

How to Brew, Blend and Maintain an Acid Beer



PRESENTED BY: JEFFREY CRANE



Presentation Overview

- Biography
- Purpose of an Acid Beer
- Brewing an Acid Beer
- Maintain an Acid Beer
- Blend an Acid Beer



Biography

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- Quality Engineer – *Risk Adverse*
- Husband/Father/Homeowner – *Time Constrained*
- Homebrewer – *Creativity/Resourcefulness*
- Barrel Program Director at Council Brewing - *Consistency*



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Purpose of an Acid Beer

A blending component

- Add acidity (Lactic acid)
 - Fine tune acidity on long term sour beers
 - Increased acidity enhances fruit flavors
 - Slight additions add a “crisp”
 - Lower pH helps color stability
- Add a “House” Flavor
 - With the use of distinct Brett strains
 - Small additions to all beers to help beer evolve



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Brewing an Acid Beer

	Hot Side Souring		Cold Side Souring	
Method	Sour Mash	Sour Wort/ Kettle Souring	Pitched Cultures (no pedio)	Spontaneous
Risk	High*	Med*	Low	LOLz
Equipment	Temperature Control Equipment		Plastic Items	Plastic Items, Koelschip
Complexity	Low	Low	Med	High
Acidity	Good, Limited	Good, Limited	Great	Great
Notes	Fast, Target a Specific Acidity		Cont. Acidity/Complexity	Ropey, Nuances lost in blending

Berliner and Beyond: Sour Mashing and Its Applications

Saturday, June 13 | 2:00 pm – 3:00 pm



Wild and Spontaneous Fermentation at Home

Saturday, June 13 | 10:15 am – 11:15 am

Lactobacillus



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Bacteria (gram positive)

Producer of Lactic Acid (yogurt type sourness)

Presence of certain hop acids will inhibit growth

New strains have been made available or discovered (i.e. older references mostly apply to *L. Delbrueckii*)

Each strain has its own optimum acid producing (growth) conditions

Ferment both in the presence or absence of oxygen but prefers reduced levels

Homofermentative— produces only lactic acid

- *Acidophilus* (99F), *Delbrueckii* (100F)

Heterofermentative - produces both lactic acid, ethanol and CO₂

- *Brevis* (75)

Facultatively Heterofermentative – homolactic with high sugar, heterolactic with low sugar

- *Plantarum* (59F)

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Lacto Strain Source

Commercial Cultures



L. Delbrueckii

L. Brevis



L. Brevis



L. Brevis, L. Plantarum



L. Delbrueckii?

Probiotics



L. Acidophilus



L. Plantarum 299v

Cultured Dregs



Sour/Tart Saisons

Berliner Weisse

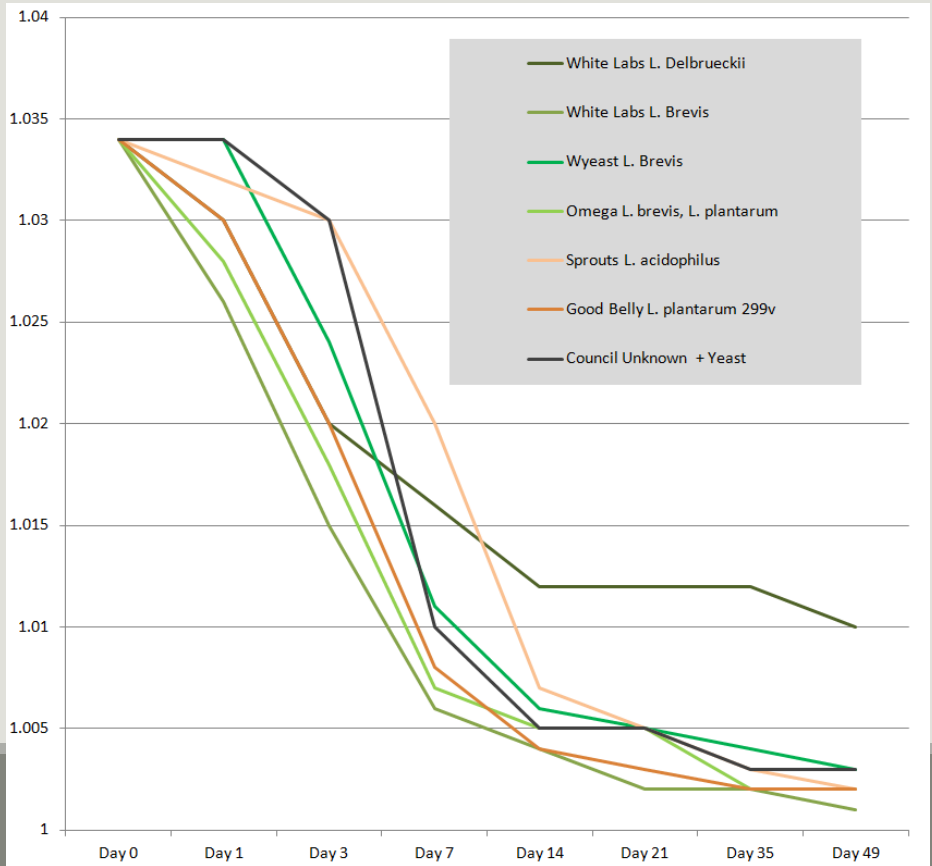
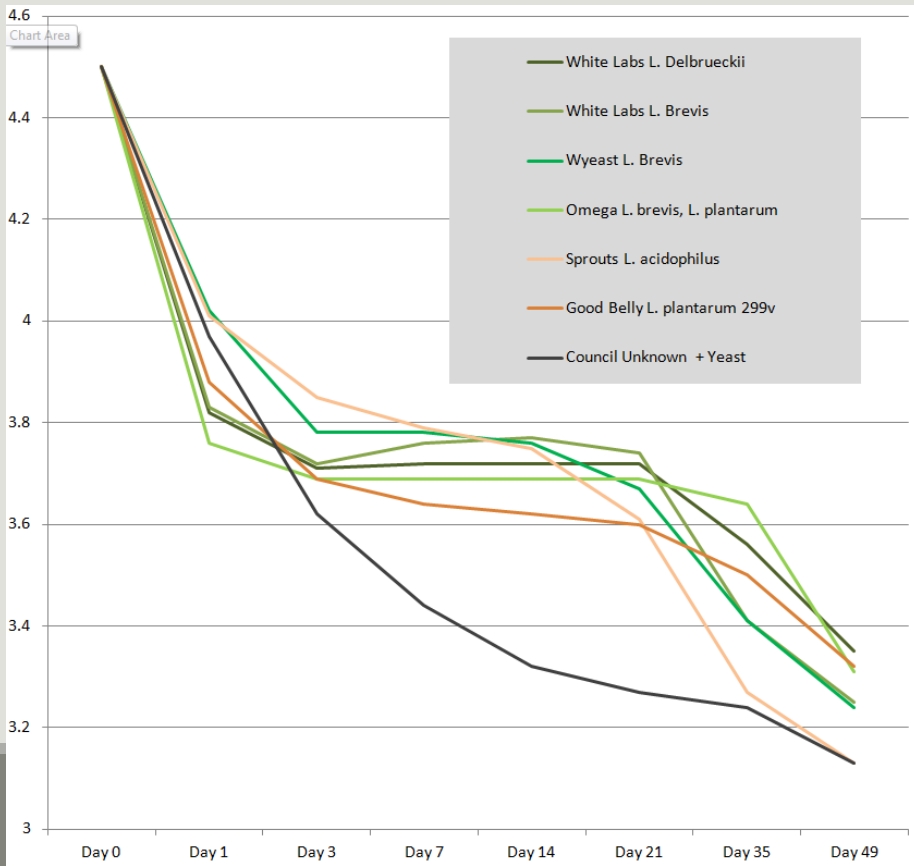
Gose



Possible Acid Beer Cultures

Each of one of these breweries packages a sour beer containing lacto and no pedio

Look for Berliner Weisse, Gose or Tart/Sour Saisons



Lacto Strain Testing

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Building up Dregs

Lacto Focus

- 2-10x faster growth than yeast
- Doesn't need oxygen (use airlock)
- IBU sensitive
- Higher temperature
- Don't decant – not good flocculation
- Low gravity – 1.020 – 1.040

Dreg Procedure

1. In bottle/small flask – ~3 oz – <1 week
2. In bottle/small flask - ~15 oz – ~1 week
3. In 1 gal glass jug – ~100 oz – 4-8 wk

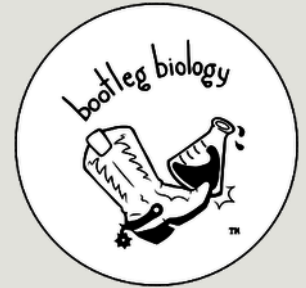


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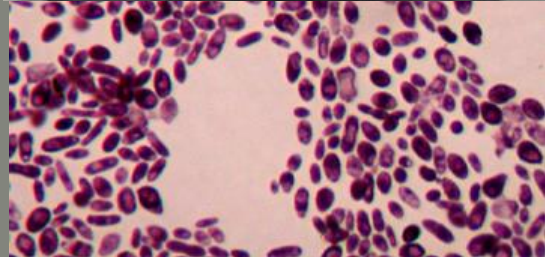
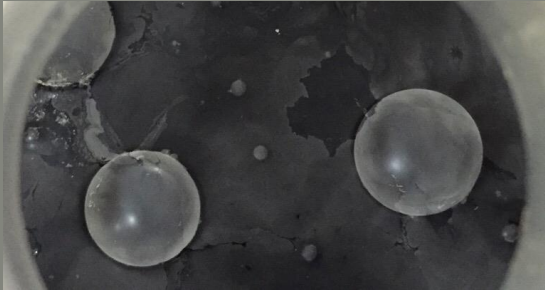
Achieving a House Flavor

Brettanomyces based

- Ferment in low pH environments
- High attenuation
- Slow fermentation rate
- Adjust over time
 - More yeast – less acid
- Many strains to
 - Commercial Sources, Dregs, Native



Brettanomyces



- Yeast (not a bacteria)
- More complex than Saccharomyces
- If oxygen is present (aerobic), produce acid (acetic, citric)
- If oxygen is not present (anaerobic), can still ferment
- Does not need to metabolize sugars/carbohydrates to produce new flavors.
- Long-term flavors depend on existing precursors
- Contain enzymes that can breakdown complex carbohydrates
- Forms a pellicle in presence of O₂

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Wort Production

- No IBUs
- Pale color
- Highly fermentable
- Low to Mid Gravity
- No Boil Needed – Pasteurize ~ 180F
- Don't Aerate
- High protein
- High starch
- Lower pH to 4.5
- Cool to 90 – 100F



Tip: Use second runnings

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Maintain an Acid Beer

Any vessel that is airtight

Reduce headspace

Limit tastings to avoid oxygen

Plan blending sessions around brew sessions

Apple Juice (5-10%)

- Malolactic fermentation for greater acidity
- Maintain viability



Good General Sour Brewing Guidelines

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Blending Logistics

Rustic Saison

Component Name	Farmers Gold	Acid Beer
Volume	8	1
pH	4.25	3.15
SRM	5	2
Original Gravity	1.050	1.035
Peak Temperature	85	85
Barrel Aged?	No	Yes
Final Gravity	1.007	1.002
Blend pH	3.89	
Blend SRM	5	
Blend ABV	5.6%	

Tart Saison

Component Name	Farmers Gold	Acid Beer
Volume	2.5	1
pH	4.25	3.15
SRM	5	2
Original Gravity	1.050	1.035
Peak Temperature	85	85
Barrel Aged?	No	Yes
Final Gravity	1.007	1.002
Blend pH	3.62	
Blend SRM	4	
Blend ABV	5.3%	

Sour Saison

Component Name	Farmers Gold	Acid Beer
Volume	1	1
pH	4.25	3.15
SRM	5	2
Original Gravity	1.050	1.035
Peak Temperature	85	85
Barrel Aged?	No	Yes
Final Gravity	1.007	1.002
Blend pH	3.42	
Blend SRM	4	
Blend ABV	5.0%	

[Blending Calculator Available Online](#)

(Based on Mad Fermentationist Original Version)

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Blend with an Acid Beer

Acid Beer is the Salt of the Sour Blending World

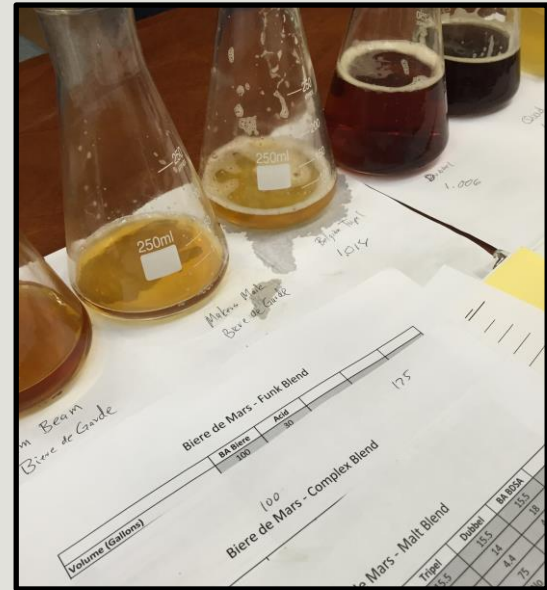
The best sour beer is only capable with blending

Process (Team Based):

1. Taste focus beer you want to perfect
2. Get vision for the final beer
3. Gather sensory and data on possible components
4. Set flavor targets and use measurements to get you close
5. Cool/Carb Blends – Tweak if needed

Practical Blending and Post-Fermentation Adjustments for the Homebrewer

Friday, June 12 | 10:15 am – 11:15 am



Blending Examples

Rustic Farmhouse beers

- Tartness helps increase drinkability
- Controlled Brett flavors

Long term aging beers

- Lower pH can bring new flavors out

Quick Oud Bruin

- Acid beer + Belgian Dubbel/Quad
- Control acidity

Fruited Beers

- Color stability
- Enhances fruit impact

Guinness

- Heightens yeast esters

Acknowledgements:

- Curtis and Liz Chism
- Matt Humbard
- Michael Tonsmeire
- Milk the Funk Facebook Group



Question and Answer

Follow-up directly by email (Jeff@Councilbrew.com)