

BEGIN FERMENTATION



"Wild Yeasts" Dominate Grape Skins

- *Kloeckera* and *Hanseniospora* (50-75%), and at lesser levels, *Candida*, *Cryptococcus*, *Rhodotorula*, *Pichia*, *Kluyveromyces* and *Hansenula*



Fermentation Yeast

Saccharomyces cerevisiae



Number of *S. cerevisiae* yeast on a grape: 1-10 Cells

= 40 thousand cells per gallon of juice

Number of *S. cerevisiae* yeast in a gallon of fermenting wine:

2×10^{12} or 2 Trillion Cells

Alcoholic Fermentation

■ Grape Sugars \longrightarrow Ethanol + Carbon Dioxide + Heat

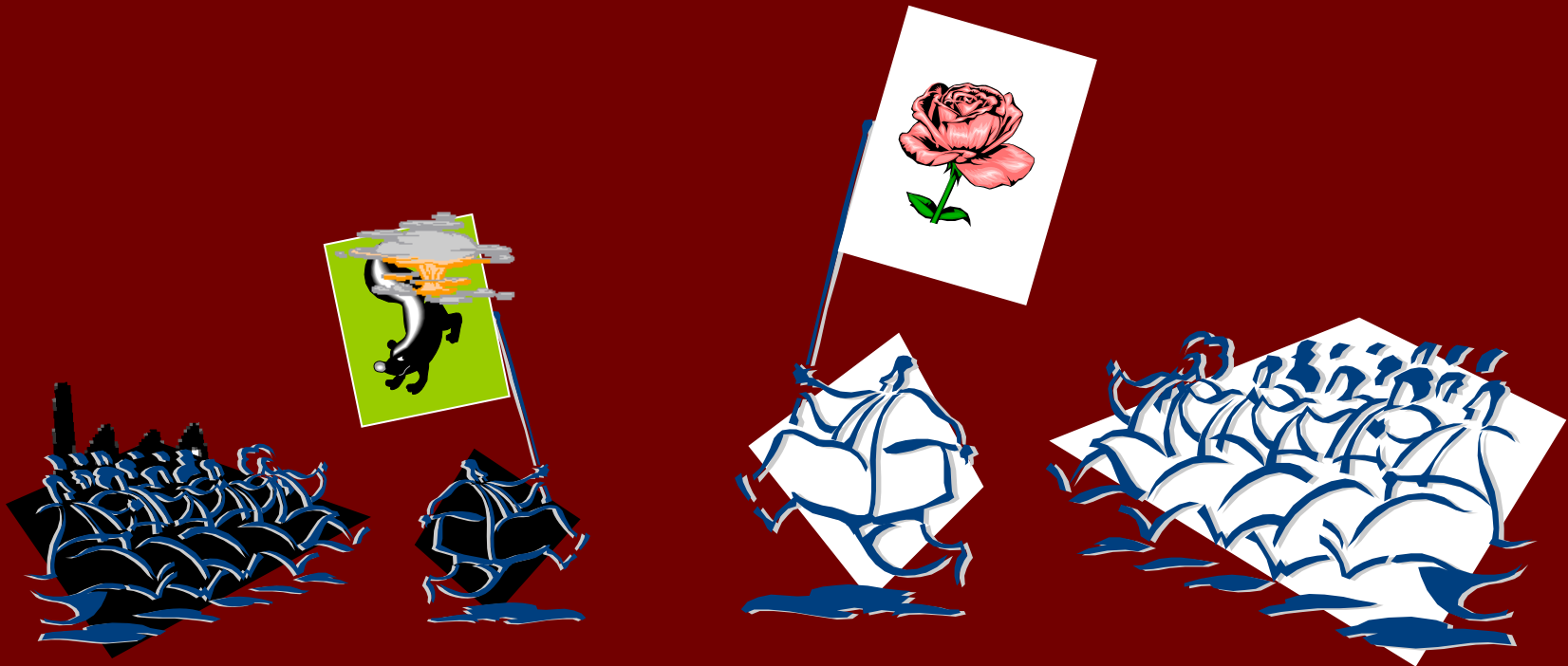
■ Yeast tolerance limits:

- Ethanol up to about 16%
- Pressurized up to about 120 psi
- Heat above 110 F



Purpose of Inoculation

- Domination by the “good guys”



Starter Yeast Cultures

- ferment 25-30% sugar to dryness
- tolerate 50-100 mg/L free SO₂
- produce minimum amounts of acetic acid, hydrogen sulfide or sulfur dioxide
- tolerate cool (50° F) to very warm (100° F) fermentation temperatures
- tolerate low pH musts (<3.0)

Happy Yeast

- Replication
 - Oxygen
 - Nitrogen
 - Sugar
- Fermentation
 - Temperature 75F
 - Sugar

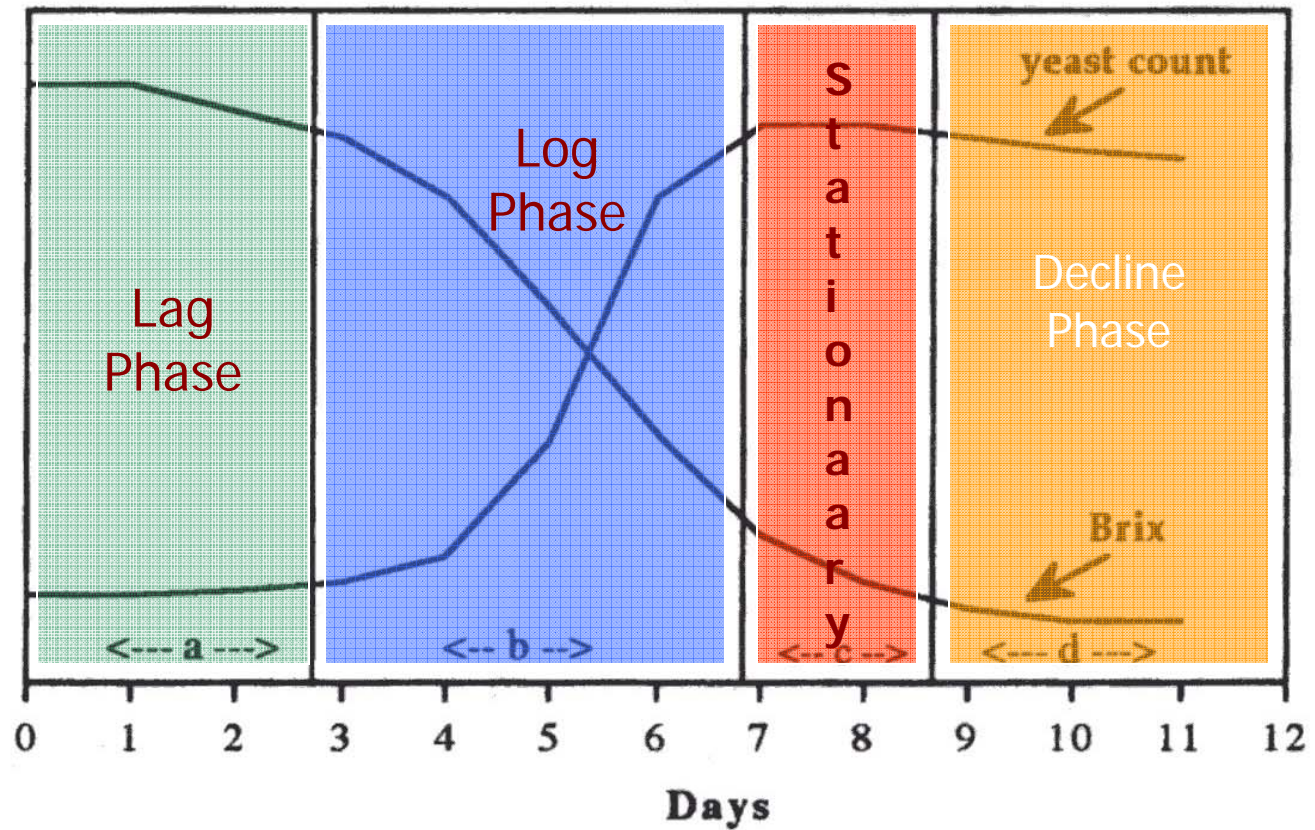


Yeast Food

- Nitrogen deficiencies in juice
 - diammonium phosphate (DAP) &/or Yeastex or Fermaid
 - proprietary formulations
 - Add up to 2 grams/gallon at inoculation
 - Helps avoid stuck fermentations and hydrogen sulfide formation

Starter Culture Preparation

- 1 gram yeast per gallon juice
- Warm 10 ml of water per 1 gram yeast to 104 F
- Sprinkle yeast on top
- Hold at 100-102F for 15-30 minutes
- Add to juice, temperature compensated, and stir in well



Typical profile of yeast growth versus sugar utilization

Monitor Fermentation

- Watch for signs
- Reinoculate if no activity after 48 hours
- Take hydrometer readings
 - Determine when to press red wines
 - Watch for stuck fermentations



Winos Labrattus

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