



Meeting #3 – Wednesday November 20<sup>th</sup> – 6PM @ Yakima Valley Hops

- Call meeting to Order
- Introductions (See Sign In Sheet) –
  - Name + Next beer you plan to brew?
- Club Business –
  - Bale Breaker Tour Recap / Little Hopper Tour – Joel
  - Membership Updates –
    - Membership Numbers – 23 members before today
    - Finances Report – (\$21.65)
      - Expenditures - \$578.35 (T-Shirts, Decals, Marketing, Insurance, Mtg Supplies)
      - Revenue - \$600 (\$440 Membership / \$160 T-Shirts)
  - Website URL vote - \$10-\$15/year
    - yakimavalleyhopheadsbrewclub.com
    - yakimavalleyhopheads.com
    - yvhopheads.com
    - yvhopheadsbrewclub.com
  - December Holiday Party Vote – 13<sup>th</sup>, 14<sup>th</sup>, 15<sup>th</sup>?
  - Bulk Grain / Yeast Purchase Interest – Fill out form
  - Gear Purchase Options / Yakima Valley Hops Brewing System
- Educational Session
  - Spiced Beers Education + Tasting
  - Detecting Off Flavors – Diacetyl, DMS, Acetaldehyde
- Upcoming Events
  - 2020 Calendar
    - Beer Education / Competition Schedule – American Beers
      - January – American Blonde Ale
      - March – American Pale Ale
      - May – American IPA / IIPA
    - Competition – Points (TBD) for how beers are reviewed / favored by other members – must adhere to the style of the month being discussed – optional participation
  - Competitions
    - GEBL IPA Bracket Challenge – Early February 2020
    - JBLM Homebrew Competition – March 2020
    - Cascade Brewers Cup – March 2020
  - Next Meeting – January 15<sup>th</sup> – Short & Shoddy Methods
- Open Question/Input Opportunity
- Beer Sampling and Feedback

## Budget

| Date              | Description              | Expenditure | Deposit       | Balance       |
|-------------------|--------------------------|-------------|---------------|---------------|
|                   | <b>Budgeted Amount</b>   |             | <b>\$0.00</b> | <b>\$0.00</b> |
| May 1, 2019       | Club Marketing Materials | \$101.07    |               | (\$101.07)    |
| May 1, 2019       | Club Window Decals       | \$58.15     |               | (\$159.22)    |
| May 1, 2019       | Club T-Shirts            | \$256.00    |               | (\$415.22)    |
| May 1, 2019       | 2019 Membership Dues     |             | \$440.00      | \$24.78       |
| May 1, 2019       | T Shirt Purchases        |             | \$160.00      | \$184.78      |
| July 17, 2019     | Meeting Supplies         | \$18.38     |               | \$166.40      |
| August 25, 2019   | 2019 Club Insurance      | \$93.75     |               | \$72.65       |
| November 19, 2019 | Meeting Supplies         | \$51.00     |               | \$21.65       |
|                   | Column Totals            | \$578.35    | \$600.00      | \$21.65       |

# **Yakima Valley Hop Heads Brew Club Ingredient Order Form**

- Bulk Grain – At least 10 pounds – Cost varies

Amount

|       |                               |
|-------|-------------------------------|
| _____ | <b>2 Row Malt</b>             |
| _____ | <b>Pale Ale Malt</b>          |
| _____ | <b>Domestic Vienna</b>        |
| _____ | <b>Domestic Munich</b>        |
| _____ | <b>Domestic Pils</b>          |
| _____ | <b>German Pils</b>            |
| _____ | <b>Crystal</b> - Color: _____ |
| _____ | <b>Other</b> - _____          |

- Bulk Yeast – Imperial Yeast – Roughly \$8-\$10 per package

|       |  |
|-------|--|
| _____ | <b>A07 Flagship</b> - Commonly referred to as "chico" this yeast is a craft brewing standard, loved for its extremely clean character. |
| _____ | <b>A38 Juice</b> - The go-to for juicy, hazy, NE IPAs. Hardly a one-trick pony, it can also be a great choice as a house ale strain.   |
| _____ | <b>L13 Global</b> - Wildly popular lager strain, produces a classic lager profile.   |
| _____ | <b>Other</b> –   |

## Website URL vote

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- yakimavalleyhopheads.com
- yvhopheads.com
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## December Holiday Party Vote – Location TBD

- Friday December 13<sup>th</sup>
- Saturday December 14<sup>th</sup>
- Sunday 15<sup>th</sup>

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## **Beerducation – Spiced Beer**

Key takeaway – The use of special ingredients should compliment the beer but not overwhelm it.

**30A – Spice, Herb, or Vegetable Beer** – This category includes all culinary spices, herbs, and vegetables, as well as nuts (anything with ‘nut’ in the name, including coconut), chile peppers, coffee, chocolate, spruce tips, rose hips, hibiscus, fruit peels/zest, rhubarb, and the like. Not to be confused with a fruit beer.

**30B – Autumn Seasonal Beer** – Beers that suggest cool weather and autumn harvest season, and may include pumpkin or other squashes, and the associated spices. An amber to copper, spiced beer that often has a moderately rich body and slightly warming finish.

**30C – Winter Season Beer** – Beers that suggest cold weather and the holiday season, and may include holiday spices, specialty sugars, and other products that are reminiscent of mulling spices or holiday desserts. A stronger, darker, spiced beer with rich body and warming finish.

## **Common Off Flavors**

### **Diacetyl**

Diacetyl is one of the more common flaws created at breweries that cut corners or use poor technique in their brewing processes. Diacetyl can be identified by an aroma of butter or butterscotch. In fact, diacetyl is used to flavor movie theater popcorn. In particularly bad cases of diacetyl, it’ll smell like rancid butter and will have an oily texture or feel on the palate.

Diacetyl is a natural creation of yeast as part of the brewing process. In fact, small levels of diacetyl are acceptable in certain styles. Many of the various brewing processes are concerned with controlling and eliminating it. During the brewing process, yeast releases CO<sub>2</sub> and alcohol as well several other compounds that contribute to the aroma and flavor of beer. One of those is a precursor that breaks down into diacetyl. Fortunately, yeast will clean up its own mess if given enough time. In lagers, extra time is particularly important to cleaning up diacetyl. Towards the end of the cold fermentation, the temperature is raised, and the yeast’s metabolism perks up so that it can quickly take up the diacetyl. This is called a diacetyl rest.

The presence of excess levels of diacetyl in a beer is marked by a buttery aroma — like movie theater popcorn butter or butterscotch — and a slick mouthfeel accompanied by a buttery sweetness. Sometimes referred to as “the brewer’s original sin,” diacetyl is, as noted above, probably the most common off flavor in craft beer next to oxidation.

As a byproduct of a healthy, normal fermentation, it is present in all beers to one extent or another. In the initial stages of fermentation, diacetyl compounds are produced by brewers’ yeast; later, yeast cells reuptake

these compounds and metabolize them, greatly reducing the impression of butteriness higher levels of diacetyl would cause.

Some yeast strains produce more diacetyl than others; “high flocculation” strains, that is, strains in which yeast cells have a higher propensity to clump together and easily fall out of solution toward the end of fermentation, tend to produce diacetyl in greater concentrations.

### **Dimethyl Sulfide (DMS)**

DMS (dimethyl sulfide) smells like creamed corn, tomatoes, cabbage, and cooked vegetables. In its lowest detectable levels, DMS can be part of the flavor profile in certain pale lagers and cream ales. DMS occurs during the grain malting process and comes from organic sulphur compounds. It’s most common in 6-row malt, pilsner malt, and corn. Brewers can prevent DMS by ensuring their stored malt doesn’t get too much moisture during storage. The next line of defense is a vigorous boil after the mash which boils off the compound.

DMS, like diacetyl, has a naturally occurring precursor in barley malt. This precursor comes out of the malt during mashing and then transforms into DMS during the wort boil; pale malts tend to have more DMS than darker malts, and thus it is often associated with pale styles, particularly pilsners, as pilsner malt tends to contain more of the precursor.

In fact, a certain amount of DMS character is appropriate to the pilsner styles and some other European and American light lagers. In darker beers, however, the presence of high levels of DMS is particularly off-putting; porters and stouts that smell like store-brand canned spaghetti, for example.

### **Acetaldehyde**

Acetaldehyde smells like green apples. Like many of the other off flavors on this list, it’s a natural part of the brewing process and in low amounts is part of the flavor profile of certain beers. Yeast produces it as a precursor to ethanol (alcohol). Excess amounts are produced when yeast isn’t as healthy or there’s too much oxygen in the liquid during fermentation or bottling. Brewers can prevent it by keeping oxygen in check and allowing time for it to break down during fermentation. The diacetyl rest is an ideal aid.

Beer consumers need to be careful to not confuse acetaldehyde with some of the “appley” esters. They are different compounds.

### **Oxidation**

Oxygen, while essential to human life and to yeast processes, can ruin beer. If a beer is properly brewed and packaged, oxidation will still occur but at a much slower rate. No matter how good processes are, there’s still some dissolved oxygen in the beer as well as some that can slip in at packaging. Over time, oxygen will cause the deterioration of the beer leading to the classic oxidation aromas of wet paper and cardboard.

The best brewers spend huge amounts of resources and effort controlling dissolved oxygen to extend the shelf life of their beer. Brewers who aren’t as careful will package beer that has a short shelf life or that never tastes “fresh.”

That chemical compound can make beer taste papery, like wet cardboard, some say. I also experience this flavor as a deadness across the palate, an inert quality I think of less as “papery” and more as “stale.”

In a pinch, you can also oxidize your own: an employee at Dogfish Head once told me that when training new reps, he’d leave a case of 60 or 90 Minute IPA in the trunk of his car over the course of a sweltering summer week in Delaware, and on Friday he’d have plenty of cooked beer to taste alongside fresh in order to demonstrate what time and temperature can do. No chemical spike needed.

## Beer Faults

### Characteristic

**Acetaldehyde** fresh cut green apples

**Astringent** Mouth-puckering, lingering harshness, husk-like graininess

**Diacetyl** Buttery, Butterscotch, Movie Popcorn

**DMS** (Dimethyl Sulfide) Cooked corn

**Light-struck** Skunky, catty

**Oxidized** Stale, papery, cardboard

### Possible Solutions

Make sure fermentation is vigorous using healthy yeast. Allow full attenuation. Leave beer on yeast longer. Oxygenate wort fully. Try another yeast strain. Make sure sufficient yeast nutrients are available. Let beer age longer.

Don't oversparge. Don't overcrush grain. Don't boil grain. Don't sparge with water above 170°F. Don't sparge with water with a high pH (over 6). Use water with lower sulfate content. Use less dark grains (especially black malt). Use less whole hops (especially high-alpha hops or simply large quantities of hops). Avoid use of raw spices, fruit pith and fruit skins.

Try another yeast strain. Oxygenate wort before fermentation. Reduce primary fermentation temperature. Use a warmer/longer secondary fermentation. Use healthy yeast in sufficient quantity. Make sure sufficient yeast nutrients are available (including reducing adjunct use). Check for infection. Allow beer to rest on yeast until fully attenuated. Don't rack, filter or fine too early. Don't crash-cool yeast. If lager, raise temperature for a diacetyl rest at end of fermentation. Bottle condition beer at cellar temperatures. Avoid adding oxygen during fermentation.

Use a long, rolling, open boil. Reduce amount of pilsner malt. Cool quickly before pitching yeast. Check for infection. Make sure you use a healthy, vigorous yeast starter.

Don't expose wort/beer to sunlight after hops have been added. Don't use clear or green glass bottles. Avoid use of Cluster hops in late hop additions.

Check for oxygen being introduced into beer post-fermentation. Don't splash when racking/bottling. Check caps and/or keg seals for good fit. Purge bottles/kegs with CO<sub>2</sub> prior to filling. Store beer cool. Drink beer when fresh.

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## **Trans-2-Nonenal (Oxidized)**

Spike: Open Air and Time

Cost: Free

Dosing: Open can covered with a paper towel for 24 hrs at room temperature

Oxidation occurs when oxygen and other compounds interact with beer, and is usually a sign that the beer is old or stale. Paper, wet cardboard, lipstick, and waxy are all characteristics used to describe oxidized beer.

I tried a few methods in order to find the best way to oxidize beer while preserving the rest of its integrity. I found an open can left on the counter for 24 hours with a paper towel rubber banded to it produced the best results. Though warm, it maintained a moderate level of carbonation. I might try to refrigerate the can next time post-24-hours on the counter to make the sample closer to the other spiked samples.

The level of oxidation was rather potent, and another relatively free and accurate method of studying an off flavor.

## **Lightstruck (Skunked)**

Spike: Sunlight and Time

Cost: Free

Dosing: A Few Minutes In Bright Sunlight

When light strikes beer, the UV rays can interact with hop compounds to create mercaptan, the same chemical that skunks spray. This process can occur within seconds, especially if the beer container is clear (no protection from UV light).

This is an easy one to test out on the patio during Sunday brunch. While you're basking in the morning sun, your beer is picking up that skunk stank. Reserve a bit of beer #1 so you can compare it to the non-light struck beer #2. You'll be surprised!

This trial is unfortunately weather dependent. You probably won't be enjoying the patio in January, so keep this in mind if you plan to use this skunking method. I've read fluorescent and LED light are also apt to skunk beer, but I've yet to test it.

This is one of the few spikes you can easily replicate by spending nothing more than time. The result is often identical to what you'd perceive from a professional kit, so use the method above in conjunction with professional spikes to get extra sensory study in.

## Lightstruck

Lightstruck beers are not a product of poor brewing processes but of poor packaging choices. Clear and green bottles are the enemies of beer. Ultraviolet (UV) light interacts with the isohumulones (hop alpha acids in beer) to create a distinctive “skunky” aroma. The chemical created is literally one of the aroma chemicals skunks spray for self defense.

This is the only acceptable use of the term “skunky.” A lot of people call beers “skunky” when they have some other flaw or aroma, but the only actually skunky aroma belongs to lightstruck beers. There are hop products available for brewing that have the volatile compound removed. Miller Brewing uses it in their clear bottled beers.

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## Diacetyl

Spike: [McCormick® Butter Extract](#)

Cost: ~\$5

Dosing: 10 drops per 6 ounces of beer

Diacetyl is a buttery flavor and aroma that is considered an off-flavor in most beer. At higher concentrations, it can be perceived as butterscotch, and even create a slick mouthfeel. It's what gives movie theater popcorn that classic butter flavor without actually using butter.

**Diacetyl** – Wilton Clear Butter Flavor, \$2.99 for 2 fl ozs. at New York Cake in Chelsea. If you're not in an urban area with crazy cake baking specialty stores, you should be able to find this at the large craft supply stores, like Michael's or AC Moore. We found that 4 drops per 12 oz bottle or 24 drops per six pack worked well.

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## **DMS (Dimethyl Sulfide)**

Spike: Canned Creamed Corn

Cost: ~\$1

Dosing: 2 teaspoons strained liquid per 6 ounces of beer

DMS can give beer an aroma and flavor of stewed tomatoes, cooked cabbage, or creamed corn. It's a naturally occurring compound in malt, and is driven off by heat. DMS normally evaporates during the boil, but can remain if the boil is not vigorous enough.

**DiMethyl Sulfide** – generic brand of canned corn from Eagle Provisions, my local grocery store. We decided on 1/4 cup strained liquid per 12 ozs or 1.5 cups per six pack.

## **Acetaldehyde**

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## **Acetaldehyde**

Spike: LorAnn Gourmet Apple Flavoring

Cost: ~\$4

Dosing: 4 drops per 6 ounces of beer

Acetaldehyde is an appley aroma and flavor produced during fermentation, and cleaned up by the yeast after the most vigorous part of fermentation is complete. If you separate the yeast from the beer before fermentation is complete, you'll end up with young beer that smells like Granny Smith apples.

**Acetaldehyde** – Loran Gourmet Apple Candy & Baking Flavoring, \$3.99 for 2 .125 fl oz bottles at New York Cake. 8 drops per 12 oz bottle or 48 drops per six pack.