

WORT SOURING



MEIKE ROSSMAN
BLUE OWL BREWING

AGENDA

Wort souring overview

What you can expect from souring with grain

Blue Owl's "sour-mash" process

Our quality controls

How to predict outcomes in your recipe development

Questions/Comments

WORT SOUR OVERVIEW

Lactic Acid Bacteria to wort

Different mediums

12-48 hours

All hot-side

WORT SOUR OVERVIEW

**Clean, bright tart
flavor**

Quick turnaround

**Low risk of
contamination**

Dynamic

**Tool in your
toolbox**

**Hop intolerant
“One note”**

INOCULATING WITH GRAIN

Diverse “bugs” on malt (microbiome)

**Microbiome can produce lots of different products, flavors,
acids**

Primarily lactic acid producing bacteria

With some steps you can maximize consistency

LACTIC ACID BACTERIA

Gram positive

Adaptable, available all over the place

Not aerobe

Homofermentative and Heterofermentative strains

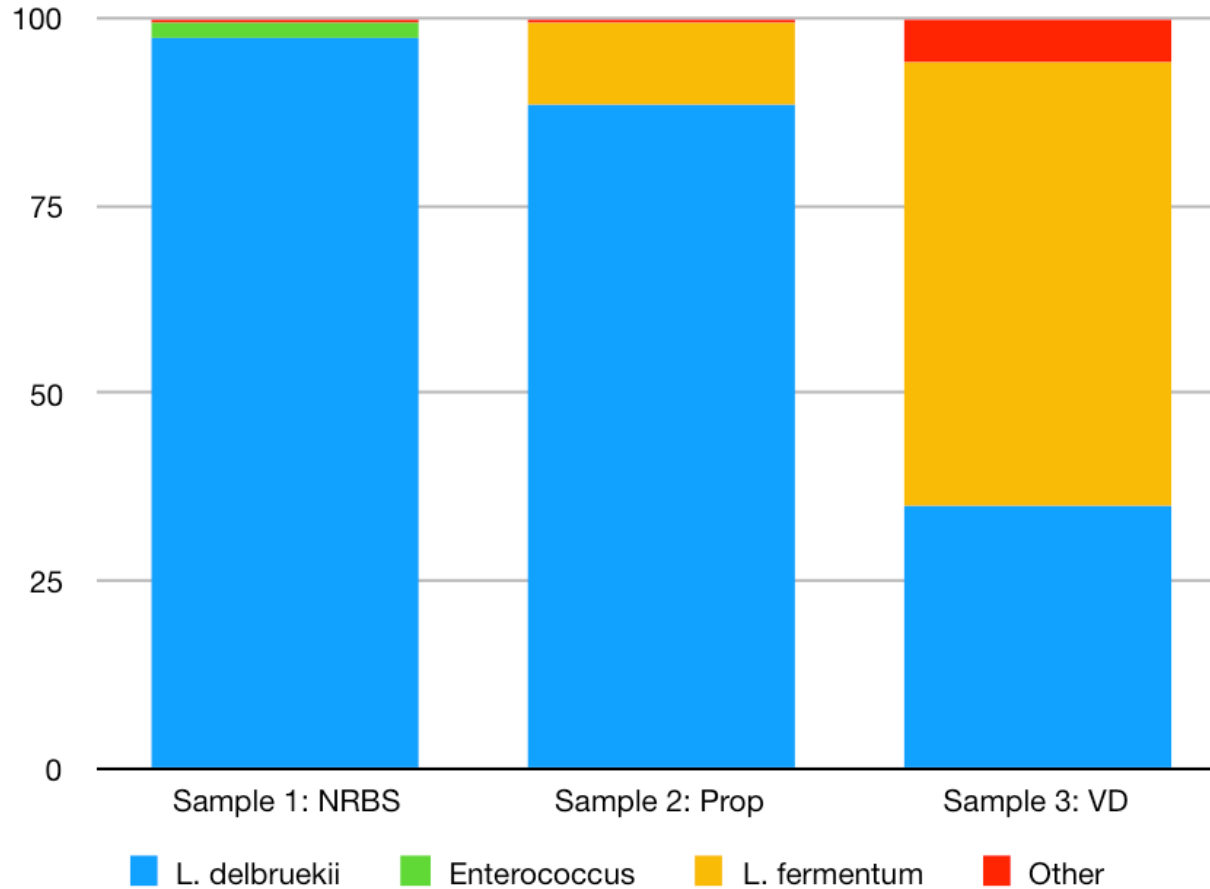
Lag phase

Self-limiting due to lactic acid concentration

Can break down some proteins

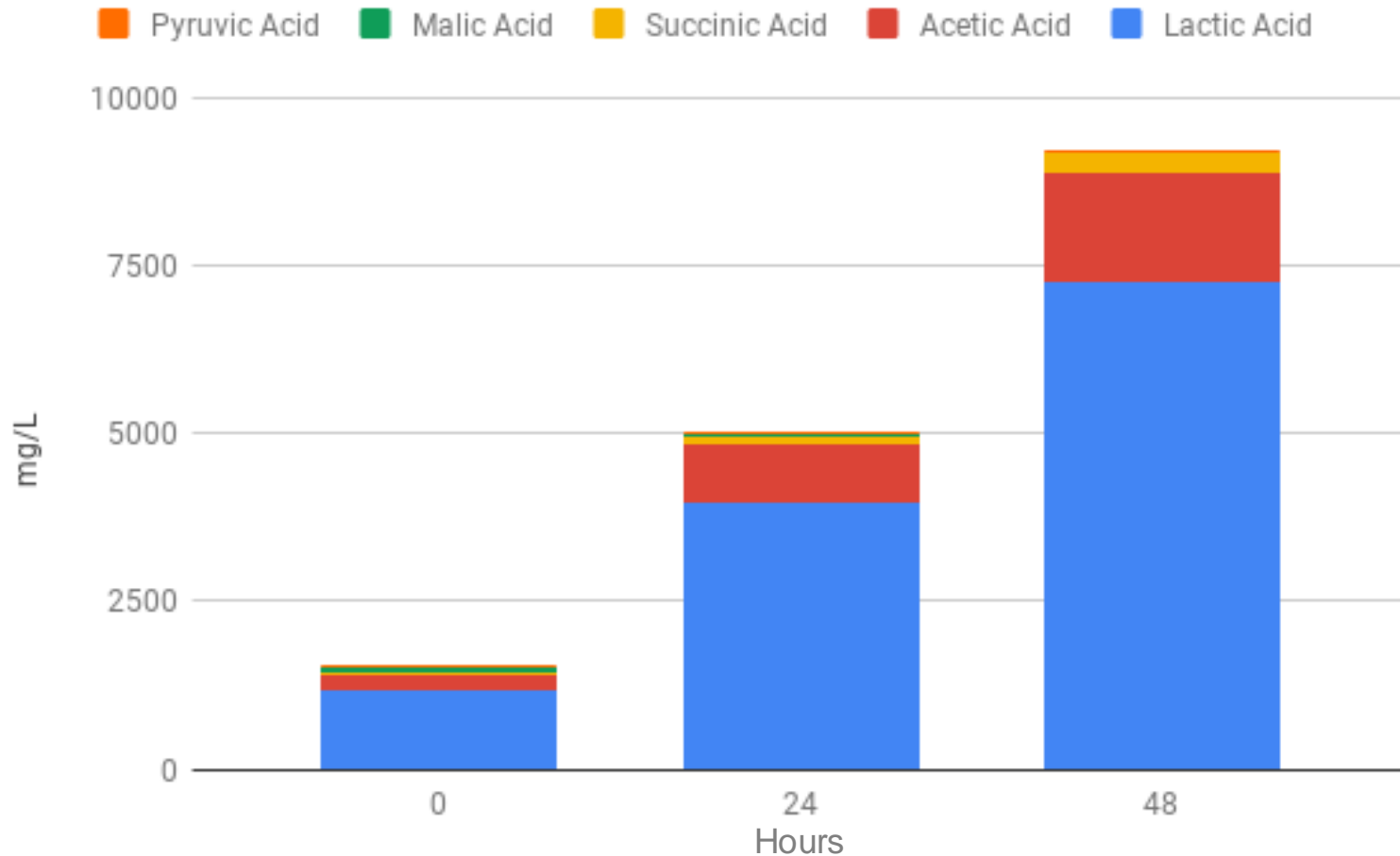
Foam degradation

INOCULATING WITH GRAIN



INOCULATING WITH GRAIN

Synergy Pilsner – Organic Acids



BLUE OWL PROCESS - BUILDING CONSISTENCY

Wort Preparation

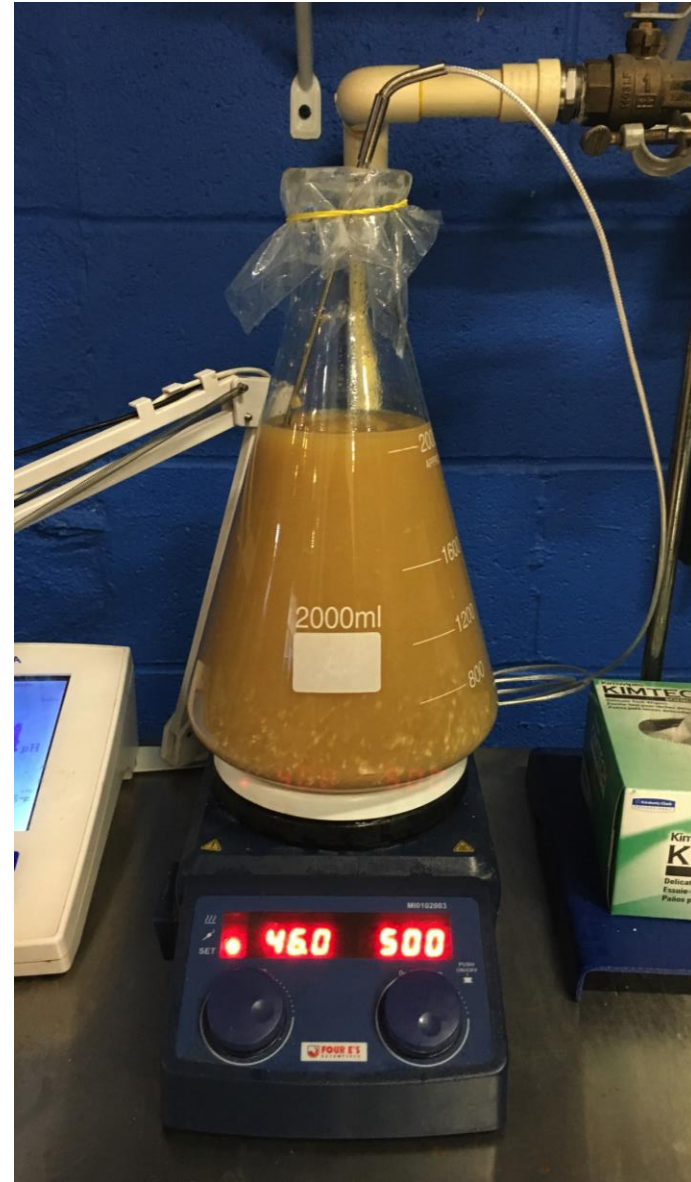
- **Normal wort process (style/beer)**
- **Pasteurize**
- **Acidify**
- **CO2**
- **Temperature Control**
- **Recirculation**
- **PRV**
- **pH Meter**

BLUE OWL PROCESS - METHODS

Souring Methods

- **Modular Inoculation Unit (MIU)**
- **Nutrient Rich Buffered Solution (NRBS)**
- **Harvesting**

BLUE OWL PROCESS - METHODS



BLUE OWL PROCESS - METHODS



CONSIDERATIONS

THP at lower temperatures

Bacteria that won't drop out

Seasonality souring potential up and down

Hostile environments for yeast

Increase nutrient

No repitch

Some yeast strains may have issues with low pH

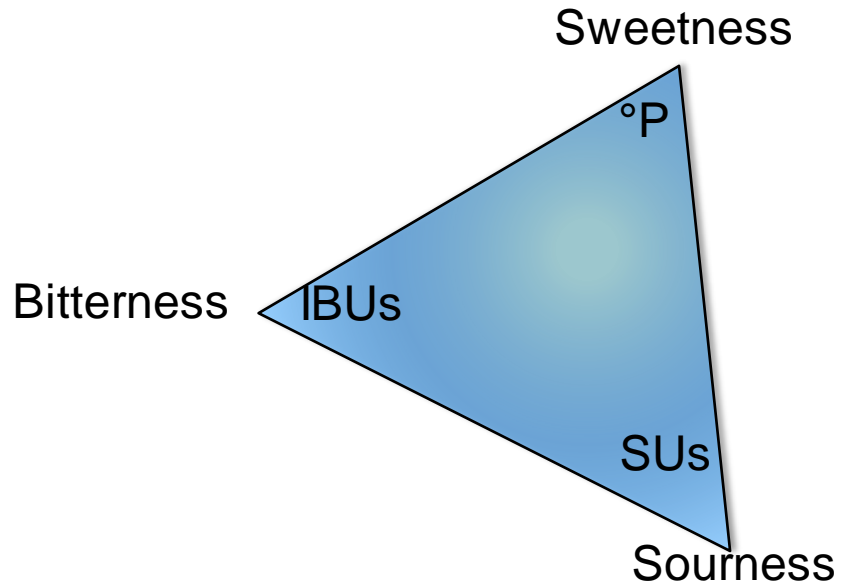
RECIPE DEVELOPMENT

Peculiar Triangle

Lactic Acid Dose

Bench tops tests to evaluate grain

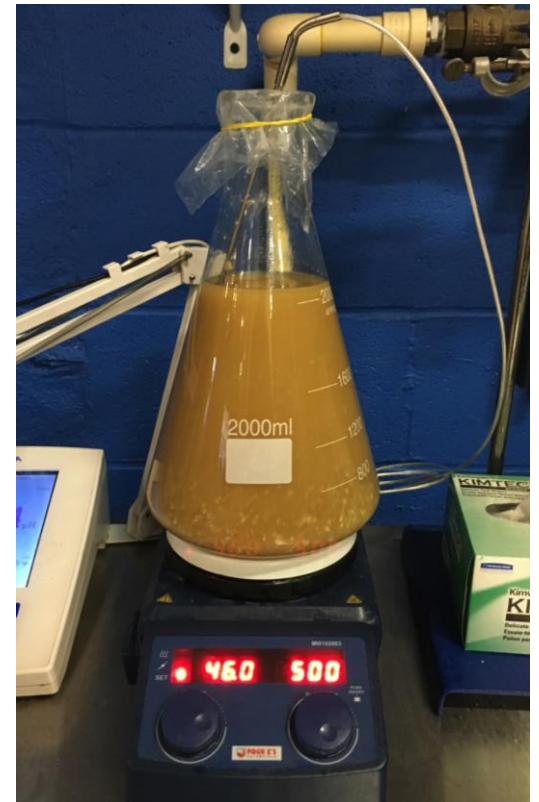
Yeast Interaction in hostile environment



BENCH TOP TESTS

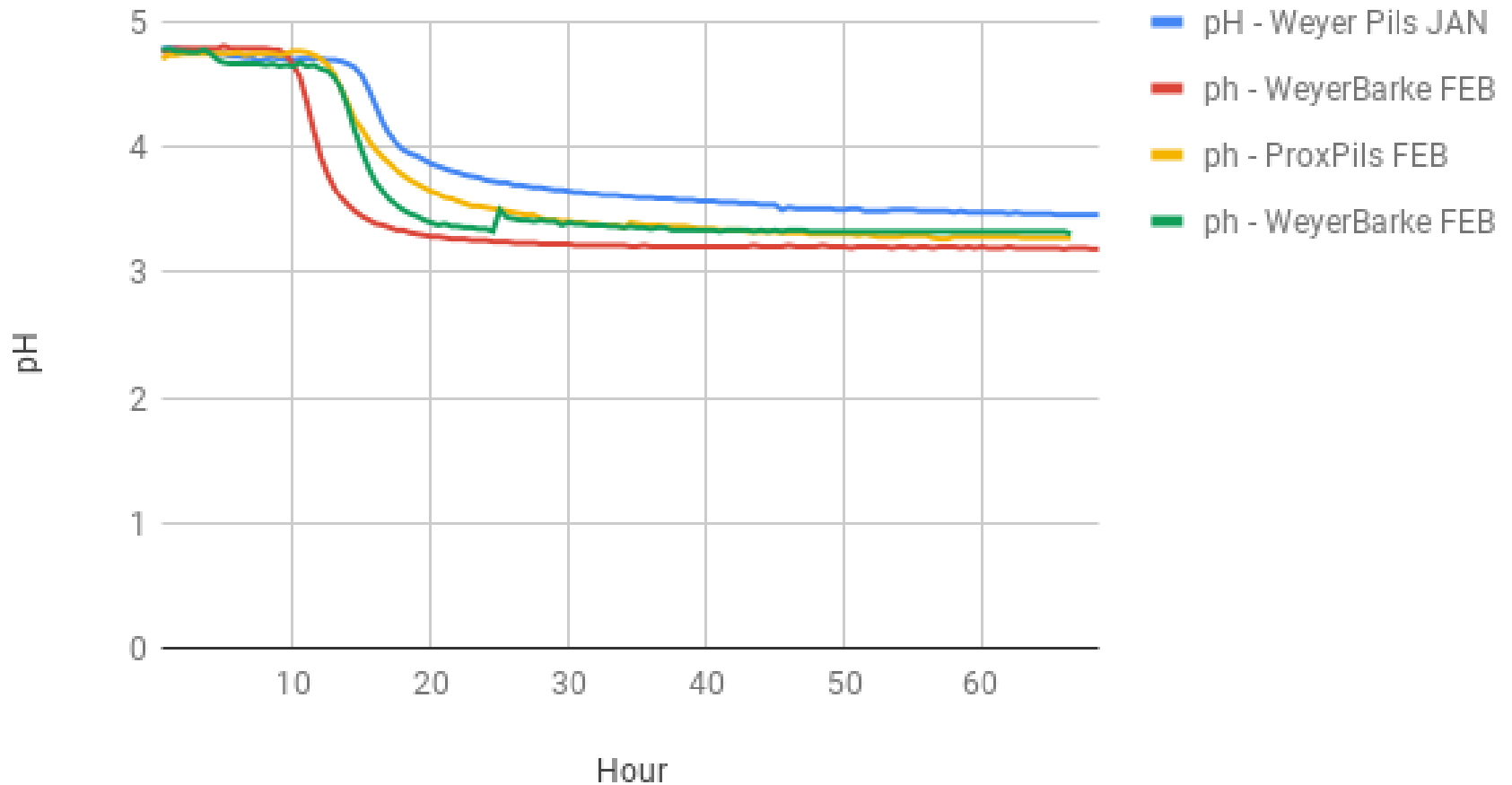
Evaluate grain

- Pull/prep wort and dose with small amount of grain
- Stir plate with temperature control
- pH meter
- Track pH over time
- Acid Base Titration



BLUE OWL BENCH TOP EXPERIMENTS

pH - January/February Tests



GRAIN SELECTION

Light Pilsner Malts

Seasonality can be an issue

Batches of the same grain can have different potential

Process/storage can wear on viability

Temperature of souring versus speed of souring

Temperature of souring versus sour flavor character

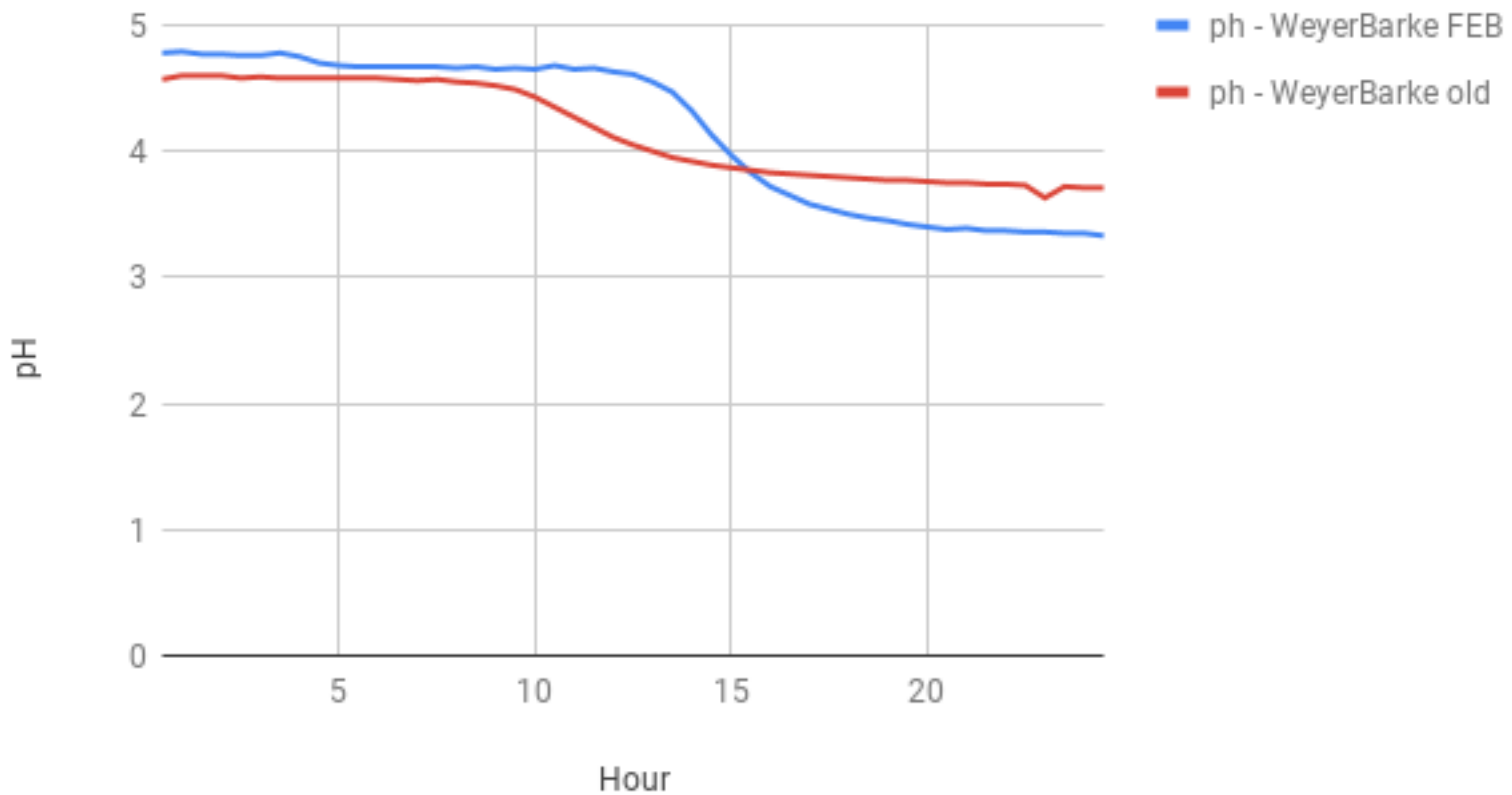
Temperature of souring and bacteria in solution

Buffering capacity of malt and wort

Run your own grain characterization tests to dial in preferences

GRAIN SELECTION

pH - Weyermann Barke Tests



THANK YOU

Cheers!

Questions?

Feel free to email me at meike@blueowlbrewing.com with additional questions/comments.

