Sour Beer

- Fast sour beers
  - Most common are German in origin
    - Gose and Berliner Weisse
  - Mainly lactobacillus and saccharomyces
- Slow sour beers
  - Most common are Belgian in origin
    - Lambics/Geuzes and Flemish/Flanders ale with the new catch-all “American Wild” ale category
  - Much more complex with a melange of lactobacillus, pediococcus, acetobacter, saccharomyces, and brettanomyces

Types of Bugs - Yeasts

- Saccharomyces
  - Clean or Belgian, nothing too attenuative
  - Works on all the simple sugars
  - Fast – days to weeks
- Brettanomyces
  - Gives the funk, can add a touch of acidity
  - Cleans up cell debris from dead cells
  - Works on complex sugars, esters, and phenols
  - Slow – months to years

Types of Bugs - Bacteria

- Lactic Acid Producers
  - Lactobacillus
    - Sensitive to IBUs (<10 IBUs)
  - Pediococcus
    - More hop resistant (<30IBUs)
      - Higher IBUs = more diacetyl (Brett will clean up)
    - Responsible for sickness/ropiness
- Other Bacteria
  - Acetobacter
    - Gives acetic/vinegar characteristic
    - Requires oxygen to grow

Fast Sour Beers

- Berliner Weisse
  - Originated in Berlin, Germany
  - 50/50 Wheat and pilsner malts
  - Syrups often used when serving
- Gose
  - Originated in Goslar, Germany
  - 50/50 Wheat and pilsner malts
  - Salt and coriander traditional adjuncts
- Often soured first with lacto before yeast addition

Slow Sour beers – Belgian Styles

- Lambics/Geuzes
  - Typically 60-70% pilsner and 40-30% raw wheat
  - Traditionally open cooled, then added to barrels for 1+ years
  - Flavor driven by bacterial sourness and brett funk
- Flemish/Flanders ale
  - Darker and maltier sours (oude bruin/flanders red)
  - Crystal/aromatic/special b/vienna malts give a stronger malt backbone
  - Often have more of an acetic character

Slow Sour beers – All the rest

- "Wild" Ales
  - Catch-all for American craft breweries running with the traditions
  - Pretty much any base beer can and has been soured
    - Porters, stouts, blondes, reds, browns
  - Hops tend to play a larger role (mostly dry hopped)
  - More fruit variety than Belgium breweries
  - Range from super sour to pleasant tartness with a gentle funk to eating gym socks stank

No Boil Berliner Weisse recipe

- 50% Wheat Malt
- 50% Pilsner malt
- Mash at 150F (65.6C)
- OG of 1.035
- Heat to 185F (85C) and add to fermentation vessel
  - Glass carboy/stainless steel pot or keg
- Cool to 115F (46C) add lactic acid to pH 4.5 and probiotics
- Keep at ~100F (38C) during souring
- When pH reaches ~3.2, pour into kettle, add hops (0.5 oz hallertauer) and heat to 185F (85C) to kill the lactobaccilus
- Chill, add back to carboy, pitch yeast (K-97 German Ale), and ferment out for 1-2 weeks

Other Souring Methods

- Handful of uncrushed grain added after the mash
  - Need to be extra careful about O2 exposure, can easily turn into into an enteric mess
- Commercial pure lactobacillus strains
  - Different temperature ranges, hop sensitivities, some can produce alcohol as well
- Adding straight lactic acid to your desired pH
  - Cheaters never win

Turbid Mash Lambic

- 60% Pilsner malt
- 40% Raw wheat
- Turbid Mash
- Hallertauer hops added at start of ~4hr boil to 10 total IBUs
- OG 1.045
- 1 vial of WLP565 Belgian Saison Ale I
- 1 cup of house sour slurry

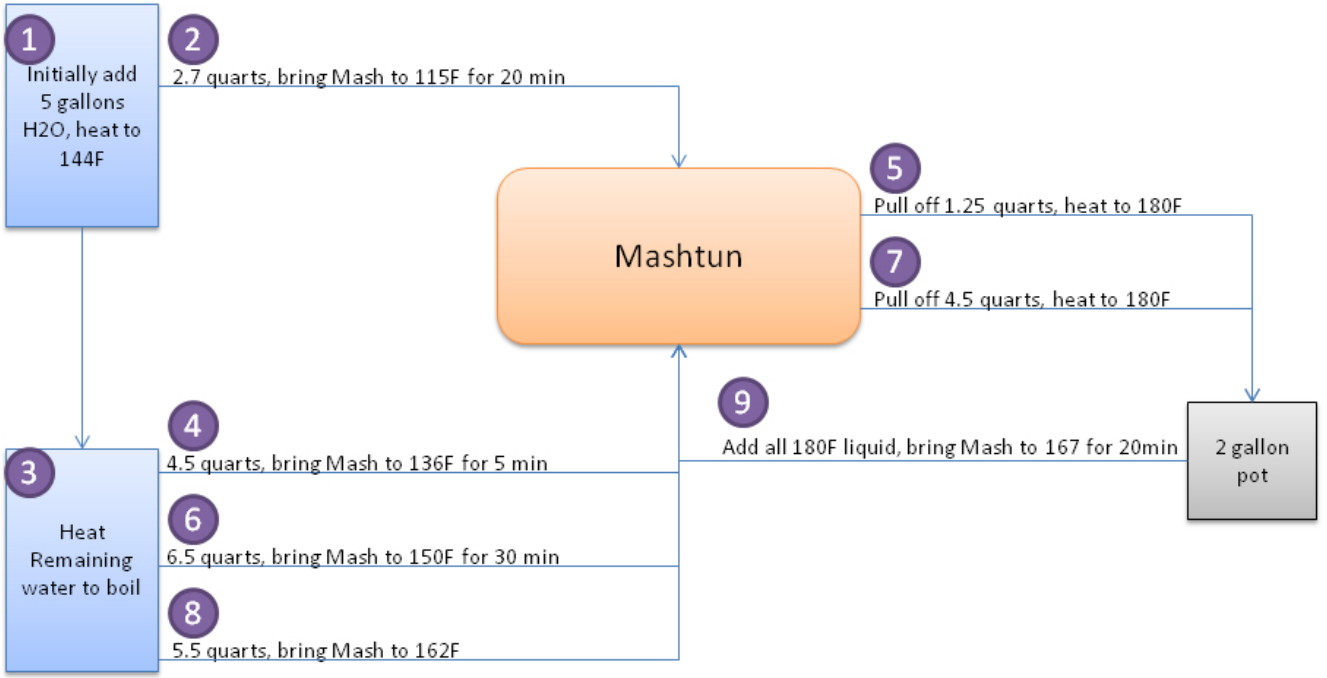
Turbid Mash

1. Heat 5 gallons of water to 144F (62C)
2. Add 2.7 quarts of 144F (62C) water to the 9 pounds of grain and mix, targeting around 115F (46C) and let sit for 20 minutes. Acid rest.
3. Bring remaining water to a boil, cover and turn down to a simmer.
4. Add 4.5 quarts of boiling water to get grain temp up to 136F (58C) for 5 minutes. Protein Rest.
5. After 5 minutes, drain 1.25 quarts of mash liquid, add to a 2 gallon pot, heat to 180F (82C) to kill enzymatic activity (once it reaches 180F (82C), you can turn heat off).
6. Add 6.5 quarts of the simmering water to mash to get temp up to 150F and let sit for 30 minutes.

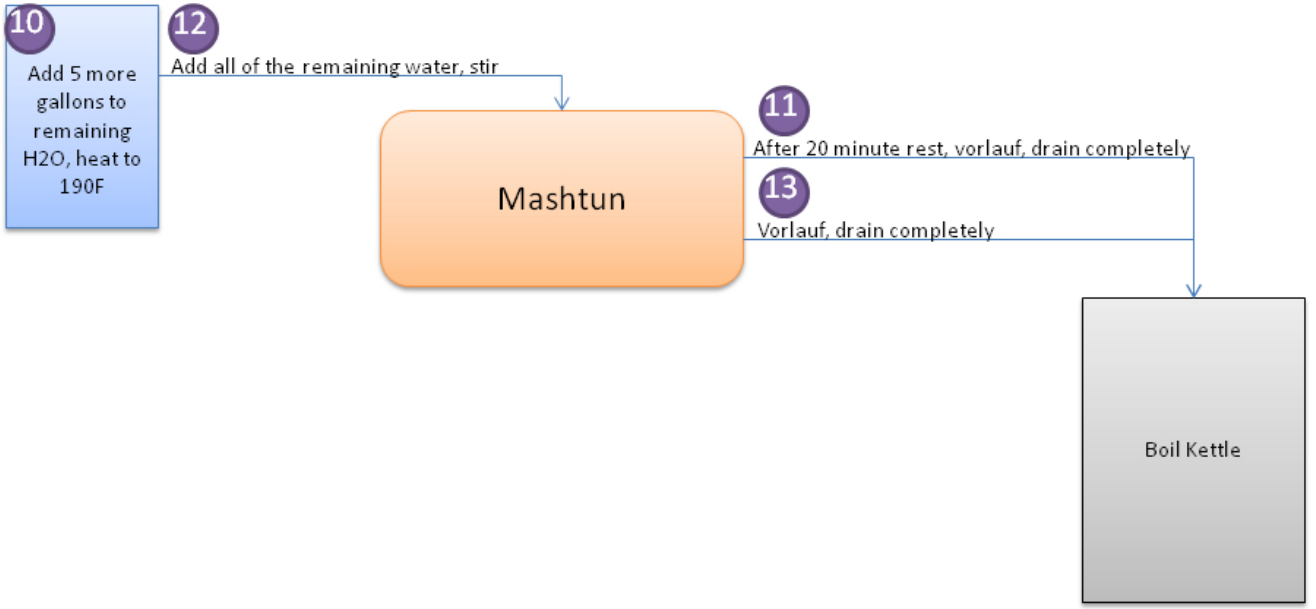
Turbid Mash

7. Drain 4.5 quarts of mash liquid, add to the 1.25 quarts in your 2 gallon pot, heat this back up to 180F (82C) (try to keep around 180F (82C)).
8. Add 5.5 quarts of the simmering water to the mash to get temp up to 162F (72C)
9. Add the ~5.75 quarts of 180F drained wort to the mash to get the temp up to 167F and rest for 20 mins.
10. During the 20 minute rest, add 5 gallons of water to your still simmering water and raise temp to 190F.
11. Vorlauf (basically make sure the wort is grain free, it's going to be cloudy), and drain mashtun into your boil kettle.
12. I batch sparge, so I added all 6ish remaining gallons of 190F water to my mashtun and stir well.
13. Vorlauf again and drain into the kettle.

Steps 1-9: The Turbid Mash



Steps 10-13: Sparging



Aging your lambic

- Let ferment in primary for 2-6 months
  - Any yeast/bacteria that lyse will get scavenged by the Brett
- Age in secondary/kegs with sterilized oak cubes (~1 ounce)
  - Light/untoasted boiled for 15 minutes before adding

Other Methods

- Normal infusion mash (158F/70C) with pilsner and wheat malt
  - Some add a few tbsps of flour during the boil
- Commercial sour blends
  - Usually not super flavorful first iteration
- Bottle dregs
  - Just dump straight into primary or secondary

Take Home Messages

- Easier than you think
  - The biggest hurdle is fear of contaminating everything
- Slow sour beers easier to make than fast sour beers
  - Time is the only extra step you need