wyeast™
Premium Liquid Yeast

Liquid Yeast Management for Nano Breweries

Liquid Yeast Management

Outline

- Importance of Yeast Management
- Aeration and Oxygen Consumption
- Diastaticus
- Direct Pitching
- Yeast Storage
- Excess Yeast Management

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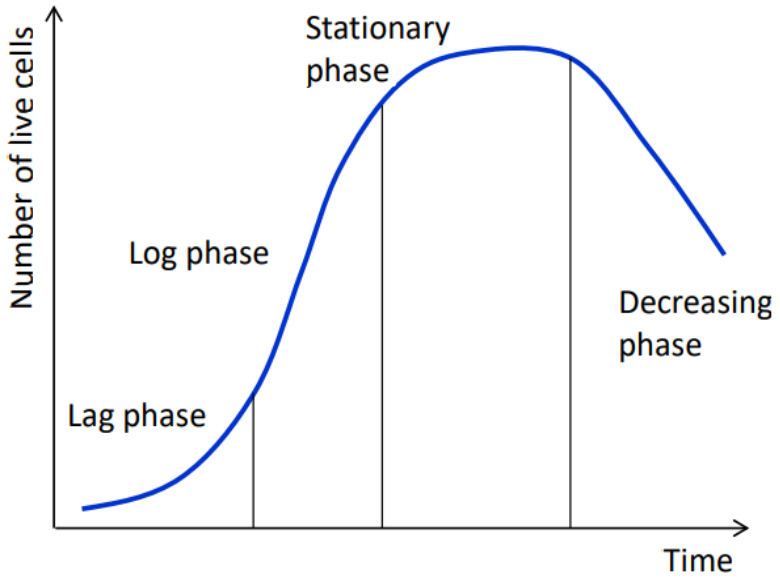
Importance of Yeast Management

- The brewery productivity is influenced by the most favorable conditions in which the yeast is handled.
- The yeast influences the beer aromas, flavors, foam stability and turbidity issues caused by Glycogen excretions.
- If harvested and repitched, it will affect the performance of a subsequent fermentation.

Aeration and Oxygen Consumption



Picture: Steineker

Propagation Phases

- **Lag Phase:**

  Yeast acclimatized to wort, consumes sugars and requires adequate amount of oxygen.

- **Log Phase:**

  Exponential growth of yeast, aromatic and flavor compounds are by-products of cell growth. Highest intake of oxygen.

- **Stationary Phase:**

  Growth stops and fermentation process starts.

- **Decreasing Phase:**

  Available sugar and nitrogen decreases, yeast cell death rate increases. Flocculation begins.

Diastaticus

- The yeast strains are classified as *Saccharomyces cerevisiae var. diastaticus* indicating they carry the STA1 gene. Several of the available yeast strains have been used commercially for brewing for many years.
- If the yeast strain carries the STA1 gene, the yeast is capable of fermenting residual carbohydrates that are unfermentable to most Saccharomyces strains because the yeast will secrete an enzyme known as Glucoamylase, which breaks down alpha 1,6 and 1,4 bonds from Maltotriose, Maltotetraose and Dextrin, reaction through which glucose is liberated.
- It causes changes in flavor, over attenuation and bottle bursting.
- Also, Diastaticus can be an environmental contaminant in the brewery.

Method of Pitching

Direct Pitching

- Direct pitching refers to adding an appropriate quantity of yeast directly to the final volume of wort.
- The proper Direct Pitch is estimated according to the cooled wort volume and the specific gravity of it.
- Liters of yeast per barrel of wort.

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Direct Pitch

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Yeast Best Practices Upon Arrival

- Check arrival temperature, ideal is 34–40° Fahrenheit (1-4° Celsius)
  - In cold weather, examine for slushy or solid signs of being frozen.
  - During the summer, heat stress will decrease viability.
- Inspect for leaks
- Compromised condition or damaged product.
- Confirm that viability and purity meet brewery requirements.
- Overall yeast health conditions.

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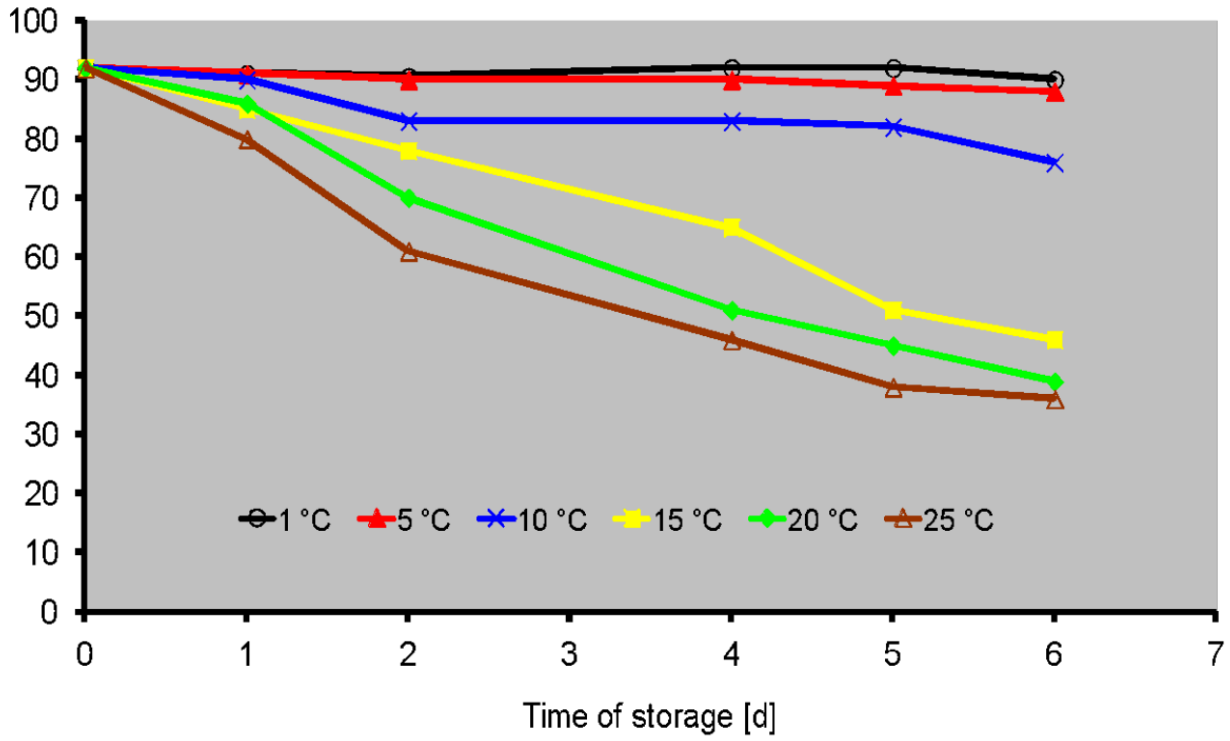
Yeast Fermentation Characteristics for Repitching

- Good health conditions showing high viability and vitality.
- Proper flocculation attributes.
- Free of contaminations.
- Number of yeast generation cycles. (Genetic instability after 12 generations).
- Performance of previous fermentation.

Yeast Storage

- During storage yeast utilizes small amounts of sugars to preserve its vitality, adequate amounts of Glycogen reserves are required as energy source to survive periods of starvation and to fuel metabolism.
- Store at 34-40°F (1-4°C).
- Store under CO_2 blanket with minimal positive pressure at 5 PSI to avoid entrance of microorganisms.
- Minimize exposure to oxygen.
- Use within 3-4 days. Strain dependent (1 day to 2 weeks)

Viability Yeasts Stored at Different Temperatures



Source: Deniz Bilge, VLB

Yeast Storage

- Store under a layer of 3-4 inches of low alcohol beer and low hopped beer.
- For re-pitching, store only yeast from beers with an alcohol range of 4-6 % ABV.
- Remove or minimize trub.
- Agitation or shake often to remove heat and CO_2.

Yeast Storage

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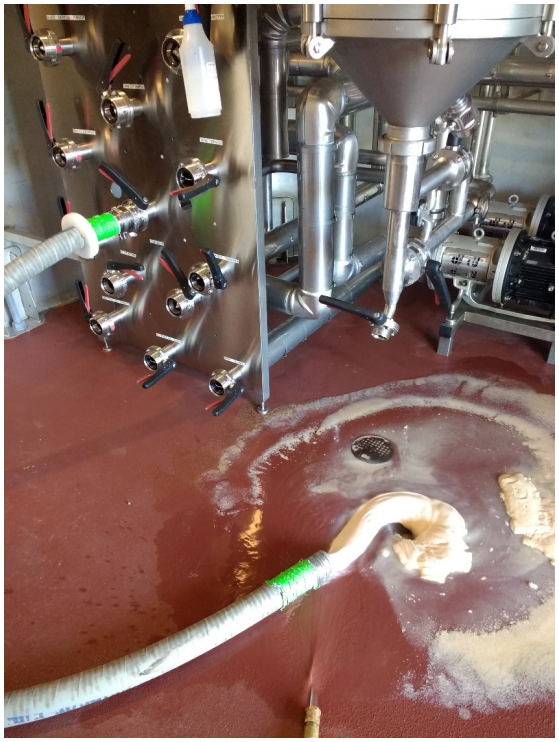
Quality Control prior to pitching

- Test for viability and vitality.
- Cell count
- pH
- Check for contaminations utilizing the ready to use NBB-B broth tubes in the Brewers QCheck Kit (Döhler).

Excess Yeast Management

- Waste reduction.
- Reduce environmental impact.
- Recycle part of the yeast instead of dumping it to drain to reduce wastewater flow defined as Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) surcharges.

Excess Yeast Management



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Any questions?

THANK YOU

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