



### The Greater Everett Brewer's League Journal

The purpose of The Greater Everett Brewers League is to promote and educate homebrewers in the production of craft-style homebrewed beers. As an AHA social club we improve members brewing skills by providing mentoring and networking to fellow brewers, promote BJCP judging, evaluation and competition entry, as well as promoting the local craft beer movement.

#### Table of Contents:

**Pg 1:** Around the Brews

**Pg. 2 to 6:** Brewing with Hops, don't be creeped out

**Pg. 7:** Top 5 Winter Brew Recipes

**Pg. 8:** Brewer Rankings, Events, Tasting Calendar and Club Presentations

#### Zoom info:

Topic: GEBL  
November Monthly Meeting - MALT!  
Time: Nov 12, 2020  
06:30 PM Pacific Time (US and Canada)

Join Zoom Meeting  
<https://us02web.zoom.us/j/88475100208?pwd=Um1hbXFwdDFKMlZ6SnZzaUNPdWtKZz09>

Meeting ID: 884 7510 0208  
Passcode: 423910

## Around the Brews

In the exciting world of Homebrew during Covid times I hope everyone is keeping safe. I know some brewers that were members are doing well including At Large and 5 Rights Brewing. I see that 5 rights is even growing their production capacity.

For safety Jim Trimble is implementing better safety processes until things are better.

If anyone is brewing and wants to send me pictures or recipes for the newsletter we would be happy to include that.



- Bryan Collazo



We may be doing an Auction for the December meeting and the IPA challenge is coming soon. If you have time to help please let Jesse know.

I and I'm sure many of you can't wait until we can all meet again in person safely.

## Brewing with Hops: Don't Be Creeped Out



Stan Hieronymus explains the creeping phenomenon of dry-hopped beers that seem to have minds of their own—and ways to keep them under control.

“Hop Creep” isn’t the name of a beer-themed horror movie—just a real, ongoing mystery that brewers and hop scientists are still sorting out.

Oregon State University’s Tom Shellhammer, one of the country’s top brewing scientists, says that his earliest moments of being introduced to the phenomenon were about five years ago, although he didn’t realize it at the time. “I was giving a talk at the 2015 Craft Brewers Conference, and somebody in the Q & A asked, ‘Hey, do you see people getting diacetyl when they dry hop?’ I was like, ‘No.’”

Diacetyl is one result of hop creep. Beer with more alcohol than a brewery intended—which brewers call “out of spec”—is another, as are bottles or cans with dangerously high levels of carbonation. Back in 1893, Horace Brown and G. Harris published research about “the freshening power of dry hops,” claiming that hops contained a “diastate” that was responsible for a second fermentation in the cask due to dry hopping.

More research in 1940 confirmed that Brown and Harris were correct. Yet the matter did not come up again for more than 70 years. So, 40 years after Anchor Brewing reintroduced America to dry-hopped beers with Liberty Ale, why did it suddenly become necessary to consider the

enzymatic potential of hops?

Looking for answers started out as a “hmmmm project,” Shellhammer says. “We opened up this box, and we found all sorts of cool stuff, from a scientific perspective.”

Curiously, it was a question from Allagash Brewing—which at the time dry hopped just 1 percent of its beers and bottle-conditioned 98 percent of them—that led to opening the box. The brewery dumped its first 60-barrel test batch of Hoppy Table Beer in 2016 because instead of finishing with a carbonation level of 2.6 volumes as targeted, the beer reached 4.5 volumes in three weeks. Allagash does not make this sort of conditioning miscalculation.

Zach Bodah, head of quality control, led a series of experiments and treatments, finding a solution to the problem. But then, “we [had] even more questions about why this [was] happening,” Bodah says. “Time to call an expert. And who are you going to call when you have a hop question? Doctor Tom Shellhammer.”

Shellhammer, Bodah, and Allagash Brewmaster Jason Perkins told the story at CBC in 2017. When their presentation, “Unintended Over-Attenuation from Dry Hopping Beers,” was complete, the second brewer to ask a question began, “We are all slaves to the creep.” The phenomenon has been called hop creep from that day forward, “creep” referring to an ongoing and slow reduction in final gravity. (There is not a single word to describe this reduction in German, so German brewers also call this “hop creep.”)

An (oversimplified) explanation of what is happening goes like this:

- Dry hopping liberates fermentable sugars in beer (glucose and maltose, mostly maltose), and hops contribute a small amount of sugar themselves.
- A higher hop load adds more sugars.
- Longer dry-hopping time and higher temperatures result in more sugars.
- Dry-hopped beer with high residual extract produces more fermentable sugars.
- Enzymatic activity varies across varieties and may be influenced by farming practices.

## Learning from Adventures in Creep-Fighting

Shellhammer headed a CBC Online panel in May, along with four brewers who talked about the approaches they’ve taken to managing hop creep.

Brewmaster Adam Beauchamp says Creature Comforts Brewing began to notice hop creep in heavily dry-hopped beers in 2016. However, it was not a serious problem in Tropicalia, the brewery’s flagship IPA. That changed in December of 2018, when instead of finishing in 14 days, Tropicalia took 20 or more to clear VDK (vicinal diketones, flavor compounds that include diacetyl). Finishing gravity, targeted for 2.8° Plato (P), dipped to 1.8° P.

Tropicalia accounts for more than 60 percent of Creature Comfort’s sales. Longer cellaring time

for the beer would have effectively lowered the brewery's capacity from 70,000 barrels per year to 43,000.

A quick check found yeast viability issues, but even after those were solved, Tropicalia was still taking longer than before to clear VDK and finishing below target. The brewery tested a variety of potential solutions: adding lactose, adding dextrose, using hop concentrates, changing yeast and hop varieties, dry hopping earlier, recirculating hops.

Ultimately, Creature Comforts settled on using alpha acetolactate decarboxylase, an enzyme that breaks down the precursor for diacetyl to acetoin, a compound with a high flavor threshold. Brewers crash cool the beer when it reaches target final gravity. Beauchamp emphasizes that separating yeast from the beer, which Creature Comforts does with a centrifuge, is essential because dextrinase from the hops will continue to create sugar.

Caolan Vaughan, head brewer at Stone and Wood in Australia, says his brewery began to notice trailing fermentations in its Pacific Ale in 2014. The 4.4 percent ABV, 20-IBU beer accounts for 88 percent of the brewery's production. It was one of the first beers anywhere to showcase Galaxy hops.

In 2015, the brewery received complaints about over-carbonation, and its lab observed that alcohol content had increased in samples held in its library. "We needed a solution, and we could not consider filtration," Vaughan says. Stone and Wood chose to begin flash-pasteurizing its beer. "We solved our problem without fully understanding how." Pacific Ale won the silver medal at 2016 World Beer Cup as an English-style summer ale.

After seeing the Allagash/Oregon State presentation in 2017, Stone and Wood conducted a series of experiments to better understand hop creep. They determined that 86°F (30°C) is the optimal temperature for enzyme activity and that the optimal pH range is 4.0–4.5. They also learned that 1 PU (pasteurization unit) is sufficient to denature hop enzymes and yeast.

At Shellhammer's panel, Vinnie Cilurzo of Russian River presented data-based details about two solutions his brewery has found. In one, brewers dry hopped an all-Simcoe beer called Row 2, Hill 56 with Cryo hops and compared it to one dry hopped with pellets. Yakima Chief Hops uses a proprietary process to produce Cryo hops, separating lupulin within the lupulin gland from green matter. Hop enzymes reside within the vegetal matter but not in the Cryo pellets.

Beer dry hopped with Cryo cleared diacetyl precursors in seven to nine days, while those dry hopped with pellets took 10 to 15 days.

In Cilurzo's second example, Russian River used hops kilned at a higher temperature than that which has become standard for aroma hops. Russian River brewed batches of Pliny the Elder made with hops kilned at 130°F (54°C), the new standard, and at 145°F (63°C). The higher-kilned

batch took a day and a half less to clear diacetyl.

At Oregon State, a tasting panel evaluated beers brewed with high- and low-kilned hops that were packaged on consecutive days. The panel described the aroma of the high-kilned version as bright citrus, pithy grapefruit rind, orange peel, tangerine, and tropical. The flavor was resinous, citrus, and almost raw.

The aroma of low-kilned beer was bright citrus, more tropical than the high-kilned, and piney. The flavor was resinous, citrus, more palatable, round, and had a softer mouthfeel with a shorter, bitter finish. Most important to Cilurzo was that panel members were split on which beer they preferred.

Another option is “flash-kilned” hops, but Cilurzo says that more research is needed to judge the value of using them. From Tributary Hop Farms in Washington, these are kilned briefly at a high temperature, then at a much cooler temperature. The dry-hopping time was slightly shorter for a beer dry hopped with 2 pounds (907 g) of flash-kilned Citra hops per beer barrel.

Researchers at Oregon State have measured the impact of temperature on enzymes, in this case as part of an ongoing study about the impact of kilning on aromatic qualities. That research found that higher heat reduces enzymes. “That’s not a call for hop farmers to turn their kilns up,” Shellhammer says. Farmers have reduced kilning temperatures by 15 to 20 degrees Fahrenheit (8 to 11 degrees Celsius) in the past decade because brewers asked for hops with more essential oil, which contains the aromatic compounds brewers seek to accentuate with dry hopping.

Max Kravitz, quality manager at pFriem Family Brewers, has talked to brewers across the country and previously summarized what he learned in a presentation for members of the Brewers Association of the Americas. He’s heard the stories about how hop creep seems more common with California ale yeast, from whatever the source, or Amarillo hops—but that doesn’t mean a brewery will want to swap out a yeast strain common to many of its beers or abandon particular hop varieties.

He recited the list of variables to consider: yeast cells in suspension, timing of dry-hop additions, dry-hop quantities, dry-hop temperature, total contact time, and agitation (rousing). Ultimately, he offered the same advice as other brewers on the panel. “The way we approach it isn’t going to work for every brewery,” he said. “Every brewery needs to develop their own strategy.”

## **Avoiding Hop Creep at Home**

Blaze Ruud, director of key accounts and brewing innovations at Yakima Chief Hops, still brews his own beer, although not necessarily five gallons at a time. He noticed hop creep several years ago and adjusted his recipes and process for heavily hopped beers accordingly. He offers this advice:

- Keep the grain bill simple, limiting the amount of unfermentable sugars for the hops to work on in the first place.
- Mash at a lower temperature, again limiting the amount of unfermentable sugars.
- Use T-90 pellets during active fermentations and Cryo hops toward the end (1–2° Plato from anticipated terminal gravity).
- He suggests a combination of pellets and Cryo hops (which reduce the enzymatic potential of the hops and brighten the aroma), replacing 2 ounces (57 g) of pellets with 1 ounce (28 g) of Cryo. A recipe that calls for 6 ounces (170 g) of dry hops would then include 2 ounces (57 g) of pellets and 2 ounces (57 g) of Cryo.
- Do not cool beer until it has passed VDK/diacetyl sensory. If this takes more than five or six days, check the yeast health.
- Get beer off the trub within one to two days of crash cooling.

## Enzymatic Power

Kaylyn Kirkpatrick, technical brewing project coordinator at the Brewers Association, wrote her master's thesis at OSU on "Investigating Hop Enzymes." In the process, she examined the enzymatic power of 30 hop cultivars, classifying their potential as high, moderate, or low. She was careful to point out the limitations of the investigation because, besides the variety, the harvest year, on-bine maturity, and drying practices may influence enzyme activity. That one lot of Amarillo she included is high in enzymatic power and one is low emphasizes that point.

High: Amarillo (2015 crop), Cluster, Fuggle, Nugget, Perle

Moderate: Azacca, Cascade, Comet, Dr. Rudi, Golding, Kohatu, Mosaic, Mt. Hood, Moutere, Pacific Gem, Pacific Jade, Rakau, Simcoe, Wai-ti, Willamette

Low: Amarillo (2016 crop), Centennial, Citra, Crystal, East Kent Golding, El Dorado, Galaxy, Hersbrucker, Saazer, Summit

By STAN HIERONYMUS



## Top 5 Winter Brew Recipes

What's Brewing In The Home? The holidays are a perfect time to get experimental with homebrewing, whether you're brewing for a party full of thirsty friends or simply getting creative with new seasonal flavors and spices. We've been toying with a few new recipes of our own, both old and new, but these five are the big stand outs of the month. Got some winter recipes to add to our list? Tweet them [@bitterandesters](#). We've always got room for more.

**Roggenbier** - A dark German Rye beer. Flavorful yet easy drinking with that rye bite. Best for: Hanging with friends, both old and new. You'll probably see John throwing one back or trying to convert you; he's a big fan you see. He actually brewed this beer because the commercial example wasn't available in the US. Hence, the birth of Roggenbier. Tastes like: Treasure this beer. Save for California, you probably won't find this anywhere else in the USA. Pairs well with: Get as German as you can. Our recommendation includes Bratwerst and sausage, or if you are vegetarian like John, try it out with baked tofu and veggie sausages. You can throw some latkes and potatoes in there too. Delicious all around. [Get the recipe](#).

**A Winter's Ale** - A spiced, malt forward winter warmer. Perfect for sipping indoors on a cold winters night. Best for: the perfect holiday gathering. Great brew for the party you're throwing at home or at the office. Tastes like: as homemade as you can get. It's the comfort food of beers with the perfect hint of cinnamon. Pairs well with: think pie and delicious holiday pastries. A Winter's Ale is unique and versatile, finding delicious union with any of the following -- cinnamon, nutmeg, cloves, and those fruity notes. All in all, a huge holiday hit. [Get the recipe](#).

**Divine Chocolate Porter** - A roasty but refined porter with a luxurious chocolate finish. For this kind of occasion: If you find yourself cozying up by the fireplace without a beverage, this one's got you covered. Why leave your house in the freezing cold when you can party with your Divine Chocolate Porter? Tastes like: chocolate and beer striking perfect harmony. Pairs well with: ice cream! Contrary to the sweetness you might think exists in a chocolate porter, this one's pretty far from sweet. So many pairings we can think of, but you pretty much have free dessert reign here. [Get the recipe](#).

**Winter Celebration** - Deep red and hoppy. Enjoy it by the fire. For this kind of occasion: Sweeter than its IPA siblings but as deliciously hoppy and aromatic as its family, this one's perfect for the holiday gathering or more casually, game night on a Monday with football in the mix. Tastes like: a Sierra Nevada's Celebration Ale, which is also our favorite beer of the season. Pairs well with: pretty much everything really. Winter Celebration with water? Check. Winter Celebration with a side a pasta? Double check. [Get the recipe](#).

**No Way Out Stout (partial mash)** - A strong Russian Imperial Stout with bourbon soaked vanilla beans. For this kind of occasion: this one's got a funny story. One of our former employees brewed a beer for his best friend's wedding. Come time to name the beer, he decided on "No Way Out," which was initially a joke and then it stuck, forever. Tastes like: a very strong Imperial Stout with bourbon and vanilla at the end. Can't go wrong there. Pairs well with: the wedding night and every night thereafter. And if you're nowhere close to getting married, drink this one for good juju. [Get the recipe](#).

## Tasting Calendar

**January 2021:** Wood Aged Beer (styles 33A & B) tentative

**March 2021:** Dark British Beer (styles 16A sweet stout, 16B oatmeal stout, 16C tropical stout & 16D foreign extra stout) tentative

## Club Presentations

**November:** GEBL Meeting - MALT

**December:** Ideas, Suggestions? Auction? Happy Holidays

## Events

**November:** Counterbalance Brewing Shelter In Place ProAM; Deadline November 30th

**November - December:** Board Elections

**December:** Georgetown Women's only ProAM; Deadline December 4th

**February:** IPA Challenge

---

**If you would like to be added to the GEBL email list send your request to:** [ed\\_andresen@hotmail.com](mailto:ed_andresen@hotmail.com)

**The GEBL Elected Club Officers for 2019 are:**

- Jesse Free President ([president@gebl.org](mailto:president@gebl.org))
- Pete Stachowiak, Vice President ([vicepresident@gebl.org](mailto:vicepresident@gebl.org))
- Maria Johnson, Secretary ([secretary@gebl.org](mailto:secretary@gebl.org))
- Bob Winchell, Treasurer ([treasurer@gebl.org](mailto:treasurer@gebl.org))
- Brad Brown, Membership Coordinator ([membership@gebl.org](mailto:membership@gebl.org))
- Robin Sparks, Librarian ([library@gebl.org](mailto:library@gebl.org))
- Bryan Collazo, Newsletter Editor, ([editor@gebl.org](mailto:editor@gebl.org))

Our website is at <http://www.gebl.org/>

Our correspondence address is: GEBL PO Box 13392 Everett, WA 98206