

Getting Started with Homebrewing

**Mike Conant and Derek Wolfgram, Silicon Valley Sudzers
Redwood City Public Library
January 27, 2018**

Mike Conant

Mike has been a homebrewer since 1994, with a penchant for big, hop-forward IPAs, well before they became a west coast phenomenon. During the day he is a Director at Agilent, a company focused on chemical and biological test and measurement systems. He is a member of the Silicon Valley Sudzers, where he was 2011 Homebrewer of the Year and past Chief Events Officer. Mike is also a member of the Santa Cruz Zymurgeeks and lives in Aptos, CA



Derek Wolfgram

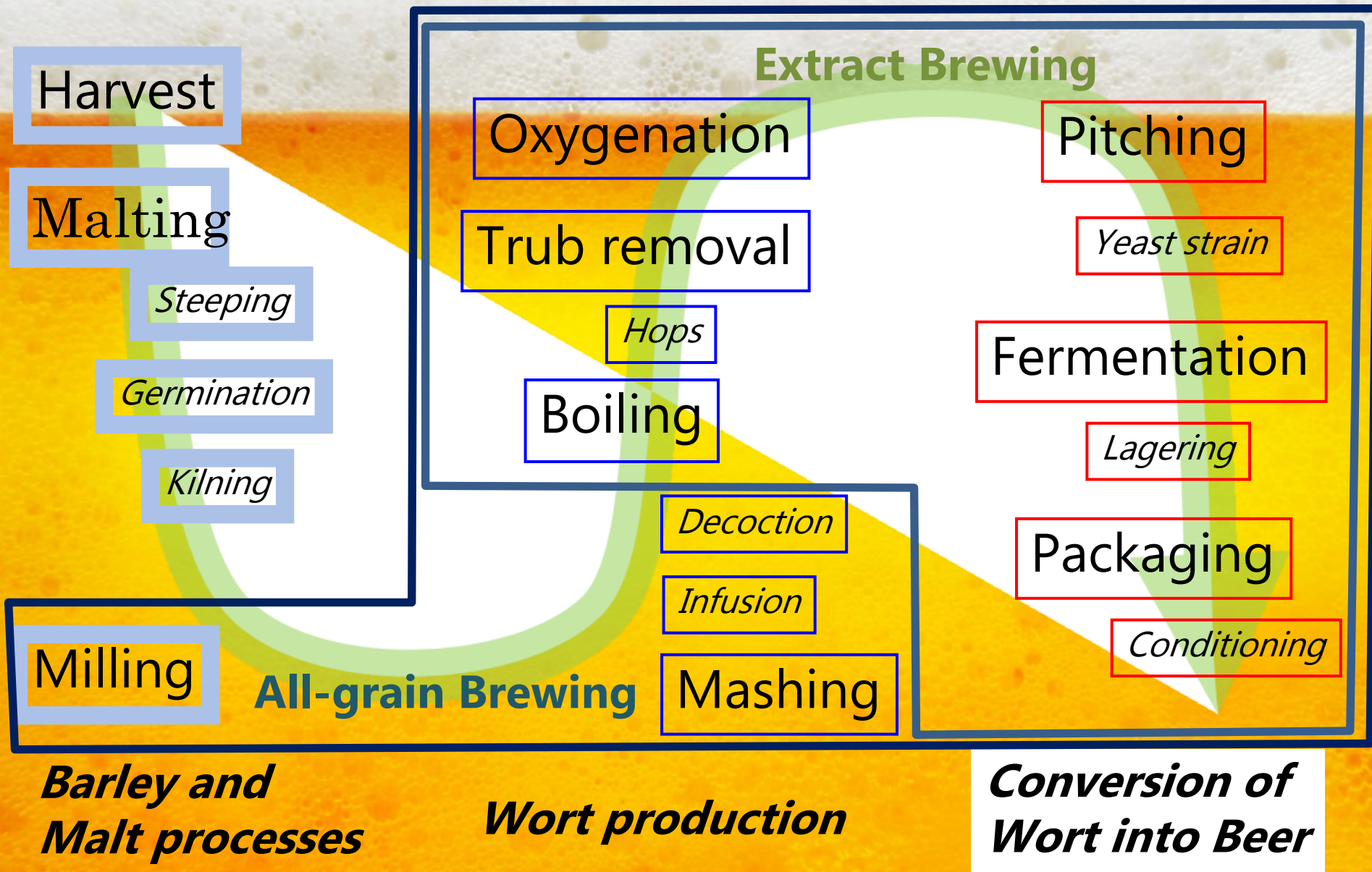
Derek has been a librarian since 1996, and a homebrewer since 2001. This program is his opportunity to bring those two passions together. Library-wise, Derek is Director of the Redwood City Public Library. Homebrew-wise, he is Past President and current Treasurer of the Silicon Valley Sudzers homebrew club and was the 2010 club Brewer of the Year, primarily for making plenty of coconut porter. Derek is a BJCP Certified Beer Judge and also writes a monthly column on California craft beers for the Los Altos Town Crier newspaper.



Outline for Today

- The Brewing Process
- Equipment and techniques
- Beer Styles
- Homebrew Ingredients
- Crafting a recipe
- Additional sources of information

Flow chart for malting and brewing



Homebrewing Method #1

Beer Machine

- a. Pour water in
- b. Add prepackaged beer kit
- c. Wait 7-10 days



Homebrewing Method #2

Extract Brewing

- Easy to get started
- Kits readily available
- Can be done on stovetop with 2 gallon boil
- Takes 2-4 hours to brew
- Can make quality beer
- Can always scale later



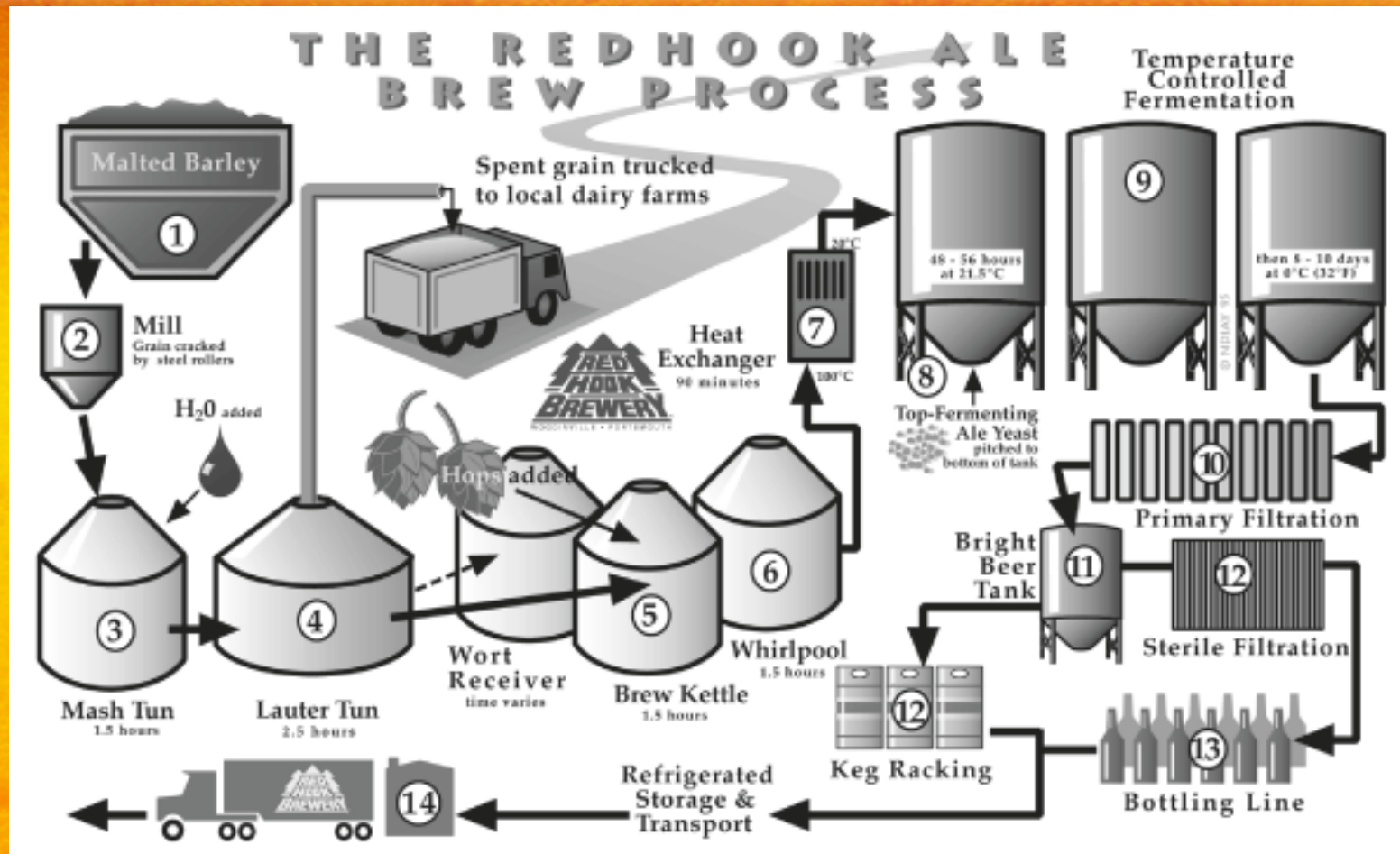
Homebrewing Method #3

All-grain Brewing

- Requires additional mashing steps
- More control over process
- Better selection of malts
- Requires full boil (7 gallons for 5 gallon batch)
- Takes 4-6 hours



Brewing at volume – for larger budgets



Brew Day Checklist

- Cleaning and Sanitizing
- Setup and Mash
- Sparge and Boil
- Final Steps
- Racking
- Bottling/Kegging
- Drinking

All Grain Brewing Equipment



All Grain Brewing Equipment

- Cleaner
- Sanitizer
- Grain mill
- Mash paddle
- Pitcher
- Big spoon
- Gram scale
- Thermometer
- Brewing salts
- Hop Spider
- Wort chiller
- Racking cane
- Tubing for transfer
- Hydrometer & flask
- Refractometer
- Carboy
- Bung
- Airlock
- Oxygen
- Keg
- CO2
- Bottle Capper

Beer Styles

- Ale vs. Lager
- National Origin
- Color
- Bitterness levels
- Alcohol strength
- Beer Judge Certification Program (BJCP) styles



Periodic Table of Beer Styles



I	II	III
1 Berliner weisse 1.006-1.009 2.5-3.6 3-12	2 Lambic 1.044-1.050 4.7-6.4 5-15	3 Belgian gold ale 1.009-1.010 7.0-9.0 65-95
4 Belgian white 1.042-1.050 1.008-1.012 4.5-5.5 15-25	5 Gueuze 1.044-1.050 1.006-1.012 4.7-6.4 5-15	6 Tripel 1.010-1.012 1.016-1.024 7.0-10.0 20-30
7 American wheat 1.035-1.050 1.008-1.018 3.5-5.0 15-20	8 Faro 1.040-1.050 1.006-1.012 4.5-5.5 5-15	9 Saison 1.050-1.060 1.010-1.015 4.5-5.1 4-10
14 Weizenbier 1.048-1.050 1.008-1.016 4.3-5.6 8-15	15 Fruit beer 1.040-1.050 1.008-1.016 4.7-7.0 15-21	16 Belgian pale ale 1.008-1.010 1.006-1.012 3.9-5.6 20-35
27 Dunkelweizen 1.048-1.050 1.008-1.016 4.5-6.0 10-15	28 Flanders red 1.042-1.050 1.008-1.016 4.0-5.8 14-25	29 Belgian dark ale 1.009-1.010 1.014-1.024 7.0-12.0 25-40
41 Weizenbock 1.050-1.060 1.016-1.028 6.5-9.6 12-25	42 Oud bruin 1.042-1.050 1.008-1.016 4.0-6.5 14-30	43 Dubbel 1.009-1.010 1.012-1.018 3.2-5.0 20-25

A BRIEF DESCRIPTION OF BEER STYLES WITH COMMERCIAL EXAMPLES

- Berliner weisse:** Lightly hopped, slightly fruity. Beer low influence of hop. (Schlafli-Berliner Weiss, Berliner Weiss (Molson))
- Lambic:** The most unusual souring beer with very little hop aroma. (Old City Cantillon Brussels 1900, Boon De Wit)
- Belgian white:** Fruity, light hop aroma. Spice aroma low influence. (Lindt, L'Orchard, Merveille, Gode-Godet)
- Belgian gold ale:** Fruity, light hop aroma. Spice aroma low influence. (Lindt, L'Orchard, Merveille, Gode-Godet)
- Gueuze:** Blend of young and old bottles. (Lindt, L'Orchard, Merveille, Gode-Godet)
- Tripel:** Lightly hopped, slightly fruity. Beer low influence of hop. (Schlafli-Tripel, Tripel (Molson))
- Saison:** Fruity, complex aroma and flavor of high alcohol. (Lindt, L'Orchard, Merveille, Gode-Godet)
- Faro:** Blend of young and old bottles. (Lindt, L'Orchard, Merveille, Gode-Godet)
- American wheat:** Lightly hopped, slightly fruity. Beer low influence of hop. (Schlafli-American Wheat, Wheat (Molson))
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IV	V	VI	VII
10 Pale ale 1.043-1.050 1.008-1.016 4.5-5.5 20-40	17 American pale ale 1.043-1.050 1.008-1.016 4.5-5.7 20-40	18 Ordinary bitter 1.008-1.010 1.006-1.012 3.0-3.8 20-35	19 Scottish light 60/- 1.008-1.010 1.006-1.012 2.8-4.0 8-20
30 India pale ale 1.050-1.060 1.010-1.015 5.1-7.6 40-60	31 Special bitter 1.008-1.010 1.006-1.012 3.7-4.8 25-40	32 Scottish heavy 70/- 1.008-1.010 1.006-1.012 3.5-4.1 12-25	33 American brown 1.008-1.010 1.006-1.012 4.2-6.0 25-40
44 American amber ale 1.043-1.050 1.008-1.016 4.5-5.7 20-40	45 Extraspecial bitter 1.008-1.010 1.006-1.012 3.7-4.8 25-40	46 Scottish Export 80/- 1.008-1.010 1.006-1.012 4.0-4.9 15-35	47 English brown 1.008-1.010 1.006-1.012 3.5-6.0 15-35

- Imperial stout:** Fruity with intense sweetness and maleness. (Schlafli-Imperial Stout, Stout (Molson))
- Belgian white:** Fruity, light hop aroma. Spice aroma low influence. (Lindt, L'Orchard, Merveille, Gode-Godet)
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IX	X	XI	XII	XIII
21 Dry stout 1.008-1.010 1.006-1.012 3.2-5.5 30-50	22 Foreign extra stout 1.010-1.012 1.008-1.014 5.0-7.5 35-70	23 German pilsner 1.004-1.006 1.002-1.008 4.6-5.4 25-45	24 American standard 1.040-1.048 1.008-1.016 4.1-4.8 6-17	25 Dortmunder 1.048-1.050 1.010-1.014 5.1-6.1 23-29
34 Brown porter 1.008-1.010 1.006-1.012 3.8-5.2 20-30	35 Sweet stout 1.008-1.010 1.006-1.012 3.2-6.4 20-40	36 Imperial stout 1.008-1.010 1.006-1.012 7.8-9.0 50-80	37 Bohemian pilsner 1.004-1.006 1.002-1.008 4.1-5.1 35-45	38 American premium 1.040-1.048 1.008-1.016 4.6-5.1 15-23
48 Robust porter 1.008-1.010 1.006-1.012 4.8-6.0 30-40	49 Oatmeal stout 1.008-1.010 1.006-1.012 3.3-6.1 20-30	50 Russian imperial stout 1.008-1.010 1.006-1.012 8.0-12.0 20-30	51 American pilsner 1.004-1.006 1.002-1.008 5.0-6.0 20-40	52 American dark 1.040-1.048 1.008-1.016 4.1-5.6 14-20

Ale

Lager

KEY

Style number
Style name
(color indicates yeast type)

ABV
Alcohol by volume

IBU
International bitterness units

Original gravity

Final gravity

SRM
Color by standard reference method

KEY TO YEAST TYPE

- Ale yeast with lactic bacteria
- Wheat ale yeast
- Ale yeast
- Lager yeast

SRM RATING

- Clear 0
- Light straw 1.0-2.5
- Pale straw 2.5-3.5
- Dark straw 3.5-5.5
- Light amber 5.5-10.0
- Pale amber 10.0-18.0
- Dark amber 18.0-26.0
- Very dark amber 26.0-40.0
- Black 40+

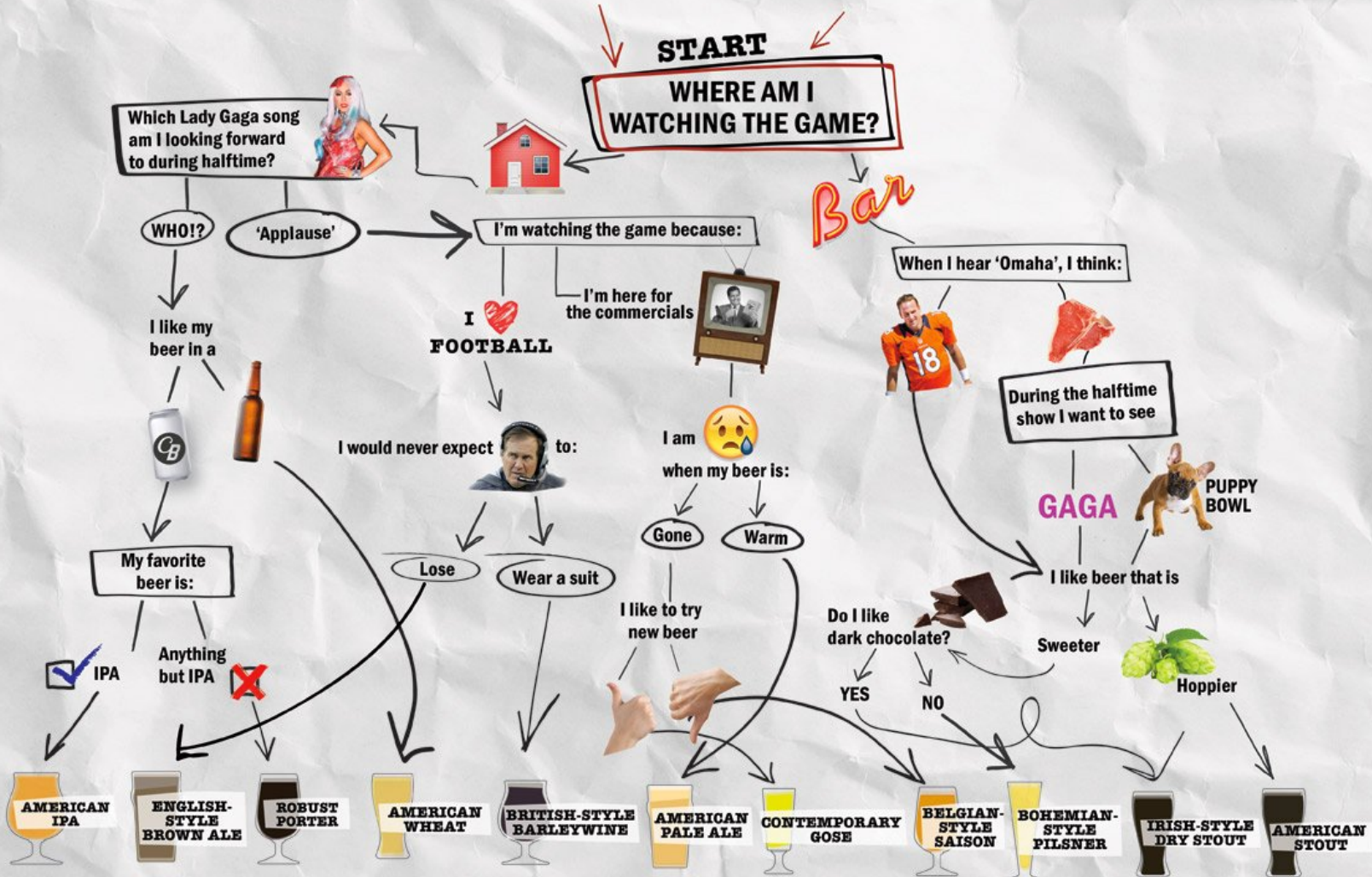
STYLE FAMILY

- I Wheat beer
- II Lambic & Sour ale
- III Belgian ale
- IV Pale ale
- V English Bitter
- VI Scottish ale
- VII Brown ale
- VIII Porter
- IX Stout
- X Pilsner
- XI American lager
- XII European lager
- XIII Bock
- XIV Alt
- XV French ale
- XVI German Amber Ale
- XVII American Special
- XVIII Smoked Beer
- XIX Barley Wine
- XX Strong Ale

XIV	XV	XVI	XVII	XVIII/XIX	XX
55 Kölsch 1.042-1.048 1.008-1.010 4.8-5.2 20-30	56 Bière de garde 1.000-1.008 1.012-1.016 4.5-8.0 20-30	57 Oktoberfest 1.050-1.058 1.012-1.016 5.1-6.5 18-30	58 Cream ale 1.044-1.050 1.007-1.010 4.5-6.0 10-35	59 Smoked beer 1.009-1.010 1.012-1.018 5.0-5.5 20-30	60 English old (strong) ale 1.009-1.010 1.015-1.022 6.1-8.5 30-40
61 Altbier 1.042-1.048 1.008-1.010 4.8-5.1 22-48	62 Vienna 1.048-1.050 1.010-1.014 4.6-5.5 20-25	63 Steam beer 1.048-1.050 1.012-1.016 3.6-5.0 35-45	64 Barleywine 1.050-1.058 1.012-1.016 8.4-12.2 50-100	65 Strong "scotch" ale 1.009-1.010 1.015-1.022 8.0-9.0 20-40	

Mixed Styles

WHICH **BEER STYLE** SHOULD I DRINK DURING THE BIG GAME?



Beer Ingredients

Malted Barley – base ingredient of beer, supplying sugars, starches, and starch-to-sugar enzymes needed for mashing. Barley grain is sprouted and toasted in a process called “malting”. Other grains may be added for giving a beer its character.



Hops – *Humulus lupulus*, provides the bittering component (*lupulin*) to beer and other hop flavors and aromas, which balances the malt sweetness and helps preserve the beer

Water – essential to the chemistry of extracting sugars from the malted barley, yeast fermentation, and makes up ~90% of your beer!



Yeast – Actually, they make your beer, we just make their food, the *wort*)

Grain Guide

Malt supplies most of the flavor and sugars for the beer.

The base malts are combined with the other forms of grain or malt to create the beer character. The color of malt (darkness) is described in degrees Lovibond (L).

Malt Extracts

Use for extract brewing, creating yeast starters, or to adjust target gravity of beer.

- DME – Dry malt extract, very stable
- LME – has 80% of water removed, there are more varieties available.

Base Malts

- 2 row pale malt – primary base malt for brewing (6 row is typically used for whisky) 2L
- Pilsner – smoother, lighter, sweeter than pale 1L
- Wheat – for wheat beers

Specialty Malts

Add color, flavor, and/or body to the brew. Some can be steeped when extract brewing

- Carapils – for head retention and stability w/o affecting color, flavor
- Munich – increases body, aroma, malt sweetness
- Rye – Must be mashed, adds a spicy, fruity flavor
- Rauch – smoked malt used in Rauchbiers, with peat flavor 25L
- Special Roast – Imparts a toasty or biscuity flavor 50L

Crystal Malts

Sugars are caramelized and non-fermentable, used to add color, flavor, and head retention

- Crystal 15L to 120L – L denotes darkness of roast
- Caramunich – 70L
- Caravienne – 25L from Belgium
- Carastan – British version, 30L

Roasted Malts

For porters and stouts

- Chocolate Malt – has a chocolaty bitter flavor
- Black Patent Malt – very dark and bitter

Adjuncts

- Corn – lightens body, and adds corn taste
- Flaked Barley – added to stouts for head retention
- Black Roasted barley – Very dark grain (500L) used in stouts, very strong bitter flavor
- Flaked Maize – add to lighter American pilsners for lightening color and body
- Honey – adds fermentable sugars, some flavor and aroma
- Oats – adds a silky texture
- Rice – used in light colored beers for a dry or crisp flavor, very little taste

Hop Guide

Hops are selected and added to boiling wort to impart specific qualities to a beer. **IBUs**: stands for **I**nternational **B**ittering **U**nits, denotes the amount of bitterness in the beer. The Alpha Acid concentration of the hops (AAUs), quantity of the hops, and length of boil determines how many IBUs go into the beer.

- Bittering** : added early in the boil, 90 to 30 mins boil time
- Flavor**: 30 to 0 mins boil time
- Aroma**: 0 mins, or after fermentation, called "dry hopping"

VARIETY	ACID RANGE (ALPHA %)	FLAVOR PERCEPTION	COMMERCIAL EXAMPLE
Amarillo®	8-10%	A flowery, citrus-like aroma with medium bittering value that is gaining acceptance as a substitute for Cascade due to its hardy nature.	Ales, IPAs
Cascade	4-7%	Flowers, citrus & spice with grapefruit the noticeable fragrance quite often. This medium aroma balances the low bittering value. Very popular hop among craft brewers.	Pale Ales, IPAs, Porters
Centennial	8-11%	Flowers & citrus most evident. A medium aroma with mid to high bittering value makes it a dual purpose choice.	Ales, IPAs
Chinook	11-13%	A pine forest washed with exotic spice and infused with grapefruit. This alluring aroma and a high bittering value has gained this hop full respect from craft & major brewers.	Most beer styles from Pale Ales to Lagers
Columbus	14-17%	High on the bittering scale yet also valued for its oil content creates a hop that is an interesting dichotomy of sharp and herbal.	American IPAs & Pale Ales, Stout, Lager
Hallertau	5-6%	Named for its origins in the Hallertauer region of Germany, this is a noble aroma hop with ever-so-subtle flower and spice fragrances defining its "über alles" superiority. Very low bittering value.	Pilsner, Bock, Lager, Wheat
Kent Golding	3-5%	The refined older English gentleman with his flowery tones that have produced some of England's best bitters.	All English-style beers (Ales, ESB, Bitter), Belgian-style Ales
Magnum	12-17%	A German thoroughbred with limited Pacific Northwest plantings. Prized for its high bittering value, the aromatic nature is one of spice and citrus.	Pale Ales, IPAs, German-style Lager
Simcoe®	12-14%	A hop variety less than 10 years old that is quickly finding its way into the hearts of bitter-loving craft brewers. Intense pine aroma adds to the fresh, youthful vigor. Dual purpose but generally considered a bittering hop.	American Ales, IPAs, Double IPAs

HOP VARIETIES

and their characters

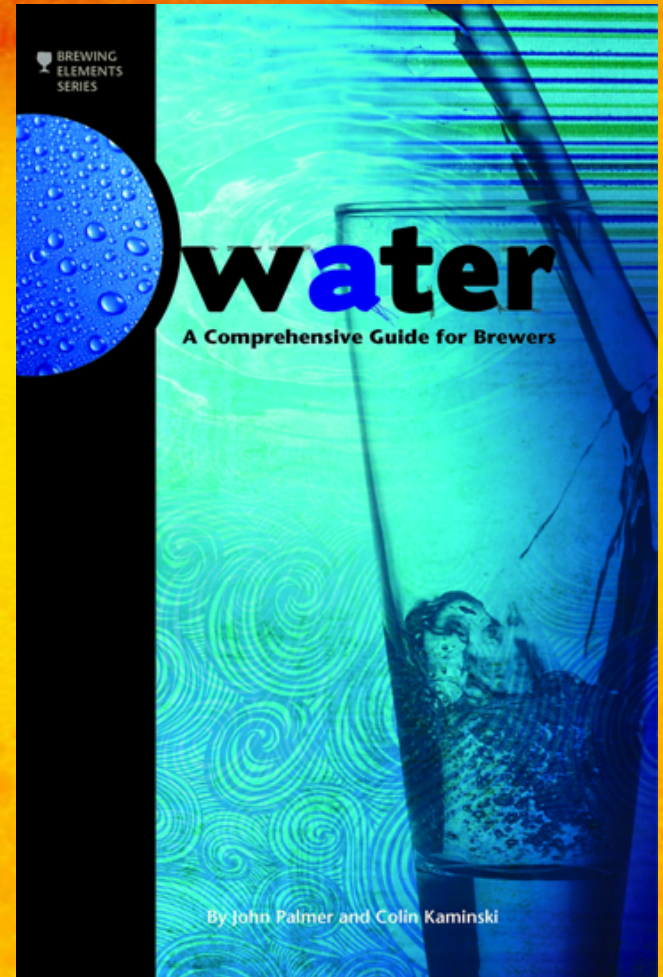


BASED ON JOHN PALMER'S HOP WHEEL • REDESIGNED AND UPDATED BY TIM KREITZ

F - Also Floral | **U** - Also Fruity | **C** - Also Citrusy | **H** - Also Herbal
R - Also Grassy/Earthy | **V** - Also Evergreen | **S** - Also Spicy

Water Basics

- Water is the most significant ingredient in beer
- Removing chlorine and chloramines
- Controlling mash and sparge pH
- Using salts to adjust flavor ions



Yeast selection

- Ale vs. lager
- Varieties
- Fermentation temperature
- Alcohol tolerance
- Attenuation
- Flocculation



Now Let's Try It – Brew Day Worksheet

- What style shall we make?
- Malt
- Hops
- Water
- Yeast
- Mash schedule

Local Homebrew Clubs

- Bitches and Studs (www.bitchesandstuds.club)
- Hetch Hetchy Hop Heads
- Silicon Valley Sudzers (www.sudzers.org)
- Worts of Wisdom (www.wortsofwisdom.org)



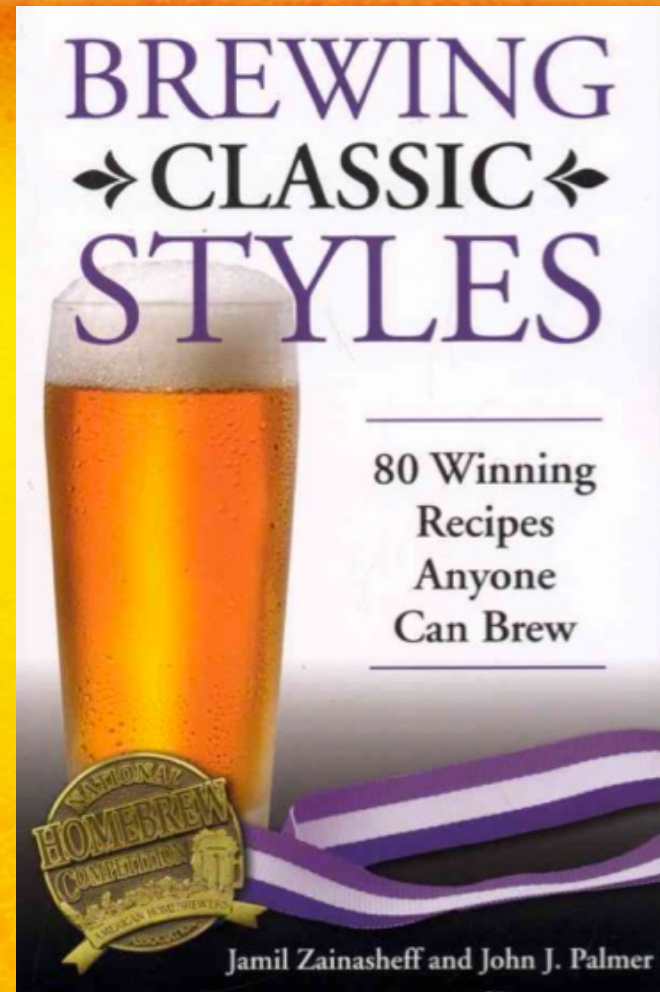
Homebrew Supply Stores

- Beer and Wine Makers of America (San Jose – www.beerandwinemakers.com)
- Fermentation Solutions (Campbell – www.fermentationsolutions.com)
- MoreBeer (Los Altos - www.morebeer.com)



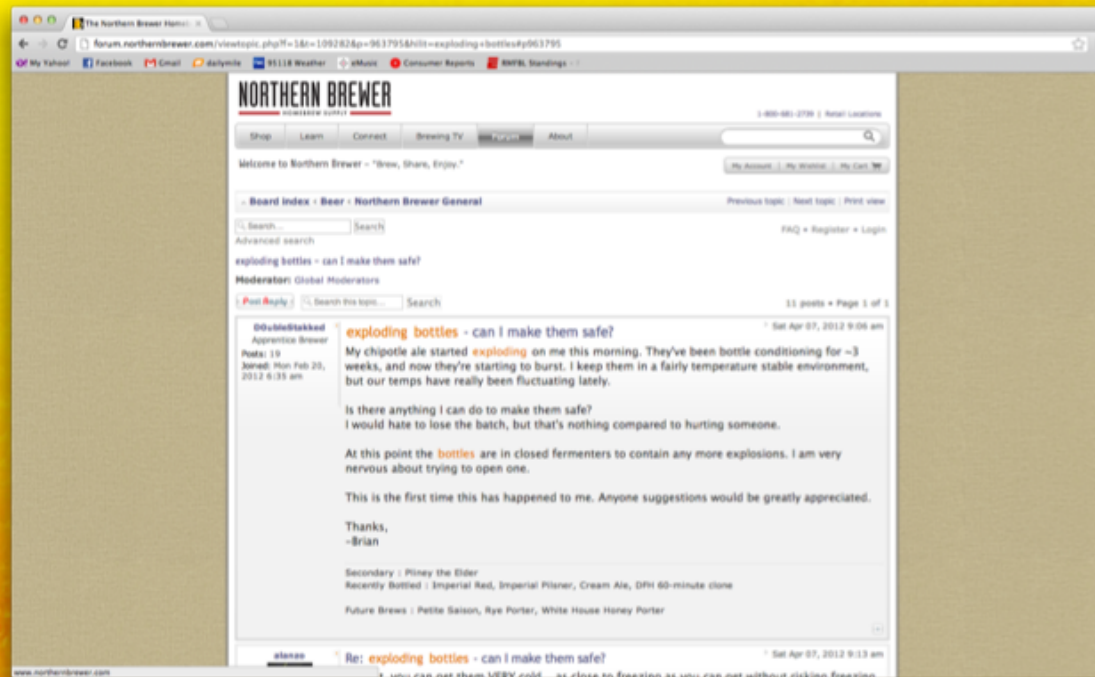
Books and eBooks from your Library

- <https://is.gd/macOzi>
(items owned by Peninsula Library System)



Online Forums

- www.homebrewtalk.com
- forum.northernbrewer.com
- www.homebrewersassociation.org/forum/index.php





Thank you!

Cheers!

**We hope to see you shortly at Freewheel
Brewing, 3736 Florence Street, for more
discussion of beer and brewing**

Visit www.sudzers.org/?p=2860

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