen during dry hopping is to use kegs. After your beer has dropped bright in the primary, rack it into a sanitized, purged keg. Have a second keg ready (also sanitized, then purged with CO₂) with the hops suspended in a mesh bag. Push the beer into the dry hopping keg, and allow it to rest at room temperature for five days. Then push the beer back into your primary keg. If you need to use a subsequent round of dry hopping, switch the hops at this point, and then repeat. This technique keeps oxygen out of the process entirely, and gives you finished beer in a keg when completed.

If your beer is in a keg with the dry hops in a bag, you could also rig up a recirculating device using a self-priming pump. Pull the beer from the beer line and recirculate it back into the gas line. This is the same concept as Sierra Nevada's "torpedo" dry hopping system. Note that Sierra Nevada uses this technique at lager temperatures.

Homebrewers who do not keg should consider buying a 5-pound (2.25 kg) CO₂ tank so carboys can be purged and blanketed with CO₂ during transfers. Simply blow CO₂ into the carboy at a low pressure to displace the oxygen, rack the beer, add the dry hops (in a mesh bag), then blow more CO₂ on top. Repeat this process every time the beer is exposed to air.



Culture Yeast
from a Bottle
of Beer

By Jamil Zainasheff

Culturing yeast from a bottle is easy when working with fresh, bottle-conditioned beer, but it can be difficult when work-

Photos by Matt Kircher and Tom Schmidlin

ing with pasteurized or filtered beer. Even though filtered beer can have some yeast in it, it is hard to cultivate such small quantities. If you are determined, membrane filtering multiple bottles might yield enough live cells to get started. However, if the beer is pasteurized, any cells in the beer are most likely dead.

Alcohol, pressure (CO_2), temperature, handling, contamination, and time all work against the survival of yeast. To improve your chances of culturing yeast from a bottle, select the freshest bottle of beer you can find for harvesting and then:

1. Refrigerate the bottle(s) for at least one week, which allows the yeast to settle at the bottom of the bottle.
2. After the yeast has settled, set up a clean work environment. Stop all sources of air movement. Close the doors and windows. Turn off the heating, air conditioning, and fans. Finely mist the air and work surface with sanitizer. If you have a Bunsen burner or alcohol lamp, you can work next to the updraft created by the flame (which keeps dust that may carry bacteria and wild yeast from settling on your work).
3. Sanitize a bottle opener and have a sterile yeast collection vessel ready. Remove the bottle from the refrigerator and sanitize the entire top of the bottle, especially around the rim area.
4. Working in your clean environment, remove the bottle cap with the sanitized opener, flame the bottle opening, and carefully decant the beer into a glass. Stop pouring when you get close to the sediment. Stopping a little early is better than stopping late and losing yeast.
5. Vigorously swirl the remaining beer to stir up the yeast. Reflame the bottle opening, pour all of the remaining liquid into the sterile collection vessel, and cover.

The yeast you've collected is most likely not a pure culture. If you wish, you can now begin the process of test fermentations and plating to isolate a pure culture from what you collected. This allows you to ensure that the yeast you use will produce the flavor and attenuation you expect, before committing it to a batch of

beer. (For more information on isolating a pure culture, refer to the book *Yeast: The Practical Guide to Beer Fermentation* by Chris White and Jamil Zainasheff.)

If you are willing to take a chance on the purity of the harvested yeast, your next steps are very similar to making a starter. It is best to start with a lower gravity wort. For yeast collected from one 12-ounce (355 ml) bottle, I use 100 to 250 ml of 1.020 SG wort with an appropriate amount of nutrients (more is not always

better) and no hops. The yeast are in a delicate state and higher gravity wort or hops can cause further difficulties in getting the yeast to grow. Once you add the starter wort, keep the container in a warm (75-80 °F/24-28 °C) area and gently shake the vessel as often as possible. If you have a shaker table, that is ideal. With time, if there are any living organisms present, the wort will become cloudy. The change may be very subtle if you start with only a few living cells and a large volume of wort. Be patient, as this step could take up to

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36 hours to show any signs of growth, depending on the health of the harvested yeast and temperature. When the starter looks to be at the peak of cloudiness, transfer the liquid portion to another sterile vessel for the next step. If there is any material that remains on the bottom during the first step, leave it behind when you transfer, as it is most likely dead yeast and other non-yeast matter.

There is no set amount of starter needed to grow this yeast up for fermentation of a beer, because the amount of viable yeast you harvested from the bottle is going to vary widely. If the first step appeared to produce very little yeast, go with a smaller amount of starter wort for the next growth step. If the first step seemed very vigorous and resulted in many cells, then you might use more starter wort for the next step. Your next step can be 500 ml to 2 L of starter wort at approximately 1.038 SG. Once it looks like you have grown up enough yeast, let it settle in the refrigerator so you can estimate the volume of yeast present. If you need to grow

more yeast, decant the spent wort and add more fresh starter wort. You might also smell and taste the spent wort at this stage. If it varies tremendously from what you expect (for example, sour or phenolic when you don't expect that character), then you can dump it before committing to a full batch of beer.

How large a starter you need is usually based on how much yeast you are trying to grow. In most cases, any size starter is better than none. An easy way to determine the proper amount of yeast for your batch and how big a starter you need is the free Pitching Rate Calculator™ at www.mrmalty.com.

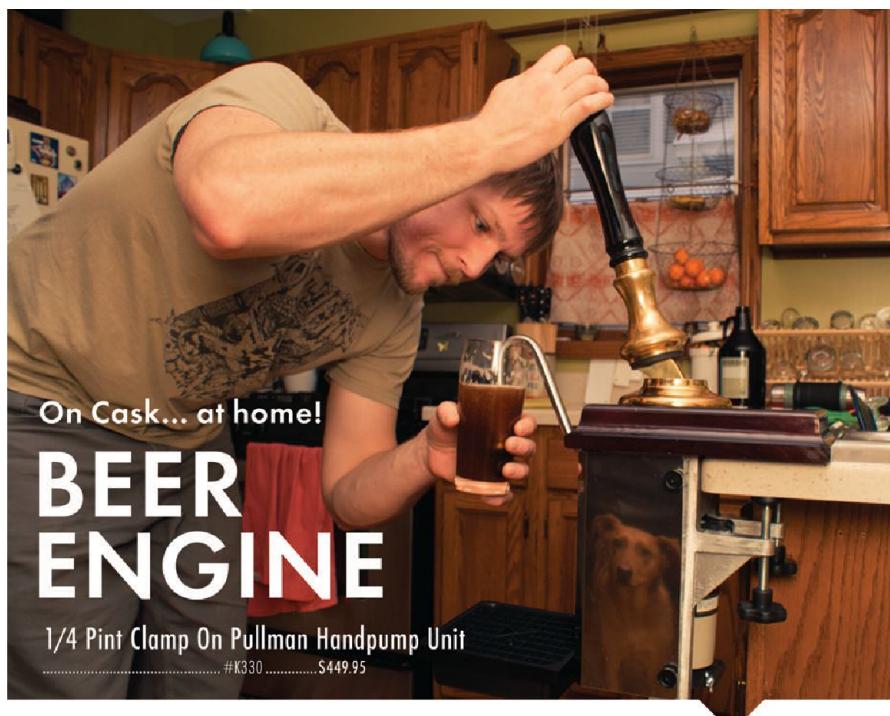
How To Make a Yeast Starter Ahead

By Jamil Zainasheff

When making starter wort, you want to balance yeast health, yeast growth, and convenience. In general, keep the starter wort gravity between 1.030 and 1.040 (7–10 °P). If you're trying to revive a stressed yeast, like culturing up yeast from a bottle-conditioned beer or from a slant, use a lower gravity starter wort around 1.020 (5 °P). Lower gravity starters are easier on the yeast, but result in less growth. High gravity starters result in more growth, but are more stressful for the yeast.

You will need a clean, sanitized container that is able to hold the starter plus some headspace, aluminum foil, light dried malt extract (DME), yeast nutrients, and water. The easiest way to make a starter is in an Erlenmeyer flask made of borosilicate glass (such as Pyrex or Bomex).

1. Add 1 gram of DME for every 10 ml of final wort volume. For example, to make 1.5 liters of starter wort, place 150 grams of DME in the flask, then add warm water until you have 1.5 liters total volume. Do not add hops. Do not use simple sugar for starters.
2. Add 1/8 teaspoon of yeast nutrient.
3. Mix thoroughly until the DME is dissolved and cover with a piece of aluminum foil that extends approximately 3 inches (8 cm) down the sides of the flask.
4. If using borosilicate glass, put the flask directly on the stove burner. Boil gently for 15 minutes, being cautious of boilover. If you do not have an appropriate flask, you can boil your starter in a pot, then add it to an appropriate sanitized container.
5. Let the starter cool to between 65 °F (18 °C) and 75 °F (24 °C), add oxygen, and then add the yeast. When adding yeast to the starter, sanitize the yeast package before opening, work in a draft-free area, and try to keep the containers open as short a time as possible. Use a stir plate or shaker table if you have one. If not, vigorously shaking the starter every hour increases the growth rate and results in approximately double the number of cells versus a non-shaken starter.



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Most starters at this temperature reach their maximum cell density within 12 to 18 hours. Low inoculation rates and low temperatures can extend that time out to 36 hours or more, but the bulk of growth should always be complete within 24

hours. I generally recommend that brewers make their starters a couple days in advance of brew day. If there is a problem with the yeast, you will have time to get another package of yeast from your homebrew shop.

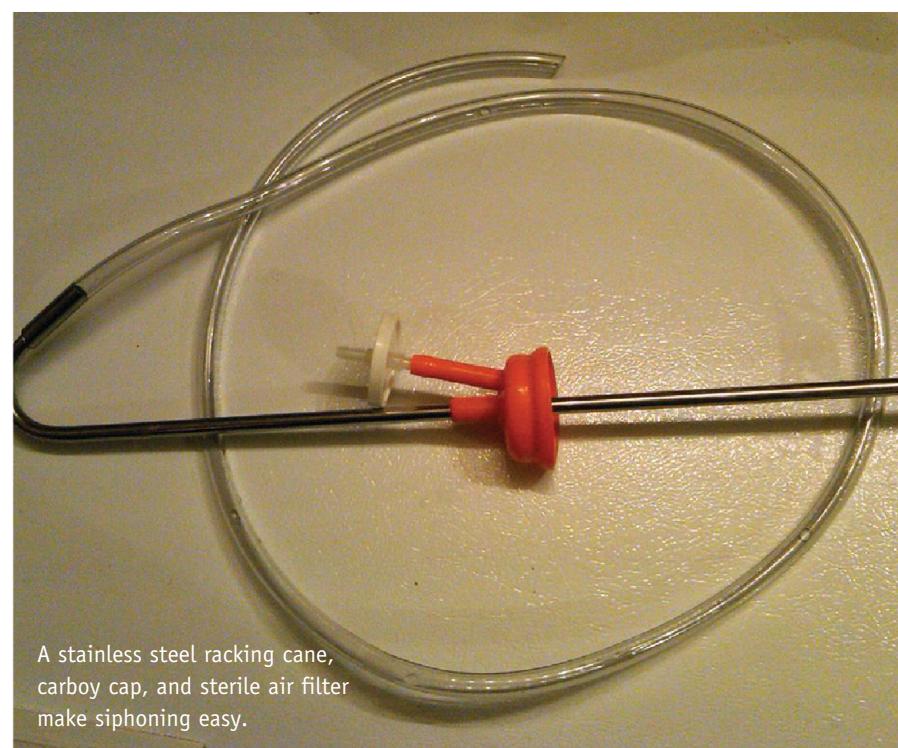
You don't want to wait forever to use your starter, as the yeast do begin to decline relatively soon after consuming the wort sugars and settling out of solution. However, you can make your starter up to a week or so in advance without too much decline in yeast reserves. Once the starter appears complete, let it sit another eight to 12 hours for the yeast to build their glycogen reserves and then slowly chill it down and put it in the refrigerator. You should store the starter either with a loose-fitting threaded lid or covered approximately 3 inches (8 cm) down the sides with aluminum foil or Parafilm.

On the morning of brew day, take the starter out of the fridge and let it slowly warm to room temperature. About four to six hours prior to pitching the yeast, decant off the spent wort and add about a pint (0.5 L) of fresh starter wort to the yeast. This will get the yeast active and ready for fermentation. When it comes time to pitch, you should see a nice layer of kräusen on top of the starter. Pitch the entire thing, wort and all, into your batch of beer.

How To Siphon With Ease

By Tom Schmidlin

Auto-siphons are wonderful tools, but a bit fragile for me. After breaking three of them, I decided I needed a better solution. I didn't invent this technique and I wish I could remember who told me about it so I could give them credit. I got a stainless steel racking cane, a carboy cap, and a sterile air filter. You just put the racking cane through one of the holes and the air filter on the other and put the cap on your carboy. A little puff of air is enough to get the siphon flowing and the filter keeps any contaminants out of your beer. If you're worried about oxidation, a tiny amount of CO₂ can take the place of the



air. You can buy this kind of setup from a homebrew shop for less than \$20.

How To Chill Your Beer in a Hurry

By Tom Schmidlin

If you're in a hurry to chill your beer, you can put it in the freezer, but you'd better not forget about it. What I've found works the fastest is to make an ice-water bath and put your bottle in it, then spin the bottle constantly for a few minutes. It works on the same principle as those wine chillers you may have seen advertised. An agitated, cold-water bath keeps the water mixed and chills the bottle faster than a bottle just stuck in ice water. An added advantage is you'll get some agitation inside the bottle, which helps mix the liquid and transfer the heat out faster.

How To Brew Beer in a Hurry

By Tom Schmidlin

So you forgot about a friend's birthday party and you promised to serve homebrew, but you only have a week! What do

you do? First, forget about high-gravity, bottle-conditioned lager. You can make great beer quickly as long as you follow a few simple guidelines—lower gravity ale, high pitching rate, force carbonated. Make a beer with a starting gravity less than 1.050 and pitch one-and-a-half to two times as much yeast as the Mr. Malty calculator recommends. Your beer should finish within three days, giving you plenty of time to crash cool, keg, and carbonate it. There is even time to dry hop if you like. If clarity counts, either use a high-floccing yeast or make a dark beer. It's really that easy. Many styles with a wide range of flavors can be brewed and served in a week, so get going!

Gordon Strong is the technical editor of Zymurgy and three-time Ninkasi Award winner at the National Homebrew Competition (NHC). Jamil Zainasheff is the co-author of Brewing Classic Styles and Yeast and a two-time Ninkasi Award winner at the NHC. Tom Schmidlin is a PhD candidate at the University of Washington studying biochemistry and the 2006 Beerdrinker of the Year as crowned by Wynkoop Brewing Co. For more great tips from your fellow homebrewers, log on to the AHA Forum at HomebrewersAssociation.org.

ORGANIZING YOUR HOMEBREW GEAR



BY: DREW BEECHUM

I have a terrible secret.

I am a slob. Not just your typical bachelor-pad type of slob, but an epic slob. The kind of slob that makes professional organizers weep and partners crazy. I don't know if it's mere deep-rooted brain lock, but where my digital life is neat, tidy and spotless, the meatspace-me is hopeless, confused, and totally unable to find that modern DIY Network nirvana of neat and tidy (with labels parading as Medallions of Organization). Fortunately, unlike arranging the books or clearing the clutter, no one looks at you cross-eyed for holding a pint of beer while exercising your inner Martha Stewart.

Containers, uncluttered sightlines and free movement are all well and good. However, if there's no substantial benefit to a laborious and tedious process, then I'll skip it. Take a look at the workings of a professional kitchen—everything has a place, everything is at hand and the layout is personally tailored. During service, the hands move automatically to grab the next piece. But no two chefs have the exact same *mise en place* and your brewery and mine won't either.

While we may not endure the kitchen's intensity, most of us enjoy our good brew day pints. Make brew day the primary driver of organization to make things flow smoothly. To me, this means focus on function, not form—practical, not shiny.

PLAN IT!

Starting with my brewing process in mind, I hit the garage with a tape measure, grid paper and pencil, noting resources and obstacles. Where are the windows, the doors, the shelves, the power,

the water? No power on the south wall, but the area by the cast iron sink is perfect for dirty gear. Place the kettles, mash tun and burners by the front door ready for brewing. Meanwhile, the glasses must stay near the tapped kegs; fermenting beer stashed by the shaded side; and malt secured away from the doors. All of this is common sense, driven by a specific goal.

Another consideration—I have 20-plus kegs. Not all of them can fit in the freezer and a SoCal garage blazes brutally during the summer. The options: buy more freezers or find a better space. I know turning my air-conditioned office into the Kegstania annex is out of the question. Instead they go to the basement where even in raging temps, they'll stay cool. I'll claim the keg transit as exercise! For bottling fiends, get access to a crawl space to use.

CONTAINING THE SPREAD

Loaded Bins

Every organizer dreams of myriad bins to group things together in standardized containers that can be labeled and stacked for easy retrieval. Don't choose a coffin-sized tub that can fit everything. If you have to go rooting around, untangling cables and hoses to find a piece, then you're doing it wrong. Medium-sized clear boxes perfectly combine volume with easy access, light weight and quick content checking. I packed things by function with bins reserved for "sugars," "post ferment flavorings," "draft parts," etc.

Watch for sales at your local container store or hardware store. It's not uncommon to find needed gear for half off.

For small parts, I found cheap little 3-liter plastic boxes. Now little things like valves, clamps and water salts get their own special

place where they don't get lost. One alternate suggestion offered by online readers is the classic American tackle box. The little trays meant for lures and worms turn out to hold little parts perfectly, presenting them neatly upon opening. Wallpaper trays offer a storage and sanitation solution for long items like racking canes.

The Toolbox

Every brewery needs tools. A nut driver here, a wrench there, screwdrivers, clamps, lighters, etc. There's just no escaping it. Even if you've got a perfectly designed automated setup, you're going to need tools.

Do the smart thing and get an extra set of tools. Hit the hardware store bargain bin and stockpile a complete set. You don't need indestructible tools in the brewery. This way you never have to scramble to find the right wrench or find that you've loaned out the one thing you need now.

In my tool box (an \$8 special), I keep a pair of small wrenches, one large wrench, a box wrench, two screwdrivers, pipe cutter, measuring tape (for volume calculation) and Teflon tape. Add in brewing-specific items like brushes, refractometer, thermometer and hop scale for a complete kit ready to brew.

The Bane of Grain

Brewers face a special problem due to bulk grain storage—namely pests that are inordinately fond of our ingredients. Cats were legendarily “domesticated” to prevent vermin damage. While my neighborhood is guarded by a feral cat army, I reach for extra insurance with pet food “vittle vaults” and 5-gallon buckets with tight-fitting gamma lids to keep the unwelcome guests out. Don't suspect unwanted attention? You may be able to use the sturdy malt bags in a tight-sealing trash can.

Even if you don't buy base malt in bulk, you can save supply runs by buying your specialty malts in larger quantities. To prevent weevil contamination, I vacuum seal each in a big bag. On brew day I slice open the bag, weigh the grain and reseal the bag. In between brew days, the malts go into bins arranged by “Roasts and Adjuncts,”

“Toasted” and “Crystals.” Alternatively, use the new airtight “snap” style boxes.

Remember to open the containers periodically to keep moisture buildup down.

STORING THE STORAGE

Shelf It!

Once you've secured endless plastic storage devices, you could just stack them against the wall. While I do this with my grain buckets, it reduces convenience and increases physical burdens. For our organized brewery, we need an easy way to get in and out of our storage.

A number of brewers have seized on inexpensive shelving units like Gorilla racks or even polyresin units from the hardware store. Even prettier mobile options like wire baker's racks work like a charm.

I got my favorite sort of solution—free—left over from the bachelor pad days, a pair of Ikea bookshelves. These things awesomely fit everything in abundance except books. The two shelving units offer



Ikea bookshelves form the basis of the newly organized brewing area. Clear plastic storage bins are a must. Don't forget to save carboy boxes for easy stacking.





3 DAYS BEFORE

Make yeast starter

1 DAY BEFORE

Collect 8 gallons of water (per 5 gallons)

Chill starter

Calculate water profile

MASH (BREW DAY)

Remove yeast from fridge

Check and close kettle valves

Filter (or treat) and heat strike water

Weigh malt

Grind grain

Assemble mash tun/rinse hoses

Dough in

Treat and heat sparge water

Check mash temperature (10 minutes)

Assemble boil kettle

Add first wort hops to kettle

Recirculate wort

Sparge mash

BREW DAY CHECKLIST

BOIL

Ignite boil kettle at 1-gallon mark

Add cleaner and hot water to HLT

Soak fermenters with cleaner

Clean mash tun

Skim "scum"/begin hop schedule

Assemble chiller

Return cleaner to HLT

Circulate cleaner through chiller (CFC)

Rinse fermenters and dry

Add sanitizer to fermenters

Drink a beer

Empty HLT and rinse chiller (CFC)

Transfer sanitizer to HLT (CFC)

Circulate sanitizer through chiller (CFC)

Add immersion chiller to kettle

Sanitize oxygenation stone

Kill boil; add knockout hops; whirlpool

CHILL/PITCH

Chill

Take gravity sample

Oxygenate/aerate wort

Decant yeast starter and pitch

Rinse chiller (circulate cleaner CFC)

Blow out CFC with CO₂

Rinse boil kettle/blow out valve



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10 feet of cubbies to hold my bins.

Open storage appeases my brain's need to see where everything is so I tend not to use cabinets. I do recognize one exception, although I haven't installed it yet—glassware. A closed cabinet keeps the dust off the glasses and keeps them from rattling around. In the meanwhile, my exposed glasses sit upside down on gridded shelf liner or pub towels. The sink has a glass washer to help.

Hang It on the Walls and the Rafters!

While many items can fit in bins and cubbies and tiny boxes, some things like hoses, cords, chillers and pumps don't,

and need to dry after use. What do you do when you run out of shelves? The answer is to be found on your walls and ceilings, and our primary weapon is the hook. Small, medium, large—all hooks have a use.

The venerable pegboard wall proves a great solution with multiple accessories designed to hang tools and brewery hoses. If you're not able to dedicate a segment of wall, you can still hook things up. My two favorite options include the 3M Command adhesive hooks for paddles, brushes, and spoons, and cable wraps for hoses and extension cords. They appeal to my reluctance to put holes in my new

SAISON ORGANIZATION

INGREDIENTS

for 5.5 U.S. gallons (20.8 liters)

9.0 lb	(4.1 kg) Pilsner malt
0.5 lb	(227 g) flaked wheat
0.5 lb	(227 g) table sugar
0.45 oz	(13 g) Magnum pellets 12.9% a.a. (60 min)
0.45 oz	(13 g) Hallertauer Saphir pellets 4.4% a.a. (10 min)
	Wyeast 3711 French Saison yeast

Original Gravity: 1.048 (70% efficiency)
IBUs: 22

SRM: 2.6

ABV: 4.7%

DIRECTIONS

Mash for 60 minutes at 150 °F (66 °C)

EXTRACT VERSION: Substitute 6.3 lb (2.9 kg) pale liquid malt extract (preferably Pilsner extract) for the pilsner malt. Substitute 4.5 oz (128 g) wheat dry malt extract for the flaked wheat. Add extracts and sugar to water and bring to a boil. Proceed with the recipe as shown.

BUYER'S REMORSE ENGLISH IPA

INGREDIENTS

for 5.5 U.S. gallons (20.8 liters)

13.0 lb	(5.9 kg) Maris Otter Malt
0.5 lb	(227 g) Crystal 55L
0.5 oz	(14 g) Magnum pellets 12.9% a.a. (90 min)
0.5 oz	(14 g) Challenger pellets 7.8% a.a. (90 min)
0.5 oz	(14 g) Pilgrim pellets 9.5% a.a. (90 min)
0.25 oz	(7 g) Challenger pellets 7.8% a.a. (20 min)
0.25 oz	(7 g) Pilgrim pellets 9.5% a.a. (20 min)
0.25 oz	(7 g) Challenger pellets 7.8% a.a. (0 min)
0.25 oz	(7 g) Pilgrim pellets 9.5% a.a. (0 min)
	WLP005 British Ale yeast

Original Gravity: 1.066 (70% efficiency)

IBUs: 52

SRM: 11.5

ABV: 6.5%

DIRECTIONS

Mash for 60 minutes at 153 °F (67 °C).

EXTRACT VERSION: Substitute 9.6 lbs (4.4 kg) pale liquid malt extract (preferably English) for the Maris Otter malt. Steep crystal malt at 158 °F (70 °C) for 30 minutes, strain, add malt extract, bring to a boil, and proceed with recipe as shown.

walls. Plus I can place hooks on the side of a shelf. Other online suggestions included repurposing cheap over-the-door shoe pockets and broom/mop holders for their convenient loops.

Look up! The ceiling offers additional room to space-starved brewers. Trolling the local hardware store yielded big hooks designed to fit over the garage rafters. Not only are these great for big items like bikes and chilling setups, you can hang sanitized hoses without contamination from a wall.

Save the Box!

The biggest space hog in my brewery are the carboys. Here's a moment for all the bucket brewers to laugh. I've discovered two options for effectively dealing with carboys. First, use chocks on shelves to make a "proto barrel rack" to hold carboys sideways. The second, cheaper option—hang on to the box. The carboy boxes permit safe stacking (within reason) of empty carboys. If you've thrown away your boxes, ask your local homebrew shop for leftovers.

STANDING TALL

The remaining problem with my setup lies stacked in the corner of the brewhouse, namely the pots, burners and coolers that make up "R&D Brewing Company." In short order I hope to take advantage of brewstand technologies that abound.

Regardless of my shortcomings, a good stand can organize the pots, pumps, burners and chillers into a compact system that is easy to use, easy to roll out, and easy to get the brew day rolling. For me that initial rollout effort causes brew-preventing inertia.

Many brewstands contain empty space begging to be utilized. Karlh from the AHA Forum built a cabinet into his stand's sizeable void. The cabinet allows kettles, chillers and tools to be stashed in a fire-safe mobile area. He even squeezes in the charcoal for the grill.

BREW DAY PLANNING

Beyond the physical layout of your brewery, there remains a second realm in need of a careful eye—the brew day itself. How

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often have any of us realized a forgotten piece of the puzzle or a process left until the last moment? Process planning, fortunately, requires less physical effort, but it does require a commitment to produce results.

You can find the primary weapon to combat BD³ (Brew Day Disorganization Disorder) in the hands of pilots, engineers and moms—the checklist. Recent studies show that even giant know-it-alls like doctors improve their performance with a checklist. I've included a sample checklist (variant first publishing in the *Everything Homebrewing Book*). Can't guarantee you

still won't forget to wash your carboy, but it will help.

The second tactic involves the bane of companies everywhere—inventory tracking. Walk into any small brewery and you'll find a board (or spreadsheet) tracking the malt inventory. What's good for a brewery to stay on top of ordering and planning is equally good for you when creating a recipe or fetching new ingredients. You don't even need a board; most modern recipe programs include an inventory function. Enter the amounts you have on hand and the computer

tracks usage and can alert you to missing ingredients for your next batch.

Finally, remember the oldest lesson—take copious notes. For this, during the brew day I prefer a printout of the recipe and a pen. Be precise! It can help you down the road to recreate that spark of magic. The proof is in the pudding as bloggers tackle brewers' logs from the 1700s and 1800s.

GETTING IT DONE

Plans and bins readied, it's time to get off my duff and make like a responsible adult. If I'm not careful, I'll get distracted by something shiny. For one whole weekend, I promise to do no work except that which makes the brewery organized. I also promise to have my share of beer.

To start, everything, even non-brewing items, goes outside. You'll be amazed at what you find hidden in the corners even after only one month in the garage. For each item, decide where it's going or make the tough call. Gadgets bought on a whim now take up space. Toss it, donate it to your club, or sell it.

Make this a family project; everyone weeds out their useless items to make more room in the brewery! In my case, my fiancée's excess items that left the garage were in exchange for a gardening and candle-making area.

Next, install shelving, hooks and storage. Get everything in labeled bins and stage them. Stand back and admire it for 30 seconds before mentally playing back a brew day. Walk through each step, seeing where you need to move, what you need to grab. Does your setup flow? Make adjustments, hang the signs and lights and throw yourself a party.

Fully expect never to be done. After all, your space is a living, breathing thing that challenges organization. Don't neglect the organizational scheme. Maintain it. If you let it slip, the committee will come and reclaim your Medallion of Organization.

Drew Beechum lives and brews in Pasadena, Calif. He is a regular contributor to Zymurgy and a member of the AHA Governing Committee.

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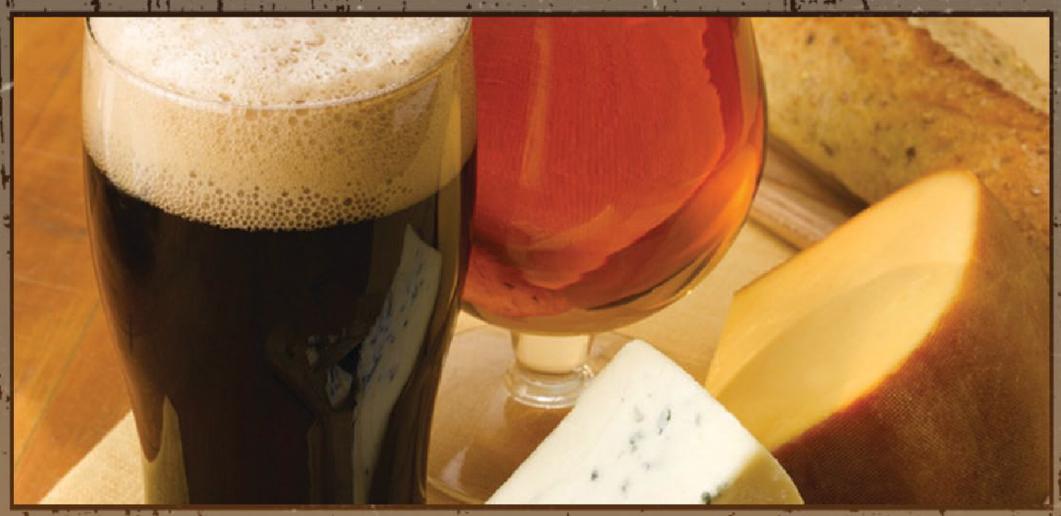
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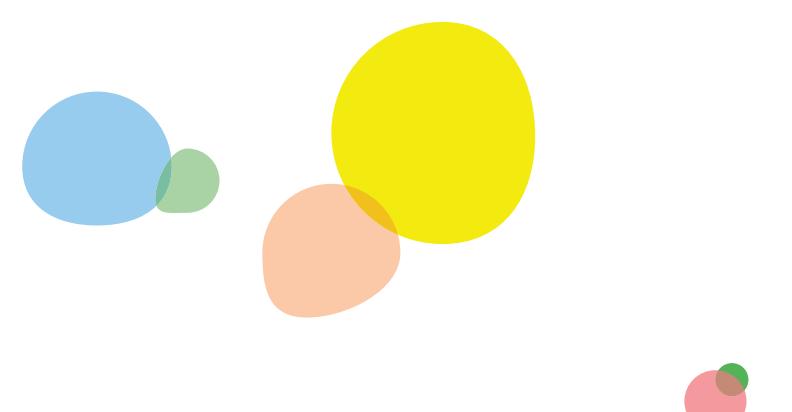
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FUNK WITH LESS FUSS: A SHORTCUT TO SOUR BEERS



Craft beer enthusiasts are becoming more and more interested in sour beer, but to many homebrewers, the amount of aging required to make authentic sour styles can be daunting. Also, homebrewers have often found lackluster results when taking beers that are normally aged in large oak casks and attempting to replicate them in small glass carboys or plastic buckets. The wood contact and micro-oxidation that occur when beer is aged in a cask have proven an essential part of the flavor profiles of beers like Flanders red ales and lambics. Why tie up a carboy for three years just to make a mediocre lambic?

Another issue that comes with fermenting your beer with bacteria or mixed cultures is the threat of cross-contamination if the same equipment is used to make a conventional beer. Investing in another set of fermenters, hoses, airlocks, racking canes and bottling wands just so you can brew a few sour beers without funkifying your IPAs is a difficult proposition as well.

Many of the more common shortcuts have also proven less than successful. Brewers sometimes add food-grade acid or acid malt to a beer to add a sour bite, and while small amounts can be useful (to add a slight tang to an Irish dry stout, for instance), when used to approximate the sourness of beers like the Flanders ales or Berliner weiss, the results are one-dimensional and dull. Another trick is the sour mash. In a sour mash, after a normal mash is completed, the temperature is allowed to drop to around 110° F (43° C) for a period of time, which allows bacteria naturally present in the grain to sour the beer. The problem is, not only are you producing lactic and other more pleasant acids, you are also allowing *Enterobacter* and other nasty bacteria to produce all kinds of off-flavors.

BY MATT LANGE

THE WORT SOURING METHOD

The sour beer method I'm proposing is similar to a sour mash, but allows you to utilize the souring bacteria naturally present on the surface of malt without subjecting the entire beer to unwanted bacteria.

The first step is to create your bacterial culture, what I call a "sour starter." Three days before brew day, take a small

amount of malt and add it to a solution of warm water and sugar (any sugar could be used, such as malt extract or table sugar; I like to use honey). A few tablespoons of malt placed in a pint of a low gravity sugar solution (around 1.030 OG) should be a good sour starter for a 5-gallon (19-liter) batch. This is allowed to sit for three days at around 100° F (38° C). The 100-degree temperature is not essential, but keeping

it as close to that as possible is best. I usually put the 100-degree sugar solution in a jar, add the malt, loosely fit the lid, insulate the jar with a winter glove, then put the jar by a radiator or heat vent (or in the summer, outside).

The starter creates a better culture than simply adding malt to the wort or mash. It utilizes the pH tolerances of different bacteria to isolate the ones we want to pitch into our beer. Bacteria such as *Lactobacillus* and *Pediococcus* have pH tolerances of 3.8 and 3.4 respectively, whereas *Enterobacter*, the class of bacteria that includes such nasty critters as *E. coli* and *Salmonella* and is associated with a number of nasty off-flavors in sour beers, has a pH tolerance of only 4.3. Therefore, if we allow the sour starter to acidify to the point that the pH has dropped beneath 4.3 but is above 3.8, the bacteria that are left in the solution will only be the beer-friendly ones. Trial and error has shown that this process typically takes around three days.

By the third day, the pH of the solution has dropped to the point where any *Enterobacter* or other nasty bacteria have been killed off, leaving a culture of lactic acid-producing bacteria. The grain is then strained out and the liquid is used to inoculate the wort. You will know this process has worked correctly if the culture has a pleasant, tart smell, not unlike green apples. If there are any rancid or vomit-like aromas, it should go without saying, don't add it to your beer.

It is possible to skip this step and use a store-bought culture of *Lactobacillus*, but I find the results to be less dynamic than those achieved with the sour starter. Plus, isn't doing it yourself part of what we love about homebrewing?

THE BREWING PROCESS

Once you have created your sour culture, mash and sparge your beer as you normally would with your equipment. Once the wort is run off to the brew kettle, bring it to a boil to kill off any bacteria that might be present after the mash. Extract brewers can simply bring their brewing water up to a boil, turn off the heat, dissolve the extract, and then

SOUR BROWN

This style is a good candidate for this method because it is typically made without oak aging.

INGREDIENTS

11.0 lb	(5 kg) Pilsner Malt
1.5 lb	(680 g) Munich Malt
0.75 lb	(340 g) Caramunich®
0.5 lb	(227 g) cane sugar
2.0 oz	(56 g) whole Hallertauer (4.3% a.a.) 60 min
	Belgian-style ale strain, such as WLP 515 or Wyeast 3522

Original Gravity: 1.070, 70% efficiency
IBU: 22

DIRECTIONS

Mash at a lower temperature, 148-150° F (64-66° C). Sourcing: After the mash, bring the wort to a boil, then cool to 100° F (38° C). Inoculate using either a commercial

culture of *Lactobacillus* or a homemade sour starter culture as described in the article. Try to keep the wort warm during the souring period (placing the wort back into a picnic cooler-type mash tun works great for this). Let it sour 18 hours, then boil 90 minutes, adding your bittering hops at 60 minutes. Ferment at around 68° F (20° C).

EXTRACT VERSION: Substitute 7.7 lbs (3.5 kg) Pilsner liquid malt extract for the Pilsner malt and 1 lb (454 g) Munich liquid malt extract for the Munich malt. Steep the Caramunich for 30 minutes in 158° F (70 C) water, strain, add the malt extracts and sugar, bring to a boil, and proceed with the recipe as shown.

Berliner Weiss

A fantastic spring/summer beer, Berliner Weiss made using this method has far more complexity than those that call for acid malt or food grade acid to achieve tartness. This recipe is a touch over the style guidelines for ABV at a little over 4 percent, but this gravity gives the beer just a touch more body while keeping it light and refreshing.

INGREDIENTS

4.0 lb	(1.8 kg) Pilsner Malt
3.0 lb	(1.4 kg) Wheat Malt
0.5 lb	(226 g) Munich Malt
0.5 oz	(14 g) whole Hallertauer (4.3% a.a.) 60 min
	German or European type ale yeast, such as WLP036 Dusseldorf Alt or Wyeast 1007 German Ale

Original Gravity: 1.038
70% efficiency
IBU: 7

DIRECTIONS

Mash on the low side for a dry beer, 148-150° F (64-66° C). Sourcing: After the mash, bring the wort to a boil, then cool to 100°

F (38° C). Inoculate using either a commercial culture of *Lactobacillus* or a homemade sour starter culture as described in the article. Try to keep the wort warm during the souring period (placing the wort back into a picnic cooler-type mash tun works great for this). Let it sour 18 hours, then boil 90 minutes, adding your bittering hops at 60 minutes. Ferment at around 60° F (16° C).

EXTRACT VERSION: Substitute 2.8 lbs (1.3 kg) Pilsner liquid malt extract for the Pilsner malt, 2.2 lbs (1 kg) wheat liquid malt extract for the wheat malt, and .33 lbs (150 g) Munich liquid malt extract for the Munich malt. Add the malt extract to water, bring to a boil, then proceed with the recipe as shown.

continue on from there. Next, allow the wort to cool down to 100° F/38° C (a wort chiller can be used to speed this up) and pitch your sour starter. The wort should then be allowed to sour for 12 to 24 hours at around 100° F (38° C). Once again, the 100-degree temperature is not essential, but helps to give you the acidity you want in your beer. A good way to keep the temperature up is to use an insulated mash tun, such as a picnic cooler. While the wort is coming to a boil, clean out the spent grain and sanitize the mash tun, then once the wort is cooled to 100° F (38° C), return it to the mash tun and pitch the sour starter.

The amount of time you allow the wort to sour depends on how sour you want the final beer. A smell or taste test is a good way to see how the acidity is progressing, but keep in mind that the perceived acidity will likely increase once most of the sugars are fermented out. Once the wort has soured to your liking, the wort should be boiled like normal and fermented with a conventional ale yeast. As an educated brewer, you might be worried that the increased acidity will adversely affect the performance of the yeast, but experience has shown that this is not the case, and beers made with this method generally ferment like normal.

This method has many advantages over traditional sour fermentations. It takes much less time, gives the brewer more control over the level of acidity in the final product based on how long he or she allows the wort to acidify, and eliminates the threat of cross-contamination in a small brewery or homebrewery environment. On the down side, it lacks the complexities that oak aging and *Brettanomyces* add to the beer, though a *Brett* fermentation and oak cubes could easily be combined with this method. The quick, high temperature wort acidification also likely creates different flavors than a longer, slower aging cycle. While this method may not produce beer identical to those aged with mixed cultures, it can create surprisingly similar results.

Matt Lange is a freelance writer and award-winning homebrewer living in Madison, Wis.

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MOVING TO MASHING

EQUIPMENT AND TECHNIQUES FOR
PARTIAL MASH AND ALL-GRAIN BREWING

BY DENNY CONN

I started brewing in 1998 using a kit of equipment and ingredients that my wife bought me as a gift. In that first kit, there was a bag of extract and some crystal malt for steeping. And like most home-brewers, before too long I started reading about all-grain brewing and decided I wanted to take the plunge. I brewed a couple partial mash batches before deciding it was time to move to all-grain brewing. I tried a few different methods before choosing the one that was right for me in terms of equipment and time requirements. In this article, we'll look at some things to consider when you decide it's time to change up your brewing style.

We all know that you can make some fine beers using extract and steeping grains, but there are some flavor profiles that are difficult or impossible to hit without actually mashing. Grains like Munich and Vienna malt, for example, can make a huge impact on the flavor of your beer and must be mashed. One of the

big reasons to start doing partial mash or all-grain is for the variety it can add to your brewing in terms of both flavors you can use and styles you can brew. Another reason is the fresh flavors it can add. No matter how good the extract you use is, it can't compare to freshly milled grain when it comes to big, fresh malt flavors in your beer. And finally, mashing is easy, fun, and makes you feel like you've done magic!

WHAT IS MASHING?

Mashing is a lot like the steeping you've likely already done, but with more control over the temperature, amount of water, and time. The goal is to enable enzymes in the malt to convert the grain starches into fermentable sugars. At the most basic level, you add crushed grain to water, let it sit for about 60 minutes, separate the liquid from the grain (called "lautering"), then rinse the grain with more water (called "sparging"). Sparging methods can be fly sparging, where you add sparge water continuously as you run off the wort; batch sparging, where you drain the wort from the mash tun, add sparge water, and drain again (see the September/October 2010 *Zymurgy*); or no sparging, where you do nothing more than drain the wort from the mash tun. Sometimes, due to space or equipment limitations, you can't mash as much grain as you need for a full batch. In that case, you can substitute extract for part of your grain and do a partial mash. Use 0.6 lb (272 g) of light or extra light dry extract or 0.75 lb. (340 g) of liquid malt extract for each pound (454 g) of grain you're replacing.

WHICH GRAINS NEED TO BE MASHED?

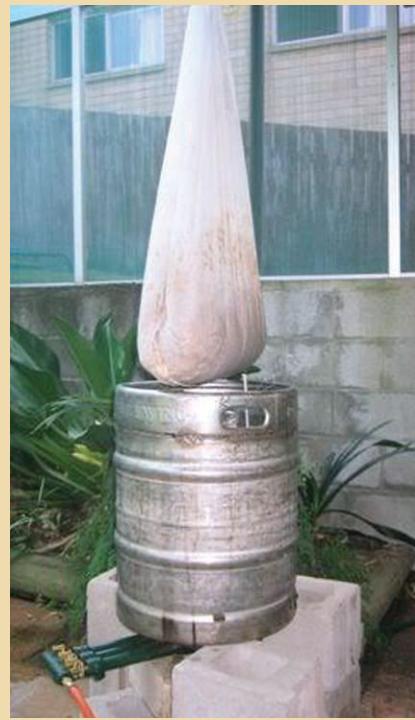
Pilsner, pale, pale ale, Vienna, Munich, wheat, rye, special aromatic, biscuit, Victory and Carapils® malts all need to be mashed. All flaked grains must be mashed with diastatic malts. A diastatic malt has enzymatic "power" to do the conversion of starch to sugar. Flaked malts have no diastatic power and need to "hitchhike" with diastatic malts in order to be converted. The basic theory of mashing is that when grain is malted, enzymes in the grain are activated. When malt is dried and kilned, the enzymes are "put to sleep." As long as the kilning process doesn't use too high a temperature,

METHODS OF MASHING

There are many methods and a lot of different equipment to choose from, and what's right for someone else may or may not be right for you. All of the following methods work well. It's up to you to choose the one that fits your time, space, budget, and style.



Many people begin by mashing in a pot on a stovetop. The advantage to this is that it's likely similar to the way you've been brewing extract beers.



Some homebrewers have found the "Brew in a Bag" method to be their choice. It's very much like the method of steeping grain in a bag, but on a much larger scale.



Picnic coolers have long been a favorite choice. They hold heat well during the mash and are inexpensive to purchase and convert to mash tuns. You can use either a round or rectangular cooler.



If your budget and space allow, there's the big fancy schmancy system!

the enzymes may be reactivated later by contact with hot water. These enzymes start converting the starch in the grain into sugar, which can be fermented. The temperature and length of time at which you mash (and to a much lesser degree, the amount of water used) determine how fermentable the wort will be. In general, mashing uses 1-2 quarts (0.95-1.9 L) of water per pound (454 g) of grain at a temperature of 145-165 °F (63-74 °C) for

60 to 90 minutes.

CHOOSING THE RIGHT SYSTEM

Any one of the systems above will allow you to make great beer. Remember, the brewer—not the equipment—makes the beer! Here are some considerations when you're thinking about which method and equipment to use.

(continued on page 42)

LET'S BREW!

Let's walk through an all-grain, batch-sparged brew session using a picnic cooler. This is my preferred method, and a lot of other brewers do something very similar. The equipment and methods are easily adapted to your chosen method.

The thing that got me brewing all-grain was Munich malt. I'd heard a lot about the flavor and was dying to try it. My first all-grain brew was a 2.5-gallon (9.5 L) fly-sparged batch of Milo's Alt. I decided that fly sparging just wasn't for me, and went to batch sparging on my next batch. But here's the Milo's Alt recipe that got me started.

Start by heating 3.75 gallons (14.2 L) of water (1.37 qt./lb. of grain, or 2.86 L/kg) to about 168 °F (76 °C) and add it to the cooler. You should hit a mash temperature around 152 °F (67 °C). Slowly stir the grain into the water and let it rest for 60 minutes.



MILO'S ALT

INGREDIENTS

5 U.S. gallons (19 liters)

8.0 lb	(3.6 kg) Munich malt 10L
2.5 lb	(1.1 kg) Pils malt
1.0 oz	(28 g) Carafla® II
1.0 oz	(28 g) Mt. Hood (5.5% a.a.) first wort hopping
2.0 oz.	(57 g) Mt. Hood (5.5% a.a.) 60 min.

Wyeast 1007 German Ale yeast



CREAM SWILL

PARTIAL MASH RECIPE

Here's a simple partial mash recipe that makes a light beer with more flavor than your average mass market beer. I like it so well as a partial mash that I've never bothered to make an all-grain version!

INGREDIENTS

for 5 U.S. gallons (19 liters)

1.0 lb	(454 g) six-row pale malt
0.5 lb	(227 g) flaked maize
2.0 lb	(907 g) light or extra light DME
3.0 lb	(1.36 kg) rice solids extract
0.5 oz.	(14 g) Horizon hops (13%AA) 60 min
0.3 oz.	(8.5 g) Horizon hops (13%AA) 1 min

Wyeast 1056 American ale yeast or Safale US-05

DIRECTIONS

Heat 2.5 qt. (2.4 L) (1.67 qt./lb., 3.5 L/kg) of water to about 160 °F (71 °C). Add grain, cover pot, let it sit for 60 minutes. The mash should settle at about 150 °F (66 °C). Maintain temp with occasional heat from burner or place the pot in an oven. Separate wort from grain using the method of your choice. I usually put the grain in a bag so I can just remove the bag. Sparge with about 2.5 qt. (2.4 L) of water at about 175° F (79 °C). I put the bag in a colander over my boil kettle and pour the sparge water over it. Fill kettle with as much water as you want to boil, add extract, proceed with boil and hop additions.

After 60 minutes, slowly drain some of the wort into a pitcher until it runs fairly clear. There should be no chunks of grain in the wort, but it doesn't have to be so clear that you can read a newspaper through it! Once it clears up, pour what's in the pitcher slowly back over the grain in the mash tun and direct the runnings from the mash tun to your kettle.



Heat 5 gallons (19 liters) of sparge water to 185-190 °F (85-88 °C) and pour it over the grain in the mash tun. Stir the water in thoroughly, but not violently.



Repeat the vorlauf (recirculation) process, once again directing the runnings to the kettle once they clear. From here on out, just continue with boiling and hop additions as you would in an extract batch.

- **Space:** What kind of space do you have to brew in?
- **Budget:** How much do you want to spend? All at once or incrementally?
- **Time:** How much time do you have to brew?
- **Personal preference:** How do you like to brew? Hands-on or push button?
- **Skills:** Do you like building equipment? Do you have the tools and

skills?

If you have children, for instance, you might want to spend a bit more money on equipment that allows you to brew in a faster, more hands-off manner so that you have more time to spend with your family. If, like me, you really like to brew in a “hands-on” fashion, you might choose simpler, less expensive equipment that relies more on your attention during the brewing process. If your space is lim-

ited, you might want to do partial mash batches in a pot on your stovetop. Again, the thing to keep in mind is that the right method is the one that will make brewing fun and rewarding for you!

KEEP LEARNING

I hope this has given you an understanding of the mashing process. For more information and further details, consult some of the great websites and reading material available. I highly recommend the third edition of John Palmer's *How to Brew*. You can also find more information on my website, www.dennybrew.com. If you're ready to move to mashing, you'll find that it's fun, easy, and rewarding. And there's a method that will match the style and needs of any homebrewer.

Resources

1. Schwartz, Ken. “Converting All-Grain Recipes to Extract/Partial Mash” <http://home.roadrunner.com/~brewbeer/extract/pres.pdf>

Denny Conn is a member of the Cascade Brewers Society and the AHA governing committee. He lives in Noti, Ore. ☈

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By Amahl Turczyn Scheppach

2010 FOAM Cup

The 2010 FOAM Cup was judged in Tulsa, Okla. on November 20, and organizer Desiree Knott was happy to report that participation in the event grew significantly over the previous year's 309 entries (474 in 2010). Reasons for this included joining the Midwest Brewer of the Year and High Plains circuits, and becoming a Masters Championship of Amateur Brewing (MCAB) qualifier. It was a particularly significant competition for many Oklahoma homebrewers, since legislation was passed last May legalizing the hobby in that state, although public awareness of this fact varied.

Knott commented on this, both as an organizer and as co-owner of local Tulsa homebrew shop High Gravity. "Many didn't know it was technically illegal. Most assumed it was legal, and when the legalization was so prominently covered, we received several phone calls from homebrewers quite concerned that what they were doing was against the law. We also received several calls at our homebrew store demanding to know why we were promoting an illegal hobby."

Fortunately, the initially negative attention from the press died down quickly, and for most Oklahoma amateur brewers, things were soon back to brewing as usual. "Several homebrewers have applied for the homebrewing permit and are happy that it is official now," said Knott. "Many don't seem to care one way or the other. They would be brewing anyway. Now if only we could get out of the 3.2 cloud..."

Two brewers from the FOAM Cup are celebrating much more than Oklahoma legislation. Winners Takumi Sato (Best of Show Beer and Cider/Perry) and Chris Mackechney (Best of Show Mead) shared their tips, tricks and recipes.

Takumi Sato is a member of the Ann Arbor Brewers Guild and a longtime homebrewer. He brewed his first extract batch in college, quickly transitioned to all-grain and joined the Central Florida Home Brewers before moving to Michigan.

Sato took advantage of the local bounty of fresh produce there, trying his hand at cider and perry. "I made hard cider in Florida but used store-bought 1-gallon jugs of preservative-free cider," he said. But in Michigan, fresh apples made an interesting difference in cider quality. "I've noticed that home-pressed fruit makes for greater clarity in the final product. I haven't figured out why the store-bought jugs seem to have a haze that is hard to get rid of."

The cool Michigan climate also allowed him to explore lager brewing, and brewing



Judges evaluated 474 entries in the competition.

Eis Eis Baby (Eisbock)

Recipe by Takumi Sato and Courtney Read

INGREDIENTS

for 10 U.S. gallons (37.85 L)

18.0 lb	(8.16 kg) Munich malt
10.0 lb	(4.65 kg) Pilsen malt
3.0 lb	(1.36 kg) melanoidin malt
4.0 oz	(113 g) Carafa® III
2.0 oz	(56 g) Perle hops (60 min)
2.0 oz	(56 g) Hallertauer hops (10 min)
	Wyeast 2124 Bohemian Lager yeast

DIRECTIONS

Using a single decoction, calculate the amount of the mash that will need to be heated with a mash in at 122 °F (50 °C). After 10 minutes, transfer the calculated amount of the mash to a separate pot. Heat the pot and constantly stir until boiling. Return

the boiled mash to the mash tun and mix with the remaining grain to bring the temperature to 150 °F (66 °C). Allow the mash to rest at 150 °F (66 °C) for 60 minutes. After fermentation, cold condition the beer for three weeks.

To make the eisbock, use 2-liter plastic soda bottles to freeze the doppelbock. Avoid glass to prevent shattering from expanding ice. Just before the beer freezes solid, pour off the beer into another vessel leaving behind the ice crystals in the bottle. When the sides are pressed, there should be some give but the contents should not still be slushy.

Start with approximately 3 gallons (11.36 L) of doppelbock and finish with 1 gallon (3.79 L) of eisbock.

partner Courtney Read inspired a greater interest in German styles. This interest culminated in a decoction-mashed doppelbock, which the two brewers refined over several iterations. "Decoction brewing was critical to develop nice caramel flavors that later matured into some plum and raisin characteristics in the eisbock," Sato commented. "We brewed 10 gallons of doppelbock and split the batch. I decided to use part of my share to make the eisbock."

Luke (Perry)

Recipe by Takumi Sato

INGREDIENTS for 3 U.S. gallons (11.36 L)
60.0 lb (27.22 kg) Green Bartlett pears
5.0 lb (2.27 kg) Red Bartlett pears
 Lalvin EC-1118 dry yeast

DIRECTIONS

Press the fruit and collect the pear juice. (The red pears give the finished perry a nice pink tint.) Add dry yeast and ferment in a cool area (~55° F, or 13° C). Rack to secondary after primary fermentation is complete. Perry was left undisturbed to mature in a 3-gallon carboy for one year.

As for the keys to his success, Sato adds, "For the eisbock, the key was to have a good doppelbock recipe and use decoction brewing methods. Then it was a matter of freezing and removing some of the water content. In addition to freezing, the eisbock was cold conditioned for several months. For perry (and cider), I like to age them for at least a year. I find that young perry and cider are often harsh and dry. They tend to have an alcohol bite, but this dissipates over time. I also

avoid Campden tablets since the cider often ends up sulfury. Instead, I dump the apples in a big tub of water treated with amber dyne to try to remove wild yeasts before pressing."

Chris Mackechney has been brewing beer for about five years. She likes to make unusual beer (fruit, spiced, vegetable). Her husband Scott, who won a gold, silver and bronze medal in the 2010 FOAM Cup, has been making mead for about six years, so she decided to try it. Mackechney was in her local Tulsa brew

Watermelon Mead

Recipe by Chris Mackechney

INGREDIENTS for 5 US gallons (18.93 L)
1 Orchard Breezin' Watermelon White Merlot wine kit
9.0 lb (4.08 kg) raw honey
 yeast nutrient
 yeast energizer
 Lalvin D 47 wine yeast

DIRECTIONS

Follow basic mead making techniques. Mead was brewed October 2009 and bottled in December 2009, then aged until the November 2010 competition.



AHA SPECIAL EVENTS

Visit www.HomebrewersAssociation.org/pages/events for more American Homebrewers Association Event Information.

March 12

AHA Rally @ Stone Brewing World Bistro & Gardens
 Escondido, CA
HomebrewersAssociation.org

April 10

AHA Rally @ Rogue Ales Public House
 San Francisco, CA
HomebrewersAssociation.org

May 7

AHA Big Brew: A Celebration of National Homebrew Day
HomebrewersAssociation.org

May 16-22

American Craft Beer Week
AmericanCraftBeerWeek.org

June 15-17

AHA National Homebrew Competition Final
 Round Judging
 San Diego, CA
AHAConference.org

June 16-18

AHA National Homebrewers Conference
 San Diego, CA
AHAConference.org

June 18

AHA National Homebrew Competition Award Ceremony
 San Diego, CA
AHAConference.org

August 6

AHA Mead Day
HomebrewersAssociation.org

September 29-October 1

Great American Beer Festival
 Denver, CO
GreatAmericanBeerFestival.com

November 5

AHA Learn To Homebrew Day
HomebrewersAssociation.org

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AHA/BJCP SANCTIONED COMPETITION PROGRAM CALENDAR

For complete calendar, competition and judging information go to
www.HomebrewersAssociation.org/pages/competitions



March 4
Homebrew at the WEB
 Frankenmuth, MI. Entry Deadline: 2/19/11. lwcruptpe@gmail.com, www.crhbc.org

March 5
Bockfest Cincinnati
 Cincinnati, OH. Entry Deadline: 2/25/11.
www.bloatarian.org

March 5
22nd Annual Reggae & Dredhop Competition
 Denver, CO. Entry Deadline: 2/25/11.
www.hopbarley.org

March 9
Kona Brewers Festival Homebrew Competition
 Kailua-Kona, HI. Entry Deadline: 3/01/11.
Fred@kieleokona.com, sites.google.com/site/konabrewcontest

March 12
18th Annual Peach State Brew Off
 Atlanta, GA. Entry Fee: \$7. Entry Deadline:
 2/26/11. www.coverthops.com

March 12
Cascade Brewers Cup
 Woodinville, WA. Entry Deadline: 2/25/11.
www.cascadebrewersclub.org

March 12
Drunk Monk Challenge
 Aurora, IL. Entry Deadline: 3/04/11.
www.knaves.org/DMC/index

March 12
Fort Wayne Brewfest Homebrew Competition
 Fort Wayne, IN. Entry Deadline: 3/10/11.
www.brewfestfortwayne.com

March 18
Patriot Club 3rd Annual Brewfest
 Offutt AFB, NE. Entry Deadline: 3/11/11.
amber.smoyer@offutt.af.mil

March 19
2011 Peak-to-Peak ProAm
 Longmont, CO. Entry Deadline: 3/11/11.
www.indianpeaksalers.org

March 19
McChord Brewfest
 McChord Field, WA. robert@nwspecialtyco.com

March 25
Silver Anniversary Bluebonnet Brew-Off
 Arlington-Dallas-Denton-Ft. Worth, TX. Entry
 Deadline: 2/24/11. www.bluebonnetbrewoff.com

March 26
Brew Masters Competition
 Florence, WI. Entry Deadline: 3/22/11.
www.tricountyfermenters.com

March 26
March Mashness
 St. Cloud, MN. Entry Deadline: 3/13/11.
www.cloudytownbrewers.org/competition

March 26
The Great Arizona Homebrew Competition
 Phoenix, AZ. Entry Deadline: 3/23/11.
www.brewarizona.org/GAHBC

March 26
Arizona Mead Cup
 Phoenix, AZ. Entry Deadline: 3/23/11.
www.brewarizona.org

March 26
Hudson Valley Homebrewers Competition
 New Paltz, NY. Entry Deadline: 3/19/11.
www.hvhomebrewers.com

March 26
**20th Annual Charlie Orr Memorial Chicago
 Cup Challenge Homebrew Contest**
 Blue Island, IL. Entry Deadline: 3/18/11.
www.bossbeer.org

March 26
Homebrewtalk.com BJCP Competition East
 Bacyrus, OH. Entry Deadline: 3/12/11. www.homebrewtalk.com

March 26
Homebrewtalk.com BJCP Competition West
 Lincoln, NE. Entry Deadline: 3/12/11.
www.homebrewtalk.com

April 1
Brew Bubbas Session Beer Challenge
 Plymouth, MI. Entry Deadline: 3/23/11. www.brewbubbas.com/Site/Session_Beer_Challenge

April 2
Mazer Cup International 2011
 Boulder, CO. Entry Deadline: 3/18/11.
www.mazercup.com

April 2
World Cup of Beer
 Berkeley, CA. Entry Deadline: 3/12/11.
www.worldcupofbeer.com

April 2
**AHA National Homebrew Competition
 1st Round**
 Saratoga Springs, NY. Entry Deadline: 3/30/11.
www.homebrewersassociation.org/pages/competitions/national-homebrew-competition

April 2
**AHA National Homebrew Competition
 1st Round**
 Seattle, WA. Entry Deadline: 3/30/11.
www.homebrewersassociation.org/pages/competitions/national-homebrew-competition

April 8
**AHA National Homebrew Competition
 1st Round**
 San Diego, CA. Entry Deadline: 3/30/11.
www.homebrewersassociation.org/pages/competitions/national-homebrew-competition

April 9
**AHA National Homebrew Competition
 1st Round**
 Denver, CO. Entry Deadline: 3/30/11.
www.homebrewersassociation.org/pages/competitions/national-homebrew-competition

April 9
**AHA National Homebrew Competition
 1st Round**
 Fort Worth, TX. Entry Deadline: 3/30/11.
www.homebrewersassociation.org/pages/competitions/national-homebrew-competition

April 9
**AHA National Homebrew Competition
 1st Round**
 Madison, WI. Entry Deadline: 3/30/11.
www.homebrewersassociation.org/pages/competitions/national-homebrew-competition

April 10
Ocean State Homebrew Competition
 Providence, RI. Entry Deadline: 3/27/11. www.jwu.edu/content.aspx?id=55413#fbid=mjsqkAadOrC

April 11
**2011 ALES Home Brew Open/
 AHA NHC Qualifier Competition**
 Regina, SK, Canada. Entry Deadline: 4/07/11.
www.alesclub.com

April 15
**AHA National Homebrew Competition
 1st Round**
 Goodlettsville, TN. Entry Deadline: 3/30/11.
www.homebrewersassociation.org/pages/competitions/national-homebrew-competition

April 16
**AHA National Homebrew Competition
 1st Round**
 Lodi, CA. Entry Deadline: 3/30/2011.
www.homebrewersassociation.org/pages/competitions/national-homebrew-competition

April 23
AHA Club-Only Competition, Bock
 Tulsa, OK. Entry Deadline: 4/16/11.
www.homebrewersassociation.org/pages/competitions/club-only-competitions

April 30
Titletown Open Homebrew Contest XVII
 Green Bay, WI. Entry Deadline: 4/22/11.
www.rackers.org

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shop High Gravity (which she claims is "the best brew shop ever") when she sampled the finished result from an Orchard Breezin' Watermelon White Merlot wine kit. She thought it would make a good payment, so after consulting with Dave Knott (who co-owns High Gravity with wife Desirée) and with her husband Scott, she decided to do it.

Mackechney was initially uncertain if her kit hybrid melomel was good enough for competition, but her club members' encouragement eventually overcame her modesty. "Although we have some great

mead makers and brewers in FOAM (Fellowship of Oklahoma Ale Makers) who liked it, I didn't think it was anything special," she said. "When the FOAM Cup came around, Scott suggested that I enter it. I told him he could, just to support the competition, but I didn't think it would place." But after winning Best of Show, Mackechney is already looking forward to next year's competition.

Amahl Turczyn Scheppach is a former craft brewer and associate editor for Zymurgy, and now brews at home in Lafayette, Colo.



KUDOS—BEST OF SHOW

AHA/BJCP Sanctioned Competition Program

August 2010

6th Annual MoreBeer! Forum Competition, 236 entries—Dwight Mulcahy, Sunnyvale, CA.

September 2010

AHA Club-Only Competition, "Pucker up" Sour & Wild Ales, 53 entries—Scott Neubauer, Omro, WI.

Fresh Hop Ale Festival Home Brew Competition, 19 entries—Derry Jeffries, Yakima, WA.

October 2010

Arkansas State Fair Competition-2010, 98 entries—Jeff Clanton, Conway, AR.

Arizona Society of Homebrewers 2010 Oktoberfest Homebrew Competition, 127 entries—Keith Mycek, Scottsdale, AZ.

National Organic Craft Brew Challenge, 10 entries—Steve Dresler, Chico, CA.

3rd Annual Final Gravity Strong Beer Competition, 105 entries—Doug Faust, Atlanta, GA.

Big Muddy Monster Brew Fest, 74 entries—Jason Whitt, Rolla, MO.

Spooky Brew Review 2010, 274 entries—Daryl Hoedtke, Chicago, IL.

Hoppy Halloween, 440 entries—Amy Satterlund and John Fowler, Kansas City, MO.

November 2010

Novembeerfest, 286 entries—Tavish Sullivan, Bothell, WA.

The Dig Pub 3rd Annual Monster Homebrew Competition, 43 entries—Craig McKenzie, Marine City, MI.

California State Homebrew Competition, 323 entries—Dwight Mulcahy, Sunnyvale, CA.

Badger Brew-Off, 189 entries—Thomas Moore, Milwaukee, WI.

Bay Street Bash, 161 entries—Les Wright, Cumming, GA.

Knickerbocker Battle of the Brews, 313 entries—Robert Sells, Fredonia, NY.

FOSSILS Porter Competition, 10 entries—Dave and Beth Howard, Georgetown, IN.

Land of the Muddy Waters, 276 entries—

Jason Gabriel, Davenport, IA.

The Piedmont Brewer's Cup, 273 entries—

Walter Haulenbeek, Garner, NC.

Crown Challenge, 22 entries—Bob Heinlein, Crown Point, IN.

Carson City Brew Off, 57 entries—Jeff Current, Reno, NV.

FOAM Cup, 474 entries—Takumi Sata, East Lansing, MI.

Thanksgiving Harvest Homebrew Competition, 31 entries—Ed and Janet Ivanov, Dracut, MA.

MALT Turkey Shoot 2010, 207 entries—Ben Schwalb, Severna Park, MD.

The South African National Homebrew Competition 2010, 25 entries—Llewellyn Janse van Rensburg.

December 2010

AHA Club-Only Competition, Strong Ales, 59 entries—Tony and Amanda Kutzke, St. Paul, MN.

Biere de Rock-2nd Runnings, 118 entries—Charlie Gottenkieny, Littleton, CO.

12th Annual Palmetto State Brewers Open, 221 entries—David Merz, Marquette, MI.

La Revancha I, 7 entries—Gustavo Blanco, Argentina.

La Revancha II, 8 entries—Sebastián Nunell, Argentina.

Holiday Cheer Christmas Beer, 21 entries—Greg Geiger, Highlands Ranch, CO.

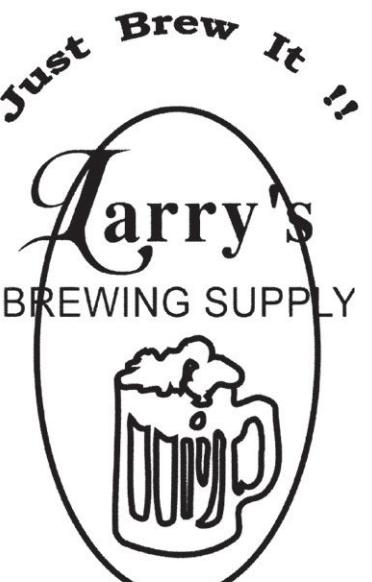
2nd Annual Fugetaboutit Homebrew Competition, 352 entries—Phil Snyder, White House, TN.

Temecula Valley Homebrewers Association Homebrew Competition 2010, 92 entries—Paul Sangster, San Diego, CA.

Manjimup Cherry Harmony HB Competition, 64 entries—Brad Raymond, Perth Australia.

Sheldon Jackson Memorial Club Only Competition, 55 entries—Brian Klatt, Las Vegas, NV.

Competencia Cerveceros Caseros (Only-Club), 10 entries—Emilio Isla, Capital Federal, Buenos Aires, Argentina.



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One way beer judges check their palates is by using commercial “calibration beers”—classic versions of the style they represent. Zymurgy has assembled a panel of four judges who have attained the rank of Grand Master in the Beer Judge Certification Program. Each issue they score two widely available commercial beers (or meads or ciders) using the BJCP scoresheet. We invite you to download your own scoresheets at www.bjcp.org, pick up a bottle of each of the beverages and judge along with them in our Commercial Calibration.

ON THE WEB

Green Flash Brewing Co.
www.greenflashbrew.com

Hair of the Dog Brewing Co.
www.hairofthedog.com

BJCP Style Guidelines
www.bjcp.org

released each November. At 11.5-percent ABV and 70 IBUs, it is brewed with organic Pilsner and British crystal malts. Brewmaster Alan Sprints uses Simcoe and Amarillo hops along with dark wildflower honey collected on Mount Hood.

“Simcoe and Amarillo are one of my favorite hop combinations—pine and peach,” commented judge Gordon Strong.

As with the Green Flash version, the Hair of the Dog Barleywine can be enjoyed fresh but should improve with age.

Two West Coast barleywines were sent to our judges to warm them up during a cold winter.

First up was Green Flash Barleywine, brewed by Green Flash Brewing Co. in Vista, Calif. The brewery specializes in brewing “assertive and distinctive beers,” with its most popular offering the West Coast IPA.

The barleywine undergoes a three-hour boil to intensify the caramel malts and the “enormous” Pacific Northwest hop charge. The result is a rich, estery brew with toffee notes and citrus hop flavors layered throughout. Green Flash suggests drinking the beer fresh or laying it down for aging to see how the flavors evolve. It checks in at 10.9-percent ABV and 85 IBUs.

Hair of the Dog is a tiny brewery in Portland, Ore. dedicated to producing “new and unusual beer styles.” Doggie Claws is one of its most popular brews, produced in September and October and

OUR EXPERT PANEL includes David Houseman, a Grand Master IV judge and competition director for the BJCP from Chester Springs, Pa.; Beth Zangari, a Grand Master level judge from Placerville, Calif. and founding member of Hangtown Association of Zymurgy Enthusiasts (H.A.Z.E.); Scott Bickham, a Grand Master II judge from Corning, N.Y., who has been exam director or associate exam director for the BJCP since 1995; and Gordon Strong, a Grand Master V judge, principal author of the 2004 BJCP Style Guidelines and president of the BJCP board who lives in Beavercreek, Ohio.

THE SCORES



Green Flash Barleywine—Green Flash Brewing Co., Vista, Calif.
BJCP Category: 19C American Barleywine

THE JUDGES' SCORES FOR GREEN FLASH BARLEYWINE



Aroma: Caramel and toffee with hints of chocolate. Moderate citrus and floral hop aroma. Significant alcohol evident. Estery, largely yeast-derived. Complex combination of toffee, alcohol and hops. No DMS. No diacetyl. (9/12)

Appearance: Amber color. Some haze, even when warming. Dense, tan, long-lasting head. (3/3)

Flavor: Alcohol dominant, somewhat hot. Caramel and toffee with moderately high citrus hop flavor. Lingering high hop bitterness. High mineral character, somewhat distracting. No DMS. No diacetyl. Balanced toward bitterness and alcohol rather than expected intense maltiness. Finish has a bit of sweetness and significant hop bitterness. (14/20)

Mouthfeel: Medium-full body. Very warming; somewhat hot alcohol. No astringency. Smooth with some sharp edges. No chewy maltiness. (3/5)

Overall Impression: Mineral character and high alcohol overshadow hop flavor. Malt has a nice toffee profile but the malt flavors are somewhat muddled. Alcohol is overpowering. This is a young (recent vintage), big beer that would benefit from aging to mellow the alcohol and bitterness. Suggest revising water chemistry to manage mineral character and emphasize the malt a bit more. One could lay down several bottles to taste this vintage over the next few years. This is a very warming beer for cold winter nights. With 22-ounce bottles, find some folks to share this with. (6/10)

Total Score: (35/50)



Aroma: Ripe orange-rind citrus, ripe peach fruitiness and deep caramel malt emerge in that order, presenting with complexity. Piney, fir needle hop aroma emerges on a swirl, and persists. (8/12)

Appearance: Burnished amber with golden highlights, brilliant clarity. Biscuity, persistent yellowish head forms and laces nicely on the glass. (3/3)

Flavor: Initial malty richness is of caramel candies (Sugar Daddy pops that take out fillings and loose teeth). Assertive hop bitterness with a Douglas fir flavor emerges and follows to the finish. Balanced to bitterness, but with a supporting malt backbone. Alcohol is evident, combining with the bitterness for a long-lasting finish. (17/20)

Mouthfeel: Full-bodied with quite soft carbonation. Alcohol warmth leaves a tingling, numbing sensation on the tongue. (4/5)

Overall Impression: Rich and complex with an emphasis on hops, this beer still showcases the malt, both by the rich, sweet caramel flavor and in support of the characterful hops. It would be interesting to see how the beer might evolve through a year or more. Wonderful balance of flavors and sensations. (9/10)

Total Score: (41/50)



Aroma: Toffee and toasted malts lead, along with a pleasant level of sherry and nutty notes from oxidation. Moderate levels of citrus and floral hops, but the balance leans slightly toward the malt. Added complexity from tropical fruit esters and alcohol that becomes more assertive as the beer warms. (10/12)

Appearance: Deep copper in color with ruby highlights and a long-lasting, linen-white head. It leaves wisps of alcohol legs when swirled in the glass, along with a nice lace. The clarity is excellent. (3/3)

Flavor: A complex blend of toasted and caramel malts, dark fruit esters, citrus hops and alcohol that lasts for several seconds before yielding to a fairly intense hop bitterness. While the aroma seemed more English, the level of bitterness speaks to the West Coast origins. However, even as an American barleywine, shifting 10 percent or so of the hop bitterness to the flavor would improve the balance. (16/20)

Mouthfeel: The beer has a nice chewiness and medium body, and there is adequate carbonation to keep it from being too heavy. Alcohol is a little on the hot side, leaving a slight burn after the beer is swallowed. (3/5)

Overall Impression: A well-crafted, tasty barleywine with a satisfying chewy maltiness and an appropriate level of sherry notes from oxidation. The hop bitterness and alcohol are just a little too dominant in the finish and could be tapered back a little to improve the balance. This is a wonderful nightcap beer that would go down well on a cold winter evening. (7/10)

Total Score: (39/50)



Aroma: Pungent nose. Darker malt (biscuity, grainy) with indistinct citrusy and piney hops. Individual characteristics not popping out. Mild esters and malt. Some sweetness. Grainy malt dominates. Some alcohol spice emerges late. (8/12)

Appearance: Tall light tan head, moussy, persisted fairly well. Absolutely beautiful light reddish copper color. Crystal clear. (3/3)

Flavor: Strong grainy malt. High bitterness with some hoppy harshness in the finish. Spicy alcohol finish makes the hop harshness seem higher. Medium-low esters. Malt has a caramel component, but on top of a grainy, biscuity base. The grainy edge is brought out by the alcohol and bitterness. (13/20)

Mouthfeel: Full body. Spicy-hot. Medium carbonation. Some hoppy astringency. Creamy character. Alcohol burn is too prominent. (3/5)

Overall Impression: Seems quite young. Flavors haven't melded yet. Hop bitterness and alcohol are harsh and forward—they both need to smooth out. Hop aroma and flavor aren't as fresh and strong as best examples. Malt has a bit of a muddy character. A little hard to drink right now, but should improve with age. (7/10)

Total Score: (34/50)



THE JUDGES' SCORES FOR DOGGIE CLAWS



Aroma: High alcohol, apricot and citrus hops, and caramel malt aromas. No diacetyl or DMS. Some yeast-derived fruity esters but fairly clean. The alcohol is a very big, but not hot, for the malt present, but the hops hold up to the alcohol. Balance is toward a fruity alcohol character with less malt complexity. (8/12)

Appearance: Amber/brown color. Significant cloudy haze, even as the beer warms. Dense, rocky, long-lasting head. (2/3)

Flavor: Sweet caramel malt with high, apricot-like hop fruitiness and high hop bitterness. Finishes balanced with both malt and honey-like sweetness and lingering hop bitterness. A lasting, salty mineral character. No DMS. No diacetyl. Intense alcohol presence that's over the top for the malt. (16/20)

Mouthfeel: Medium-full body. Very warming, but not hot/fusel. No astringency. Lingering bitterness in mouthfeel. Fairly highly carbonated. Soft, mushy palate/mouthfeel. (4/5)

Overall Impression: Quite drinkable and interesting. Alcohol is high and unbalanced for the malt, which is understated. The high hop bitterness holds its own. The combination of mineral character, alcohol, hop bitterness and hop flavor/aroma is quite complex, however the malt is a simple caramel character. I expect a more intense maltiness to better match the rest of the beer. This is fairly young for such a big beer. It will likely age well over time. (7/10)

Total Score: (37/50)



Aroma: Smelled the hops on opening the bottle, before the beer hit the glass; pine, grapefruit and salt, like the ocean air, and a background of ripe peach and caramel malt. Hops dominate. (11/12)

Appearance: Deep copper, slightly hazy, with a thick, biscuity off-white foam that persists at about half of the glass. Doesn't have a chance to leave lace. (2/3)

Flavor: Pronounced sweetness, more than just malt, gives way to significant, assertive citrus pine hop flavor, which gives way to a firm bitterness. Malt character plays a supporting role to hops, and is more sweet-bready than caramel in character. A hint of hazelnut at the finish. (17/20)

Mouthfeel: Medium-full bodied with very soft carbonation. Low alcohol warming becomes more pronounced with a post-finish that both lingers and intensifies the hop character. (4/5)

Overall Impression: Very lovely barleywine that leans to the sweet side, perhaps due to the addition of honey, which may also lighten the body. The effect is a deceptively quaffable product, which could leave the uninitiated behind. A sipper for enjoying with friends, it also kind of veers to the English side. Wouldn't mind aging this one for a while, as it should continue to develop complexity and character. (8/10)

Total Score: (42/50)



Aroma: A burst of fresh hop character, with intense citrus and pine notes from American hops. Some support from caramel and toasted malt, along with some nuttiness from oxidation, but focus is on the hops. Alcohol is evident, with clean notes from ethanol and more powerful aromatics from esters and higher alcohols. (9/12)

Appearance: Copper in color with a little haze from yeast that was roused during shipping. Acceptable, given the short time in which to evaluate the beer. The head is impressive, with fine beading, great retention and an unusually light color. (3/3)

Flavor: Solid malt backbone, with sweetness of crystal malt and some toasted and toffee notes underneath. A bright hop flavor with lemony and pine notes from the Amarillo hops, merging onto a moderately bitter finish. The balance is a little on the sweet side, unusual for a beer that incorporates honey. The honey adds some esters that complement those from the fermentation. (17/20)

Mouthfeel: A little cloying, although the sweetness left on the lips is pleasant. I also get some metallic and astringent notes underneath the sides of the tongue that linger after the beer is swallowed. A modest alcoholic warmth is enhanced by esters and higher alcohols. (3/5)

Overall Impression: A very nice beer with a flavor profile that distinguishes it from other barleywines in its class. It is a bit cloying on the palate, but it may dry out a little with aging. The hops are very well done, and the honey comes through well considering the intensity of the malt and fermentation flavors. Nicely done! (8/10)

Total Score: (40/50)



Aroma: Big hop nose mixed with moderate fruit, alcohol, and malt. Hops are prominent with a piney note. The fruity esters are nice—peach, apricot. The malt has a toffee-sweet character. Alcohol adds some spice that plays with and enhances the evergreen nose. Aromatics are well blended but the alcohol is still a bit too sharp. (10/12)

Appearance: Very tall aged ivory head, tight bubbles, moussy, developing into a rocky head with excellent retention. Lots of bubbles rising from the bottom of the glass. Deep amber-orange color. Some haze. (2/3)

Flavor: Malty-sweet initially with a nice toffee flavor. Full, honey-like palate. High bitterness emerges toward the finish. Moderate piney hop flavor and stone fruit esters. Finish is fairly sweet, which moderates the bitterness. Aftertaste has some spiciness along with malty sweetness and hop bitterness. Tastes malty-honey-sweet but not worty or under-fermented. (16/20)

Mouthfeel: Very full body. Rich and creamy. Medium-high carbonation. Warming but not burning, mostly due to the malty-honey sweetness. Carbonation gives it a fuller feel. Deceptive alcohol level—it doesn't taste like an 11-percent beer. (4/5)

Overall Impression: Bittersweet/honey palate gives it an interesting character. Hop nose and bitterness are strong, and the hop flavor gets a bit lost. I'd like to see if this dries out as it ages. The sweetness is a bit high now, but it does enhance the drinkability; otherwise, the hops and alcohol could be overwhelming. (8/10)

Total Score: (40/50)



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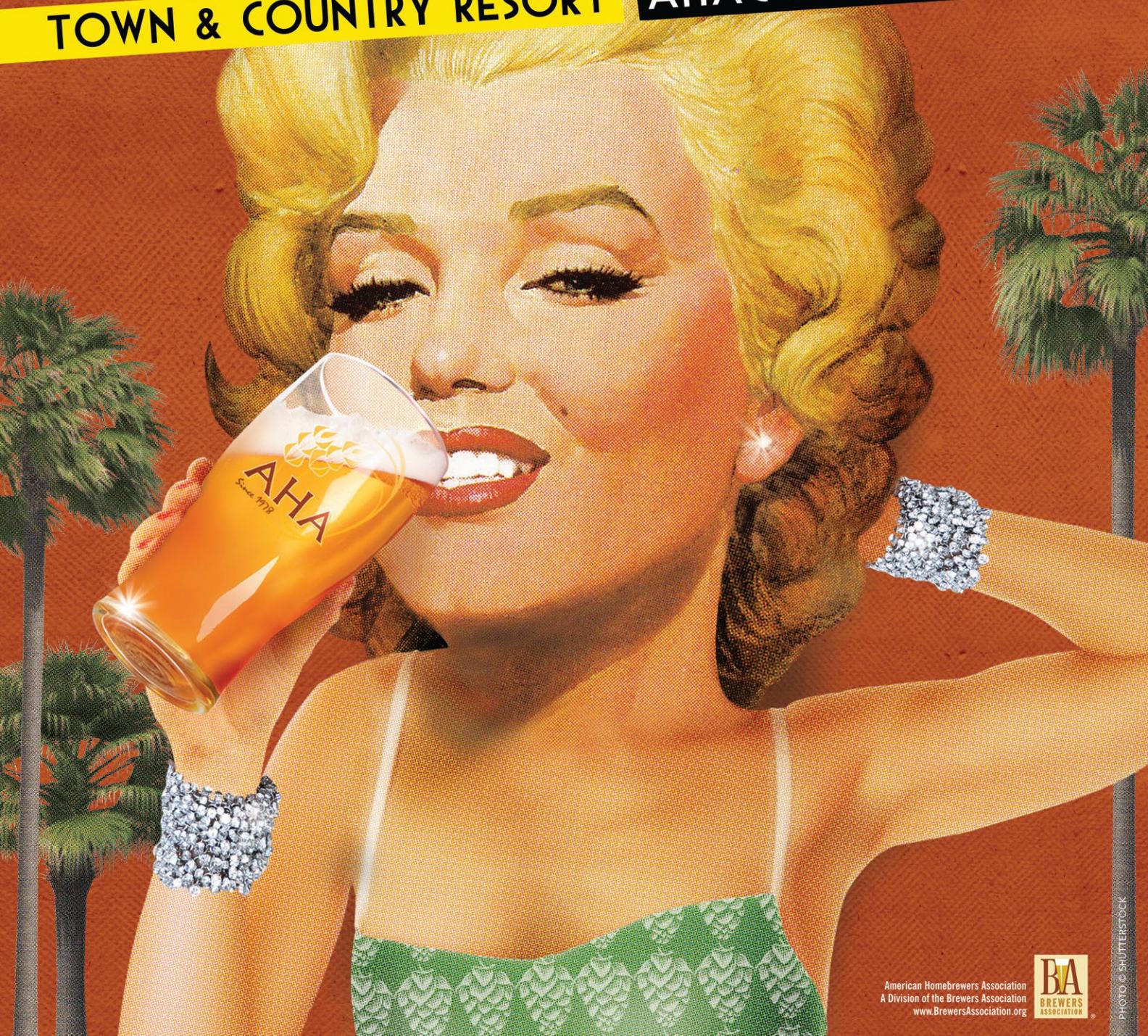
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by Charlie Papazian



Blinking Star Dark Lager



There's so much interesting brewing going on throughout the world, it makes you not want to even blink once, for fear of missing out on some exciting new idea or beer. In late October, I participated in several beer workshops at Slow Food's biennial Salone del Gusto held in Turin, Italy.

The Italian beer enthusiast community organized an excellent program. Here are snapshots of thoughts inspired during my participation.

Bitterness and Beer Workshop

An eye-opening workshop about the perception of bitterness and how it related to beer was led by Mirco Marconi and Professor Paolo Gasparini of the University of Trieste. Paper "taste strips" were distributed to all participants who were asked to register their experience. A show of hands revealed that about 10 percent of people experienced a disgusting and rather objectionable taste sensation. About 65 percent perceived bitterness but did not think it was objectionable. About

25 percent perceived nothing. The audience was mostly European with perhaps a 15-percent mix of individuals from outside of Europe.

I thought to myself, "Wow. This many

people do not experience bitterness." Professor Gasparini, who has done extensive genetic and cultural research on this subject, conceded that the show of hands was not surprising. "Your ability to sense bitterness is genetic. You can blame your mothers and fathers for not being able to fully appreciate some of the beers we will taste during this session."

Thoughts that I presented:

- Brewers often present bitterness units as calculated, which is different than actually measured.
- Hop bitterness is a measure of a specific hop-derived compound. This hop bitterness reaches saturation depending on the qualities of the wort, somewhere below 100 BU.
- There are other compounds that contribute to beer bitterness derived from other ingredients, vegetal matter of hops, malt, and grain-derived compounds.
- Hop oils will dramatically alter percep-

tion of bitterness, often tricking the mind.

- Balance of malt sugars and alcohol will affect perception of bitterness.

I walked away with the realization that of the millions of Americans who enjoy a thousand brands of India Pale Ale, perhaps

a significant percent really do not perceive bitterness at all. Is this why some excessively hopped brands appeal to a small portion of beer enthusiasts, while more balanced IPAs appeal to those who perceive but aren't offended by bitterness? And for those who do not like bitterness, it can be blamed on genetics. Genetic percentages are likely

going to be different with various ethnic groups, perhaps explaining resistance to certain characters in beer.

People who say they do not like bitterness often don't understand what they have an aversion to. Many of these "I don't like bitterness" people often enjoy IPAs that are high in hop aroma and flavor; the hop oils suppress their perception of bitterness.

Moeder Lambic Workshop

Led by owner and manager Jean Hummler of the popular Brussels beer "café/pub" Moeder Lambic, the workshop offered an opportunity to instruct participants about why the presentation of beers on-premises is important. Moeder Lambic is one of a very few passionate on-premises beer establishments in Belgium. I visited Moeder Lambic in early September. Owner, managers, servers, cellar managers, and buyers are all knowledgeable about beer and brewing.

Thoughts that I presented:

- At on-premises establishments, presentation, glassware, maintenance of draft lines, beer temperature, and quality of food served are but a few very important elements necessary to maximize the beer experience.
- Belgian brewers were among the world's original creators of diversity, but much of that innovation has been lost.
- Belgians have a history of not brewing to any particular style; they have strived to be unique.
- As mergers and consolidation occur in Belgium and debts and loans need to be paid off, focus has shifted to sales volumes and "copy cat" mentality, translating to sameness and mass appeal (high volume sales) in most of the Belgian market.

I noted a conversation I recently had with a well-known and respected lambic brewer from the Brussels area. He asked me "Why do Americans describe many of their beers as sour? We don't describe our beers as sour here in Belgium." The presentations of beers during this workshop and discussion inspired me to offer these thoughts:

(continued on page 55)

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Blinking Star Dark Lager

ALL GRAIN RECIPE

INGREDIENTS

for 5.5 U.S. gallons (21 liters)

6.0 lb	(2.7 kg) German Pilsener malt
3.0 lb	(1.36 kg) Munich malt (10° L)
8.0 oz	(225 g) Belgian aromatic malt
8.0 oz	(225 g) German CaraMunich® malt (75° L)
8.0 oz	(225 g) honey malt (75° L)
4.0 oz	(113 g) English chocolate malt
1.0 oz	(28 g) German black Carafla malt
1.5 oz	(42 g) French Strisselspalt hop pellets 2.6% a.a. (3.9 HBU/109 MBU) 60 min
1.0 oz	(28 g) Mt. Hood hops 4.2% a.a. (4.2 HBU/117 MBU) 30 min
0.75 oz	(21 g) French Strisselspalt hop pellets, 3 min
0.5 oz	(14 g) Crystal hop pellets, dry hopping
0.1 oz	(3 g) Simcoe hop pellets, dry hopping
0.1 oz	(3 g) Citra hop pellets, dry hopping
0.1 oz	(3 g) New Zealand Nelson B Sauvin hop pellets, dry hopping
0.25 tsp	(1 g) powdered Irish moss Cry Havoc lager/ale yeast or other malt emphasizing lager type yeast
0.75 cup	(175 ml measure) corn sugar (priming bottles) or 0.33 cup (80 ml) corn sugar for kegging

Target Original Gravity: 1.050 (12.5 B);
mash efficiency at 71%

Approximate Final Gravity: 1.016 (4 B)

IBUs: about 31

Approximate Color: 19 SRM (38 EBC)

Alcohol: 4.8% by volume

DIRECTIONS

A step infusion mash is employed to mash the grains. Add 11 quarts (10.5 liters) of 140° F (60° C) water to the crushed grain, stir, stabilize and hold the temperature at 132° F (53 C) for 30 minutes. Add 5.5 quarts (5.2 liters) of boiling water and add heat to bring temperature up to 155° F (68° C) and hold for about 30 minutes. Raise temperature to 167° F (75° C), lauter and sparge with 3.5 gallons (13.5 liters) of 170° F (77° C) water. Collect about 5.75 gallons (22 liters) of runoff. Add 60-minute hops and bring to a full and vigorous boil.

The total boil time will be 60 minutes. When 30 minutes remain add the 30-minute hops.

When 10 minutes remain add the add Irish moss. When 3 minutes remain add the 3-minute hops. After a total wort boil of 60 minutes, turn off the heat and place the pot (with cover on) in a running cold-water bath for 30 minutes. Continue to chill in the immersion or use other methods to chill your wort. Strain and sparge the wort into a sanitized fermenter. Bring the total volume to 5.5 gallons (21 liters) with additional cold water if necessary. Aerate the wort very well.

Pitch the yeast when temperature of wort is about 70° F (21° C). Once visible signs of fermentation are evident, ferment at temperatures of about 55° F (12.5° C) for about one week or when fermentation shows signs of calm and stopping. Rack from your primary to a secondary. Add dry hops to fermenter. If you have the capability "lager" the beer at temperatures between 35-45° F (1.5-7° C) for 4-7 weeks. Prime with sugar and bottle or keg when complete.

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Blinking Star Dark Lager

MASH EXTRACT RECIPE

INGREDIENTS

for 5.5 U.S. gallons (21 liters)

6.0 lb	(2.7 kg) amber malt extract syrup or 4.8 lb (2.2 kg) amber DRIED malt extract
1.0 lb	(454 g) Belgian aromatic malt
8.0 oz	(225 g) German CaraMunich® malt (75° L)
8.0 oz	(225 g) honey malt (75° L)
4.0 oz	(113 g) English chocolate malt
1.0 oz	(28 g) German black Carafa malt
2.0 oz	(56 g) French Strisselpalt hop pellets 2.6% alpha (5.2 HBU/149 MBU) 60 min
1.0 oz	(28 g) Mt. Hood hops 4.2% alpha (4.2 HBU/117 MBU) 30 min
0.75 oz	(21 g) French Strisselpalt hop pellets, 3 min
0.5 oz	(14 g) Crystal hop pellets, dry hopping
0.1 oz	(3 g) Simcoe hop pellets, dry hopping
0.1 oz	(3 g) Citra hop pellets, dry hopping
0.1 oz	(3 g) New Zealand Nelson B Sauvin hop pellets, dry hopping
0.25 tsp	(1 g) powdered Irish moss Cry Havoc lager/ale yeast or other malt emphasizing lager type yeast
0.75	cup (175 ml measure) corn sugar (priming bottles) or 0.33 cup (80 ml) corn sugar for kegging

Target Original Gravity: 1.050 (12.5 B); mash efficiency at 71%

Approximate Final Gravity: 1.016 (4 B)

IBUs: about 31

Approximate Color: 19 SRM (38 EBC)

Alcohol: 4.8% by volume

DIRECTIONS

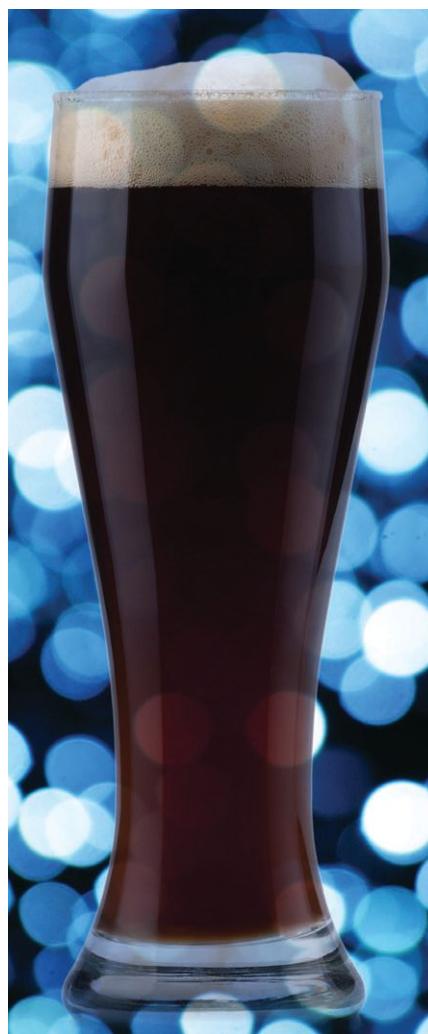
Heat 4 quarts (4 liters) water to 172° F (77.5° C) and add crushed grains. Stir well to distribute heat. Temperature should stabilize at about 155° F (68° C). Wrap a towel around the pot and set aside for about 45 minutes. Have a homebrew.

After 45 minutes, add heat to the mini-mash and raise the temperature to 167° F

(75° C). Pass the liquid and grains into a strainer and rinse with 170° F (77° C) water. Discard the grains.

Add to the sweet extract you have just produced more water, bringing the volume up to about 3 gallons (9.5 l). Add malt extract and 60 minute hops and bring to a boil. The total boil time will be 60 minutes. When 30 minutes remain add the 30-minute hops. When 10 minutes remain add the Irish moss. When 3 minutes remain add the 3-minute hops. After a total wort boil of 60 minutes, turn off the heat. Immerse the covered pot of wort in a cold water bath and let sit for 15-30 minutes or the time it takes to have a couple of homebrews.

Strain out and sparge hops and direct the hot wort into a sanitized fermenter to which 2 gallons (7.6 l) of cold water has been added. If necessary add cold water to achieve a 5.5 gallon (21 l) batch size. Aerate the wort very well. Pitch the yeast when temperature of wort is about 70° F (21° C). Once visible signs of fermentation are evident, ferment at temperatures of about 55° F (12.5° C) for about one week or when fermentation shows signs of calm and stopping. Rack from your primary to a secondary. Add dry hops to fermenter. If you have the capability "lager" the beer at temperatures between 35-45° F (1.5-7° C) for 4-7 weeks. Prime with sugar and bottle or keg when complete.



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- Americans often use literal sensations as general descriptors of a genre of beer, such as “sour beer” or “bitter beer.” Perhaps it’s part of our culture in America to need a singular reference, a single word, a single person to blame, a single reason for responsibility. Actually, life is much more complex. We limit our access to the true nature of beer descriptions and nuances.
- Lambic type beers are not just sour beers. They are complex with many flavors that have nothing to do with sourness. They are wild and full of unusual flavors that more accurately define lambics than simply the reference as “sour beer.”
- India Pale Ales are not just bitter beers. They are hoppy beers full of complexity from the variety of hop utilization during the mashing, brewing, fermentation, and serving processes. They come from a variety of hops. Bitterness does not define IPAs.

Beer with Grapes Workshop

Led by master beer enthusiast Lorenzo Dabone (aka Kuaska), eight Italian artisanal brewers presented eight distinctly different beers brewed with the addition of wine must (also known as grape juice; fresh, cooked, reduced, or otherwise). There are hundreds of varietal grapes grown throughout Italy. There are thousands of wines made with unique character influenced from the land from which they grow. Italians process “must” in many ways in their preparation for fermentation. These and other differences have inspired Italian small brewers to marry grapes and offer special editions of these rather special beers. The frontiers they are exploring are heading far beyond the directions that American craft brewers have only begun to explore. Among Italian artisanal brewers, there seems to be a minimal amount of “copycat” brewing. Each brewer takes pride in the directions they are exploring and indeed there is much to be explored. This workshop offered only a small glimpse of what is happening with Italian small brewers.

One artisanal brewer and cheesemaker, Luca Montaldo, offered a tasting of his unique and delicious crystal malt-coated and aged cheese.

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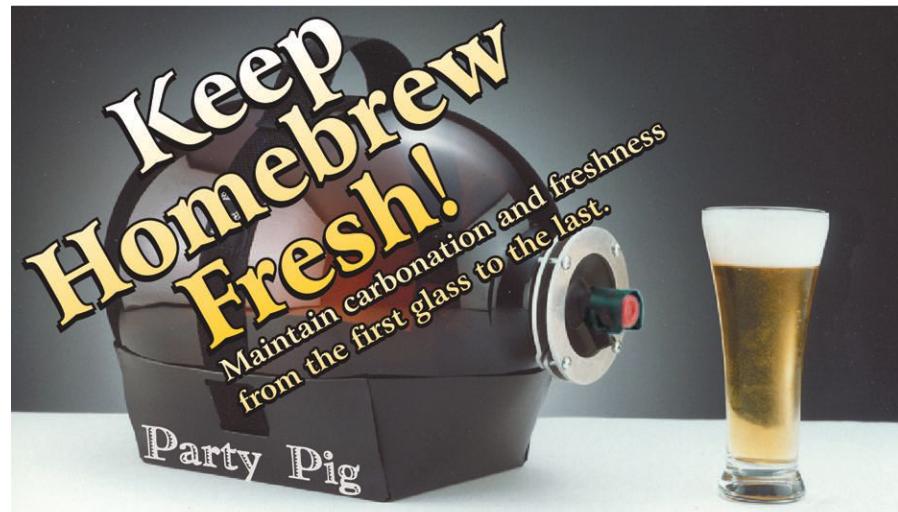
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Homebrewing to Professional Brewing Workshop

Led by Lorenzo Dabone, this panel discussion and beer tasting revealed to participants the strong connection to homebrewing from which Italian and American small brewers have emerged. Several Italian artisanal brewers accompanied Americans Greg Koch (Stone Brewing), Matt Brynildson (Firestone Walker Brewing) and me in revealing paths taken by today's small brewers.

In the January/February issue of Zymurgy, I offered a hoppy recipe called Dancing with Hops. My wife and I enjoyed this so much, I altered the direction of a fermenting 29 BU Czech-style dark lager. Enjoying the hop character of Dancing, I ended up dosing the lagering fermenter with a jazzed dose of hops. The result is on tap as you read this. "Out of style?" You bet it is, but wow, the beer is good and sessionable at about 5-percent ABV.

So let's cut the shuck and jive and get on with the recipe.

Charlie Papazian is founder of the American Homebrewers Association.

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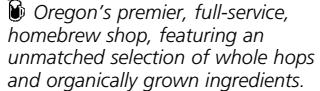
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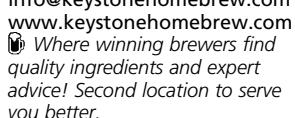
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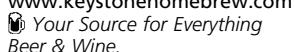
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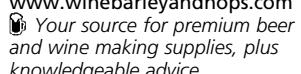
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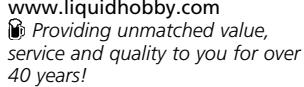
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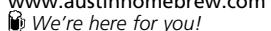
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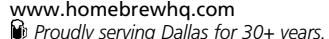

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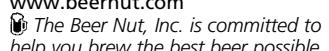
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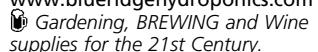

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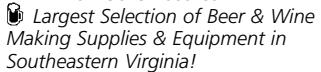
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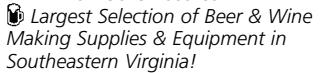
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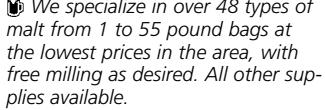
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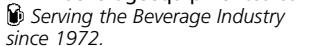
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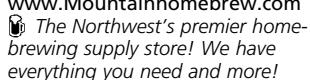
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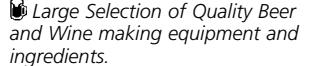

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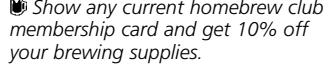

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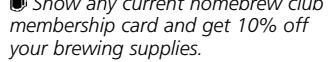

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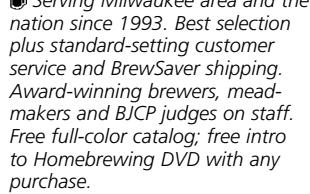
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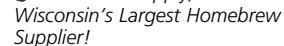
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Must-See (Brewing) TV



As it turns out, the same things that make being a homebrewer exciting are pretty much the same things that make being a homebrew videographer exciting. Like any given brew day, shooting and editing have ups, downs and improvised workarounds. It can be as simple or complex as you make it. You meet great people. There is always beer to share. And, as with homebrew, the more care, respect, attention and dedication you put into it, the better it tastes. Or, in our case, looks.

I am a homebrewer first, and the videographer and editor for Brewing TV second. BTV celebrates the wonderment that is homebrewing, homebreweries, and of course, the homebrews. When co-hosts Jake Keeler, Michael Dawson and I launched the show in May 2010, we had one simple goal in mind: to bring you the “why,” not the “how,” of the homebrew world. BTV is more about the experiences we all share through homebrewing than it is about the instructions for making beer and mead.

Don't get me wrong. We and our guests

do get into some seriously experimental and advanced brewing. In our first 30 episodes, we made several open-fermented beers, worked with unusual spicing and hopping schedules, held a subfreezing outdoor parti-gyle brew session, made a farmhouse ale that was fermented in a rum barrel, and brewed an authentic-as-possible Finnish sahti.

Producing Brewing TV has afforded us some great experiences and opportunities. I always enjoy traveling around the country, talking with different homebrewers and clubs, crashing competitions, and riding shotgun for exciting brew days. I consider myself lucky to have worked with some of my homebrew gurus like Charlie Papazian and Fred Eckhardt. Sitting down with them for a pint and a chat is like sitting down for a meeting with the gods. Jamil Zainasheff announced the founding of his Heretic Brewing Company during an interview with BTV. And *How to Brew* author John Palmer crafted the recipe for a Tolkien-inspired beer called Belladonna Took's Oaked Mild especially for an episode. We're working hard to get you the brewtastic goods!



Chip Walton, Jake Keeler and Michael Dawson launched Brewing TV in May 2010.

I hope those who haven't seen our show will check it out. I hope those of you who are already die-hard BTVers are not only enjoying it, but learning alongside us. With each episode, Jake, Michael and I uncover more about our own love for beer and beer-making. That's why I most enjoy making these episodes: like a good homebrew, it's a joy to produce, present and share with others. And there's always another one to be made.

As we like to say: All for brew, brew for all!

Chip Walton is a homebrewer and video projects producer for Northern Brewer Homebrew Supply. He lives in Minneapolis with his mead-loving wife, Elsa, and a crazy-eyed beagle, Charlie P. He is a proud member of the Minnesota Homebrewers Association, Northern Brewer Fermentation Brigade, and the Civilian Brewers Division. You can watch episodes at BrewingTV.com.

American Homebrewers Association® 33rd Annual

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Businesses receiving NHC entries cannot answer questions regarding the competition. All competition questions should be directed to Janis Gross.

* Drop-off by prior arrangement. See HomebrewersAssociation.org for details.

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