

# Brewing with Brett (and bacteria)

---

PRESENTED BY:

JEFFREY CRANE

*BARREL PROGRAM DIRECTOR*



# Presentation Overview

---

## Important MicroOrganisms

## Sour Homebrewing Tips

- 28A - Brett Beer
- 28B - Mixed Fermentation Sour Beer
- 28C - Wild Specialty

## Blending



***Guided Tasting Throughout Presentation***

# Mixed Fermentation Microorganisms

---

## Two Major Families

### Yeast

*Saccharomyces*

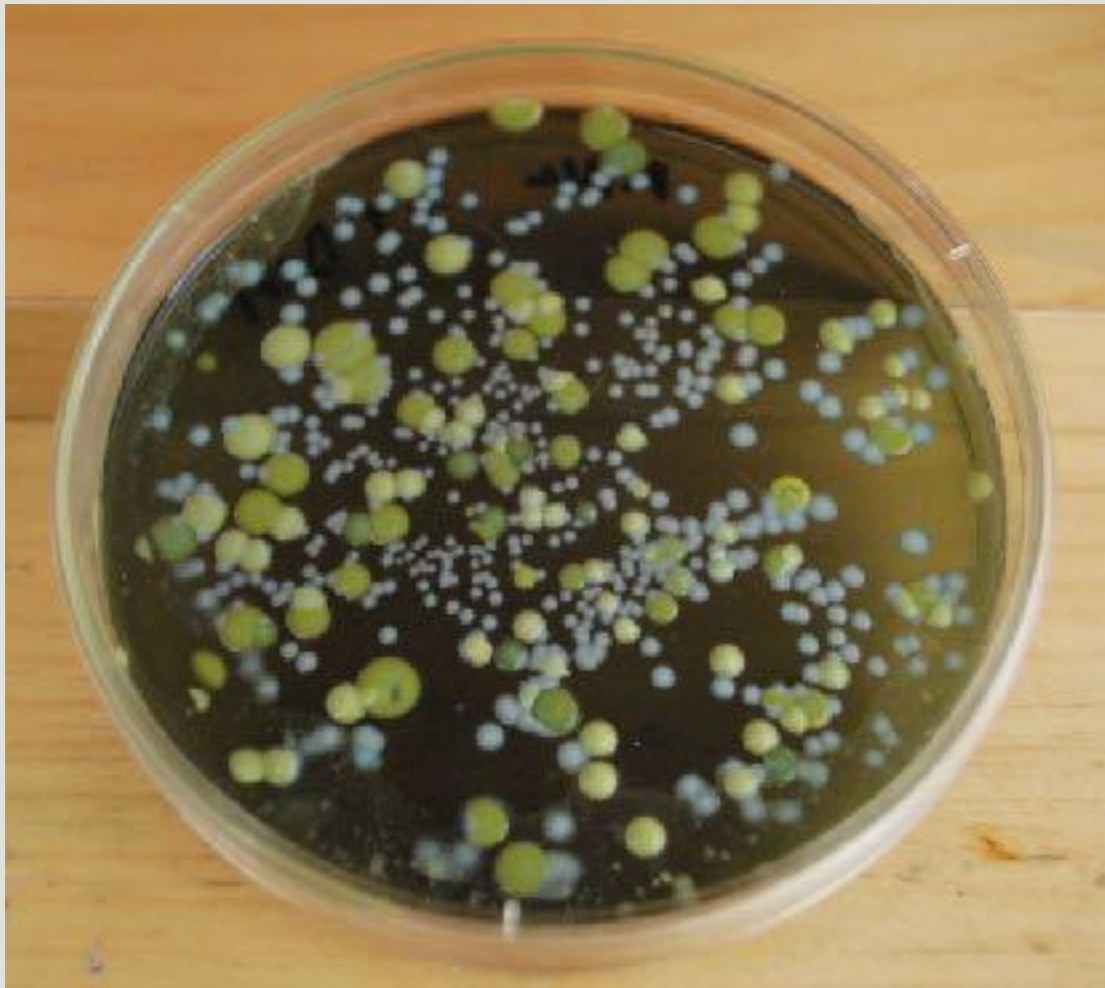
*Brettanomyces*

### Bacteria

*Lactobacillus*

*Pediococcus*

*Acetobacter*





# Beatitude Tart Saison – *Citra Dry Hopped*

ABV ~4.5%

pH low 3s

IBUs <5

## **Mixed Fermentation:**

Saccharomyces, Brettanomyces,  
Lactobacillus

## **Process:**

Low Mash Temp

No Boil

Fermented and Extended Aging in Conical

Aged on fruit to dryness

Bottle Conditioned

# Brettanomyces

---

## Yeast

- Flavors are strain dependent
- Does not need sugar to produce new flavors.
- Long-term flavors depend on existing precursors
- Enzymes that can breakdown complex carbohydrates
- Forms a pellicle in presence of O<sub>2</sub>



# Lactobacillus

---

## Bacteria

- Produces Lactic Acid (yogurt)
- Some types produce ethanol
- Hop acids will inhibit growth
- Each strain has optimum acid producing conditions
- Ferment both in the presence or absence of oxygen



# Pediococcus

---

## Bacteria

- Produces Lactic Acid
- Produces diacetyl (artificial butter)
- Prefers reduced levels of oxygen
- Grows slowly
- Has symbiotic relationship with Brett



# Acetobacter

---

## Bacteria

- Produces Acetic Acid (vinegar)
- Acetic acid is produced by oxidizing ethanol
- Avoid oxygen pick-up while aging and packaging
- Early signs smell like ethyl acetate (nail polish)





# General American Wild Ale Tips

- Separate plastic equipment
- Same sanitization methods
- Be Patient - Don't taste too often
- Beer is done when you like the taste
- Make adjustments during aging
- Oxygen is the enemy



**Ease-In Method - 1 gallon taken from clean batch + bottle dregs/commercial yeast**

# Brett Beer Recipe Tips

---

## *2015 BJCP Category 28A*

- **100% Brett IPA:**

- 10-20% High Protein: Golden Naked Oats, Rye, Spelt
- IBUs Lower than Traditional IPA <40
- Late Hopping and Whirlpool Hops Preferred
- Tropical Fruit hops compliment well
- Fruitier Brett Strains Preferred:
  - WLP 648 BSI Drei, ECY 019

- **Other 100% Brett Beers:**

- Flavors are restrained early - Design in complexity



*Judging Focus - Balance with slight Brett (over-ripe) character*

# Brett Beer Recipe Tips

---

## *2015 BJCP Category 28A*

- **Secondary Brett Beers:**

- Ensure flavor pre-cursors are available
- Design for increased dryness and thinner body
- Taste periodically for Brett - Base Beer balance
- Aggressive Funk Preferred:
  - WLP 650 B. Brux
  - WLP 653 B. Lambicus
  - YB Amalgamation
  - ECY 34 Dirty Dozen



*Judging Focus - Dryness, Traditional Brett (No Medicinal), High Carb*

# Budweiser (w Brett Drie)

“Brewed” Feb. 5<sup>th</sup>,  
2016

Mixed Fermentation:

Saccharomyces

Brettanomyces

Process:

Primary: Macro Lager

Secondary: Brett Drie

Bottle Conditioned



# Mixed Fermentation Recipe Tips

---

## *2015 BJCP Category 28B*

- **Golden Sour Beer:**

- 10-20% High Protein: Oats, Rye, Spelt
- Low IBUs (<5-10)
- Mash low for beers to be drank younger
- Mash higher for beers to be drank older
- Focus on bold yeast and bacteria
- Oak for tannins/mouthfeel (.2 oz/gal)



*Judging Focus - Firm Sourness, Medium Mouthfeel, No Off Flavors*

# Mixed Fermentation Recipe Tips

---

## *2015 BJCP Category 28B*

- **Dark Sour Beer:**

- Restrain acidity to prevent acrid notes (pH > 3.4)
- Avoid heavily roasted grains
- Mash high (>158 F) for residual sweetness
- Blend in small percentage fresh beer (5-10%)
- Oak for tannins/mouthfeel (.3 oz/gal)



*Judging Focus - Sweet/Sour Balance, Complexity*

# Wild Specialty Recipe Tips

## 2015 BJCP Category 28C

### Fruit

- High Acid - Low Sugar fruits work best
- Easiest to add when gravity is stable
- Package once return to previous gravity
- Match fruit intensity to base beer

Stone fruits - 2-3 lbs/gal

Grapes - 1-1.5 lbs/gal

Berries - .5-1 lbs/gal

Cherries - 1-2 lbs/gal

### Spice/Herb

- Match spicy phenols to spice/herb
- Use tinctures to dial in amounts



*Judging Focus - Identifiable Fruit w/o losing base beer*



# Staircase of Everlasting Peaches Wild Specialty Ale

ABV 6.0%

pH low 3s

IBUs <5

## **Mixed Fermentation:**

Saccharomyces, Brettanomyces, Lactobacillus

## **Process:**

Fermented and Extended Aging in Sauvignon

Blanc Barrels

Aged on Peach Puree

Bottle Conditioned



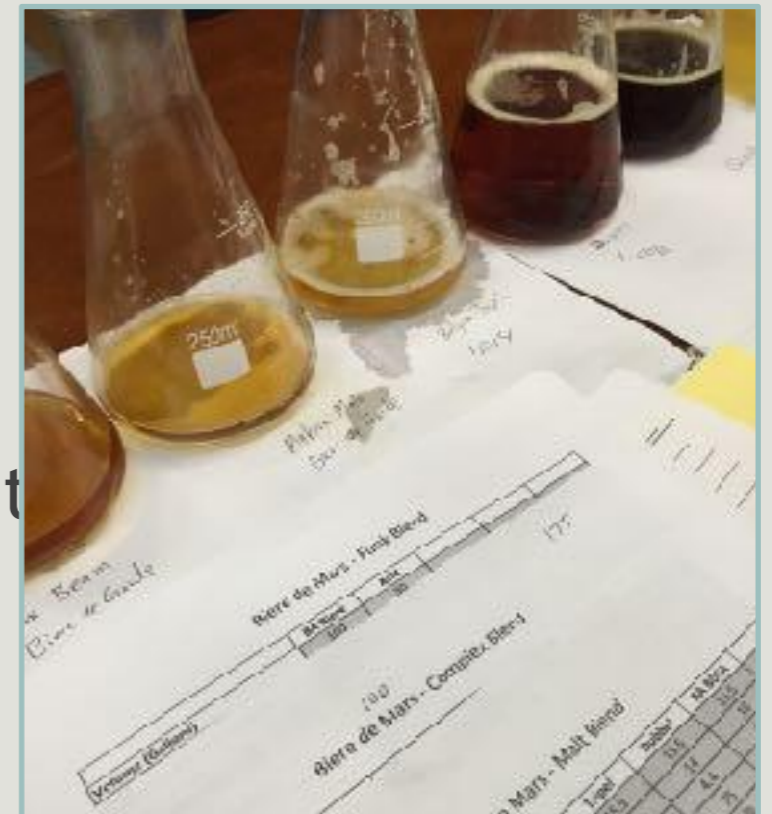
# Council's Blending Method

---

*Control of Mixed Fermentation beer comes from blending*

Process (Team Based):

1. Taste base beer you want to perfect
2. Discuss final vision for the beer
3. Gather sensory and data on possible components
4. Set flavor targets and use measurements
5. Cool/Carb Blends - Taste days later - Tweak



# Blending by Numbers

---

*Calculation help to narrow down possible options*

## ***Rustic Saison***

Component Name	Farmers Gold	Staircase
<b>Volume</b>	8 (87.5%)	1 (12.5%)
<b>pH</b>	4.25	3.08
<b>SRM</b>	5	2
<b>Original Gravity</b>	1.050	1.050
<b>Final Gravity</b>	1.007	1.004
<b>Blend pH</b>	3.85	
<b>Blend SRM</b>	5	

# Blending by Numbers

---

## *Tart Saison*

Component Name	Farmers Gold	Staircase
Volume	2.5 (60%)	1 (40%)
pH	4.25	3.08
SRM	5	2
Original Gravity	1.050	1.050
Final Gravity	1.007	1.004
Blend pH	3.56	
Blend SRM	4	

# Blending by Numbers

---

## *Sour Saison*

Component Name	Farmers Gold	Acid Beer
Volume	1 (50%)	1 (50%)
pH	4.25	3.08
SRM	5	2
Original Gravity	1.050	1.050
Final Gravity	1.007	1.004
Blend pH	3.35	
Blend SRM	4	

[Blending and Priming Calculator Available Online](#)

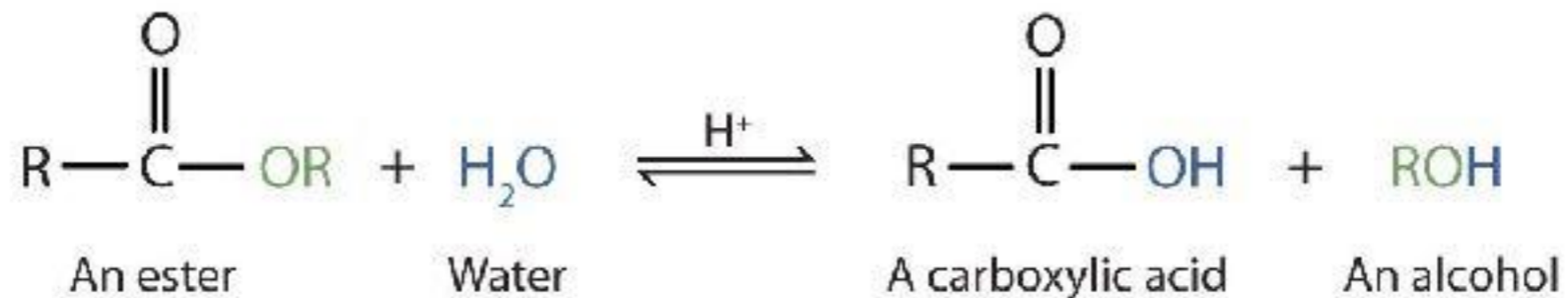
# Blending for Evolution

Pick-up oxygen with time

- Short term - ATHP, Ropiness, DMS, Diacetyl
- Acetic acid will increase with time
- Ethyl acetate will increase with time

Brett does not need food for flavor

- Think about available precursors
- EX. 4-vinylguaiacol (clove) to 4-ethylguaiacol (smokey)
- EX. Lactic Acid to Ethyl Lactate (pineapple)



# Question and Answer

Follow-up directly by  
email

[Jeff@Councilbrew.com](mailto:Jeff@Councilbrew.com)



@jeffreycrane

