IMPACT OF HOP HARVEST TIMING | BRIGHT IDEAS FOR DARK LAGERS | BREWING FRESH HOP HOMEBREWS

BrewYour Own

THE HOW-TO HOMEBREW BEER MAGAZINE

JULY-AUGUST 2026, VOL. 32, NO. 4

WWW.BYO.COM

AWARD-WINNING FRUIT BEER RECIPES

CAPTURE SUMMER IN A PINT GLASS WITH TIPS, TECHNIQUES, & PROVEN HOMEBREW RECIPES



1 STYLE. SAME INGREDIENTS. HOME AND PRO BREWERS FROM AROUND THE WORLD.

BUILD A DIY BREW-IN-A-BAG STAND

BREW A NEW SOUTH AMERICAN BEER STYLE

wyeast™
Premium Liquid Yeast

Legendary liquid yeast.

Trusted for 40+ years by professionals and homebrewers alike.

Proof yeast integrity, revitalize cells, and shorten lag time with our one-of-a-kind Activator System™.

Smack the pack to activate at the start of brew day. When it swells, the active yeast is ready to pitch.



Current release: July-Sept 2026

2352-PC
Munich Lager II

3463-PC
Forbidden Fruit

Product of Hood River, Oregon • USA

WYEASTLAB.COM



Join Brew in DENMARK for a Brewery and Biking Adventure!

May 16 - 23, 2027









Experience Denmark's deep-rooted beer culture firsthand with hundreds of small breweries alongside classic lager powerhouses like Carlsberg. Beer has historically played an important part of the local Danish community fabric blending "hygge" (cosiness) with fun conversations and great food. You'll travel from one end of the country to the other (and even jump over to Sweden for a quick visit) to explore this bucket list destination for any beer lover.

Don't miss our new *Brew Your Own Magazine* trip:

- Experience Denmark's vibrant beer culture from the northern Jutland Peninsula all the way to historic Copenhagen
- Visit 12 Danish breweries (and 2 Swedish breweries!) - including the big to the small and the old to the new
- Attend the Copenhagen Beer Festival filled with Denmark's best craft beers
- Meet with local pro brewers to get your brewing questions answered as you sample their beers
- Go on a day trip to Sweden to check out their craft beer scene
- Climb aboard a recreated traditional Viking boat and sail a beautiful fjord
- Enjoy beer-paired Danish meals at local breweries
- Pedal your bicycle through scenic Danish towns, cities, and countryside to the next brewery stop
- Travel with other homebrewers who share your passion for beer and brewing!

FOR MORE DETAILS VISIT: BYO.COM/TRIP

contents

JULY-AUGUST 2026, VOL. 32 NO. 4











features

24 AN EMERGING PARAGUAYAN STYLE
A group of craft brewers in Paraguay have been trying to establish a regional beer style representative of their country, brewed using many of the same ingredients as the national beverage, tereré.
by Franco Michele Chiola Annicchiarico

30 TIMING HOP HARVEST
Even though it often isn't indicated on the label, harvest timing may be the biggest factor in what makes one lot of hops different from another. From early-harvest to late-harvest, the same hop's character will change tremendously.
by Eric Sannerud

34 BREW AWARD-WINNING FRUIT BEERS
Gordon Strong shares different brewing approaches and award-winning recipes for fruit beers with help from a group of accomplished homebrewers.
by Gordon Strong

44 KIWI HOP HARVEST & BREWERY ADVENTURE
We recap and share photos from the latest trip *BYO* Publisher Brad Ring and readers went on in New Zealand during the country's hop harvest.

46 LESSONS FROM THE BEST BREW CHALLENGE
A look at the BestBrewChallenge — a competition run by BestMalz in which homebrewers and pros submit the same beer style brewed using the same basic ingredients. Plus, brewing advice from a two-time winner from Lithuania.
by Marty Nachel

CELLAR SCIENCE

NEW!

INSTANT WATER



WATER SALTS FOR BREWING

Perfect Brewing Water. Zero Chemistry Required.

- **Skip the Calculators:** Completely eliminates the need to measure individual salts or make manual acid adjustments.
- **Tailored to Your Recipe:** Choose from packs like Hazy, West Coast, Stout & Porter, Lager, and more to automatically lock in the ideal mash pH for your beer.
- **Better Fermentations:** Optimized chemistry improves enzyme activity, leading to better efficiency, attenuation, and clarity.
- **Maximize Flavor:** Get the right sulfate-to-chloride ratios to enhance hop expression, smooth out bitterness, and balance your malt.
- **Brew with Consistency:** Engineered for exact repeatability so you get reliable results, batch after batch.



For All-Grain Brewing | Available in 5-gallon and 1bbl sizes!

Available at MoreBeer.com

Brew Your Own
THE HOW-TO HOMEBREW BEER MAGAZINE

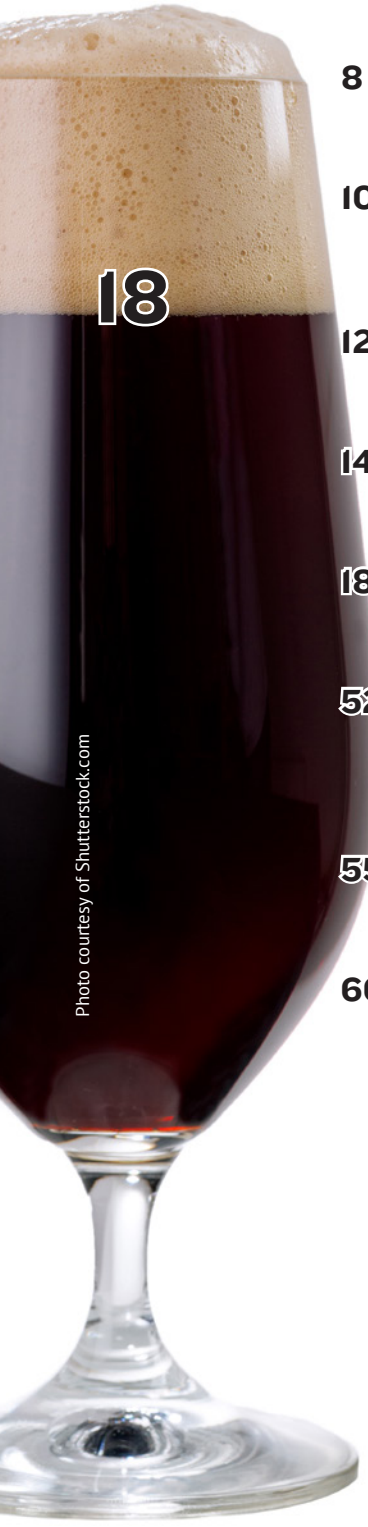


Photo courtesy of Shutterstock.com

departments

7 **MAIL**
A homebrewer surprised that their order of grain came crushed asks how long they have to brew with it.

8 **HOMEBREW NATION**
BarthHaas offers educational opportunities for brewing non-alcoholic beer. Plus, the latest products and upcoming fermentation holidays.

10 **REPLICATOR**
Triptych Brewing Co.'s wee heavy went through many iterations over the years before landing where it is today. What makes it unique is the fermentation with a lager yeast and an extra dry finish.

12 **TIPS FROM THE PROS**
Three pro brewers who have been recognized for their fresh-hop beers share advice for making beers with hops that go straight from the bine to the kettle.

14 **MR. WIZARD**
What's the best way to clean your beer glasses? The Wizard dives deep into cleaning products and procedures, as well as offering advice for calculating CO_2 volumes.

18 **STYLE PROFILE**
International dark lager was added to the Beer Judge Certification Program Style Guidelines in 2015 and covers a broad collection of dark industrial lagers.

52 **NANOBREWING**
Dan Russo has brewed for many years near the heart of the Pacific Northwest hop-growing region, giving him many opportunities to brew with fresh hops. He shares what he's learned so you can make something special during this limited window of opportunity.

55 **PROJECTS**
A homebrewer shares his compact design for a Brew-In-A-Bag stand that features a hoist, mounts for the pump, controller, and tubes, and easily disassembles after the brew day.

60 **LAST CALL**
Sweden may sound like a peculiar place to find a Belgian homebrew festival, but with close to 1,000 participants and over 100 entries, Belgoträffen has been celebrated for 20 years and is now more popular than ever before.

where to find it

22 Beer Education Section
58 Homebrew Directory
59 Reader Service

RECIPE INDEX

Triptych Brewing Co.'s Luke's Still Here, Man. clone . . **11**
International Dark Lager **19**
Cerveceria Singular & Cerveceria Pinoza's Ida Y Vuelta clone . . . **28**
Catharina Sour with Andean Blackberry and Raspberry **38**
Apricot American Wheat **39**
Belgian Blond with Apple, Elderflower, and Lemon Peel. . **40**
Belgian Dubbel with Roasted Figs **41**
Blackberry Baltic Porter **42**
Mischievous Wind Leicht Weizen **50**



RECIPE STANDARDIZATION

EXTRACT EFFICIENCY: 65%
(i.e. — 1 pound of 2-row malt, which has a potential extract value of 1.037 in one U.S. gallon of water, would yield a wort of 1.024.)

EXTRACT VALUES FOR MALT EXTRACT:
liquid malt extract (LME) = 1.033–1.037
dried malt extract (DME) = 1.045

POTENTIAL EXTRACT FOR GRAINS:
2-row base malts = 1.037–1.038
wheat malt = 1.037
6-row base malts = 1.035
Munich malt = 1.035
Vienna malt = 1.035
crystal malts = 1.033–1.035
chocolate malts = 1.034
dark roasted grains = 1.024–1.026
flaked maize and rice = 1.037–1.038

HOPS:
We calculate IBUs based on 25% hop utilization for a one-hour boil of hop pellets at specific gravities less than 1.050. For post-boil hop stands, we calculate IBUs based on 10% hop utilization for 30-minute hop stands at specific gravities less than 1.050. Increase hop dosage 10% if using whole leaf hops.

Gallons:
We use U.S. gallons whenever gallons are mentioned.

WHY I BREW WITH BRIESS



"WE'VE BEEN ABLE TO BREW AWARD-WINNING BEERS WITH BRIESS MALT YEAR AFTER YEAR."

MATT POTTS
Founder & CEO, Destihl Brewery

When we asked Matt at Destihl Brewing why he brews with Briess, he replied, **"We've been a partner of Briess since 2013, and it's because of the quality, which has been consistent all along."**

"You have to give kudos to Briess for their dedication to the craft beer industry, going back as far as as they did with supporting craft brewers."

Hear why Matt at Destihl brews with Briess
BrewingWithBriess.com/Destihl



BRIESS®
MALT & INGREDIENTS Co.
All Natural Since 1876

info@BrewingWithBriess.com | ©2026 Briess Industries, Inc.

Brew Your Own
THE HOW-TO HOMEBREW BEER MAGAZINE

EDITOR
Dawson Raspuzzi

DESIGN
Open Look

TECHNICAL EDITOR
Ashton Lewis

CONTRIBUTING WRITERS
Drew Beechum, Denny Conn, Paul Crowther, Derek Dellinger, Audra Gaiziunas, Jason Simmons, Brad Smith, Gordon Strong

EDITORIAL REVIEW BOARD
Tomme Arthur • Port Brewing/Lost Abbey
David Berg • August Schell Brewing Co.
Michael Dawson • RahrBSG
Denny Conn • Experimentalbrew.com
Horst Dornbusch • Cerevisia Communications, LLC.
Chris Graham • MoreBeer!
Bob Hansen • Briess Malt & Ingredients Co.
William Jablonski • Draftnauts LLC
Micah Lenz • Electrical Engineer
John Maier • Rogue Ales (retired)
Paul Manzo • Homebrew Consultant
Ralph Olson • RNV Enterprises
Mitch Steele • New Realm Brewing
Gordon Strong • BJCP President Emeritus
Michael Tonsmeire • Sapwood Cellars
Chris White • White Labs
Kal Wallner • TheElectricBrewery.com
David Wills • Freshops

EDITORIAL & ADVERTISING OFFICE
Brew Your Own
5515 Main Street
Manchester Center, VT 05255
Email: BYO@byo.com

MEMBERSHIPS
Brew Your Own
5515 Main Street
Manchester Center, VT 05255
M-F 8:30-5:00 EST
E-mail: byo@byo.com
$39.99/year

Cover Photo Illustration:
Shutterstock.com

Q What is your go-to method for using fruit in your brewing?

I generally brew one fruited sour per summer (the last couple of times with Philly Sour yeast). I most often use fruit puree simply for convenience. I keep thinking I'll pick enough wild raspberries that grow by my house one year and brew with them, but my kids always get to them before I can collect enough to brew with.

Depends on the beer. If I want it to taste like the fruit, I use flavorings. If I want the unique flavor of the fermented fruit then I go with fresh/purees. Flavorings are mostly used at serving so I can have a base American wheat and make it almost any fruit flavoring I want after I pour it.

I am usually a spontaneous brewer. If I think adding fruit is a good idea, I add that to the primary and hope for the best. I do pull a book from the shelf to get inspired and sometimes will follow smarter brewers' advice. Frozen, peeled, whatever is available without much effort. No, it's not always a good idea, but I do enjoy my own brews.

PUBLISHER
Brad Ring

ASSOCIATE PUBLISHER & ADVERTISING DIRECTOR
Kiev Rattee

EVENTS MANAGER
Jannell Kristiansen

ADVERTISING CONTACT:
Kiev Rattee (kiev@byo.com)

EDITORIAL CONTACT:
Dawson Raspuzzi (dawson@byo.com)



All contents of **Brew Your Own** (ISSN 1081-826X) are Copyright © 2026 by Battenkill Communications, unless otherwise noted. Brew Your Own is a registered trademark owned by Battenkill Communications, a Vermont corporation. Unsolicited manuscripts will not be returned, and no responsibility can be assumed for such material. All "Letters to the Editor" should be sent to the editor at the Vermont office address. All rights in letters sent to **Brew Your Own** will be treated as unconditionally assigned for publication and copyright purposes and subject to **Brew Your Own**'s unrestricted right to edit. Although all reasonable attempts are made to ensure accuracy, the publisher does not assume any liability for errors or omissions anywhere in the publication.

All rights reserved. Reproduction in part or in whole without written permission is strictly prohibited. Volume 32, Number 4: July-August 2026

BrewYourOwn
@BrewYourOwn
@brewyourownmag
@brewyourownmag

suggested pairings at BYO.COM

When in Barbados, Brew Local: Brewing a Cassava Ale



The cost of sourcing brewing grains in Barbados makes homebrewing a challenge. To supplement traditional base grains, a brewer shares how they use cassava in their brews. www.byo.com/articles/barbados-brew-local-brewing-cassava-ale

Processing Homegrown Hops



There's more to growing your own hops than picking the cones from the bines. Get advice for harvesting, drying, and storing your homegrown harvest so your hops will remain at their best when it is time to use them. www.byo.com/articles/harvesting-homegrown-hops

Ciphering Fruit Beers



Calculating the impact a fruit addition will have on a beer's ABV is tricky — so much so that even commercial brewers have gotten in trouble for miscalculating their influence on gravity. We take a closer look at the math required to get it right, and why the assumption that adding fruit will always raise the gravity of your wort is false. www.byo.com/articles/ciphering-fruit-beers

New Zealand Pilsner



New Zealand Pilsner combines some of the better attributes of Pilsner and Kölsch — it is smooth and highly drinkable, normal strength, well-attenuated but not super dry — but what makes it unique is the added bonus of intriguing modern New Zealand hops. www.byo.com/articles/style-profile-11

MAIL



SHELF LIFE OF CRUSHED GRAIN

We sometimes ride over to and through Biloxi, Mississippi, and I found a homebrew store I stop at when there. I had bought uncrushed malt there while stopping in over the last year or two. Recently, knowing we were going to be passing through, I ordered a larger amount ahead of time online, some in 5-lb. (2.3-kg) bags and some 1-lb. (0.45-kg) bags to stock up. There was no "crushed/uncrushed" selection and I didn't specify uncrushed any other way. For whatever reason, when I got there, he had crushed and prepackaged my order. I now have many bags of crushed base and specialty grains. The bags are heat-sealed, but not vacuum-packed. Do you have any suggestions and cautions? Do I have to hurry up and use this malt? I just brew 2.5 gallons (9.5 L) at a time.

Donnie Maheu • *Baton Rouge, Louisiana*

The shelf life of grains that are already crushed is definitely shorter than uncrushed, but if you keep them in good conditions (ideally in a room with low humidity and consistent temperatures between 50–70 °F/10–21 °C), and in the sealed bags they are already packed in (or Ziploc bags if you have leftovers after opening), they should still last 3–6 months without any noticeable depreciation. After that, the grain will lose some aroma, though still be OK to brew with if kept dry. Give some a nibble as time goes by and see if you start picking up on stale flavors/texture. If you reach a point where you do, then you may see some negative impact on the resulting beer.

SOME LOVE FOR SAISON

Thank you *BYO* for giving so much attention to Belgian saison in the May-June 2026 issue. I learned quite a bit from Drew Beechum's in-depth profile on the style, and the accompanying story by Bob Sylvester with clone recipes of so many great saisons was an added bonus. I've been brewing saison (clean-fermented, I don't bring bugs into the homebrewery) for many years since there are so few good examples available in the stores near me. Now I've got some added motivation to brew my next saison, with a couple new tips I picked up!

Jacob Mansfield • *via email*

contributors



Eric Sannerud first fell in love with hops as Co-Founder and farmer-CEO of Mighty Axe Hops, a fully integrated 80-acre hop farm in Minnesota. He later went on to be the Hop Brand Manager for a large hop supplier and today works with clients all over the world to improve their hoppy outcomes through Sannerud Hop Consulting. Outside of hops, he is an active farm advocate in Minnesota.

Beginning on page 30, Eric explains how the often-overlooked detail of harvest timing plays a huge factor in hops' expression, and how you can use this information if you grow your own hops.



Gordon Strong is President Emeritus and the highest-ranking judge of the Beer Judge Certification Program (BJCP), the organization that certifies beer judges for homebrew competitions and also registers qualifying homebrew competitions. In addition to his Grand Master Level V judge status, Gordon is a three-time winner of the National Homebrew Competition Ninkasi Award and the author of homebrewing books *Brewing Better Beer* and *Modern Homebrew Recipes*. He has been *BYO*'s "Style Profile" columnist since 2015 and is a frequent feature story author.

Gordon does double duty this issue, covering international dark lagers in his "Style Profile" column on page 18 and sharing advice and award-winning homebrew recipes for fruit beer starting on page 34.



Marty Nachel is a beer educator, author, award-winning homebrewer, and BJCP beer judge. He started homebrewing in the 1980s and eventually began writing about beer and brewing. Forty years later, he's authored numerous books including *Homebrewing for Dummies* and *Judging Beer Like a Pro*. Along the way, he's had the honor of associating with some of the biggest names in the industry as well as judging beer at some of the most prestigious festivals and competitions around the world. He's also the Founder and President of the American Craft Beer Hall of Fame.

Starting on page 46, Marty shares brewing tips from a two-time winner of the BestBrewChallenge — a unique international competition pitting homebrewers and pros against each other to brew the same style using the same ingredients.

NEWS

BARTHHAAS LAUNCHES EDUCATION ABOUT NON-ALCOHOLIC BEER



Photo courtesy of Shutterstock.com

Non-alcoholic beers are one of the fastest growing global segments in the beer market. Particularly among younger people, more and more beer drinkers are turning to non-alcoholic beer to moderate alcohol consumption. Drinkers expect the same depth, balance, and overall quality they associate with alcoholic beers, and many breweries are playing catch-up to meet the market demand. Producing great non-alcohol beer is challenging, because without alcohol as a carrier of flavor, every ingredient, process step, and decision in the brewing process is fully exposed.

This is why BarthHaas, one of the world's leading suppliers of hop products and hop-related services, has dedicated resources to support brewers in improving their non-alcoholic brewing and has placed non-alcoholic beers at the center of a comprehensive campaign, which includes a two-part white paper, webinars, and other information to be released throughout the year.

Available now, Part 1 of the white paper shows how to improve balance, body, and aroma, and how to optimize flavor, process control, and stability in a targeted manner. Part 2, to be published in the summer, will address dealcoholization technologies.

In addition to the white papers, BarthHaas will regularly distribute further materials via its LinkedIn campaign and related newsletters. On June 11, a free webinar entitled "Modern Brewing: Flavor and Stability in Non-Alcoholic Beer" will address this highly topical subject.

Comprehensive information on non-alcoholic beer and its production, access to the download of Part 1 of the white paper, and registration for the webinar are available on the BarthHaas website here.

UPCOMING EVENTS

AUGUST 1, 2026

NATIONAL MEAD DAY



The 24th annual National Mead Day takes place in the U.S. to celebrate and increase awareness of this ancient, fermented honey beverage and foster camaraderie among meadmakers both pro and amateur alike. Never brewed a batch of mead before? Now's the time! Raise a glass and cheers with us on August 1. Find techniques, tips, and recipes for making mead in the *BYO* archives here.

AUGUST 1, 2026

HOME FERMENTATION DAY



Join the celebration of all things fermentation on Home Fermentation Day! It is a day to celebrate the art and hobby of all things fermentation — from familiar homebrewer favorites like beer, mead, and cider, to the great beyond of fermented drinks and fermented foods. Get your fermentation on!

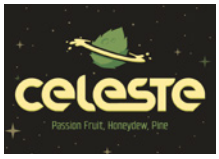
WHAT'S NEW

NEW CELLARSCIENCE YEAST STRAINS



CellarScience has released eight new dry yeast strains for homebrewers in 15-gram sachets. That's 30% more yeast than traditional dry yeast sachets (CellarScience has sold previous strains in 12-gram sizes, though all of their strains will soon be coming in the larger 15-gram format). The new strains are for a wide variety of beer styles, from hazy and West Coast IPAs, to English styles, hefeweizens, Belgian ales, and more. None of CellarScience's strains require rehydration — just pitch and let the yeast do its job. Learn more here.

CELESTE™ HOPS



Celeste™ is the latest hop released from Oregon's West Coast Hop Breeding after three years of commercial trials. Celeste™ features bright, sweet, and clean notes of passion fruit, apple, pear, honeydew melon, and pine that are a good fit for hazies and West Coast IPAs as well as hoppy Pilsners. It was previously known by experimental names WCHB-102 and 2B. In addition to superior brewing qualities, it is cultivated for organic production with excellent disease-resistance and high yields. The hop is currently only available in commercial brewing quantities. Learn more here.

BREWERS HUT EASY CLEAN PLATE CHILLER



The Brewers Hut Easy Clean Plate Chiller does what no other plate chiller can — it comes completely apart for thorough cleaning and inspection. Industrial-grade stainless construction, powerful wort cooling, and a modular design that grows with your brewery. Available in three configurations (12, 16, or 22 plates) for homebrew batch sizes from between 5–16 gallons (19–60 L). Depending on your configuration, the Easy Clean can drop wort from 212 °F (100 °C) to pitching temperature in as little as 10 minutes. The price starts at $339.99. Learn more here.



Brew Your Own 31st Annual Homebrew Label Contest

Entries due Aug. 28th



Send us your best homebrew labels and you could win some of the hundreds of dollars worth of great brewing prizes from BYO advertisers! Enter as often as you like, but you can only win one prize. Winners will see their artwork featured in the Nov/Dec '26 issue of the magazine.



Brew Your Own Label Contest Entry Form

Name _____

Address _____

City _____ State/Prov _____ Zip Code _____

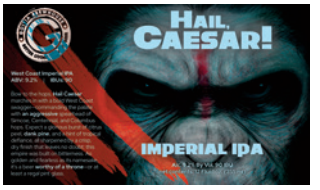
E-mail _____

Daytime Phone _____

All original artwork? Y or N (circle one)

Email your entry to:
edit@byo.com

DEADLINE: August 28, 2026





These are last year's top winners. Send your labels today for your chance to **WIN GREAT PRIZES!**

Rules: Entrants should email labels to **edit@byo.com**. All rules are made up by the editors of BYO as we go along. Labels are judged in one category, open to graphic artists and amateurs alike, so ultimate bragging rights are on the line. When submitting your labels, tell us a bit about the artwork and its inspiration. Is it hand-drawn? Created on a computer using AI? Send us your best labels, tell us how you made them, and how they represent the beer inside, and good luck!

BYO REPLICATOR

BY DEREK DELLINGER

DEAR REPLICATOR, I loved the beers (and their names) at Triptych Brewing. I haven't tried to brew a wee heavy in more than a decade, but I recall that I was never very happy with my attempts back in the day. Triptych's wee heavy "Luke's Still Here, Man." was fantastic though. You think they might share some tips?

Kyle Ives
Cleveland, Ohio



When Anthony Benjamin opened Triptych Brewing with two friends in 2013, the name was carefully chosen to represent the entire project. Much like medieval triptych artwork — three distinct images which can be viewed separately, but which form something greater when brought together — the Savoy, Illinois, brewery was built on a foundation of threes. Sitting at the intersection of three overlapping communities (Champaign, Urbana, and Savoy), the project created by three friends came together to celebrate three of the core ingredients of beer: Hops, barley, and water.

Before Triptych, Benjamin was an avid homebrewer. In 2009, he was named Midwest Homebrewer of the Year based on his success in a circuit of regional homebrew competitions. The honor gave him the confidence to consider opening a commercial brewery. However, making the jump from the homebrew scale to a commercial brewhouse brought its inevitable challenges. Benjamin credits his professional background in computer programming and systems thinking for a smooth transition, as he was able to maintain a focus on process and repeatability, and found himself with the ability to intuit how minor adjustments might affect the final product.

"One of the biggest differences from homebrewing is how much flexibility disappears," Benjamin says. "At home, you can change course late in the process without much consequence. In a brewery, decisions are locked in much earlier by packaging, labeling, and customer expectations."

When Triptych first opened its doors, Benjamin's personal brewing focus was firmly on session beers: British bitters, dry stouts, and low-ABV pale ales. But the 2013 craft beer market had different ideas, with customers hesitant to pay premium prices for lower-alcohol pints.

This reality pushed Benjamin toward a more iterative approach. The brewery began testing the waters, putting beers on tap and watching the response. In 2016, fresh off a World Beer Cup gold medal for a brilliantly clear session IPA called Little Secret, Benjamin decided to brew the exact opposite — a hazy IPA — almost as a joke. That beer, Dank Meme, sold out faster than anything they had ever made. Nearly a decade later, Dank Meme still makes up more than 45 percent of Triptych's annual production.

After years of leaning into experimental, attention-grabbing beers, the Triptych team made the choice to settle down. "We've scaled back innovation considerably and focused on more grounded, well-executed beers rather than novelty for novelty's sake," Benjamin explains. "Money doesn't go as far as it used to, and most people aren't looking to gamble on a hype-driven concept beer that might not deliver."

While Triptych is still largely known for its hop-forward pale ales and IPAs, they maintain a deep appreciation for malt-forward seasonals. "Luke's Still Here, Man." is a wee heavy that entered the brewery's lineup several years ago as a limited seasonal release. While many of Triptych's beers reference popular fantasy and science fiction franchises, the meaning behind "Luke's Still Here, Man." goes deeper. The beer traces its roots back to a period of staffing transition in 2018, when regulars in the taproom began to ask "Where's Luke at?" or "Is Luke still here?" The response was, well, you can probably guess. Because the wee heavy style is Head Brewer Luke Taggart's favorite, the team brewed a batch and named it in his honor. The name stuck, and the beer has become an annual winter tradition.

Over the years, the recipe has gone through about eight distinct iterations before arriving at the recipe the brewery uses today. Through this trial and error, Benjamin decided to swap out British crystal malts for CaraMunich®. To achieve the right color and flavor profile without harsh astringency, roasted barley was eventually replaced by pale chocolate malt. The brewers also once tried adding a touch of peat-smoked malt at Luke's request. They have been sure to never do that again.

The beer's biggest departure from tradition is in its yeast: Triptych ferments their wee heavy with a lager strain. This unusual choice was driven by their reliable access to large, healthy lager pitches, which results in an incredibly clean fermentation. While using a lager strain is not required, do pick a strain that will ensure the fermentation is as clean as possible.

Similarly, aim for a dry finish. Despite the sweet notes that the style is known for, too much sweetness can quickly cross the line into cloying. Many traditional wee heavies are thick and sticky, Benjamin says, and thus he purposefully ferments his beer drier than benchmark examples. "At higher alcohol levels, the alcohol itself contributes perceived sweetness and body, so I don't think you need to rely on excessive residual sugar to make the beer feel full," he explains.

TRIPTYCH BREWING CO.'S LUKE'S STILL HERE, MAN. CLONE

(5 gallons/19 L, all-grain)
OG = 1.080 FG = 1.015
IBU = ~17 SRM = 16 ABV = 8.5%

INGREDIENTS

8.5 lbs. (3.9 kg) Golden Promise malt
6.9 lbs. (3.1 kg) 2-row pale malt
11 oz. (310 g) CaraMunich® malt (60 °L)
6 oz. (170 g) pale chocolate malt
4.8 AAU Fuggle hops (first wort hop) (1.2 oz./34 g at 4% alpha acids)
½ tsp. Servomyces yeast nutrient (or other yeast nutrient that includes zinc)
Your favorite lager or clean-fermenting ale yeast
¾ cup corn sugar (if priming)

STEP BY STEP

Water Preparation: Begin with reverse osmosis water and build a target water profile of: Ca: 4 ppm, Mg: 4 ppm, SO_4: 0 ppm, Cl: 10 ppm, HCO_3: 45 ppm. Add enough calcium chloride to the mash and kettle to hit 50 ppm Ca and roughly 100 ppm chloride.

Mill the grains and mash in with 4.75 gallons (18 L) of strike water to achieve a single infusion rest temperature of 152 °F (67 °C). Hold at this temperature for about 60 minutes or until full conversion is achieved.

Add hops directly to the kettle for first wort hopping. With sparge water at 170 °F (77 °C), sparge and collect about 6.25 gallons (23.6 L) of wort in the kettle over the hops. Bring the wort to a boil.

At the start of the boil, set a timer for 60 minutes. With 15 minutes remaining in the boil, add Servomyces or other yeast nutrient that includes zinc.

After the boil, chill the wort to your chosen yeast's preferred starting temperature (typically around 48–50 °F/9–10 °C if using a lager strain). Oxygenate the wort heavily to reach 15 ppm if using liquid yeast and then pitch yeast.

Maintain fermentation temperature within your chosen yeast's preferred range. Monitor the gravity, and during roughly the final 30% of attenuation (around 1.034 SG), allow the temperature to free-rise to 65 °F (18 °C). Hold for 3–5 days, then lager for 2–3 weeks.

Add priming sugar and bottle condition or keg and force carbonate as usual.

TRIPTYCH BREWING CO.'S LUKE'S STILL HERE, MAN. CLONE

(5 gallons/19 L, extract with grains)
OG = 1.080 FG = 1.015
IBU = ~17 SRM = 16 ABV = 8.5%

INGREDIENTS

10.5 lbs. (4.8 kg) Maris Otter liquid malt extract
11 oz. (310 g) CaraMunich® malt (60 °L)
6 oz. (170 g) pale chocolate malt
4.8 AAU Fuggle hops (first wort hop) (1.2 oz./34 g at 4% alpha acids)
½ tsp. Servomyces yeast nutrient (or other yeast nutrient that includes zinc)
Your favorite lager or clean-fermenting ale yeast
¾ cup corn sugar (if priming)

STEP BY STEP

Start with 5 gallons (19 L) of carbon-filtered or reverse osmosis water. Because malt extract already contains a concentrated mineral profile from the original mash, there is no need to add the calcium chloride used in the all-grain version.

Place the crushed specialty grains in a large muslin bag. Steep in 2 gallons (7.6 L) of water at 155–165 °F (68–74 °C) for 30 minutes. Remove the grain bag, placing it in a colander over the kettle, and gently rinse with 1 gallon (3.8 L) of hot water.

Add water to the kettle to reach a pre-boil volume of approximately 6 gallons (23 L) and add the hops at this time. Bring to a boil, then turn off the heat and carefully stir in the malt extract until fully dissolved.

Boil wort for 60 minutes. With 15 minutes remaining in the boil, add Servomyces or other yeast nutrient that includes zinc.

After the boil, chill the wort to your chosen yeast's preferred starting temperature (typically around 48–50 °F/9–10 °C if using a lager strain). Oxygenate the wort heavily to reach 15 ppm if using liquid yeast and then pitch yeast.

Maintain fermentation temperature within your chosen yeast's preferred range. Monitor the gravity, and during roughly the final 30% of attenuation (around 1.034 SG), allow the temperature to free-rise to 65 °F (18 °C). Hold for 3–5 days, then lager for 2–3 weeks.

Add priming sugar and bottle condition or keg and force carbonate as usual. BYO

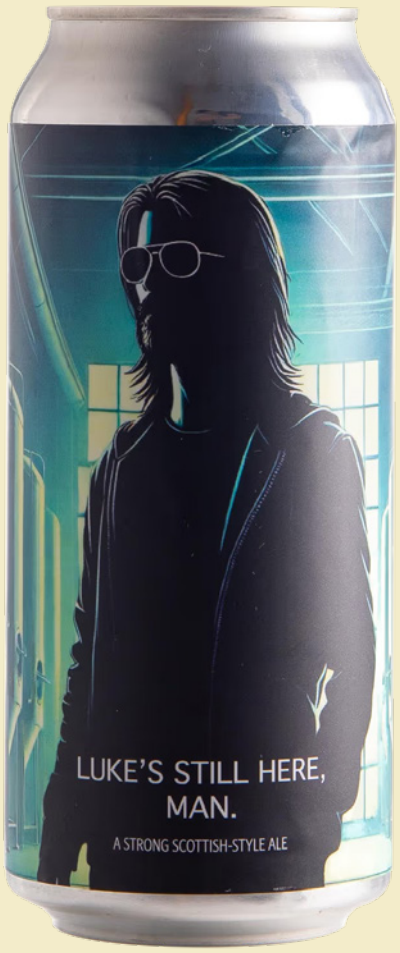


Photo courtesy of Triptych Brewing Co.

BY DAWSON RASPUZZI

FRESH HOPPING

The fresh harvest opportunity

Whether you grow your own hops, live a short drive from a hop yard, or overnight fresh hops from a supplier, fresh-hop (or wet-hop as they are sometimes called) beers are an opportunity to create a unique brew each hop harvest. Three pros who savor this opportunity every hop harvest share their fresh advice.

If you have ever walked through a kiln during hop harvest, you are hit in the face with aroma from all of these volatile oils and compounds that are being cooked off at 135 °F (57 °C) for eight hours. By using wet hops right out of the picker, we get to trap those oils and compounds in the liquid at every step of the brewing process. There are flavors and aromas that can only be extracted by using fresh, non-kilned hops. That's what makes fresh-hop beers so special and unique.

We use Centennial and Chinook grown at our farm for our Mt. Cleman Pale Ale. Our flagship fresh-hop IPA, GROWN4U is 100% fresh Simcoe® hops. We believe it is the quintessential West Coast IPA hop and there is no limit to how much you can use. We take advantage of that — the more the better! Max hopping rates do vary by variety. A mild hop like Cascade would be impossible to hit a max hopping rate with, while Citra® is on the opposite end of the spectrum and can come off a little catty at higher doses. That's why we like Simcoe®, which as a fresh hop we use at an 8:1 ratio compared to pellets. We think that is the sweet spot of a little grassy and a lot of citrus/pine.

You can turn any style of beer into a fresh hop one, but we believe clean West Coast pale ales and IPAs best showcase the wet-hop character. After all, they aren't called fresh-malt beers …

Being located in Yakima, Washington, and having such a close relationship with our friends at Green Acre Farms, Tributary Hop Farms, and Carpenter Ranches, I can leave the brewery halfway through the sparge to go grab the 400–600 lbs. (180–270 kg) of fresh hops used in one batch of beer. By the time I get back with the hops, the boil is almost done. We load the bales on the platform and they head straight into the hopback. The sooner you use the hops from the time picked, the better. If you do the math on water content in the wet vs. dry product it comes out to about 5:1. However, a pelletized product that separates easily in the kettle or fermenter and maximizes surface contact area is not the same as a whole cone with 78% water content. With wet hops, the bracts (leaves) make it difficult for the wort to get to the lupulin and also difficult to get it out, so we use somewhere between an 8:1 to 10:1 ratio compared to pellets. We also use a ton of agitation in the hopback to get as much liquid as possible circulating around the bracteoles (stems of the leaves).

For GROWN4U IPA we only add fresh hops during the boil. For Mt. Cleman Pale Ale, we have the hops right here in our hop yard, so we add them at every step that we can. As a homebrewer, I would throw some in the mash, some as first wort hops, and then completely pack the hopback/whirlpool with as many as I could possibly fit. Then I would separate the batch into two fermenters and dry (wet) hop one half of the batch so you can taste the difference between hot-side and cold-side additions. The cold-side additions can cause some microbial and oxidation issues if fermentation isn't super healthy so if that half-batch goes south, you still have the hot-side half-batch to enjoy. Don't forget that hops float, so put them in a nylon bag and weigh it down with sanitized weights so they stay submerged. Extremely healthy yeast is so important with these beers, so don't be afraid to over-pitch your yeast.

There are flavors and aromas that can only be extracted by using fresh, non-kilned hops.



Derrick Nordberg is a third-generation farmer that fell in love with hops before he fell in love with craft beer. His mother-in-law was a homebrewer and got him started on brewing. He and his wife, Maria, started Cowiche Creek Brewing in Cowiche, Washington, in 2016, where they grow some of the hops they brew with.



Matt Grimm is the Head Brewer at Upland Brewing Company in Bloomington, Indiana. He has ten years of experience in the craft brewing industry. Outside of work he enjoys spending time with his wife and two kids, reading, and getting his hands dirty with gardening or woodworking.

I've only ever brewed IPAs with fresh hops. Some hazy, some juicy, some West Coast, some imperial. Fresh-hop beers are pretty much required to be collaborative endeavors with local growers, so varieties tend to be whatever handles your climate well. Around here, that's usually Cascade or Copper. Used correctly, fresh hops impart a softer and smoother hop profile with an unmistakable "greenness."

Freshness is the name of the game: The less time between harvesting and brewing, the better. For a larger production brewery, we usually use fresh hops within a day or two; harvest happens over the weekend and then we'd brew that beer first thing on Monday. For that short amount of time before use, we simply refrigerate (35–40 °F/2–4 °C) the loose hops in bags or boxes.

While you could use fresh hops for each hop addition, it doesn't mean that you should. The biggest problems to solve for with fresh hops are yield and sanitization. The large amount of vegetal matter of the unprocessed hops would quickly turn all your wort to trub without the proper preventative steps. You need some way to take the hops back out after you add them. For our large-scale production batches, we use a hopback. It's a separate vessel between our boil kettle and whirlpool that is intended for this very purpose. It has screens onto which you can add your leaf hops and allow the wort to flow through on its way to the whirlpool. For smaller-scale batches, nylon mesh bags worked great in whirlpool additions. As far as sanitization is concerned, heat is your friend. Coming straight off the bine, these hops aren't exactly "clean." Adding them when your wort is still 180+ °F (82+ °C) is the best way of keeping contaminants out of your beer.

Fresh-hop beers don't need to be entirely made from fresh hops. Every fresh-hop beer I've been a part of making has used other hop formats as well, like T-90s, Cryo® hops, extracts, etc. The fresh-hop component for those usually comes out at around 3–4 lbs./bbl. (1.5–2 oz./gallon or 11–15 g/L).

Fresh hops are a fun way to get creative. With dried hops you have so much information available — alpha acids are the most used day-to-day, but there's also beta acids, survivable compounds, total oils, terpenes, etc. It can all get pretty overwhelming. I always appreciate the chance when using fresh hops to take a step back and just trust your own senses. Get your nose in them and if they smell good, your beer should too!



Steve Luke is the Head Brewer and Founder of Cloudburst Brewing in Seattle, Washington. An alum of the UC-Davis Master Brewers Program, he's won lots of awards (12 GABF & 7 WBC medals) and accolades (James Beard Foundation Semi-Finalist, GABF Brewer of the Year), yada, yada, yada, and probably thinks your beer isn't bitter enough.

Fresh-hop beers are unique because there's more of a textural component — leafy, chewy — in addition to some pleasant chlorophyllic/green character.

We use fresh hops all on the hot side — at first wort, early in the boil, late in the boil, and in the whirlpool. We also often convert our mash tun into a massive hopback and recirculate boiled wort through them. Even using fresh hops at all of these stages we'll still add T-90 pellets and/or kettle extract at boil to make sure we get enough bitterness units. Fresh hops don't come with lab analysis, so everything is unknown. You have to use your senses — eyes, nose, and hands — to make sure they are up to snuff. We don't worry about much bitterness pickup from fresh hops; they're mostly water after all.

I'd stick with the same fresh-hop varieties you'd use in a style as you would if they were pellets, I'd say at a rate of 5–10 times the typical weight. We typically use 15–20 lbs./bbl (7.5–10 oz./gallon or 55–75 g/L) on IPAs and 10 lbs./bbl (5 oz./gallon or 38 g/L) on lagers. If you go much higher than these rates you risk imparting a vegetal flavor.

If you grow your own hops, you shouldn't have any problem using them within 24 hours of picking, which is optimal. If we don't use them immediately, we store them in our walk-in cooler and try to spread them out and let them breathe. To get the best results, pick your hops when they smell the best, not when they look the best. A lot of versions of these beers made with homegrown hops tend to be pretty green/grassy because, I think, the hops are picked a little early.

HELP ME, MR. WIZARD

BY ASHTON LEWIS

CLEANING BEER GLASSES

Plus: Calculating CO_2 volumes

Q AFTER READING YOUR "ADVANCED BREWING" COLUMN "IN SEARCH OF PERFECT FOAM," I AM CURIOUS WHAT IS THE BEST WAY TO CLEAN MY BEER GLASSWARE. IF I DON'T USE A DETERGENT LIKE DAWN, WHAT DO YOU SUGGEST?

LOUIE STRANO
VIA EMAIL

A This is a great question, Louie. I may have written something in that column about foam that suggested household detergents like Dawn are problematic; but to clarify, they are not when the detergent is properly rinsed.

You, like other homebrewers and commercial brewers who work in taproom breweries and brewpubs, want extremely clean beer glasses to deliver the best looking glass of beer in a clean vessel. And you have lots of options when it comes to detergent selection. Commercial-strength caustic cleaners, milder chemicals like PBW, detergents specific to restaurant dishwashers, household products like Dawn, and even homemade sodium carbonate are all options. These options range in cleaning efficacy and have different safety considerations.

When selecting a cleaner, start by defining the task. Most beer glasses are soiled by beer residue and whatever the consumer's lips transfer to the glass. Other soils that are often overlooked come from the cleaning/rinse water, detergent residues that need to be rinsed from the glass during cleaning, and soils that may be deposited on the glass surface during cleaning. This means that the ideal detergent can remove carbohydrates, protein, lipids, and mineral deposits, function in a wide range of water types, and be easily rinsed after the cleaning step. That's a tall order.

Looking at this from a commercial brewer's lens, caustics intended for tank cleaning are the first cleaners that come to mind because when one is accustomed to dirty fermenters, everything looks like a dirty fermenter. These chemicals are the hands-down winner when it comes to cleaning power because they are based on sodium and/or potassium hydroxide, which are great for organic soil removal, especially proteins and lipids, contain surfactants that help with soil dispersion and rinsing, and are sometimes equipped with chelating agents to sequester calcium and magnesium, thereby improving cleaning performance and minimizing water spots. A major problem with these products is they are dangerous and should only be used when wearing protective gloves and eye protection. While not a practical choice for glassware cleaning, they are the gold standard when it comes to cleaning efficacy and serve as a useful benchmark for cleaning.

A general cleaning fact that is helpful to know is the relationship between pH and soil removal. When liquid pH increases and becomes alkaline, proteins change shape and are more easily dissolved, and lipids are saponified, turning into water-soluble soaps. When alkaline cleaners are used without hand protection, fats from skin turn into soaps, feel slippery to the touch, and are rinsed from skin after cleaning, often resulting in dry skin. If these cleaners are repeatedly used without proper protection, dry skin will eventually crack and can become infected. Not good!

Although PBW, the long-standing cleaning standard in the homebrewing world, is less alkaline than heavy-duty

. . . the ideal detergent can remove carbohydrates, protein, lipids, and mineral deposits, function in a wide range of water types, and be easily rinsed after the cleaning step.



Photo courtesy of Shutterstock.com

There are many products that can be used to clean beer glassware that will make the glass perfectly clear and not negatively impact foam.

caustics, it shares many of their cleaning strengths and works quite well for glassware. But what exactly is PBW? The answer can be found by referring to PBW's Safety Data Sheet (SDS). Based on this legally-required document, we know that the key ingredients are: Disodium carbonate (30–60%), sodium percarbonate (10–30%), tetrasodium EDTA (5–10%), sodium metasilicate (1–3%), and trisodium MGDA or methylglycinediacetic acid (0.5–1.5%). Because PBW works great for cleaning beer glasses, let's walk through this list of ingredients.

Sodium metasilicate, although a minor ingredient, is the heavy hitter in the ingredient list and is like sodium and potassium hydroxides; the main difference is that sodium metasilicate is slightly less alkaline. And it only makes up 1–3% of the total formulation. Disodium carbonate, commonly known as soda ash and made by heating baking soda, is an alkaline cleaner that has good cleaning properties, but works best when blended with other compounds, especially chelating compounds. It comprises 30–60% of the PBW formulation and its cleaning properties are boosted by the other ingredients.

Sodium percarbonate, the key ingredient found in OxiClean™ Free, acts in three different ways. When added to water it breaks down into sodium carbonate, providing alkalinity that helps with lipid removal, and hydrogen peroxide. Hydrogen peroxide is a chemical oxidizer that removes protein and acts as a bleaching agent; it is also a source of bubbles that help free deposits from the glass surface.

The last ingredient group, chelating compounds, is comprised of EDTA and MGDA. These compounds sequester calcium and magnesium ions found in hard water, maintaining alkalinity by preventing the formation of calcium carbonate and magnesium carbonate during use. They also prevent the deposition of these hard water salts on glass.

What makes PBW a much better choice for glassware washing is safety. Although PBW is a strong alkaline cleaner with a high pH when diluted to usage strength, about pH 11 at 3%, it is much safer than caustic-based cleaners with pH >13 at 3%. However, like other household cleaners intended for use on tougher soils, pH 11 cleaning solutions should be used with gloves.

Moving into the kitchen space, the two obvious choices are dish soaps like Dawn and products specifically intended for glassware cleaning in bar sinks. Referring to Dawn Ultra's SDS, the key ingredients include alkyl sulfates, alcohol ethoxysulfates, amine oxides, and ethanol.

In a nutshell, alkyl sulfates and alcohol ethoxysulfates are anionic surfactants that are great at cleaning, dissolving fatty soils, and dispersing the liberated soils into the cleaning solution. They are also very foamy. One weakness that these anionic surfactants have is they don't work well when pH falls.

Amine oxides, commonly called amphoteric surfactants, have both hydrophobic and hydrophilic parts of the molecule. Like anionic surfactants, they clean, dissolve, disperse, and produce lots of foam, but they are not as effective and are considered boosters. The strength of amphoteric surfactants is their ability to work well over a broad range of pH.

Finally, ethanol is used as a solvent to keep all of the ingredients, including dyes and fragrances not included in the SDS, uniformly distributed in the concentrate. Fragrances are certainly something that can cause issues with beer glasses if not completely rinsed from the glass surface.

One key difference between a cleaner like Dawn and the other cleaners discussed so far is safety. Designed for use in the kitchen sink, household dishwashing solutions do not require hand or eye protection. Dawn's formulation is sounding pretty good!

But there is a hitch; detergents like Dawn do not contain chelating compounds or rinsing aids often used in conjunction with very foamy cleaners to help remove the foam. These are the reasons that household detergents are not the ideal glass cleaner. The absence of surfactants allows calcium and magnesium water spots to form when glasses are air dried and the lack of a rinsing aid, the sort of thing that dishwasher drying agents contain, means that some of the detergent and soils from the cleaning liquid can be left behind. These residues can make glasses appear milky and damage beer.

In practice, thorough rinsing can make up for what detergents like Dawn lack. You can also use a dilute acid solution of something like citric acid or white vinegar as a rinse aid. But that's another step and most people washing beer glasses are not going to turn glassware cleaning into a 3-step process of pre-rinsing, cleaning/rinsing, and final rinsing.

The last tool to consider is a detergent designed for use in bar sinks. Because most municipal and state health codes require a final sanitize step, bars typically use 3-sink systems behind bars for manual cleaning. The first sink is a dump sink, the second sink contains the pre-rinse/cleaning solution, and the third sink contains a sanitizer — thankfully this model is not needed at home.

Bar sinks can be hostile on everything that passes through them because of the range of soils found on dirty glassware, including fats from cream-containing drinks, greasy bar foods, and lipstick, and the number of glasses cleaned before a fresh sink of cleaner is prepared. The third sink is the real problem for beer lovers. It rinses detergent and soil from glasses carried from the second sink and contains a sanitizer that can handle the organic load. The most common options are quat-based products or chlorine bleach. Both sanitize effectively, but quats kill foam, and chlorine bleach often leaves glasses smelling like a swimming pool. And neither help rinse the stuff carried into the sanitizer bath from the dreaded sink #2!

There are hundreds of detergents sold into bars and restaurants, so I picked one at random with a cool name: Beer Clean Low Suds Glass Cleaner. When used in a 3-sink system, this one detergent is expected to hold up to dirty glasses plunged repeatedly into the sink while cleaning brushes scrub glass surfaces. According to its SDS, the ingredients required to be disclosed are sodium citrate, sodium sesquicarbonate, sodium hydroxide, and amines, c12-14-tert-alkyl, ethoxylated propoxylate. Let's decode.

Sodium citrate acts as a chelating agent and buffers the pH in the 7–9 range. Sodium sesquicarbonate is also a chelating agent and is a mild alkaline cleaner that is like the sodium carbonate found in PBW but not quite as strong. The mouthful listed as amines, c12-14-tert-alkyl, ethoxylated propoxylate are nonionic surfactants that help disperse soils and aid in rinsing. And finally, sodium hydroxide is present in

small amounts and is the main source of alkalinity. As it turns out, this cleaner I randomly selected and decided to cover last has some very useful properties that explain how it lives up to the challenges of a second bar sink.

So what are the takeaways? Here is my summary:

1. Commercial products, whether intended for use in the home kitchen, homebrewery, bar sink, or commercial brewery, lack detailed ingredient labels. However, Safety Data Sheets (SDS) are required and are easily accessible through a simple Google search. There is much to be learned by studying a product's SDS.
2. The best cleaners contain alkaline cleaners and boosters, chelating agents, surfactants, and rinsing aids.
3. Some cleaners require PPE (personal protective equipment) to safely use and others do not. Beer glass cleaning is something where PPE should not be required.
4. All the info in this answer can also be used to evaluate these cleaners for other uses in the homebrewery.

Q I PRESSURE-FERMENT, THEN PRIME AND BOTTLE MY BEERS. SOME REQUIRE COLD CRASHING AS WELL. I'VE READ ARTICLES RELATED TO COLD CRASHING BUT HAVEN'T SEEN ANYTHING ABOUT THE EFFECTS OF PRESSURE FERMENTATION ON DISSOLVED CARBON DIOXIDE.

HOW LONG DOES IT TAKE FOR "STILL" UNDISTURBED BEER TO EQUILIBRATE CO_2, FOR EXAMPLE FROM 10 PSI TO AMBIENT AT ~70 ºF (21 °C)? CAN I SIMPLY IGNORE THE INCREASED SOLUBILITY OF CO_2 WHEN HALF-CRASHING, FOR EXAMPLE AT 55 ºF (13 °C) FOR 2–3 DAYS?

TOM BROWN
VIA EMAIL

A Tom, these are great questions! I'll start with the second because it has a clear answer. No, ignoring the carbon dioxide absorbed during a brief rest at cooler temperatures is not a good idea if you want to control carbonation in bottle-conditioned beers. There is, however, a useful workaround that I'll cover after addressing your first — and much deeper — question about the effect of time.

Determining how much carbon dioxide is absorbed by beer after 2–3 days at 55 °F (13 °C) depends on several factors and is described mathematically by the rate of gas diffusion. The equation that follows describes how quickly a gas dissolves into a liquid over time:

$$V \, dC/dt = kL \, A \, (C^* - C)$$

This relationship is a dynamic mass balance, meaning the rate of change in dissolved gas concentration depends on how far the system is from equilibrium and how effectively mass transfer occurs.

In this equation, V is the beer volume; C is the dissolved gas concentration at a given moment; C* is the equilibrium (saturation) concentration — a function of temperature and pressure; kL is the liquid-side mass transfer coefficient; A is the gas–liquid interfacial area; and dC/dt is the rate of concentration change. The driving force is (C* – C), which is initially large and diminishes as the beer approaches equilibrium carbonation.

When you cool your beer to 50 °F (10 °C) for some

FERMENTING UNDER PRESSURE

When beer is fermented under atmospheric pressure, the pressure at the bottom of the fermenter is strictly a function of liquid (hydrostatic) head — the distance between the bottom of the fermenter and the liquid level at the top. One atmosphere of pressure is equal to about 407 inches, or 33.9 feet, of water column. This value varies with liquid density; for example, 388 inches (32.3 feet) of wort with a specific gravity of 1.048 is equivalent to 407 inches of water with a specific gravity of 1.000.

As beer fermenters became taller to allow breweries to expand vertically, brewers began noticing differences in fermentation, yeast health, and beer aroma as a function of liquid head. Fermentation speed, gas evolution (fermenter foaming), and mixing tend to increase with fermenter height because carbon dioxide bubbles expand as they rise from the bottom of tall vessels, creating turbulent — sometimes violent — mixing. Increased hydrostatic head may also have a progressively negative effect on yeast health, as higher carbon dioxide solubility places stress on yeast cells. This stress often becomes apparent in subsequent fermentations. In addition, beer from tall fermenters tends to have a less pronounced ester profile.

Over time, as vertical fermenters grew taller — and often narrower to minimize on-site tank fabrication — brewers empirically discovered there is a practical limit to liquid head. While no single value applies universally, many brewers established a maximum hydrostatic head suitable for their operations. For many, that limit was around 32 feet, or roughly one atmosphere of liquid head, based on 12 °Plato wort. Although beer aroma plays a role in setting this limit, yeast health is the primary driver.

In 2006, I worked for a stainless-steel company that received an order from Sierra Nevada Brewing Co. to build a 10-barrel pilot brewhouse along with its accompanying cellar vessels. Because most of their production fermenters were 100- and 200-barrels, the pilot fermenters were built at 20 and 40 barrels. I was told that when they first began brewing their flagship Pale Ale, they increased the top pressure on the pilot fermenters to better match the hydrostatic head of their much taller production vessels. This adjustment made the pilot fermentations more similar to their production fermentations. For me, this was the moment when tank top pressure became part of my mental brewing toolbox.

period, it absorbs carbon dioxide at a rate governed by this framework. Changing pressure raises C^*, meaning more or less CO_2 can ultimately dissolve, while lowering/increasing temperature increases/decreases C^*.

However, the rate of carbonation depends on kL A. In a still keg/pressurized fermenter, mass transfer is slow because the interfacial area is limited and boundary layers remain intact. Agitating or rocking the keg or fermenter, even minimally, increases both effective surface area and mixing, which increases kL and accelerates carbonation. Bubbling gas through a stone dramatically increases interfacial area compared to occasional rocking and has a much larger effect on the carbonation rate.

The value of kL depends on the beer itself and varies with specific gravity, the presence of other gases like nitrogen, pH, and alcohol concentration. In other words, kL is not something you can simply look up in a table. When gas diffusion rates are calculated, kL is determined experimentally, and its combined effect with interfacial area is expressed as kLA.

This is why it is difficult to know how much CO_2 is dissolved after storing a keg/pressurized fermenter for a few days at 10 PSIG and 55 °F (12 °C). While the equilibrium level is defined by those conditions, the path to equilibrium is not. The actual dissolved CO_2 depends on the system's mass transfer history — whether the keg or fermenter was moved, how much headspace it has, and how diffusion occurred. Without knowing kL A, you cannot reliably determine how close the system is to equilibrium.

In practical terms, if you pressure-ferment at 10 PSIG, cool your beer to 50 °F (10 °C) while maintaining that pressure, and hold it for some period, the carbonation level will increase to an unknown value. This makes consistent bottle conditioning nearly impossible. Fortunately, there is a straightforward alternative if you approach it step by step. All you need to know is your fermentation temperature and the head pressure maintained during fermentation.

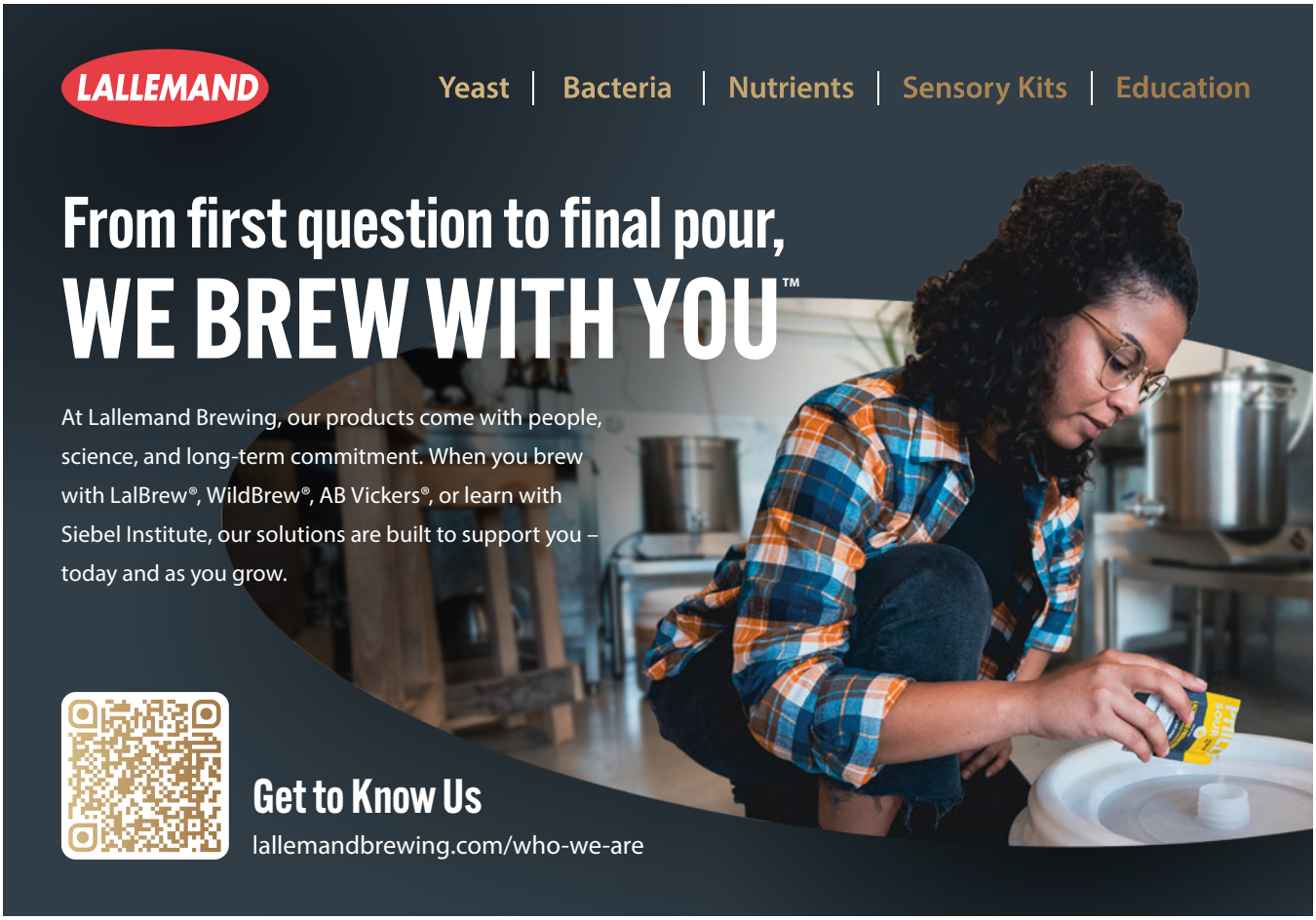
Step 1: Determine your current carbonation level using a gas table, such as this one from Zahm & Nagel. Because you fermented at a fixed pressure and temperature, it's reasonable to assume the beer is saturated under those conditions. For example, beer at 10 PSIG and 70 °F (21 °C) contains less than 1.54 volumes of CO_2. Since the Zahm & Nagel table doesn't go lower, we'll use 1.54 volumes as an estimate.

Step 2: Determine the pressure at 55 °F (12 °C) that corresponds to 1.54 vol. From the gas chart, this is about 7 PSIG.

Step 3: Disconnect your gas supply to your keg/pressurized fermenter, cool the beer to 55 °F (12 °C) and maintain the pressure at 7 PSIG. Because this matches the equilibrium condition for the existing dissolved CO_2, the carbonation level will remain unchanged. The main reason for connecting gas to the keg/fermenter is to make sure there is no loss of gas due to a minor leak. Not always required.

Step 4: Calculate the priming sugar based on your beer volume and 1.54 vol. of CO_2, then prime and bottle as usual.

Hopefully, this combination of background, theory, and practical guidance helps answer your beast of a question.



BY GORDON STRONG

INTERNATIONAL DARK LAGER

A broad collection of dark industrial lagers

The combination of attenuation, malt flavors, and bitterness level should result in a beer that doesn't seem overly sweet.

INTERNATIONAL DARK LAGER
BY THE NUMBERS

OG:	1.044–1.056
FG:	1.008–1.012
SRM:	14–30
IBU:	8–20
ABV:	4.2–6%



Photo courtesy of Shutterstock.com

International dark lager is a family of related minor beer styles that share similar sensory characteristics and history. It was formally defined within the Beer Judge Certification Program (BJCP) Style Guidelines in the 2015 edition, when the International Lager category was added to describe the variety of mass-market industrial lagers produced around the world. In the prior 2008 edition of the guidelines, these types of beers were best described by the Dark American Lager style, but that version tended to exclude the more premium or international versions, or somehow imply that international products were derived from American examples.

The 2015 International Lager category was intended to capture the common everyday lagers made by major multi-national brewers, while also allowing for some of the slightly more premium examples. Before 2000, the Dark American Lager was often epitomized by the Michelob Classic Dark example, if for no other reason than it was widely available and was frequently cited by Dr. George Fix as having a predictable 17 SRM color reference.

At the time, the beer was best described as an American adjunct lager that often was colored dark with a commercial colorant that added little flavor. Large market European examples often followed a similar pattern, with a dark lager being a variant of their pale lager. However, other countries had dark lagers that involved different recipes. The Brewers Association style guidelines recognizes four subcategories in their International Dark Lager category (American, European, Czech, and Mexican). The BJCP groups the Czech lager differently, but the others are part of the single style.

I judged a first-round flight of these beers at the 2025 Great American Beer Festival, so I have some observations about how this style presents in competition and what some of the most common errors were. I think these comments will also be helpful for homebrewers trying to enter their beers in competition, or to at least troubleshoot basic issues.

International Dark Lager is style 2C in the 2021 BJCP Style Guidelines, along with International Pale Lager and International Amber Lager. Together, these form the International Lager category and describe the basic color-driven range of many modern lager portfolios of large commercial breweries.

SENSORY PROFILE

International dark lagers are first identified by their color; they don't have to be strictly dark, but the range starts at a deep amber and goes up to a very dark brown, not black. Basically, something darker than an amber lager but not as dark as a stout. The head is usually beige to a light tan in color, but may not persist. Clarity is bright, as with most lagers, if not opaque in normal light.

The lager character is the next aspect of the beer to consider. A clean fermentation profile is typical, along with good attenuation. Clean doesn't have to mean neutral, however; a good lager often can have background fermentation esters and a whiff of fresh sulfur indicating freshness. The lager character should give it a smooth palate without rough flavors, and allow the malt flavors to come through cleanly. The bitterness level likewise does not interfere with the malt impression; the perceived bitterness can be low to medium. The combina-

tion of attenuation, malt flavors, and bitterness level should result in a beer that doesn't seem overly sweet.

The malt that gives the beer color also gives the beer flavor and aroma, and this character is probably the one aspect most open to brewer interpretation. There are a wide range of malts that can give dark colors, but it's typical to find caramel and toasty flavors in these beers. Roasty flavors are usually restrained and should not be strong or have a burnt character. Flavors of chocolate, coffee, brown sugar, or molasses may be found as supporting flavors.

The hop flavor and aroma is fairly low and should be unobtrusive, if present at all. An aggressive hop character is out of place in this style. The hop bitterness is enough to make the beer not seem overly sweet, but the balance should remain malty. The finish should be soft but dry with a malty aftertaste.

This style is an average strength beer, around 5% ABV, but can range a little higher. In stronger versions, the other flavors can be stronger as well, but a noticeable alcohol character is out of place. The overall impression of the style is that of a smooth lager with a light but interesting chocolate and caramel flavor, restrained bitterness, and a clean finish. It's an everyday drinking kind of beer that goes well as an accompaniment to most foods.

When I judged these beers at the GABF, I found some common errors that hurt several entries. Some had brewing or handling faults that would be problematic in almost any style. Fermentation issues that cause off-flavors, infections, sourness, acetaldehyde, diacetyl, and high fruitiness are all problems. Oxidation or staleness are common handling problems, as lagers like this taste best when fresh.

Beyond those issues, the remaining problems had to do with ingredient selection and balance. A common problem was beers that were too hoppy or bitter, or beers that had too much roasted or burnt flavor. On the other side, some beers were too sweet or heavy in the finish. The best examples had a soft finish with a malty aftertaste, and the correct malt flavors

INTERNATIONAL DARK LAGER



(5 gallons/19 L, all-grain)
OG = 1.050 FG = 1.012
IBU = 14 SRM = 22 ABV = 4.9%

INGREDIENTS

5.5 lbs. (2.5 kg) North American 2-row pale malt
2 lbs. (0.9 kg) Belgian Pilsner malt
1 lb. (0.45 kg) flaked corn
1 lb. (0.45 kg) flaked rice
10 oz. (283 g) Weyermann Carafa® Special II malt
6 oz. (170 g) Dingemans Cara 45 malt
4.4 AAU Vanguard hops (60 min.) (0.8 oz./23 g at 5% alpha acids)
White Labs WLP833 (German Bock Lager), Wyeast 2487 (Hella Bock), or SafLager W-34/70 yeast
¾ cup corn sugar (for priming)

STEP BY STEP

This recipe uses reverse osmosis (RO) water. Adjust all brewing water to a pH of 5.5 using phosphoric acid. Add 1 tsp. of calcium chloride to the mash.

This recipe uses a single-infusion mash. Use enough water to have a moderately thick mash (1.5 qts./lb.). Mash in the 2-row and Pilsner malts as well as the flaked corn and rice at 149 °F (65 °C) and rest for 60 minutes. Begin recirculating, add the Cara 45 and Carafa® Special malts, raise the mash temperature to 169 °F (76 °C), and recirculate for 15 minutes.

Sparge slowly and collect 6.5 gallons (24.5 L) of wort.

Boil the wort for 90 minutes, adding hops with 60 minutes remaining in the boil.

Chill the wort to 50 °F (10 °C), pitch the yeast, and ferment until complete. Rack to secondary and lager for two months at 34 °F (1 °C).

Rack the beer, prime and bottle condition, or keg and force carbonate as usual.

INTERNATIONAL DARK LAGER



(5 gallons/19 L, extract with grains)
OG = 1.050 FG = 1.012
IBU = 14 SRM = 22 ABV = 4.9%

INGREDIENTS

4.9 lbs. (2.2 kg) light liquid malt extract
1.1 lbs. (0.5 kg) rice syrup solids
10 oz. (283 g) Weyermann Carafa® Special II malt
6 oz. (170 g) Dingemans Cara 45 malt
4.4 AAU Vanguard hops (60 min.) (0.8 oz./23 g at 5% alpha acids)
White Labs WLP833 (German Bock Lager), Wyeast 2487 (Hella Bock), or SafLager W-34/70 yeast
¾ cup corn sugar (for priming)

STEP BY STEP

Use 6.5 gallons (24.5 L) of water in the brew kettle; heat to 158 °F (70 °C). Turn off the heat. Add the Cara 45 and Carafa® Special malts in a mesh bag and steep for 30 minutes. Remove and allow to drip back into the kettle.

Add the malt extract and rice syrup solids and stir thoroughly to dissolve completely. Turn the heat back on and bring to a boil.

Boil the wort for 60 minutes, adding hops at the start of the boil.

Chill the wort to 50 °F (10 °C), pitch the yeast, and ferment until complete. Rack to secondary and lager for two months at 34 °F (1 °C).

Rack the beer, prime and bottle condition, or keg and force carbonate as usual.

in a pleasant proportion. Finally, the beers had to present as fresh and smooth lagers, so not having rough flavors or showing an abbreviated lagering period.

BREWING INGREDIENTS AND METHODS

While the origins of the style hint at making a standard American lager and then coloring it with caramel, I think that homebrewers can design a standalone recipe that isn't simply a variation created at packaging. This is what craft brewers do anyway, so I think the industrial brewing approaches are better left for the big boys. Craft brewers (and homebrewers) have some latitude in making choices and in interpreting the style, so let's walk through these decisions.

As an international lager, the base malts shouldn't have a strong flavor profile. I would steer away from using all German malts (such as Pilsner, Vienna, or Munich malts) that would make it taste too much like a Munich dunkel or schwarzbier. American two-row or six-row can be used, although my preference is for the less grainy two-row. If you do use European malts, consider diluting the flavor with American two-row or other equally neutral malts as part of the grist. I like blending base malts anyway, so that's what I often do.

The style can be made as an all-malt beer, or it can use starchy adjuncts like corn and rice, or even dark brewing sugars. If I was using more strongly flavored German malts, I might use those adjuncts to cut the flavor. Similarly, I would also think about using them if using the higher-protein six-row malt. The form of corn and rice would drive how the mash schedule would work; using flaked grains would simplify the mashing and allow a single infusion mash schedule.

The specialty malts will add the color and flavor to the beer. Most typically, this will include some kind of crystal or toasty malt along with something darker giving deeper flavors that usually include chocolate. Be careful about using too much dark malt or those with a higher degree of roast, or you'll pick up a roasted or burnt flavor that is unwanted in this style. I prefer to use huskless dark malts for color adjustment to reduce the possibility of unintentional flavor pickup.

The beer is fairly well-attenuated, so the mash schedule should be targeted towards dryness. A step mash or a single-infusion mash with a conversion temperature at the lower end of the range (say, 149–151 °F or 65–66 °C) would work. Nothing complicated is required for this style. I would avoid higher mash temperatures as I don't expect a big body or too much sweetness from this style.

Hopping is straightforward with a single bitterness charge keeping the balance somewhat malty. A light flavor or aroma hop addition is optional at the brewer's discretion. I would stick to noble-type hops to blend well with the malt and to not be overly intrusive. American hops that mimic noble characteristics work well and are often fresher in homebrew shops. I would avoid citrusy, piney, dank, tropical, or other aggressive hop profiles as the style doesn't feature those characteristics.

There is no distinctive water characteristic in the finished beer style, so something that is light on minerals is best. Again, no need to complicate things. If you need to add calcium for the mash chemistry, my preference is the more neutral-tasting calcium chloride that also favors a more rounded, malty finish.

Since this style is a lager, we obviously need to select a lager yeast. The style has a clean fermentation profile and a malty balance, so yeast strains that favor those finished characteristics are best. I like the clean to malty German lager strains, such as the clean W-34/70 strain that is available in many forms from several producers, or the malty-finishing German bock lager strain. American lager strains could certainly be used as well. Nothing special needs to be done with the fermentation; I like to use traditional German production techniques with fermentation temperatures around 50 °F (10 °C) followed by a lagering period near freezing.

HOMEBREW EXAMPLE

My version is like a premium American dark lager that uses adjuncts. The base malt is a North American two-row malt with the addition of some European Pilsner malt to add a little more character. I'm using both corn and rice in flaked format for easier mashing. The adjuncts represent almost 20% of the grist. The dark color and flavors come from the addition of European caramel malt and a huskless dark malt that is similar to a chocolate malt. The color should come in firmly in the brown range.

I've selected a single-infusion mash for this beer at the lower end of the typical temperature range to encourage attenuation. There will be a bit of residual sweetness from the caramel malt, but the balance leans towards the malty side as the bitterness level is around 14 IBUs. A single bitterness addition of a hop with noble characteristics will be unobtrusive.

The fermentation schedule is fairly traditional, and my yeast choice is the maltier tasting German bock lager yeast. If this yeast isn't available, the W-34/70 strain is a good substitute. I prefer to lager until the palate is smooth and the beer has dropped clear, and then will package it.

This version will hit the upper end of the style in flavor, but is otherwise middle of the road in other respects. In my part of the U.S. Midwest, dark lagers are cool-weather beers, but I would still drink one in the summer after cutting the grass. However, my first preference is to drink them while watching football games, as it is fairly food-friendly. BYO

Related Link:

- *The 2015 Beer Judge Certification Program Style Guidelines added the International Lager category, made up of International Dark Lager, International Amber Lager, and International Pale Lager. The color isn't the only difference in these styles, though they do have commonalities. Gordon has previously written about the amber version in a "Style Profile" column that you can find at:* **www.byo.com/articles/style-profile-9**

Saniclean PAA Pro

FIVE STAR

A Powerful Acid Rinse & Sanitizer in One

NEW PRODUCT



THE NEWEST ADDITION TO THE FIVE STAR FAMILY

This EPA-registered formula delivers powerful PAA-based sanitization — engineered to keep your brewery clean, compliant, and efficient.

Order yours today support@fivestarchemicals.com or ask your local distributor

the best of Brew Your Own

Complete your brewing library with these BYO Special Issues.

ALL available for immediate digital download!



ORDER AT Byo.com/shop

Get the wireless range you need with

TILTPRO MINI



Built for stainless conicals and kegs.

Upgrade today

tilthydrometer.com



BEER EDUCATION

Looking to advance your brewing knowledge? Check out the beer education programs on the following pages to start your journey down the path to a higher education in beer brewing or the business of beer.



BYO NANO CON ONLINE

OCTOBER 23, 2026

SMALL-SCALE CRAFT BREWING

- Full-Day of Live, Online Seminars and Q&A Panels
- Access to Video Recordings and Course Materials of All Sessions
- 3 Learning Tracks: Business & Sales, Brewing Operations, Start-Ups
- Get Your Questions Answered Live by Craft Beer Experts
- Interact with Other Small-Scale Craft Brewers & Breweries-In-Planning
- Q&A Sessions with Leading Small-Scale Brewing Suppliers

REGISTER NOW & SAVE!

NanoCon.beer

Brought to you by BrewYourOwn

AUBURN
HUMAN SCIENCES

Brewing Science and Operations

Brew your way through school. Auburn University's new M.S. in brewing science and operations will help you master the art and science of brewing.

This unique program:

- Combines up-to-the-minute theory with industry practice
- Is offered fully online
- Is delivered by renowned and fully credentialed faculty
- Results in excellent industry relations and placement of graduates
- Partners with New Realm Brewing Company to provides behind-the-scenes industry access
- Is covered and approved by federal VA benefits

brewing.auburn.edu
brewing@auburn.edu

When I graduated Auburn University's brewing science and operations program in 2018, I was excited to have gained the tools to fine-tune the quality of our product and aid in the launch of our expansion.

In 2020, I realized the program also provided me with the knowledge necessary to enhance the survivability of our small business during a global pandemic.

Kate Russell — Graduate Certificate '18, Master of Science '23
Hopkinsville Brewing Company, Founder and Brewer

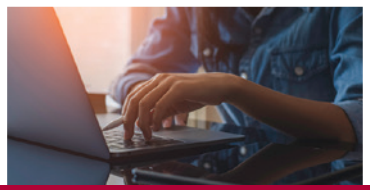




Photo courtesy of UC-Davis








Great Beer Starts in Washington!

What Makes Our **Brewing Certificate Program** Unique?

- Courses are **Online** and **on your own time!**
- Engage in **practical experiences** over three weekends.
- Network and learn from **industry experts**.

Get Started Today!

WASHINGTON STATE UNIVERSITY
Viticulture and Enology

An Emerging PARAGUAYAN Style

The beer that emulates the national beverage, tereré

by Franco Michele Chiola Annicchiarico

Let's explore Paraguay, a country in South America where a new trend is on tap in the world of craft beer, the aptly named "Paraguayan ale," or sometimes simply "Paraguayan beer" as there are also lager versions. It's exciting, fun, and bringing a lot of breweries together as they try to establish a style representative of our beautiful country.

I am the Head Brewer of a microbrewery called Cerveceria Singular (a Spanish word that denotes peculiarity, but loses meaning when translated to English) located in the city of Asunción, capital of Paraguay. Although Singular primarily brews farmhouse ales, we also make this new Paraguayan ale style. As a passionate brewer committed to spreading beer culture, as well as a member of our nation's craft and homebrewer association (ACERVA PY), I believe this new style is worth sharing with brewers around the world. And as homebrewers, I believe readers of *Brew Your Own* may be excited to learn about a potentially new-to-them beer style with a flavor combination worth exploring.

To put this style in context, tereré is the national beverage of the Republic of Paraguay, and a tangible piece of cultural heritage recognized internationally by UNESCO. Tereré consists of an infusion of cold water (different from mate, which is hot and is also consumed in various South American countries) with yerba mate and various local herbs and flavorings including lemongrass, orange peel, and many others. Most of the herbs and flavorings have medicinal use, principally by the indigenous tribes.

Tereré is a stamp of the Paraguayan identity, but what does that have to do with beer? Recently, commercial brewers and homebrewers in Paraguay have been making some delicious beers with the same ingredients, adding these local herbs in the mash or during fermentation.

Can a country create a new style of beer? Well, that would be a long and divisive debate, which will not be the focus of this article, but that indubitably, for the foreigner visiting Paraguay, will call attention to the quantity of taps listed as "Paraguayan ale" or "Paraguayan lager" in various bars.

A LITTLE BIT OF HISTORY

As a newer style, it is not too difficult to trace where the first Paraguayan ale was born.

The originators of this beer were the Stanley brothers of Cerveceria Herken, and the day they first brewed this experimental



Photos courtesy of Franco Michele Chiola Annicchiarico

beer happened to be on a day when I was visiting the brewery. Augusto, one of the four brothers and brewers of Herken, told us that they started homebrewing in 2014 before formally starting the business. "We would buy a kit of an American pale ale with hops from over there (the U.S.) of course, or a Czech lager with Bohemian malts and Czech Saaz hops, and we asked ourselves, what if we make a beer with Paraguayan ingredients? We try to use local ingredients not just to keep costs down but also to have our own identity."

They tried many ingredients, from local orange peel to a large variety of herbs and local varieties of wood. Finally, they opted to make a blonde ale base with local herbs to maximize the freshness, using cassava (*Manihot esculenta*) flour, a classic and almost unavoidable element of Paraguayan cuisine, as one of the pillars of the grain bill, in addition to an herb mix added in the whirlpool.

Initially, Herken bottled their Paraguayan ale and added a sprig of lemongrass inside. The refreshing flavor of lemongrass was something that Paraguayans were already accustomed to as it is almost always added to infusions of tereré.

Augusto stated that at the beginning, customers were very surprised to find lemongrass leaves when pouring the bottle into a glass. The beer was the front-page story in two newspapers during that time, with one headline reading, "New Beer Made From a Base of Cassava With Lemongrass Leaves."

With respect to the use of cassava, Cerveceria Herken worked with chemistry students at the National University of Asunción to optimize the use of that ingredient and to see the power of extraction/fermentability of cassava flour. "The values were approximate to a malt base like Pilsen malt," says Augusto.

Augusto didn't patent or register anything related to the new beer because, he says, he wanted to incentivize the use of local ingredients among other brewers. "It was only a matter of time before someone in Paraguay did it and we were lucky to be the first," he says with a smile.

Worth mentioning, as tereré was a large influence on this beer style, is that yerba mate was included in many early examples. However, its flavor in beer is similar to making a toasted herbal syrup, which isn't at all pleasant and Paraguayan ale examples rarely include it today.



The Paraguayan ale originated at Herken Brewery, run by the four Stanley brothers. From left to right: Roberto, Augusto, and Eduardo (the fourth brother, Ernesto, is not pictured).

GAINING STEAM AMONG OTHER BREWERS

We have several well-known Paraguayan ales now regularly available including options from Herken, Churro Campaña from Sacramento Brewing Co., Paraguayan Ale from The Hop, ParaguayIPA from Beerkingos (which is a hoppier version of the style).

Other popular versions include Churro Pantano at Sacramento Brewing Co., and a collaboration brew between Cerveceria Singular (where I am the Head Brewer) and Cerveceria Pinoza with the beer called Ida Y Vuelta (a clone recipe for this beer is on page 28). This recipe was formulated together and both breweries begin with the same wort but ferment it in their respective brewery with their own house yeast strains. "Ida" means "to go" and "vuelta" means "to return." The taps at both breweries are labeled Ida Y Vuelta, but generally at Singular it is ordered as Ida while at Pinoza it goes by Vuelta.

At Simon Dice Brewery, Francisco Montanaro, Head Brewer and Administrator, and President of our brewers association ACERVA PY, commented

> “It’s everything that a Paraguayan could want and is accustomed to in its sensory profile.”
> – Francisco Montanaro, Simon Dice Brewery Head Brewer

that when he was first getting started in the world of craft beer he found the Paraguayan beer from Herken, “and immediately I wanted to make my own version.”

In addition to brewing one at Simon Dice, Francisco previously worked in other breweries where he also produced this style in their production lines. Differently from Herken, which produces an ale, Simon Dice’s Paraguayan beer is a light lager with a small amount of hops, where in place of adjuncts such as corn or rice they use cassava starch and treat the herbs as if they were dry hopping, bringing a peculiar freshness to the beer.

“It’s everything that a Paraguayan could want and is accustomed to in its sensory profile,” said Francisco with laughter.

When the style started spreading among brewers, Francisco said all the brewers in Paraguay wanted to add the Paraguayan beer style as an addendum to the provisional styles in the Beer Judge Certification Program’s Style Guidelines. With time, he and other brewers realized that should not be the focus, but instead attention should be turned to create a greater awareness of this type of beer so it can reach more consumers. As an association, myself and other brewers decided to add Paraguayan beer as a style in the competitions that we hold annually, to provide better visibility for all of the participants. From various meetings, style guidelines for Paraguayan beer entered in competitions were established by ACERVA PY members — guidelines that are followed to this day.

The guidelines offer a lot of flexibility, but there are some particular characteristics that should be adhered to, summed up here:

- It may be an ale or a lager.
- It is blonde in color and light.
- Includes cassava as an ingredient.
- Includes other local herbs of Paraguay.

A SINGULAR (UNIQUE) RECIPE

If you’re starting to think this beer style may be difficult to replicate outside of Paraguay with limited access to many of these herbs, don’t worry as there is plenty of flexibility here and substitutions can be made. We get it, and are used to the degree of difficulty in brewing beer styles from the other side of the world. It is a headache when we want to brew an Australian sparkling ale in Paraguay with Cluster or Pride of Ringwood hops, or to make a Czech lager with Bohemian malt and the classic Czech Saaz hops, just to cite a couple of examples we do make but have to sometimes compromise on available ingredients. If the herbs that Paraguayan brewers use, like menta’i (*Mentha piperita*), Paraguayan lemongrass, and other varieties, lemongrass with a touch of mint will be close enough to emulate the beer.

In most parts of the world you can buy cassava (or yuca, another name for it) flour or tapioca starch (tapioca



The common thread tying the so-called Paraguayan beer style together is the use of cassava flour in the grain bill and a combination of tereré-inspired herbs for flavoring. Some versions are fermented with ale yeast, while others, including Simon Dice Pohã Lager, are lagers.

starch is a starch extracted from the cassava root, whereas cassava flour is made from the entire root after it is dried and ground to a powder). It may cost you more than we are accustomed to, but if you can find it, you have everything necessary to start brewing a Paraguayan-style beer. Just add a small amount of rice hulls to avoid a stuck sparge because the flours outside of Paraguay are often very fine, which can cause problems. But with care, these can fulfill their use. Cassava flour will contribute up to 20% of the grain bill.

A classic Paraguayan beer should be light, refreshing to drink, and dry thanks to the cassava flour, giving a thin body and a neutral note that is difficult to explain. The yeast should offer a clean fermentation and harmonize with the freshness of the herbs. The hop character generally is low so as to not compete with the other ingredients. Noble hops are an ideal choice, as are American Cascade, Centennial, or even Amarillo® to complement the flavor, but keep their use restricted to the whirlpool — you aren't looking to turn this into an overly hoppy beer.

As far as malts are concerned, the variety and proportion should usually be simple. A great place to start is with the base of an American blonde ale, but replace the Pilsen malt with cassava flour (15–20%), ignore the caramel malts and instead use something like Munich or Vienna malt (about 10%), or a small amount of Victory® (3–5%) to balance things out. There are versions here in Paraguay that employ that grain bill.

In the brewery where I work, we usually use something similar to the above grain bill. Some of the very rich malted notes, with the light toastiness of cookie, can compete with the herbs. Another option is to think about making an American light lager, Kölsch, or English golden ale with light bitterness.

The recipe from Cerveceria Singular and Cerveceria Pinoza offers more information about ingredient selection and how we brew this beer, though there is a lot of room for interpretation in this style.

PARAGUAYAN ALE RECIPE

CERVECERIA SINGULAR & CERVECERIA PINOZA'S IDA Y VUELTA CLONE

(5 gallons/19 L, all-grain)
OG = 1.044 FG = 1.008
IBU = 20 SRM = 3 ABV = 4.8%



This is Cerveceria Singular's most award-winning beer, winning many gold medals at regional competitions in the categories of "Paraguayan Beer" and "Spiced & Herb." The recipe was created in collaboration with Cerveceria Pinoza and both brew the recipe using their own house yeast. "Ida" means "to go" and "vuelta" means "to return." The taps at both breweries are labeled Ida Y Vuelta, but generally at Singular it is ordered as Ida while at Pinoza it goes by Vuelta.

INGREDIENTS

7.2 lbs. (3.3 kg) Pilsner malt
7 oz. (200 g) wheat malt
1.4 lbs. (0.6 kg) cassava flour
4 AAU Centennial or Amarillo® hops (60 min.)
(0.4 oz./11 g at 10% alpha acids)
0.6 oz. (17 g) Centennial or Amarillo® hops (5 min.)
0.3 oz. (9 g) orange peel
0.3 oz. (9 g) lemongrass
SafAle US-05, White Labs WLP001 (California Ale), or Wyeast 1056 (American Ale)
¾ cup corn sugar (if priming)

STEP BY STEP

Mash all of the grains at 149–151 °F (65–66 °C) for 60 minutes. Mash out at 168 °F (76 °C), sparge grains with enough water to collect 6.5 gallons (24.5 L) in the kettle. Boil for 75–90 minutes to avoid potential off-flavors from the Pilsner malt, like Dimethyl Sulfide (DMS).

Obtain a bitterness of 15–17 IBUs in the first hop addition at 60 minutes remaining in the boil, and the final hop addition should contribute the other 3-5 remaining IBUs late in the boil. Depending on the variety of hops used, this will usually be half a gram or one gram per liter (0.67 oz. in 5 gallons) added with 5 or 10 minutes remaining in the boil.

I usually use Centennial or Amarillo® hops depending on availability, but a noble hop variety like Saaz will also work. Remember that the flavor protagonists are the herbs.

After turning off the flame, add the orange peel and lemongrass and stir to create a whirlpool. Allow to sit for 20 minutes and then cool and transfer to the fermenter.

We usually use SafAle US-05 yeast, but any flavor-neutral yeast strain will function well.

If you're lacking enough of the herbal and refreshing notes of the lemongrass, create a tincture with just enough vodka to cover the lemongrass. Leave it overnight, no more because it will oxidize, and add with a dropper to your preferred taste when the beer is ready to be packaged. BYO



THE HOW-TO HOMEBREW BEER MAGAZINE

BrewYour Own **Digital Downloads**

Beer Styles



Recipe Collections



Projects



And more!



Immediately access homebrew recipes, projects, and how-to right to your desktop or mobile device for as little as $1.99! 150+ to choose from!

Order Today at...

Byo.com/shop

BYO


DANGER
HOP REVOLUTION
NZ

Timing Hop Harvest

When you pick impacts more than you think

by Eric Sannerud

One of my favorite conversations to have with fellow hop industry folks is about factors that influence hop expression. Every hop person knows that each lot of Cascade is different than the next, and the idea that any variety is a certain way aroma-wise is simply a necessary convenient rule of thumb to protect brewing decisions from infinite decision fatigue.



Photos courtesy of Hop Revolution

What factors make each lot different? The top five factors are: Growing season, growing practices, growing location (terroir), harvest processing practices, and harvest timing. Ranking those factors is the fun of the conversation. Of the five, harvest timing is the most important. Which may be surprising to brewers and homebrewers because, frankly, harvest timing generally isn't on the label, the COA (Certificate of Analysis), or the website. Alpha acids, beta acids, oils, variety name, usually at least the country of origin are easy to find, but not a single hint about harvest timing.

Harvest timing is another way of saying hop maturity. When in a given hop's maturity/pick window was it harvested? Harvest windows are usually grouped into either early-, mid-, or late-pick. Some varieties "hang" better than others, i.e., they have desirable aroma characteristics for a longer period of time and have a longer harvest window.

Harvest timing, the maturity of a hop at harvest, is the most important factor because all throughout the ripening process a hop's chemistry is changing — its potential flavor, aroma, and other impacts in beer are changing. Generally speaking, hops picked earlier in their harvest window will have greener aromas and flavors such as green pepper, fresh-cut grass, or maybe muted, underripe fruits. The longer a hop hangs, the more mature a hop gets. As this happens, aromas and flavors will deepen, green grassy notes fade into ripening fruits through to juicy and even heavy or overripe fruit aromas, or aromas described as "diesel" or "dank." Wait too long, however; and all hops will eventually go bad, at which time the aromas evolve to onion, garlic, and rotten fruits. Chemistry is a play in relation to timing too — as hops mature, alpha acids, oils, and thiol profiles tend to increase.

LEADING THE CHARGE

Awareness of the importance of hop maturity has been growing amongst brewers as hops have risen to prominence. Some hop sellers have been more actively highlighting certain pick windows on particular varieties. Take for example CLS Farm's positioning of early-pick CTZ, or Hop Revolutions' early/mid/late Nelson Sauvins. New Zealand's Hop Revolution describes the sensory analysis of their early-pick Nelson Sauvin as "hints of lemon, cantaloupe, and white wine grape." Compare that to the mid-pick, where "citrus takes a step back to allow tropical flavors and subtle floral aromas to develop," while the late-pick is described as "traditional Nelson Sauvin profile, classic white wine, dank profile."

Perhaps making the most waves, though, is Crosby Hop's Deep Cut Cascade. Blake Crosby, CEO of Crosby Hops in Woodburn, Oregon, described Deep Cut Cascade as; "Still Cascade, but deeper and richer, sometimes woody and spicy, still citrus in there." Deep Cut Cascade emerged out of conversations in the late 2010s with former Sierra Nevada hop expert Tom Nielson, who had trialed some accidentally extremely late-picked Cascade from another farm and noted it never turned to aromas of onion and garlic. That interest was spurred on by a 2017 white paper by a group of researchers from Sapporo that showed measurable chemistry differences across harvest maturity within the same variety.

Fast forward to the 2020s and Crosby's famed Top Wire Hop beer bar opened, surrounded by a field of Cascade hops. Crosby harvested them later than usual to keep the visual appeal around the beer garden as long as possible. The result was a Cascade with a more modern expression than expected.

When I was growing hops commercially, I intentionally manipulated pick windows across varieties, just to see. Cascade was one that showed major differences from mid-pick dates to late. So different that we sold our late-pick Minnesota-grown Cascade



These late-pick Nelson Sauvin from Hop Revolution's farms show some physical signs of age, but the real tell is a changing aroma toward dank/white wine.

> “I intentionally manipulated pick windows across varieties, just to see. Cascade was one that showed major differences from mid-pick dates to late.”

as “Julius.” Our mid-pick Cascade was picked between 22–24% dry matter and smelled more or less like Cascade: Citrus, pine, and a relatively mild intensity. “Julius” Cascade was picked at 26–28% dry matter and carried distinctive notes of creamsicle, orange juice, and vanilla. The gap between these two harvest timings was about two weeks.

Why the difference? Chemistry! Every minute throughout a harvest window a hop’s chemistry profile is changing. From early to late, a hop’s alpha acid level tends to rise to a peak and then fall off a bit, oil levels tend to rise and rise, and thiols tend to concentrate. This is not the case for all hop varieties — genetics are important — but generally, these rules hold true.

Steve Luke, Head Brewer and Founder of Cloudburst Brewing in Seattle, Washington, says “yes, totally” pick windows influence the hops he chooses to use. Even at his level of access, one of the darlings of the hop industry, Steve has ridiculous access compared even to other craft brewers — he has to ask and build direct farmer relationships to get pick timing information. Steve also shared a Cascade pick window story; in 2023 CLS was tracking a recently planted virus-free Cascade yard (the influence of viruses on hop aroma expression is an emerging question). This field continued to hang and hang, not ripening, not going bad and wound up being the final field CLS picked that year. The aroma was nothing like their other Cascades. According to Steve, it was “blood orange, very dark.” Recently, Stan Hieronymus wrote a deep dive into Cascade expression for *Hop Queries* that goes even deeper down this Cascade rabbit hole, available to read online here.

IMPACT FOR HOMEBREWERS

Ok, you’ve read this far — it’s interesting, sure — but how can a homebrewer put this hop harvest timing knowledge to work? Some homebrew hop sellers — I’m thinking particularly an outfit like Yakima Valley Hops or Hops Direct — have great access and hops know-how behind them. Neither distinguish between lots or harvest windows on their e-commerce sites, but they certainly know what lots they have of each variety, and the respective lot’s pick window. Reaching out and starting a relationship with suppliers like this might improve your access to specific lots of a variety.

Outside of that though, the best way to experience hop harvest timing differences, and control to get the expressions you want, is to grow your own hops.

How to grow your own hops is another article entirely, though BYO has covered the topic extensively in the past. In relation to this topic on harvest timing, let’s assume you’ve got hops growing. How do you go about measuring readiness?

I recommend you both touch, feel, and smell for ripeness characteristics, and employ a more objective dry matter measurement. Depending on the variety, season, and disease pressure, a cone might also change colors — many hops will eventually turn brown as they continue to hang. Most hops, most years, are “ripe” between 22–28% dry matter by weight, with 22% being the earlier side of maturity and 28% being the later side. Measuring dry matter content in a hop cone is extremely simple. Here’s the process I used for years when operating my hop farm:

Collect a sample of roughly 10 grams, taken from different plants at different heights on the plant. Document the original weight of the sample. Make sure you have a scale that can measure in 0.1-gram increments. Then treat the sample with high heat in a microwave in 45-second intervals. (Put the hops on a plastic, glass, or ceramic plate, as paper will absorb moisture evaporating from the hops and skew results.) Between each heat treatment, allow the sample to cool, then measure and document the weight. Once the weight stops going down after each treatment, for three treatments in a row, you know you’ve reached your dry weight. This is the number to be used as a base for your calculations.

With the field weight (original weight of sample) and the dry weight, you can now calculate the percent of water that makes up your hops’ weight at the time of sampling using this equation:

$$\% \text{ Moisture} = [(\text{Wet weight} - \text{Dry weight}) / \text{Wet weight}] \times 100$$

For example: If the wet weight is 10 g and the dry weight is 7.9 g, the equation would look like this:

$$[(10 - 7.9) / 10] \times 100 = 21\%$$

With this number, you can determine if your hops are too wet and thus need to wait for harvesting, or if they’ve reached or dried beyond the optimum 72–78% window.

Hop harvest timing matters. A lot. And whether you’re growing and brewing your own, or just brewing, it’s time to start learning and tracking what timing your hop lots were harvested at.

Related Link:

- *Hops can successfully grow in a wide array of climates. We soak up advice from hop farmers in three very different regions of the United States that everyone should be able to glean hop-growing advice from:* **www.byo.com/articles/grow-your-own-hops-tips-from-the-pros**



Photo courtesy of Shutterstock.com



Brew Award-Winning FRUIT BEERS

Recipes and techniques exploring different forms of fruit

by Gordon Strong

Fruit has always been a popular ingredient in craft beer, and homebrewers now have more ways than ever to incorporate fruit into the brewing process. I've used fruit many ways myself, but I also wanted to seek out advice from other brewers on how they use fruit. I've learned many of these techniques while doing commercial collaborations (including some that I've written about before, including previous articles on Catharina sour and grape ale), but wanted to see what other options are available today.

To explore these choices, I talked with (and got recipes from) a number of brewers who had won awards for their beers, including some that I tried: Nate Pahl (Belgian blonde ale with apple, elderflower, and lemon peel), Todd Donnelly (American wheat beer with apricot), Juan Jaramillo (Catharina sour with Andean blackberries and raspberries), and Sean Torres (Belgian dubbel with figs). In addition to each of theirs, I have also included my own National Homebrew Competition-medaling blackberry Baltic porter recipe at the end of this article. I also consulted some other brewers who offered advice, including Richard Sheppard who had medaled with a Berliner weisse with pear. Past Meadmakers of the Year Thomas Eibner, Curt Stock, and Scot Schaar had previously given me good recommendations for working with fruit that also would apply to beer. Its a diverse group of experts to help cover a diverse category of beer.

WAYS OF USING FRUIT

Fruit is available in many forms. For many brewers, fresh, ripe, in-season fruit is the first choice. For Catharina sour in Brazil, that fruit choice is a defining factor for the style. Selecting seasonal fruit can be a labor of love, as sorting the fruit to choose the best examples takes effort. At the very least, remove rotten, bruised, or damaged fruit, then clean them and remove any leaves, stems, seeds, pits, skins, or other unwanted bits.

Nate and Juan mentioned selecting either heirloom or unusual varieties that judges might find interesting. Sean and Richard suggested sourcing fruit from backyard trees or farmer's markets in-season when bulk fruit is less expensive. Fresh fruit can be used as is, or further processed. Curt recommends freezing and thawing fresh fruit, and then using it in the primary fermentation. Thomas suggested running the fruit through a juicer in instances when the skins or seeds would give too much tannin or other flavors. I remember him using this approach when using strawberries to reduce the 'seedy' flavor from the little black seed-like bits on the surface.

Sean, Richard, and Nate mentioned pureeing the flesh of the fruit in a blender before adding to a recipe. Some fruit can be roasted, grilled, or sautéed before using to caramelize sugars and add extra flavor. Scot roasted pineapple, Sean broiled figs, and I remember Tomme Arthur of Lost Abbey talking about sautéing raisins and then deglazing them with Port wine. So, fruit can certainly be used as naturally as possible or transformed through cooking processes.

Home juicing or pureeing fruit is essentially the same process used when buying commercial juices or purees, although those products will often have preservatives or stabilizers added. Fresh-frozen fruit products can also be sourced to increase variety or when a fruit is out of season. When buying juices or concentrates, read the ingredients carefully since some products are pure fruit, while others may include sugar syrup, apple or grape juice, or other products. I have used RW Knudsen and Brownwood Acres juices. I have also looked for syrups from ethnic or international markets, particularly for products from Eastern Europe or Scandinavia (Adriatica black currant and Bende sour cherry, notably). Some products intended for making fruit wines can be useful; I have experience with the Vintner's Harvest fruit wine base, for instance. Other products are available, but these are ones I have been able to

"Fresh-frozen fruit products can also be sourced to increase variety or when a fruit is out of season."



Photo courtesy of Shutterstock.com

Juicing fruit at home is a great technique for adding fresh fruit to beer without the preservatives or other additions juice from a store often contains.

source and use where I live.

Todd makes a lot of meads and ciders, and cites this experience as helpful when working with fruit (and I concur). He experimented with Amoretti flavorings, particularly their water-soluble extracts. Perhaps he found success using these products because he is a pharmacist and is comfortable with small measurements, compounding, and scaling up test measures. He recommends starting with manufacturer recommendations and adjusting to taste, working with small samples first and scaling up for the final batch.

Another option is blending in the fruit. Fruit wines or meads can be made separately and blended with a finished base beer, just as a juice or extract can be added. The advantage of this approach is that the beer and fruit components can be individually optimized (possibly including fermentation with different yeasts) and then blended to taste. Many fruit beers require a final adjustment anyway, and this allows for more alternatives. Curt first suggested this idea to me, which I also medaled with.



Photo by Gordon Strong

Fresh, in-season fruit is most often added to Catharina sours when fermentation is about 75% complete, which preserves more fruit character than if it were added on the hot side or earlier in fermentation.

PUTTING FRUIT TO USE

Before you start grabbing fruit, spend some time with your concept. Yes, be aware of what fruit is available to you, but take care in pairing the fruit with the base beer, or how you choose complementary fruits, or how you use spices in support of your fruit. Nate told a story where his wife had mixed an apple soda with an elderflower lemonade and liked the results.

Scot suggested looking in Page & Dornenburg's *The Flavor Bible* for known good (and bad) flavor combinations. Sean stressed finding compatible flavor combinations from the base beer and the fruit. These flavors can either amplify or enhance key components of the base style (think dark or dried fruit flavors in dark Belgian monastic ales), or perhaps provide a known complement (think about orange, raspberry, or cherry with beers that have a chocolate malt flavor, mirroring flavors found in confections).

Fruit can be added at several stages of the brewing process. Adding fruit during the primary fermentation is a common meadmaking approach, since the fruit adds nutrients that honey lacks and encourages a more vigorous fermentation. As wort typically has sufficient nutrients, this makes fruit usage in the primary more of a choice than a requirement.

One consideration is how whole or pureed fruit will be added and removed from the batch, or if the fruit will cause racking problems. Many brewers recommended putting the fruit in mesh bags to facilitate separation. Fruit that has been juiced doesn't have this problem, although careful racking will improve clarity.

Fruit in the mash or boil is possible, and is something I have done when using pumpkins and similar vegetables, but I don't think this has advantages when making most fruit beers because much of the character is lost or degraded during the boil, and fruit pectins can be set, which can cause permanent haze.

Catharina sours are typically made with fresh fruit added when fermentation is about 75% complete to preserve as much fresh-fruit character as possible, but while not seeming like a cocktail or unfermented drink. Fruit can be used in other styles in the same manner.

Juices and syrups can be added at any point, although adding late in fermentation or post-fermentation best preserves their character. The trade-off is fresh-fruit intensity versus a more fully fermented flavor. Fruit can be added at multiple times in the process, of course, and is often used during final adjustments before packaging.

Extracts, juices, and finished fruit wines or meads can be mixed in after the beer fermentation is complete or mostly complete. I recommend a final tasting and adjustment, which also can include adjusting final sweetness and acidity levels, as the last step. Just as a good chef will taste and correct the final dish before serving a plate, a good brewer will do the same with a beer being packaged or sent to a competition.

To further explore examples of fruit/beer style pairings that work, forms of fruit, and ways to add fruit to beer, we'll dig into the award-winning fruit beer recipes I've collected on the following pages.

Catharina Sour with Andean Blackberry and Raspberry

(5 gallons/19 L, all-grain)
OG = 1.051 FG = 1.013
IBU = 8 SRM = 4 ABV = 5.1%



*Andean blackberry (*Moras de Castilla*) are small, very dark, sweet, and intense blackberries when ripe. Perhaps a mix of elderberries and loganberries would be the best substitute if you can't source them. They are mixed with raspberries in this recipe to add a bright acidity and freshness. The fruit is purchased as a pulp and briefly pasteurized before using, which adds a somewhat non-traditional (for Brazil) jammy note. Traditional kettle souring techniques can be used, but this recipe leverages the Philly Sour strain to ferment and sour jointly. This recipe also uses the technique to naturally carbonate in a keg using the fruit sugar, though you could add the fruit to the fermenter with an airlock if you plan to bottle.*
- Recipe courtesy of Juan Jaramillo, Django Cerveceria, Quito, Ecuador

INGREDIENTS

5 lbs. (2.3 kg) Pilsner malt
4 lbs. (1.8 kg) wheat malt
1.5 lbs. (680 g) pale ale malt
8 oz. (227 g) Carapils® malt
10 g kosher salt
1 oz. (28 g) Simcoe® hops (whirlpool)
2.7 L (2.9 qts.) blackberry puree
2.7 L (2.9 qts.) raspberry puree
WildBrew Philly Sour yeast

STEP BY STEP

This recipe uses a single-infusion mash. In 17 quarts (16 L) of water, mash the grain at 151 °F (66 °C) for 60 minutes. Raise the mash to 169 °F (76 °C) and mash out for 10 minutes. Sparge slowly and collect 6.5 gallons (24.5 L) of wort. Boil for 60 minutes. Add the salt in the last 10 minutes of the boil. At the end of the boil, turn off heat and let cool to 194 °F (90 °C) and then add the whirlpool hop addition. Stir the wort and let rest for 10 minutes. Cool to 72 °F (22°C) and then pitch the yeast.

When the fermentation has slowed considerably, pasteurize the fruit purees by bringing them up to 160 °F (71 °C) for one minute before cooling it. Once cooled, move puree to a keg and then transfer the slowly fermenting beer on top of it. Allow the beer to continue fermenting using the fruit as a priming sugar, while creating carbonation in the pressure-safe container. This process takes 2–3 weeks, then crash cool to 32 °F (0 °C) and hold for a week, then transfer under pressure to a fresh keg.

(5 gallons/19 L, extract only)
OG = 1.051 FG = 1.013
IBU = 8 SRM = 4 ABV = 5.1%



INGREDIENTS

7.1 lbs. (3.2 kg) wheat liquid malt extract
10 g kosher salt
1 oz. (28 g) Simcoe® hops (whirlpool)
2.7 L (2.9 qts.) blackberry puree
2.7 L (2.9 qts.) raspberry puree
WildBrew Philly Sour yeast

STEP BY STEP

Use 6.5 gallons (24.5 L) of water in the brew kettle; heat to 158 °F (70 °C).

Turn off the heat. Add the malt extract and stir thoroughly to dissolve completely. You do not want to feel liquid extract at the bottom of the kettle when stirring with your spoon. Turn the heat back on and bring to a boil.

Boil for 60 minutes. Add the salt in the last 10 minutes of the boil. At the end of the boil, turn off heat and let cool to 194 °F (90 °C) and then add the whirlpool hop addition. Stir the wort and let rest for 10 minutes. Cool to 72 °F (22°C). Pitch the yeast.

When the fermentation has slowed considerably, pasteurize the fruit purees by bringing them up to 160 °F (71 °C) for one minute before cooling it. Once cooled, move puree to a keg and then transfer the slowly fermenting beer on top of it. Allow the beer to continue fermenting using the fruit as a priming sugar, while creating carbonation in the pressure-safe container. This process takes 2–3 weeks, then crash cool to 32 °F (0 °C) and hold for a week, then transfer under pressure to a fresh keg.

Apricot American Wheat

(5 gallons/19 L, all-grain)
OG = 1.051 FG = 1.013
IBU = 19 SRM = 4 ABV = 5%



Any basic American wheat or rye recipe can be used as the base, as long as you avoid using recipes that have dry hopping or substantial late-hop additions. Other fruit flavors can be selected, with peach giving a similar result. Add the extract just before packaging, but taste and adjust the level to suit your palate. Small trials are recommended before dosing the entire 5-gallon (19-L) batch.
- Recipe courtesy of Todd Donnelly, Chardon, Ohio

INGREDIENTS

6 lbs. (2.7 kg) wheat malt
4 lbs. (1.8 kg) 2-row pale malt
1 lb. (0.45 kg) Munich malt
5 AAU Willamette hops (60 min.)
(1 oz./28 g at 5% alpha acids)
0.5 oz. (14 g) Hallertauer hops (0 min.)
3 mL Amoretti Apricot Water Soluble Extract
Wyeast 1056 (American Ale), White Labs WLP001
(California Ale), or SafAle US-05 yeast
¾ cup corn sugar (if priming)

STEP BY STEP

Mash in all malts at 152 °F (67 °C) for 60 minutes. Mash out at 168 °F (76 °C) for 15 minutes, recirculating wort during this time. Sparge with 170 °F (77 °C) water, collecting 6.5 gallons (25 L) of wort.

Boil the wort for 90 minutes, adding Willamette hops with 60 minutes remaining in the boil. Add the Hallertauer hops at the end of the boil.

Chill the wort to 68 °F (20 °C), pitch the yeast, and ferment until complete. Rack the beer, blending in the apricot extract and adjusting to taste. Add priming sugar and bottle, or keg and force carbonate.

(5 gallons/19 L, extract only)
OG = 1.051 FG = 1.013
IBU = 19 SRM = 4 ABV = 5%



INGREDIENTS

6 lbs. (2.7 kg) wheat liquid malt extract
1 lb. (0.45 kg) Munich liquid malt extract
5 AAU Willamette hops (60 min.)
(1 oz./28 g at 5% alpha acids)
0.5 oz. (14 g) Hallertauer hops (0 min.)
3 mL Amoretti Apricot Water Soluble Extract
Wyeast 1056 (American Ale), White Labs WLP001
(California Ale), or SafAle US-05 yeast
¾ cup corn sugar (if priming)

STEP BY STEP

Use 6.5 gallons (25 L) of water in the brew kettle; heat to 158 °F (70 °C).

Turn off the heat. Add the malt extracts and stir thoroughly to dissolve completely. You do not want to feel liquid extract at the bottom of the kettle when stirring with your spoon. Turn the heat back on, add the first wort hops, and bring to a boil.

Boil the wort for 60 minutes, adding Willamette hops at the start of the boil. Add the Hallertauer hops at the end of the boil.

Chill the wort to 68 °F (20 °C), pitch the yeast, and ferment until complete. Rack the beer, blending in the apricot extract and adjusting to taste. Add priming sugar and bottle, or keg and force carbonate.

Belgian Blond with Apple, Elderflower, and Lemon Peel

(5 gallons/19 L, all-grain)
OG = 1.060 FG = 1.007
IBU = 12 SRM = 5 ABV = 7.1%

While the recipe calls for transparent apples (a pale green, tart apple), another variety with similar characteristics could be substituted (such as Granny Smith). Nate also uses locally pressed sweet apple cider when the apples are not available. This option is in the extract version of the recipe. The elderflower and lemon peel can be added to the keg as well.
- Recipe courtesy of Nate Pahl, Clayton, Ohio

INGREDIENTS

8.5 lbs. (3.9 kg) Pilsner malt
1 lb. (0.45 kg) wheat malt
8 oz. (227 g) aromatic malt
6 oz. (170 g) acidulated malt
4 oz. (113 g) flaked wheat
4 oz. (113 g) flaked oats
1 lb. (0.45 kg) corn sugar
2 AAU Hallertauer Mittelfrüh hops (60 min.) (1 oz./28 g at 2% alpha acids)
1 oz. (28 g) Saaz hops (20 min.)
1 oz. (28 g) Hallertauer hops (whirlpool)
1 oz. (28 g) Saaz hops (whirlpool)
2 lbs. (907 g) transparent apples
4 oz. (113 g) dried elderflower
2 oz. (57 g) freshly zested lemon peel
Wyeast 1388 (Belgian Strong Ale), White Labs WLP570 (Belgian Golden Ale), or Mangrove Jack's M31 (Belgian Tripel) yeast
¾ cup corn sugar (if priming)

STEP BY STEP

Mash in all malts and grains at 149 °F (65 °C) for 60 minutes. Mash out at 168 °F (76 °C) for 15 minutes, recirculating wort during this time. Sparge with 170 °F (77 °C) water, collecting 6.5 gallons (25L) of wort.

Boil the wort for 90 minutes, adding hops at the times indicated in the recipe. Add the sugar in the last 15 minutes of the boil. The whirlpool hops are added after the boil has ended and the wort has cooled to 175 °F (80 °C). Stir the wort vigorously and then leave the hops in contact with the wort for 20 minutes at this temperature. Chill the wort to 68 °F (20 °C), pitch the yeast, and ferment until complete.

Wash, peel, and slice the apples, adding to the secondary along with the elderflower and lemon peel. Rack the beer onto the fruit and spices in the secondary and allow to rest for one week. Rack the beer, add priming sugar and bottle, or keg and force carbonate.

(5 gallons/19 L, extract only)
OG = 1.060 FG = 1.007
IBU = 12 SRM = 5 ABV = 7.1%

INGREDIENTS

5.5 lbs. (2.5 kg) pale liquid malt extract
1.6 lbs. (0.7 kg) wheat liquid malt extract
1 lb. (0.45 kg) corn sugar
2 AAU Hallertauer Mittelfrüh hops (60 min.) (1 oz./28 g at 2% alpha acids)
1 oz. (28 g) Saaz hops (20 min.)
1 oz. (28 g) Hallertauer hops (whirlpool)
1 oz. (28 g) Saaz hops (whirlpool)
2 quarts (1.9 L) fresh sweet apple cider
4 oz. (113 g) dried elderflower
2 oz. (57 g) freshly zested lemon peel
Wyeast 1388 (Belgian Strong Ale), White Labs WLP570 (Belgian Golden Ale), or Mangrove Jack's M31 (Belgian Tripel) yeast
¾ cup corn sugar (if priming)

STEP BY STEP

Use 6.5 gallons (25 L) of water in the brew kettle; heat to 158 °F (70 °C).

Turn off the heat. Add the malt extracts and stir thoroughly to dissolve completely. You do not want to feel liquid extract at the bottom of the kettle when stirring with your spoon. Turn the heat back on and bring to a boil.

Boil the wort for 60 minutes, adding hops at the times indicated in the recipe. Add the sugar in the last 15 minutes of the boil. The whirlpool hops are added after the boil has ended and the wort has cooled to 175 °F (80 °C). Stir the wort vigorously and then leave the hops in contact with the wort for 20 minutes at this temperature. Chill the wort to 68 °F (20 °C), pitch the yeast, and ferment until complete.

Add the apple cider, elderflower, and lemon peel, and allow to rest for one week. Rack the beer, add priming sugar and bottle, or keg and force carbonate.

Belgian Dubbel with Roasted Figs

(5 gallons/19 L, all-grain)
OG = 1.071 FG = 1.017
IBU = 21 SRM = 27 ABV = 7%



Figs were selected because of their availability from a local tree, and were paired with a dubbel in order to complement its raisin and dried-fruit character. The figs were roasted and broiled to caramelize the sugars, adding another tie to the flavor of the base beer. The figs are mashed up and added at the end of the boil in a mesh bag before the wort is chilled and transferred to the fermenter.
- Recipe courtesy of Sean Torres and Phil Gardner, Staten Island, New York

INGREDIENTS

5.4 lbs. (2.4 kg) Pilsner malt
4.3 lbs. (2 kg) Munich malt
13 oz. (369 g) aromatic malt
9 oz. (255 g) CaraMunich® Type II malt
4 oz. (113 g) Special B malt
1.5 lbs. (0.68 kg) D-90 candi syrup (10 min.)
8 oz. (227 g) D-180 candi syrup (10 min.)
1.5 lbs. (0.68 kg) roasted figs (0 min.)
6.2 AAU Styrian Golding hops (60 min.)
(1.15 oz./33 g at 5.4% alpha acids)
1 oz. (28 g) Styrian Golding hops (1 min.)
Wyeast 1762 (Belgian Abbey II), White Labs WLP540 (Abbey IV), or SafAle T-58 yeast
¾ cup corn sugar (if priming)

STEP BY STEP

Prepare the roasted figs. Select fresh, ripe, plump figs (Black Mission figs, preferably). Wash and dry them, cut the stem and top off, then slice in half lengthwise. Roast cut side up in a 325 °F (163 °C) oven for 2–2.5 hours, removing them before they burn or get too dry. The goal is to get the figs very soft and the sugars deeply caramelized. Run the figs under a broiler briefly if necessary to get final caramelization. Let cool and then mash the figs into a paste and reserve for later.

This recipe uses an infusion mash. Mash in the malts at 151 °F (66 °C) in 18 qts. (17 L) of water, and hold this temperature for 90 minutes. Sparge with 170 °F (77 °C) water until 6.5 gallons (25 L) of wort is collected.

Boil the wort for 90 minutes, adding the hops at times indicated in the recipe. Add the candi syrups with 10 minutes remaining in the boil. Put the fig paste in a mesh bag and add at knockout. Steep for 15 minutes, then pull the bag and chill to 66 °F (19 °C).

Oxygenate, then pitch the yeast. Ferment at 66 °F (19 °C) until fermentation is complete. Prime and bottle condition, or keg and force carbonate to 2.5 volumes.

(5 gallons/19 L, extract with grains)
OG = 1.071 FG = 1.017
IBU = 21 SRM = 27 ABV = 7%



INGREDIENTS

3.6 lbs. (1.6 kg) Pilsner liquid malt extract
3.25 lbs. (1.5 kg) Munich liquid malt extract
9 oz. (255 g) CaraMunich® Type II malt
4 oz. (113 g) Special B malt
1.5 lbs. (0.68 kg) D-90 candi syrup (10 min.)
8 oz. (227 g) D-180 candi syrup (10 min.)
1.5 lbs. (0.68 kg) roasted figs (0 min.)
6.2 AAU Styrian Golding hops (60 min.)
(1.15 oz./33 g at 5.4% alpha acids)
1 oz. (28 g) Styrian Golding hops (1 min.)
Wyeast 1762 (Belgian Abbey II), White Labs WLP540 (Abbey IV), or SafAle T-58 yeast
¾ cup corn sugar (if priming))

STEP BY STEP

Prepare the roasted figs. Select fresh, ripe, plump figs (Black Mission figs, preferably). Wash and dry them, cut the stem and top off, then slice in half lengthwise. Roast cut side up in a 325 °F (163 °C) oven for 2–2.5 hours, checking to make sure they don't burn or get too dry. The goal is to get the figs very soft and the sugars deeply caramelized. Run the figs under a broiler briefly if necessary to get final caramelization. Let cool and then mash the figs into a paste and reserve for later.

Use 6 gallons (23 L) of water in the brew kettle; heat to 158 °F (70 °C). Place the malts in a mesh bag, and steep in the hot water for 30 minutes. Remove the mesh bag, then turn the heat off.

Add the liquid malt extracts and stir thoroughly to dissolve the extract completely. You do not want to feel liquid extract at the bottom of the kettle when stirring with your spoon. Turn the heat back on and bring to a boil. Boil the wort for 60 minutes, adding the hops at the times indicated in the recipe. Add the candi syrups with 10 minutes remaining in the boil. Put the fig paste in a mesh bag and add at knockout. Steep for 15 minutes, then pull the bag and chill to 66 °F (19 °C).

Oxygenate, then pitch the yeast. Ferment at 66 °F (19 °C) until fermentation is complete. Prime and bottle condition, or keg and force carbonate to 2.5 volumes.

FRUIT BEER RECIPES

Blackberry Baltic Porter

Based on an idea from Curt Stock, this beer is created by blending a sweet blackberry mead with a Baltic porter. This version uses a canned fruit wine base for the fruit. The mead and beer are fermented and aged separately, then blended to taste. A fruit wine can be used instead of the mead, but it should be similar in sweetness to the base beer in order to keep the balance consistent.
- Recipe courtesy of Gordon Strong, Beavercreek, Ohio

Blackberry Mead
96 oz. (2.8 L) blackberry fruit wine base
12 lbs. (5.4 kg) light-colored and flavored honey
Lalvin 71B wine yeast

Combine fruit and honey, adding enough water to make 3 gallons (11.4) volume. Pitch yeast and ferment at 68 °F (20 °C) until complete. Backsweeten if necessary to be subjectively sweet, perhaps FG 1.032. Use this mead to add blackberry character to beer. Conduct a test with a small amount using 20% mead and 80% beer, then adjust to taste. Scale up for the full batch.

Baltic Porter
(5 gallons/19 L, all-grain)
OG = 1.083 FG = 1.024
IBU = 30 SRM = 54 ABV = 7.8%*
* All numbers prior to blending



INGREDIENTS

7.25 lbs. (3.3 kg) pale ale malt
3.5 lbs. (1.6 kg) dark Munich malt
1.5 lbs. (0.68 kg) brown malt
1 lb. (0.45 kg) wheat malt
1.75 lbs. (0.8 kg) CaraMunich® Type II
1.25 lbs. (0.6 kg) crystal malt (90 °L)
8 oz. (227 g) Special B malt
12 oz. (567 g) chocolate malt
6 oz. (170 g) Carafa® Special Type III malt
9 AAU Fuggle hops (60 min.)
(2 oz./57 g at 4.5% alpha acids)
0.5 oz. (14 g) Hallertauer hops (10 min.)
0.5 oz. (14 g) Hallertauer hops (2 min.)
Wyeast 2112 (California Lager), White Labs WLP810 (San Francisco Lager), or Mangrove Jack's M54 (Californian Lager) yeast
¾ cup corn sugar (if priming)

STEP BY STEP

This recipe uses a single-infusion mash. Mash in the malt at 151 °F (66 °C) in 17 qts. (16 L) of water. Hold at this temperature for 60 minutes. Raise mash temperature to 170 °F (77 °C), hold for 5 minutes then recirculate. Run off wort and sparge with water hot enough to keep the grain bed around 170 °F (77 °C). Collect 6.5 gallons (25 L) of wort. (Check that final runnings do not drop below SG 1.010, even if this means collecting slightly less wort.) Boil wort for 60 minutes, adding hops at times indicated.

If using liquid yeast, build a 2-qt./2-L yeast starter a day before pitching. Aerate wort and pitch yeast. Ferment at 62 °F (17 °C). Lager at 34 °F (1 °C) for 12 weeks. Prime and bottle condition, or keg and force carbonate.

Baltic Porter
(5 gallons/19 L, extract with grains)
OG = 1.083 FG = 1.024
IBU = 30 SRM = 54 ABV = 7.8%*
* All numbers prior to blending



INGREDIENTS

6.6 lbs. (3 kg) light liquid malt extract
11 oz. (312 g) light dried malt extract
1.5 lbs. (0.68 kg) brown malt
1.75 lbs. (0.8 kg) CaraMunich® Type II
1.25 lbs. (0.6 kg) crystal malt (90 °L)
8 oz. (227 g) Special B malt
12 oz. (567 g) chocolate malt
6 oz. (170 g) Carafa® Special Type III malt
9 AAU Fuggle hops (60 min.)
(2 oz./57 g at 4.5% alpha acids)
0.5 oz. (14 g) Hallertauer hops (10 min.)
0.5 oz. (14 g) Hallertauer hops (2 min.)
Wyeast 2112 (California Lager), White Labs WLP810 (San Francisco Lager), or Mangrove Jack's M54 (Californian Lager) yeast
¾ cup corn sugar (if priming)

STEP BY STEP

Steep grains in 3 gallons (11.4 L) of 158 °F (70 °C) water for 30 minutes. Remove grain, add dried malt extract and enough water to make at least 3 gallons (11 L) of wort. Boil wort for 60 minutes, adding hops at times indicated. Keep some boiling water handy and do not let boil volume dip below 3 gallons (11 L). With 15 minutes remaining in the boil, turn off the heat and add liquid malt extract, carefully stirring it until dissolved. Continue boiling for last 15 minutes. Chill wort, transfer to fermenter and top up to 5 gallons (19 L).

If using liquid yeast build a 2-qt./2-L yeast starter a day before pitching. Aerate wort and pitch yeast. Ferment at 62 °F (17 °C). Lager at 34 °F (1 °C) for 12 weeks. Prime and bottle condition, or keg and force carbonate. BYO

BYO NANO CON ONLINE

OCTOBER 23, 2026

SMALL-SCALE CRAFT BREWING

- **Full-Day of Live, Online Seminars and Q&A Panels**
- **Access to Video Recordings and Course Materials of All Sessions**
- **3 Learning Tracks: Business & Sales, Brewing Operations, Start-Ups**
- **Get Your Questions Answered Live by Craft Beer Experts**
- **Interact with Other Small-Scale Craft Brewers & Breweries-In-Planning**
- **Q&A Sessions with Leading Small-Scale Brewing Suppliers**

REGISTER NOW & SAVE!



NanoCon.beer

Brought to you by BrewYourOwn — The How-To Homebrew Beer Magazine



KIWI HOP HARVEST & BREWERY ADVENTURES:

BYO Readers Explore New Zealand

Brew Your Own readers including Publisher Brad Ring recently spent eight days exploring the Southern Hemisphere hop harvest and the thriving craft beer scene of New Zealand.

Over the last decade, New Zealand hops have increasingly captured the attention of both pro brewers and homebrewers around the world with new varieties packing intense tropical and citrus character. As a result, the group did a deep dive on New Zealand hops in the midst of harvest with in-depth tours of two hop farms (or in Kiwi phrasing "hop gardens"): Eggers Hops and Freestyle Hops, both located in the Moutere Valley on the South Island. At both locations, the 21 American homebrewers had the chance to walk through unpicked hop rows before heading into production facilities to watch the just-picked bines stripped of their cones, loaded into kilns for drying, and eventually pelletized.

We also wanted to better understand why New Zealand is a leader in hop innovation by spending time with two leading hop breeders. We had lunch with pioneer Dr. Ron Beatson (the hop Nectaron® is named in his honor) to learn about the country's hop growing history. Our group also paid a special visit to the national hop research center in Motueka with lead hop breeder Kerry Templeton to see where many of the most popular New Zealand hop varieties first got their start and learn more about the hop breeding process.

New Zealand produces great malt in addition to great hops. The *BYO* group also had a wonderful tour at Gladfield Malt to learn firsthand about how their New Zealand-grown barley, wheat, and oats go through the malting process and understand better how the different types of malts we all use for brewing are made.

With visits to 15 breweries, the group was lucky to experience the incredible beer culture of New Zealand on both the North and South Islands. We visited a broad spectrum of breweries from exploring the world of coolship spontaneously-fermented



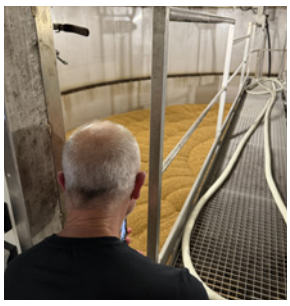
sour beers and barrel-aged stouts in downtown Wellington at The Garage Project's Wild Workshop to driving our bus down a residential street in Christchurch leading to a different kind of garage project: Wilderness Brewing's modest 80-gallon (300-L) nanobrewery located in brewer Oli Drake's home garage producing outstanding beers the group enjoyed while standing in his driveway. All along the way we had the chance to meet with passionate and friendly local brewers happy to share their tips and techniques while the group enjoyed sampling their beers. We even had the chance to spend a few hours sharing local beers and brewing stories with members of the Christchurch, New Zealand, homebrew club – true bottle diplomacy at its best!

In addition to beer, New Zealand's incredible scenery is known worldwide. The group had the opportunity to soak up some stunning views and earn their next pint of beer with daily hikes and even a waterfront bicycle ride ending with a river ferry ride to the Golden Bear Brewing brewpub for lunch and a tasting with the brewer.

New Zealand's craft brewers covered a broad swath of popular beer styles, but one style began to stand out during the group's travels as the perfect platform to highlight the tropical and citrus aromas and flavors of their local New Zealand hops: New Zealand Pilsner. The base beer sits somewhere in between German and Czech Pilsners with a softer malt profile and a neutral fermentation character that lets the special character of these Kiwi hops shine. We also learned quite a few New Zealand brewers produce their New Zealand Pilsners as a cool-fermented ale and skip lager yeast and aging altogether.

Since it was hop harvest season, we ended up touring quite a few breweries overflowing with incredible hop aromas while in the middle of brewing fresh-hop beers. All the brewers we visited used the same technique for their fresh-hop brew day by immediately cleaning the grains out of their mash kettle while the wort was busy in the boil kettle. Then the brewers would turn their mash tun into a hop back by adding the just-picked wet hops on top of the mash kettle's false bottom and when the boil was finished with some moderate hopping added, the hot wort was pumped back on top of the hops and allowed to soak for about 20 minutes before draining off to chill and ferment. The group just wished we could stay around a few more weeks to taste all these fresh-hop beers we watched being made!









New Zealand is also known as a food lover's dream with a heavy use of locally grown and farmed fruits, vegetables, dairy, meats, and seafood. We enjoyed many memorable meals from super fresh fish and chips and the country's signature green-lipped mussels to a special multi-course dinner at the Free House in Nelson created with all local ingredients washed down with their own in-house brewed beers served on hand pull.

With eight days filled with beautiful cities to the oceanfront towns ringed by towering mountains, from acres of neat rows of hop bines to the rolling hills of farmland, our group had a great taste of both urban and rural settings for breweries combining for the unique chance to experience New Zealand beer culture up close one sip at a time all with an incredibly warm Kiwi welcome.

Our upcoming *BYO* trip this September to the Netherlands is sold out, but we've just announced a new May 2027 *BYO* trip to Denmark. We hope you can join us on a future brewery adventure. Details on our trips can be found at: byo.com/trip. Cheers!



Photo courtesy of BestMalz



LESSONS FROM THE BEST Brew Challenge

Same ingredients, same beer style, and a two-time winner

by Marty Nachel

Craft beer lovers who lived in the greater Chicago area back in the early 20-teens are likely familiar with the annual event called Beer Hoptacular. It was a beer festival that was rather itinerant for much of its relatively short existence, moving from one venue to another, from one year to another, as properties and short-term leases and legal licensing would allow.

One of the festival features that remained a constant, however, was quite popular among the local homebrew clubs. Each year, Beer Hoptacular would host a homebrew challenge designed to get homebrew clubs in the tri-state area (Illinois, Indiana, and Wisconsin) involved in the fest. The hook was that each club had to brew a beer using only the malts provided by Beer Hoptacular.

Capitalizing on my connections with the local Country Malt Group warehouse, who donated all the grain, I arranged to pick up and ship out enough malt to supply all of the participating clubs with the grain they would need to brew their beer entry; hops, yeast and any additional non-malt ingredients were the individual club's responsibility.

Also, making the most of my relationships with local beer judges, I assembled a crack team of ale adjudicators for competition day. First, second, and third place winners were publicly announced during the festival and a great time was had by all.



Photo courtesy of BestMalz

2025 BestBrewChallenge winner Tomas Sirtautas (left) won the opportunity to brew a beer at BestMalz in Heidelberg, Germany, with René Auradniczek (Operations Controller & Brewmaster).

Sadly, that beer festival and its homebrew challenge are no more. But if the concept of brewing a beer style from the same basic ingredients as your fellow homebrew contestants sounds like a true test of your homebrewing proficiency, then read on!

The word "best" in this article's headline is not only used as a superlative adjective meaning most excellent or desirable — but more significantly, it's the name of a renowned German maltster. It's not a coincidence that BestMalz is the host of this global competition.

Beginning in 2015, BestMalz has been inviting homebrewers and commercial brewers from around the world to enter their annual BestBrewChallenge competition. In fact, that inaugural year their plan was to set the Guinness World Record for the world's largest simultaneous collaboration brew — including both homebrewers and commercial breweries — with all participants in all different countries and time zones brewing their entries at the same time. The date was set for April 23, 2015, to start the countdown to the 500th anniversary of the German Beer Purity Law — the Reinheitsgebot.

For the 10th anniversary of the BestBrewChallenge in 2025, the slogan was "International brewing artistry at the highest level," and the competition once again demonstrated the diversity and creativity of the international brewing scene. Though official statistics on the percent of homebrewers versus commercial brewers participating are not kept by BestMalz, it is estimated that homebrewers made up about 80% of the more than 100 participants in the 2025 competition, while commercial brewers made up the remaining 20%.

"The BestBrewChallenge is a globally unique competition in which all participants brew at the same time using the same ingredients — a real live experiment in the art of brewing," said Dr. Axel Göhler, whose company organizes the challenge every year.

Though the targeted beer style changes each year, in 2025 the focus of the competition was on oatmeal stout, a complex beer style known for its velvety texture, roasted aromas, and subtle notes of coffee and dark chocolate. The 2025 challenge was to brew an oatmeal stout using Best Oat Malt. Also suggested for use in the recipe were Best Chocolate Malt, Best Black Malt, and Best Black Malt Extra. Hop varieties were not stipulated for this style, while the recommended yeast was AEB Fermoale AY3. As one might expect with a German brewing competition, all beers must comply with the Reinheitsgebot, which only allows the inclusion of grain, hops, yeast, and water, with no additives or preservatives used in the production of the beer.

The spotlighted malt each year is chosen by BestMalz, based mostly on current brewing trends, but also on what hasn't already been used in past years. Previous recent beer styles chosen include helles lager, altbier, light German wheat beer, festbier, and Vienna lager; most of which, not surprisingly, seem to skew towards cold fermentations.

So, ultimately, the real challenge isn't simply brewing the stipulated beer style with the required malts; it's brewing that particular beer better than every other brewer who is jumping from the same starting block.

2025 BESTBREWCHALLENGE

This past year, 112 entrants from 12 countries took up the challenge of creating and submitting an oatmeal stout using these identical base malts. The beers were evaluated based on taste, style consistency, and color, using the Beer Judge Certification Program Beer Style Guidelines as a reference. In addition to taste and adherence to style, the judges also focused on creativity, balance, and craftsmanship.

The judge panel consisted entirely of trained beer sommeliers. Training to become a beer sommelier is often completed at the Doemens Academy in Germany (which is also affiliated with the Siebel Institute, now headquartered in Montreal, Canada). In the past, BestMalz employees were also involved as tasters, but in 2021 it was decided to fill the jury entirely with external members.

What made the judging especially interesting is that, despite using the same base ingredients, the flavor profiles ranged from dry and bitter to creamy and full-bodied. Each beer told its own story — influenced by regional brewing techniques, water profiles, and the personal signature of each brewer. This impressive variety in interpretation showcased just how multifaceted a single beer style can be,

even when brewed using (mostly) the same ingredients.

So, who were the winners? Interestingly, two of the top three front-runners were from Lithuania, with the other hailing from the Czech Republic. Taking top honors, was Lithuanian Tomas Sirtautas; his Out for Delivery Oatmeal Stout was deemed best-of-show.

Tomas is no stranger to winning the BestBrewChallenge. His light German wheat beer also took first place in 2021, and that's the recipe he chose to share for this article (found on page 50). That's right, with over 100 entrants brewing nearly identical recipes, the same winner has been chosen twice in the past five years. Given the uniqueness of such a feat, we thought it was worth talking with Tomas to learn more about his setup and secrets for success.

KEYS TO TOMAS' SUCCESS

Tomas calls his homebrewery Relaxed Man Brewery. "It doesn't mean anything special," he said, "The competition required a brewery name and that's what I came up with." Perhaps that's simply his winning approach towards brewing beer at home; after all, it does have that certain ring to it (*"Relax. Don't Worry . . ."*).

Tomas has been brewing since 2013, beginning back when he used to live in the U.K. His path into homebrewing began with extract brewing, before quickly moving to all-grain. His original brew system was a 30-L (8-gallon) Grainfather all-in-one system before upgrading to a 3-tier system.

Tomas eventually felt comfortable enough to engineer his own self-made 10.5-gallon (40-L) system, which includes a boil kettle, mash tun, and a modified Heat Exchange Recirculating Mash System (HERMS) Grainfather sparge water heater (he also uses it for wort recirculation through a self-installed heat exchanger), Nordic Tec 40 plate heat exchanger, and two magnetic pumps, pictured on this page. Regarding fermentation, he uses a temperature-controlled, environment-modified refrigerator.

The perfect water for his beers begins by reverse osmosis filtration of his local water, which he then builds up to the required water profile for the particular beer style by adding minerals. He adjusts mash pH — if necessary — either with minerals or with phosphoric acid, or both combined. When brewing high-gravity beers, he oxygenates the wort with pure oxygen.

He used to bottle all his beer, but now, in his Relaxed Man mode, he uses the less time-consuming method of kegging his beer.

Sounds like pretty normal, yet advanced, brewing techniques. So, how did Tomas make his beers stand out? Here are a few bullet points for successful brewing, according to Tomas:

- Use only the best and freshest quality ingredients you can get.
- Research and then design recipes.
- Use specific water chemistry profile for particular beer styles.
- Perfect sanitation.
- Focus on hitting your mash pH.
- Fast wort cooling.
- Pitch an adequate amount of healthy yeast and oxygenate your wort.
- Always ferment in a temperature-controlled environment.

As the winner of the BestBrewChallenge, Tomas was well-compensated for his time, effort, and expense. Last September, he traveled to Germany for a tour of the malting plant in Wallertheim (near Mainz) and to brew a beer on the company's brewing system at its headquarters in Heidelberg. "I enjoyed brewing at BestMalz very much; the staff was very friendly. I wish I had the equipment they do," said Tomas. "It's a beautiful system."

Travel and accommodation expenses are provided not only for the brewer, but a companion as well. And the beer brewed at BestMalz is ultimately served at the Drinktec Fair in Munich (Drinktec is the world's leading trade fair for the beverage and liquid food industry).

ENTER YOUR OWN

While the opportunity to enter the 2026 competition has passed, for those interested in competing against Tomas and others, let's quickly look further at this unique competition. According to the rules, the calendar window for mashing in is a very short three days (in 2025, for instance, it was March 28–30). Here are some of the other rules:

- Every entry must be accompanied by a completed Documentation Sheet, which is found on the BestBeerChallenge website: www.bestbrewchallenge.com
- Every contestant must submit at least three liters of their beer



Photo by Tomas Sirtautas

Two-time BestBrewChallenge winner Tomas Sirtautas brews on a modified homebrewing system.

(rounded up, this would be about nine 12-ounce bottles).
- Entries must be shipped to the BestMalz location in Heidelberg, Germany.
- All entries must be brewed to comply with the Reinheitsgebot.

There is no fee to enter this competition; however, shipping the equivalent of three liters of beer to Germany will surely set you back a few bucks. This is probably why there have been relatively few North American competitors over the past decade.

So, where did all the entries emanate from this past year? Not surprisingly, most of them were from Germany, but the second most were submitted from Lithuania. Other countries involved included Norway, Sweden, Bulgaria, Bosnia, Czech Republic, Italy, Switzerland, Slovakia, Netherlands, and Australia,

No Americans submitted entries in 2025, but several have participated in past challenges. In fact, an American brewer took third place in the very first BestBrewChallenge back in 2015, and the most recent American to medal was in 2023. The year with the highest participation from the U.S. was 2022, with 25 registered entries.

Registration for the 2026 BestBrewChallenge started in February and all (Dark Wheat Beer) entries would have had to be brewed long before you read this. But it's never too early to start dreaming about brewing your best beer in Germany in 2027.

Related Links:

- *What separates the best homebrewers from the average ones may not be as much as you think. Two Ninkasi Award winners share their secrets to brew great beer:* **www.byo.com/articles/the-little-things-what-separates-the-best-from-the-rest**

- *Three award-winning brewers share advice on how to stand out and win homebrew competitions:* **www.byo.com/articles/winning-competitions-tips-from-the-pros**

MISCHIEVOUS WIND LEICHT WEIZEN

(5 gallons/19 L, all-grain)
OG = 1.033 FG = 1.007
IBU = 5 SRM = 3 ABV = 3.3%

This light ale recipe from Tomas Sirtautas won the 2021 BestBrewChallenge competition.

INGREDIENTS

4 lbs. (1.8 kg) Best Heidelberg wheat malt
2.6 lbs. (1.2 kg) Best Heidelberg malt
5 oz. (140 g) rice hulls
1.4 AAU Tettnang hops (60 min.) (0.4 oz./11 g at 3.5% alpha acids)
White Labs WLP300 (Hefeweizen Ale) yeast
¾ cup corn sugar (if priming)

STEP BY STEP

Use reverse osmosis water and adjust to: Ca-55 ppm, Mg-9 ppm, SO_4-50 ppm., Cl-85 ppm. This recipe uses a step mash. Mash in at 113 °F (45 °C) and rest for 20 minutes. Raise temperature to 149 °F (65 °C) and rest for 30 minutes. Then raise the mash temperature to 158 °F (70 °C) and rest for 30 minutes. Mash out and boil for 60 minutes, adding the hops at the start of the boil.

At the end of the boil, quickly cool the wort to slightly below fermentation temperature, about 63 °F (17 °C). Oxygenate wort and pitch yeast. Ferment at 64 °F (18 °C) until complete and then bottle or keg as usual.

MISCHIEVOUS WIND LEICHT WEIZEN

(5 gallons/19 L, extract with grains)
OG = 1.033 FG = 1.007
IBU = 5 SRM = 3 ABV = 3.3%

INGREDIENTS

2 lbs. (0.9 kg) wheat dried malt extract
1.6 lbs. (0.7 kg) light dried malt extract
1.4 AAU Tettnang hops (60 min.) (0.4 oz./11 g at 3.5% alpha acids)
White Labs WLP300 (Hefeweizen Ale) yeast
¾ cup corn sugar (if priming)

STEP BY STEP

Bring 6.5 gallons (24.5 L) of water to a boil and remove from heat while carefully stirring in the malt extracts until dissolved. Return to heat and stir in the hops. Boil for 60 minutes.

At the end of the boil, quickly cool the wort to slightly below fermentation temperature, about 63 °F (17 °C). Oxygenate wort and pitch yeast. Ferment at 64 °F (18 °C) until complete and then bottle or keg as usual.



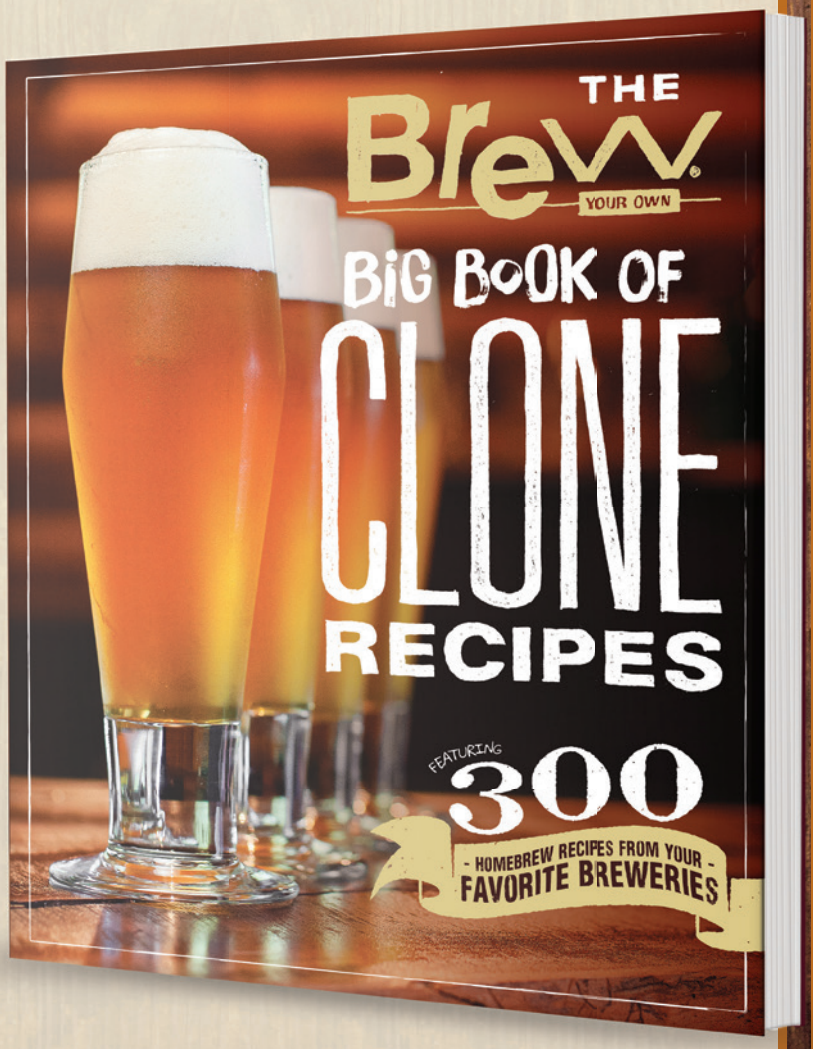
Photo courtesy of BestMalz

SEND IN THE CLONES!

HUNDREDS OF RECIPES TESTED BY *BREW YOUR OWN*

Enjoy the ultimate collection of our clone recipes, complete with full-color photography. This book contains both the classics and newer recipes from top craft breweries including Brooklyn Brewery, Deschutes, Firestone Walker, Hill Farmstead, Jolly Pumpkin, Modern Times, Maine Beer Company, Stone Brewing Co., Surly, Three Floyds, Tröegs and many more.

Whether you're looking to brew an exact replica of your favorite IPA or get some inspiration on a stout from the greats, this book is your new brewday planner.



Clone Your Favorite Commercial Beers at Home!

ORDER YOUR COPY TODAY: BYO.COM/BOOK

QuartoKnows.com • #BeInTheKnow

Quarto Knows

VOYAGEUR PRESS

Brew YOUR OWN THE HOW-TO HOMEBREW BEER MAGAZINE

BY DAN RUSSO

FRESH-HOP BEER CONSIDERATIONS

Fresh from the bine

Fresh-hop season is such a wonderful time for brewers. Living in Oregon, I have the privilege of being less than 100 miles from some of the best hop growers on the West Coast. Take that a little further to the epicenter of hop farming in America: Yakima, Washington, and you are in hop heaven. That being said, hops are grown across the country with great success, so even if you aren't in the Pacific Northwest, you may be able to source fresh hops from not too far away. Though this column isn't on sourcing hops — it's on what to do with fresh hops when you have them — do know that there are ways to get fresh hops to your brewery even if they aren't grown a short drive away.

There are so many ways that you can jump into making fresh-hop beer. Do you want to focus on using hot-side hop additions, cold-side hop additions, or even liquid nitrogen to make the perfect fresh-hop beer? You also must decide what styles you want to tackle and the best way to approach them. All are valid questions and have many different paths that you can take. Having brewed many fresh-hop beers myself, I would like to share details around some of those paths and help you formulate a plan for the best season of brewing!

The general school of thought is to use 4–4.5 times your normal hopping rate (by weight) to achieve the character you are looking for.



Adding fresh hops to the mash tun is one approach to utilize them on the hot side.

HOP SEASON

Hop harvest is usually split into three sections: Early-, mid-, and late-harvest, as not all varieties are ready to pick at the same time. Harvest timing is predicated by the moisture of the hop cones to determine when they are ready to be picked. Hop harvest usually begins in the first two weeks of August and continues for up to a month thereafter in the Northwest. Central hop growing states usually see the hops starting to hit peak ripeness in mid-August and running through mid-September. East Coast local growers usually are able to start harvesting in late August and the harvest will run through September. The first hops harvested usually consists of European-derived varieties that can be used to make fresh-hop lager, such as Mount Hood and U.S. Tettnang; but Strata® is another early ripening variety. You will also get the first burst of Centennial.

Mid-harvest brings the bulk of the C-hops. Hops like Cascade, Chinook, and Columbus start being harvested in the second to third week of August. This timeline would be well adjusted depending on your climate for your local growers that you are connected with.

Near the end of August and early September is when you get the "cool kid" hops such as Citra®, Mosaic®, and Simcoe®. Knowing the relative timeframe the variety you are after will be picked allows you to plan well in advance for your brewing schedule. Hop suppliers usually start reaching out to customers in late May with projected dates of harvest. It is a bit of a moving target, but they are pretty spot on. I just leave a little bit of variability in my production schedule in case they push a hop's harvest by a day or two.

HOP USAGE RATES

This is probably the easiest place to start with fresh-hop beers. It's still a little unpredictable and will always take adjustment. The general school of thought is to use 4–4.5 times your normal hopping rate (by weight) to achieve the character you are looking for. For German and English beer styles you can use the lower end of 3.5x, but for hoppier styles like pale ales and IPAs use the upper range for fresh hops. These rates even apply to the nitrogen section of this article.

PRODUCTION: THE REALITY OF HOT-SIDE VS. COLD-SIDE HOPPING

Every brewer has their own preference on how to use fresh hops. Some like adding them on the hot side and some like to use them on the cold side as a dry hop. There are many ways to go about each use of the fresh hops and either option creates a fantastic product to encapsulate the season.

Hot Side – I have always loved hot-side fresh hopping. You really get the essence of the hop into the beer. The main worry is always the chlorophyll component, which in some ways is inevitable. Outside of a small bittering addition, everything gets pushed to the whirlpool. You can use bags, but I have found that using your mash tun as the hot-side vessel is perfect. The ability to have the full soak, without having to push the bags down continuously while the hops have their bath works great. And you can scoop them out, making it easier than hauling sacks tied to string out of your kettle. The benefit of using the hops during the boil is that you have a ton of options once you reach your terminal gravity. You can dry hop with whatever hop that you would like. Make it as expressive as you want. Or you don't dry hop at all. You have the opportunity to see where the beer is, and take it wherever you want to go.

The issue with hot-side additions is that you will not have the alpha acids provided at that time of harvest. Most suppliers do not get the alpha provided until after full processing, which could be months. Knowing the hops you are choosing and looking at past records of the alpha acids, you should be able to get a pretty good idea to determine your best course of action for the amounts and usage for your beer.

I have seen some of the best brewers in the world take this approach of focusing on hot-side additions and win medals year after year with their fresh-hop beers.

Cold Side – Using hops after the boil gets a bit more adventurous. There are both positives as well as potential drawbacks. If you look at the benefits, you are getting the true essence of the hop off the bine. The grower has chosen the exact moisture level that it needs to be picked at. Depending where you are, the fresh hops are either picked up the same day they are harvested or shipped to you overnight for a next day brew. It's all a win-win on freshness. The biggest issue, in my mind is the "green" or chlorophyll character that comes out of cold-side fresh hopping. The leaf matter of the hops will penetrate the beer. Whole cone hops — fresh or nitrogen frozen in bales — will still have that character. In some ways it is enduring. It shows the season, without a doubt. In my experience in the Northwest, I see it in new-age American lagers and some IPAs. It really comes down to finding a sweet spot. It's not my place to tell you what you think that spot is, but I think as advanced brewers you will know when you need to pull the beer off the hops. At that point, pick your favorite brite tank (my superstition for fresh-hop beers), crash the beer fully, and make that transfer and carbonate. Give it a couple of days to mellow and you should be in a great place to package.

Nitrogen – A trend that has hit the industry over the past dozen years is the use of liquid nitrogen to flash freeze fresh hops and get the complete essence out of the cones. The idea is to pick the hops, take them back to the brewery and use



A delivery of fresh hops always makes brewers smile.

the liquid nitrogen to stabilize the hop character that you want. The idea comes from the same idea of how hops are packed in pellet form from major hop farms. Each packaged bag gets a nitrogen purge before it is sealed. This helps with the longevity of the hops. The same concept can be applied to fresh hops. The process seems complicated, but is actually pretty simple.

Before even considering liquid nitrogen use; as fun as a return that it can have on your fresh-hop beer; you must ensure that you have the proper Personal Protective Equipment or PPE. Heavy industrial gloves, chemical-resistant boots, face shields, and proper skin protection. Liquid nitrogen is no joke. Take precaution and be responsible.

Most industrial supply companies carry liquid nitrogen and the tools to use it. This includes the tank and a dispersing wand. What you are trying to create can essentially be called shatter. You need to remove the excess oxygen from the hops and make a stable hop product ready to be added to your beer. You'll need the nitrogen and equipment from your supplier to disperse the cold gas on hand when the hops arrive. Then you'll need one, if not two, extra strength plastic bins. The extra strength is imperative. If you want to spend money every year on new vessels for this process you can, but getting the heavy duty one will last you a long time for a nominal cost. You are also able to use some of your smaller vessels, if they have an open top and can vent.

Once you have the nitrogen and the hops, in a well ventilated space, add the hops into your bins as soon as you get them into the brewery. Then take the wand and stick it to the bottom of the bin. Crank the nitrogen all the way open — be careful of off-gassing, inhaling liquid nitrogen can result in injury or death. Again liquid nitrogen is very dangerous. That gas can fill a room quickly as it disperses. It is also incredibly cold and if it touches your skin can be incredibly harmful to you. If this is a route you want to try, take precaution on all steps. Slowly move the wand up as you start seeing billowing gas coming out of the container. As you get to the top you will start to see the freezing in real time. The hops start to become brittle. Once you see this, you can turn off the liquid

nitrogen flow. Now the frozen solid hops need to be broken down. The shatter is very vulnerable at this point. The cost-efficient route is using a baseball bat. You take the bat and use the top end and just smash! Definitely fun and therapeutic. The other option is an immersion blender (preferably industrial). This will break all the particulates apart and make for easy use. Have a hop sack available to pour the hops into, wrap up, and get ready for transfer.

TRANSFER AND FINISHING

Depending on which method you choose, there is some variability in how to handle fresh hopping. If you choose to go hot side only, maybe with a dry hop of your choice, you can pretty much settle on a standard fermentation and transfer schedule.

If you use the fresh hops exclusively on the cold side or a mix of the cold and hot side, I would suggest a double transfer. Even with hop bags, the particulate will come through the mesh and it becomes hard to settle. I look at a fermenter-to-fermenter transfer first at full crash. Let it settle for a day or two and then transfer to the brite tank for carbonation. It does take up tank space but will vastly improve the look and quality of the beer. If you are a filtering brewery, I would resist filtering these beers; as the hop quality you are trying to express from their freshness will be diminished significantly. Whether it is a single transfer or a double transfer, I suggest over-CO_2 purging your tanks. Make sure oxygen is absent as best you can. The best method is to fill a tank with water, purge the tank with gas and send the water back to your hot liquor tank or water storage unit. This allows you to reuse the water for the next batch of beer or for cleaning.

CONCLUSION

We have the opportunity to create and manipulate our beers from grain to glass. A lot of that falls to the wayside when we get to the fresh-hop season. It makes us reflect on where our hops are grown, the farmers who grew them, and how they were produced. I am lucky enough to have the opportunity to drive to my growers and smell the hops through the season. It helps plan out a year of brewing. But fresh-hop season is special as it allows any brewer to showcase their favorite hops in their prime. It is a fulfilling process that connects our beer back to the land from which it came. I encourage every brewer to connect with their hop supplier to learn more about their fresh-hop options and glean any insight they can.

The fun part, as with all craft beer, is that you get to make it your own, while working with farmers who care as much as you do about the craft. Don't ever forget about them. BYO

Special thanks to the brewers who have taught me so much about using fresh hops: Brett Thomas (Sunriver Brewing Co.), Stephen Hughes (Coldfire Brewing), and Shaun Kalis and Devin Benware (Ruse Brewing).





BY LENNY MODELEWSKI

CUSTOM BREW-IN-A-BAG STAND

A compact design to make brew day easier

After a few extract brews, the realization and initial amazement that I was actually able to make beer with a pot on a stove top and a bucket subsided. What came next for me was longingly gazing at others' elaborate all-grain brewing systems. Not surprisingly, the child in me wanted the biggest, coolest, shiniest, most flashing lights and gizmo-laden system I could find. Cost and space were of no concern. It just had to be awesome! The adult in me, however, went full on buzz kill mode wondering where in the world will a monstrosity like that fit in the garage? How exorbitant is the price tag for all that? Even begrudgingly starting off with an Igloo cooler-type 3-vessel system would still require THREE large vessels! Not to mention two large burners, a false bottom, valves, pumps, and hoses or some kind of large vertical stand just to get started. All of this sounded very costly and destined to occupy a large chunk of nonexistent real estate in an already crowded garage. Wishing for a way to break into all-grain brewing on a tight budget and limited physical space before knowing if the hobby would even be something I'd want to continue long term, I found the Brew-In-A-Bag (BIAB) method.

BIAB seemed like a way to get myself into all-grain brewing that would be approved by the adult in me. Requiring only one large vessel, a mesh bag, and my propane turkey fryer burner to get started, it checked the boxes for space-saving and wallet-friendly. It seemed like a great way to introduce myself to all-grain brewing until I could afford and figure out how to fit a "real" all-grain brewing system of my own. At least, that was my misguided thought process at the time.

After a number of BIAB batches I could see that this hobby is certainly something I wanted to continue, but one of BIAB's downsides became quite evident. Wrestling around with the cumbersome hot bag full of wet grain is awkward at best, and more than a tad uncomfortable on a few occasions. A simple pulley and rope hooked to the garage door frame or an A-frame ladder remedied that problem temporarily. This "system" was certainly nothing to look at. It was a far cry from the electric panels and pumps and shiny stainless advertised in magazines, but it worked. Though the child in me still yearned for that fancy, all-grain system. After the eventual realization that BIAB is indeed "real" all-grain brewing, tricking out a single-vessel BIAB system became the new goal, and my current system began to take shape.

The first addition had to be a brew stand. The stand had to be able to come apart and store away when not in use to take up as little space as possible. Using some basic materials, I created a brew stand that was functional for me to brew on from day one, yet able to be easily modified as new components were added.

In my opinion, BIAB excels as a system for a homebrewer for multiple reasons. The first being that it can be a comparatively cheap and simple way to get yourself into all-grain homebrewing. I started off with a basic 16-gallon (60-L) GasOne kettle I ordered from Amazon with my propane turkey fryer burner perched on a few concrete blocks and a bag from The Brew Bag. That's truly all you need to be a successful all-grain homebrewer with a BIAB system, and it's your choice to leave it at that or slowly add and build it as budget and time allows. That GasOne kettle and old turkey fryer burner are still the foundation of my brew system today.

BEFORE



AFTER



Photos by Lenny Modelewski

A homemade copper coil immersion chiller was the first upgrade, followed by a homemade hop spider. Over time, I added a pump and hoses with a trub dam and whirlpool arm, and whirlpooling was now mechanized rather than me slowly stirring by hand. With a pump in the mix, the immersion chiller was eventually upgraded to a plate chiller, and ran in that configuration for quite some time before adding the RIMS (Recirculating Infusion Mash System) tube to the mix. With the addition of the RIMS, I'd argue that my BIAB system offers more control than some of those shiny three-vessel stainless gizmo-laden systems I once longingly yearned for. Strike temperature just has to be in the ballpark. The RIMS tube will make the correction if I hit low on my mash-in temperature in a matter of minutes. Multi-step mashes are also a breeze, and mash efficiency is improved.

Is my BIAB brew system "finished"? Honestly, tinkering and building is half the fun for me with this hobby, so the answer is likely "no." What I can say for sure is that BIAB was the way to go for me. I was able to budget and slowly build this setup over time as I gained more knowledge, while still being able to brew on it throughout its evolution from day one. This, along with the fact that all the components still fit in my overcrowded garage space appeased the adult in me. The child in me is happy to be able to step back and admire the shiny, elaborate, gizmo-laden creation. For me, my BIAB stand and brew system is a win-win. And if you think it may be for you also, I'm here to share more about the stand itself. I'll avoid most of the exact measurements due to the nature of this build being sized for my own gear, but try to give a clear picture of how you can build something similar to fit your needs as well.



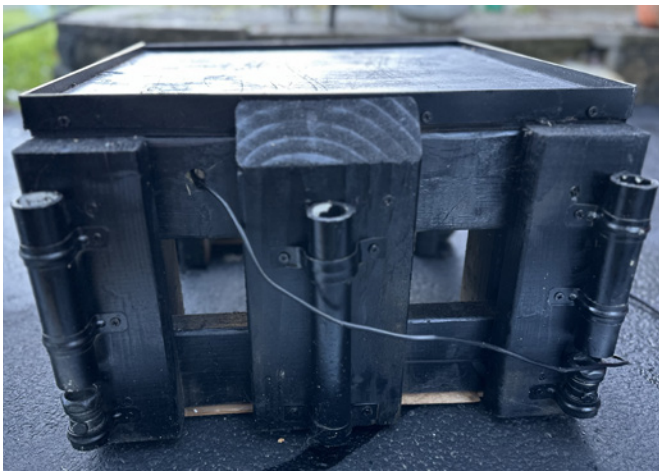
The three parts of the BIAB stand include a wooden base, four sections of steel pipe, and a crossmember on top made from steel angle.



The stand assembles and disassembles quickly before and after brew days.

The stand itself is composed of three main parts consisting of a sturdy wooden base, four equal length sections of ¾-inch Electrical Metallic Tubing (EMT), and a crossmember on top for the pulleys and rope to hoist the bag.

The crossmember setup is constructed using steel angle. I welded that in an "X" and at each end I welded a section of ½-inch steel round tube that would fit inside the electrical conduit. This same idea could easily be accomplished with a nut and bolt drilled through the center to create the "X" and large bolts on the ends to seat into the tops of the conduit legs if you don't have a welder. I happened to have a new welder I wanted to play with, so I went that direction.



The base that holds the vertical pipes in place and supports the burner is made primarily of scrap wood.

The base is simply 2x4s and a small piece of ¾-inch plywood that I also had in the garage. I chose to purchase some 1-inch flat steel to create a lip around the edge as a little added protection from one of the propane burner's legs slipping off the platform during a brew. On the corners of the base are short sections of 1-inch PVC pipe secured with pipe hanger straps. The ¾-inch electrical conduit fits nicely inside the 1-inch PVC. Under each section of PVC is an EMT conduit coupling that I drilled a hole through and lag bolted to the frame. This provides a well-fitted pocket for the base of each conduit leg and keeps them off the ground at an even height. The additional PVC sleeve seen in the center of the picture above was added later as a mount for the plate chiller.

The dimensions of the base were specific for my space also. The base and the burner are able to fit under my fermentation chamber when not in use to save precious space.



A boat cleat to keep the bag suspended when draining, as well as a pump mount and hooks have all been added to the EMT steel pipe legs.

The strong, yet lightweight electrical conduit is easy to drill, which made mounting a boat cleat to keep the bag suspended for draining a breeze. Later modifications to the conduit legs were made to mount the pump, a hook for the lid, the RIMS tube and controller, and whatever may come next.

During the boil, the RIMS tube can easily be removed to wash and the hoses are reconfigured for whirlpooling and chilling. The addition of the plate chiller has made knockout more efficient for me. If you're interested in BIAB brewing, whether it stays as a simple functional stand or slowly gets tricked out over time, I'd suggest that some version of a brew stand with a pulley system be at the top of your project list. BYO



The mounted pump, RIMS, and plate chiller make transferring and cooling wort easy and add a lot of control many BIAB brewers don't have.

HOMEBREW DIRECTORY

UNITED STATES

CALIFORNIA

THE CHI COMPANY
6070 Enterprise Dr., Suite K
Diamond Springs 95619
(530) 622-8265
info@chicompany.net
www.chicompany.net
4000+ Beverage related parts: Beer, Wine, Soda. New & used equipment. Brass & Stainless Fittings. ALL Ball, Pin & Sanke keg parts. If we don't have it — We will find it for you!

MOREBEER! & MOREWINE! (Concord)
995 Detroit Ave. Unit G
Concord 94518
(925) 771-7107 fax: (925) 671-4978
srconcord@moreflavor.com
www.morebeer.com
Absolutely Everything! for Beer-Making

MOREBEER! & MOREWINE! (Riverside)
1506 Columbia Ave. #12
Riverside 92507
(951) 779-9971 fax: (951) 779-9972
srriverside@moreflavor.com
www.morebeer.com
Absolutely Everything! for Beer-Making

SOCAL BREWING SUPPLY
747 Shadowridge Drive
Vista 92083
(760) 420-3774
socalbrewingsupply@gmail.com
www.socalbrewingsupply.com
SoCal Brewing Supply features a huge selection of brewing ingredients to support all your homebrewing needs.

STEIN FILLERS
4160 Norse Way
Long Beach 90808 (562) 425-0588
www.steinfillers.com
brew@steinfillers.com
Your complete Homebrew Store, serving the community since 1994. Home of the Long Beach Homebrewers.

COLORADO

BOULDER FERMENTATION SUPPLY
2510 47th - Unit 1
Boulder 80301 (303) 578-0041
www.boulderfermentationsupply.com
Newly Expanded! Proud vendor of Colorado Malting Co. With a wide range of gluten free grains, CO_2 refills and all your fermentation needs. Stop in, open weekdays 11-7, weekends 10-6.

LIL' OLE' WINEMAKER
516 Main Street
Grand Junction 81501
(970) 242-3754
Serving Colorado & Utah brewers since 1978

ILLINOIS

GNOME BREW
2026 W Montrose Ave.
Chicago 60618 (773) 961-7750
gnomes@gnomebrewshop.com
gnomebrewshop.com
2022 Homebrew Shop of the Year. Easy online ordering with next day fulfillment and nation-wide shipping. Call or email us anytime to talk with our knowledgeable and friendly staff.

IOWA

BLUFF STREET BREW HAUS
372 Bluff Street
Dubuque (563) 582-5420
jerry@bluffbrewhaus.com
www.bluffbrewhaus.com
Complete line of wine & beermaking supplies. In operation since 2006.

KANSAS

BACCHUS & BARLEYCORN LTD.
6633 Nieman Road
Shawnee 66203 (913) 962-2501
www.bacchus-barleycorn.com
Fast, friendly, personalized service since 1968. Full line of fresh ingredients for home beer, wine, mead, cider and cheese makers. Your home fermentation specialists.

LOUISIANA

BREWSTOCK HOMEBREW SUPPLY
1300 S Broad Ave.
New Orleans 70125 (504) 208-2788
www.brewstock.com
email: oliver@brewstock.com
Louisiana's largest selection of Homebrewing supplies! Beer, wine, cider, distilling, kombucha, and more!

MARYLAND

THE FLYING BARREL
1781 North Market St.
Frederick
(301) 663-4491 fax: (301) 663-6195
www.flyingbarrel.com
Maryland's original Brew-On-Premise; winemaking and homebrewing supplies!

MICHIGAN

BELL'S GENERAL STORE
355 E. Kalamazoo Ave.
Kalamazoo 49007 (269) 382-5712
www.bellsbeer.com
Staying true to our roots, Bell's General Store has been supplying homebrewers since 1983. Visit us next door to Bell's Eccentric Café or online at www.bellsbeer.com

SICILIANO'S MARKET
2840 Lake Michigan Dr. N.W.
Grand Rapids 49504
(616) 453-9674 fax: (616) 453-9687
e-mail: sici@sbcglobal.net
www.sicilianosmkt.com
The largest selection of beer and wine making supplies in west Michigan. Now selling beer & wine making supplies online.

MINNESOTA

MINNESOTA HOMEBREW
22043 Industrial Blvd., Ste. 2
Rogers 55374
(763) 742-9035
www.mnhomebrew.com
Minnesota Homebrew is a brewing and canning supply store offering a wide selection of products related to all things brewing, fermented, and preserved, while maintaining a friendly and informational environment.

NEW HAMPSHIRE

EARTH EAGLE BREWINGS
350 NH-108
Somersworth 03878 (603) 767-8235
www.aghomebrewsupply.com
alex@eartheaglebrewings.com
Fromerly A&G Homebrew Supply Quality supplies for beer and winemaking at home. CO_2 exchanges, kegging equipment. Cheesemaking, gifts, books. Friendly, expert service and great prices. Plus, Earth Eagle Brewings merch and 4-packs!

NEW YORK

PANTANO'S WINE GRAPES & HOME BREW SHOP
249 Rte 32 South
New Paltz 12561
(845) 255-5201 or
(845) 706-5152 (cell)
www.Pantanosbeerwine.com
pantanowineandbeer@yahoo.com
Find Us On Facebook. Full line of homebrewing equipment & ingredients for all your brewing needs and Distilling Yeast. Serving Hudson Valley's homebrewers. Beer Club in House! M.H.B.A.

NORTH CAROLINA

AMERICAN BREWMASTER
3021-5 Stony Brook Dr.
Raleigh 27604
(919) 850-0095 (ph)
(984) 251-3030 (txt)
americanbrewmaster.com
Locally owned and operated for 40+ years. Est. 1983.

OHIO

LABEL PEELERS BEER & WINE MAKING SUPPLIES, INC.
636 S. Walnut St.
Ravenna 44266
(330) 678-6400
info@labelpeelers.com
www.labelpeelers.com
Guaranteed lowest shipped price to your door. Hours: Mon–Fri 10 am–7 pm; Sat & Sun 10 am–5 pm.

OREGON

THYME GARDEN HERB COMPANY
20546 Alsea Highway
Alsea 97324
(541) 487-8671
Visit us at: www.thymegarden.com
Email: herbs@thymegarden.com
Order NOW for the best selection! Over 22 varieties of certified organic hop rhizomes, extra large and rooted rhizomes. Wholesale by phone or email. Also dried hop cones and herb and pepper seeds.

PENNSYLVANIA

KEYSTONE HOMEBREW SUPPLY
3361 Bethlehem Pike
Souderton 18964
(215) 855-0100
Email: info@keystonehomebrew.com
www.keystonehomebrew.com
Your Source for Everything Beer, Wine, Mead, Cider & more! Fresh Wine Grapes & Juice in Spring & Fall. AHA 2025 Homebrew Shop of the Year!

SCOTZIN BROTHERS
65 N. Fifth St.
Lemoyne 17043
(717) 737-0483 or 1-800-791-1464
www.scotzinbros.com
Open Tu-F 10am-6pm,
Sat 10am-5pm
Central PA's Largest IN-STORE Inventory!

VERMONT

BREWFEST BEVERAGE CO.
199 Main St.
Ludlow 05149
(802) 228-4261
www.brewfestbeverage.com
Supplying equipment & ingredients for all your homebrewing needs. Largest selection of craft beer in the area. Growlers poured daily!

VIRGINIA

ORIGINAL GRAVITY
6118 Lakeside Ave.
Richmond 23228
(804) 264-4808
www.oggravity.com
Extensive selection of ingredients, supplies, and equipment for all levels from beginner to seasoned brewer. We have a knowledgeable and friendly staff to assist you with brewing and kegging questions and recipe formulation.

WASHINGTON

JON'S HOMEBREW AND WINE SUPPLY
1430 E. Main Ave., #1430C
Puyallup 98372
(253) 286-7607
jon@jonshomebrew.com
jonshomebrew.com
Puyallup's home for Home Beer and Winemaking supplies!

WISCONSIN

WINE & HOP SHOP
1919 Monroe Street
Madison 53711
1-800-657-5199 or
(608) 257-0099
www.wineandhop.com
info@wineandhop.com
Madison's locally-owned homebrewing and winemaking headquarters. Offering fresh ingredients, quality supplies, and expert advice for over 40 years.

AUSTRALIA
W. AUSTRALIA

BREWMART BREWING SUPPLIES
*Bayswater * Maddington * Rockingham
Wholesale and Retail suppliers of Brewing Equipment and Ingredients. Find us at brewmart.com.au or on Facebook and Twitter.

NEW ZEALAND

BREWSHOP
www.brewshop.co.nz
sales@brewshop.co.nz
Online homebrew beer supplies

READER SERVICE

ADVERTISERS IN THIS ISSUE, THEIR CONTACT INFO, AND THE AD PAGE NUMBER.

AUBURN UNIVERSITY 23
brewing.auburn.edu
brewing@auburn.edu

BREW YOUR OWN BIG BOOK OF CLONE RECIPES 51
www.byo.com/book

BREW YOUR OWN DENMARK TRIP 1
www.byo.com/trip

BREW YOUR OWN DIGITAL DOWNLOADS 29
www.byo.com/shop

BREW YOUR OWN LABEL CONTEST 9
www.byo.com
edit@byo.com

BREW YOUR OWN SPECIAL ISSUES 21
www.byo.com/shop

BRIESS MALT AND INGREDIENTS CO. 5
www.brewingwithbriess.com
info@brewingwithbriess.com

COLOMA FROZEN FOODS 54
269-849-0500
www.colomafrozen.com
orders@colomafrozen.com

FASTBREWING 9
www.fastbrewing.com
info@fastbrewing.com

FIVE STAR CHEMICALS & SUPPLY INC. 21
1-800-782-7019
www.fivestarchemicals.com
support@fivestarchemicals.com

LALLEMAND INC. 17
www.LallemandBrewing.com
homebrewing@lallemand.com

LD CARLSON COMPANY 29
1-800-321-0315
www.ldcarlson.com
www.brewersbestkits.com
info@brewersbestkits.com

MOREBEER! 3
1-800-600-0033
www.morebeer.com
sales@morebeer.com

NANO PODCAST 54
www.byo.com/nanopodcast

NANOCON ONLINE ..... 22 & 43
nanocon.beer

OKTOBER CAN SEAMER ..... Cover 3
www.oktoberdesign.com

RAHRBSG ..... Cover 4
www.bsghandcraft.com
www.rahrbsg.com/rahr-to-thee-pils/

TILT® HYDROMETER 21
www.tilthydrometer.com

WASHINGTON STATE UNIVERSITY 23
https://bit.ly/WSUBrewingCert

WYEAST LABORATORIES, INC. ..... Cover 2
Fermentation Cultures: Beer, Wine, Cider
www.wyeastlab.com
customerservice@wyeastlab.com



Photo courtesy of Shutterstock.com

BY GUSTAV DOMINICUS

BELGOTRÄFFEN

Sweden's Belgian homebrew fest turns 20

A gymnasium in Uppsala, Sweden, filled with homebrewers pouring saisons, dubbels, and funky, yeast-driven ales might seem like an unlikely tribute to Belgium. The first time I experienced Belgoträffen — a gathering dedicated entirely to Belgian-style homebrewing — what struck me wasn't just the range of beers, but the shared obsession behind them. Recently celebrating its 20th anniversary, and even inaugurated this year by the Belgian ambassador to Sweden, this small Swedish event has quietly grown into one of the most dedicated celebrations of Belgian-style homebrewing outside its country of origin, highlighting its cultural significance.

The idea behind Belgoträffen (which translates to Belgo- "meetup" or "gathering") traces back to a 2005 trip to Belgium, when a group of Swedish homebrewers visited a local beer festival. It wasn't a grand event — and that was precisely the appeal. Brewers and drinkers met face to face, sharing beers, ideas, and a mutual respect for Belgian traditions. Inspired by that experience, the travelers returned home with a simple question: Why not create something similar in Sweden? Less than a year later, they organized the first Belgoträffen, laying the foundation for a lasting cultural exchange within the Swedish homebrewing community.

From just a couple dozen beers in its early years, Belgoträffen has grown to showcase around 100 entries and close to 1,000 participants. Despite growing interest and quickly selling out of tickets, we in the Uppsala Homebrew Club (UHBF) have deliberately resisted making the event too large. Our goal has never been scale, but atmosphere — fostering a warm, close-knit environment that preserves the same feeling that sparked the idea in the first place.

At the same time, Belgoträffen is very much a competition. All beers compete in a "people's choice" vote divided into two classes of stronger and lower-strength beers, with the split around 7.5% ABV — while certified beer judges evaluate entries based on established Belgian style guidelines. Beers that stay close to classic Belgian styles often appeal to judges, while more experimental and inventive interpretations tend to resonate with the public vote.

But it's not just about what's in the glass. Brewers pour their own creations and engage directly with attendees, creating an open exchange of techniques, feedback, and inspiration — with conversations that can range from microbiology to philosophy.

Names like *Black Pepper Zombie of Hops, Pirate Bay,* and *Muscles in Brussels* hint at the playful spirit behind many entries, where tradition meets curiosity. As homebrewers, we can push stylistic boundaries in ways rarely seen in commercial brewing, often blurring the line between classic and experimental (a pastry-inspired quadrupel once sparked a lively debate: Was it still within style, or had it gone too far?) At Belgoträffen, those conversations — between judges, brewers, and curious drinkers — are part of what makes the event so dynamic.

What makes Belgoträffen remarkable isn't just its longevity or the number of beers poured, but the community it continues to foster. Brewers challenge themselves to understand Belgian traditions better while still making them their own, promoting learning and connection within the homebrewing community.

In that sense, Belgoträffen reflects a universal aspect of homebrewing: The drive to learn, share, and connect through beer. What began as a simple idea inspired by a small festival in Belgium has become a lasting reminder that great beer culture doesn't depend on size, but on passion.

Find this year's winning recipes here. BYO

What makes Belgoträffen remarkable isn't just its longevity or the number of beers poured, but the community it continues to foster.

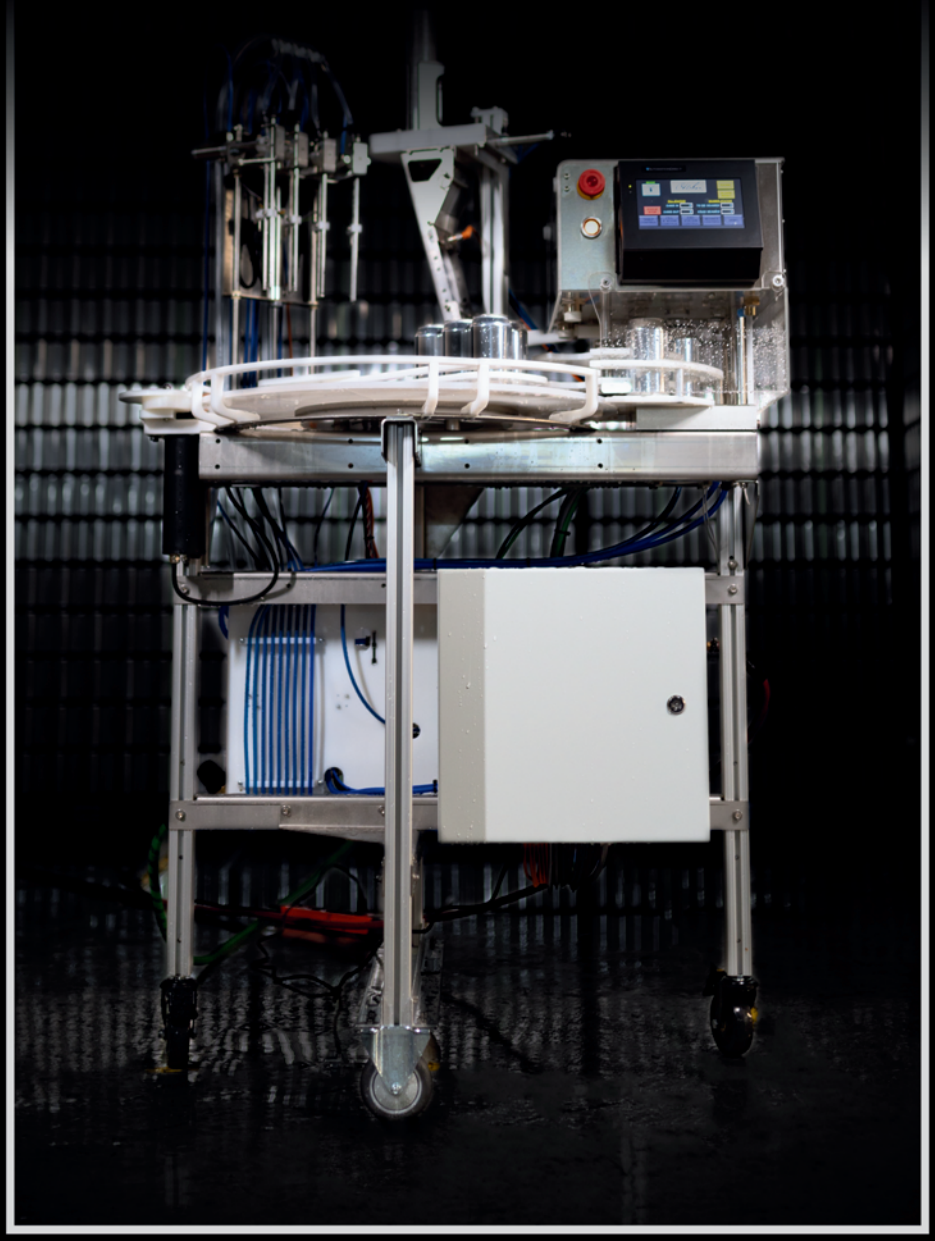


Photo courtesy of Gustav Dominicus

The Belgian Ambassador to Sweden Colette Taquet joined in celebrating Belgian beer styles at the 20th annual Belgoträffen.

Oktober

CL1 fully automated Canning Line



Built for the Long Run.

Explore the CL1 →

TO THEE! PILS™

RAHR MALTING CO.



Josh Pfriem, Co-founder and Brewmaster

pFRIEM

Our Toast To Generations Of Brewers

New from Rahr Malting Co., To Thee! Pils™ is a Low-Color Pils Malt Developed In Collaboration With Our Friends at pFriem Family Brewers

RahrBSG | Available from your favorite homebrew retailer