Practical Yeast Management

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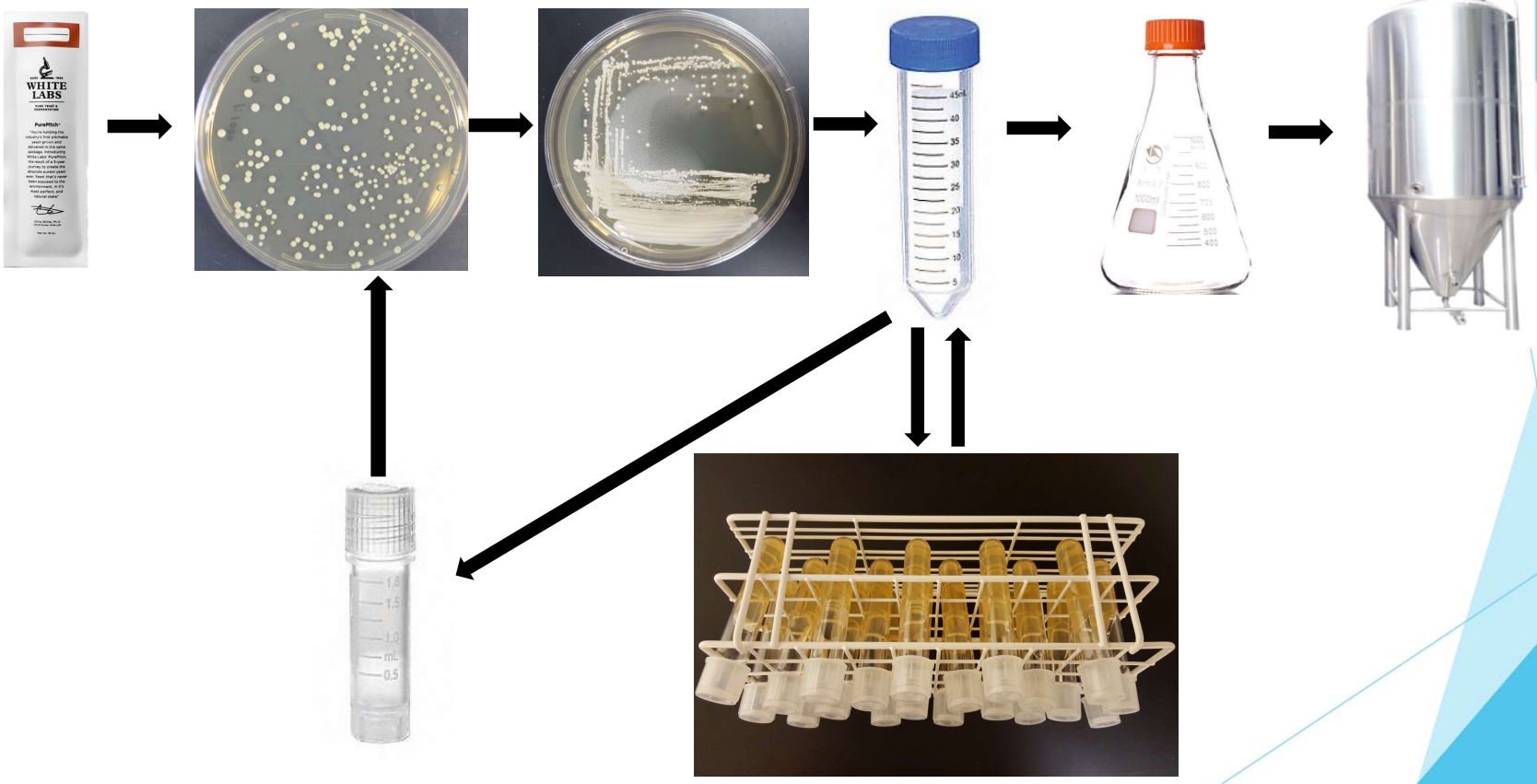
Quick Poll

- A. How many store cultures on-site cryogenically?
- B. How many purchase small volumes of yeast and store on slants for continual use?
- C. How many purchase pitchable volumes and propagate from there?
- D. How many purchase pitchable volumes and pitch direct to fermenter?
- E. How many use dry yeast?

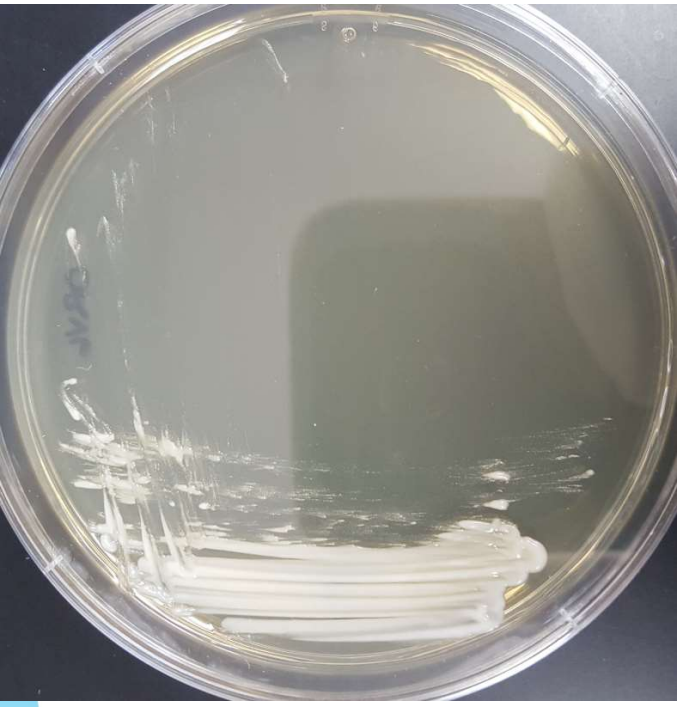
Flowchart: Freezer to Fermentation

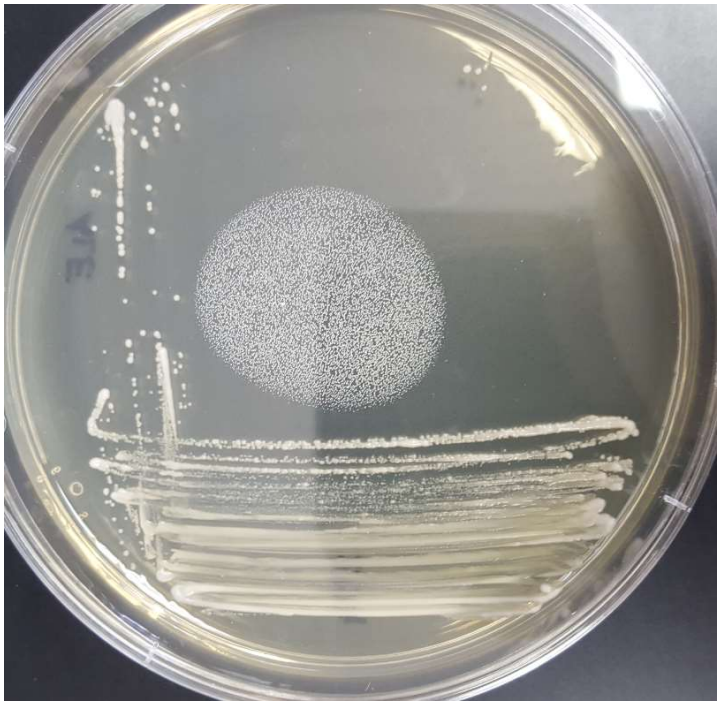


YPD Media

- Per 1.0L Distilled H_2O
  - 10.0g Yeast Extract
  - 20.0g Peptone
  - 20.0g Dextrose
  - 15.0g Agar
- Boil for 1 minute to completely dissolve solids
- Autoclave at 121.0°C for 15 minutes

We're Going Streaking





Cryogenic Storage

- -80.0°C
- Arrests metabolism, allows long-term viability maintenance of culture
- Must dilute cultures with glycerol (15%) to prevent cell lysis

PROS:

- Immediate access to strain of choice

CONS:

- Expensive equipment up front
- Requires aseptic working conditions

Yeast Propagation Basics

- Yeast Propagation = Yeast Training
- Match propagation wort to destination beer:
  - OG/RDF-ensure ABV of final product will be within specification
  - IBU-proper bitterness levels
  - Color-true to brand color in final product
- Temperature Requirements
  - Warmer Temps = Faster Propagation
  - +2.0°C from fermentation temp
- Aeration Rates
  - Continuous during propagation
  - 3.0-6.0L/hr, strain dependent
- Feed Volumes
  - Generally 1:10 ratio is optimal for 24hr cell growth turnaround
  - 1:100 will work just fine

Pitch Rates

- Consistent pitches = consistent fermentation = consistent beer
- $C_1V_1 = C_2V_2$
- Ale Yeast
  - 1.0×10^6 cells/mL per °P
  - $+1.0 \times 10^6$ cells/mL per every °P above 16.0°P
  - Ex: 12.0°P Ale = 12.0×10^6 cells/mL
  - Ex: 19.0°P Ale = 22.0×10^6 cells/mL
- Lager Yeast
  - 1.25×10^6 cells/mL per °P
  - $+1.0 \times 10^6$ cells/mL per every °P above 16.0°P
  - Ex: 12.0°P Lager = 15.0×10^6 cells/mL
  - Ex: 19.0°P Lager = 26.75×10^6 cells/mL

Alternate Methods

- "Crop 'n' Prop"
  - Pull slurry/active fermentation into propagator
  - Introduce O_2 & feed wort to repropagate
- Continuous Propagation
  - Pitch propagation into brew, leaving small stump behind
  - After pitching, refeed on top of stump to continue propagation
- Drauflassen
  - Pitch propagation into brew & ferment normally
  - Once cell concentration has hit high enough levels, feed more brews into same FV