

VARIETY _____

YEAST _____

M/L _____

PREMIUM RED WINE FROM FRESH GRAPES

SUGAR _____

pH _____

ACIDITY _____

Stop by The Shop to get:

Yeast / **MLF Culture** / **"Go-Ferm®"** for re-hydrating the yeast
"Super Food® Plus" nutrient for the yeast / **"Leucofood™ Plus"** MLF
nutrient / **Tartaric Acid** / **Bi-Sulfite Powder**

1 - CRUSH AND DESTEM GRAPES

- Rinse a clean **Primary Fermenter** with **Sulfite Solution**. *Drain well.* Fill up to 3/4 full with crushed and de-stemmed grapes.

2 - ADD SULFITE

- **Now**, add **1/2 teaspoon** (50 ppm SO₂) **Bi-Sulfite Powder** per **100 lbs. Grapes**. Mix well.
Sulfite prevents browning and spoilage.

3 - TEST AND ADJUST SUGAR / pH / ACIDITY

- Using your **Hydrometer**, **check sugar**, adding if necessary.
- **If too high (above 26°B)**, dilute with filtered water. Mix well.
- Using your **pH Papers** or **pH Meter**, **adjust the pH** down to **pH 3.5-3.6** with **Tartaric Acid**. Mix well.
- If you can't check pH, **check Total Acidity** with **your Acid Testing Kit**, adjust, as directed, with **Tartaric Acid**. Mix well.

4 - ADD YEAST - 12+ hours after Sulfiting.

- **Rehydrate Yeast**. See **"Rehydrating Yeast"**
- **Cool to must/grape temperature**.
- **Add the activated yeast slurry**.

TIMING OF NUTRIENT ADDITIONS

- ❖ **Pre-Stage 1** - **Rehydration of Cultured Yeast in "Start Up™"**. Growing yeast need nitrogen and a wealth of nutrients, minerals, vitamins, and survival factors to build up enough healthy bio-mass that is needed to start and to complete ferment. Since there is no DAP [inorganic nitrogen/ammonia] in **"Start Up™"**, the yeast will get their nitrogen by "eating their amino acids" instead of "spoiling their dinner" by gorging on ammonia/DAP first. Now, your yeast are fully ready to grow when added to the must.

- ❖ **Stage 1** - Add 1/3 of the Total Nutrient Addition ("**Super Food® Plus**") when your fermentation is fully active and the **Brix have dropped 3 to 4 degrees**. (about 48 hrs. after inoculation) At this point, the yeast have taken up most of the nitrogen in the juice, and need more of everything.
 - ✓ **This is also the time to add your **M-L culture**.**
 - ❖ **Stage 2** - Add another 1/3 of the Total Nutrient Addition when your fermentation **Brix have dropped another 3 to 4 degrees**.
 - ❖ **Stage 3** - Add the last 1/3 of the Total Nutrient Addition when your fermentation **Brix have dropped another 3 to 4 degrees**, at or just about mid-fermentation (8°B – 12°B). The yeast have stopped growing, but the alcohol is low enough that they can still take up extra nitrogen, replenishing the amount needed to survive to complete ferment.
 - ✓ **If, doing "spontaneous/native" fermentation**, add Stage 1, only when *saccharomyces* yeasts, instead of *Kloeckera* and other apiculate vineyard yeast, start growing. **Do not feed non-saccharomyces vineyard yeast.**
- "°B"** = the Brix sugar reading on your hydrometer.

5 - PRIMARY FERMENTATION

- **Fermentation should start within 24 hours of adding the yeast.** A cap of skins will rise to the top, due to CO₂ gas being produced, as sugar is changed into alcohol.
- **Follow the "Timing of Nutrient Additions", above.**
- **Punch the cap down into the juice at least twice a day.** All the "goodies", flavor, color, intensity, are in the skins.
- Temperature in the cap should reach 85° - 95°F at mid-ferment. **Punch down the cap more often to dissipate** this temperature build up. Higher temperature can result in a stuck fermentation and flavor loss.
- More punching down the better.

6 - PRESSING THE SKINS

- **Standard Timing: Press when Hydrometer reads 5°B to 0°B.** This will yield the maximum color, more intense tannins, and the freshest fruitiness.
- **Extended Maceration: Press 14 - 21 days after 0°B.** This allows the harder tannins to link-up and to become softer. **Some fruitiness is lost.** Seeds should be removed first. **A CO₂ condition must exist on top of the cap of skins.** This comes from injecting CO₂ gas or adding Dry Ice each day or more often. Keep the fermenter tightly covered. Keep the skins wet, but do not over-manipulate the cap.

7 - SECONDARY FERMENTATION (and Post Ferment Malo-Lactic Addition)

- Siphon the pressed wine into clean glass or stainless steel Secondary Fermenters.
- **From now on and until bottling, all air (O²) must be kept from the wine.** Keep all secondary fermenters **topped up** into the narrow part of the neck, 1/2 inch below the stopper.
- Attach Fermentation Locks, filled half-way with **Sulfite Sanitizing Solution.**
- **In 24 - 48 hours**, rack off of the gross lees (sediment) into clean secondary fermenters. Re-attach fermentation locks.
- **Now, is the time to add your M-L culture (if, not already added in Stage 1, above).**
 - Add the **"Leucofood™ Plus"** nutrient. Dissolve and mix uniformly.
 - Add the **M - L culture.**
- Keep the cellar temperature **above 65°F** (preferably 68°F – 72°F) until MLF has finished gassing (2 weeks – 2 months).
 - Test MLF completion with a fresh **Accuvin® Malic Test Kit.**
- **Rack in 3-4 weeks**, or when relatively clear, **or when MLF is finished.**
- Always keep **all your fermenters topped up!**
- Refresh the **Sulfite Solution** in the fermentation locks, often.

8 - AGING AND FINING

- **Adjust pH/acidity early in the Fall.** Only use **Tartaric Acid.**
Adjust to pH 3.4 – 3.7. This is a judgment call based on taste.
 - **pH too low** = flavors too tightly bound, tart.
 - **pH too high** = too flabby, biologically unstable.
- **Be cautious with acid additions.** Use less than your test calls for and then re-check.
- **After MLF is finished:**
 - Adjust **Sulfite level to 25-35 ppm Free SO₂.**
(approximately 1/4 teaspoon Sulfite Powder per 5 gallons)
 - Or, using the **"Sulfite Addition Chart"**, adjust SO₂ relatively to the wine's pH.

- **If MLF is not being done:**
 - At the end of the sugar ferment, adjust **Sulfite level to 50 ppm Free SO₂** (100 ppm Total). **And**, add **“Lysozyme®”** to kill off the potential wild MLF.
 - **Rack wines every three months.**
 - **Top Monthly, or more often.**
 - **Adjust SO₂ every month. Consult pH/SO₂ Chart or Calculator**
 - **Cool cellar temperatures (after MLF)** will be needed for several months to precipitate out excess acidity.
 - If only checking Total Acidity, **adjust by taste**, to .65 - .8 g per 100 ml.
 - **If still too acidic** (very usual if pH had to be lowered), try force chilling in a refrigerator for 2- 3 weeks.
 - **If still too acidic**, try **Potassium Carbonate**, although the pH will rise. You must then also force chill for further acid reduction and to lower the pH.
 - **If too tannic** (from skin, seed, barrel contact), fine with Skim Milk/Casein or Egg Whites. Casein or Egg Whites can be used up to a month before bottling. Do not over-fine.
 - **Barrel Aging** is a way to mellow and condense the wine, adding a hint of oak complexity.
 - Choices abound: French/American/Re-Coopered, degree of toasting and so on.
 - Also available: Oak chips, Oak nuggets and Carboy Links.
 - Each imparts a different flavor/texture/mouthfeel. Barrels also reduce fruitiness but increase “complexity”. The choices are yours to make.
 - **Be sure to top up the barrels on a very regular basis.** More often for smaller barrels. Each topping **“micro-oxygenates”** (not oxidizes) your wine, **softening tannins, enhancing aging**. Also, be sure to not over-oak. **Taste as you top**. When you finally taste oak flavor, you’ve usually gone too long.
- Store empty barrels with great care. Follow standard procedure to avoid spoilage and loss.

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