

## Considerations for Developing your Home Winery & Wine-Viticulture Library

*v. 6/23/2021 revised 9-18-2023 G. Alvey.*

### Introduction:

On more than one occasion I've been asked by members who are new to winemaking "what should I buy", "Should I borrow or rent." Initially, renting or borrowing make sense. However, later I believe becomes an inconvenience. There are several factors that guide you to what is perceived as your equipment needs. Recommendations from other's experiences are often the case but may not fit your situation. As you'll find, once you begin making wine, needs are similar but can be very different. Attached is a list of considerations as you venture into winemaking, begin developing your winery, library and buying equipment. When you're deciding what you would like to buy, think of your winemaking future. Will you increase volume? will you make white & red? Over the past 17 years of winemaking, my experience has shown me below that my decisions were generally based on one or more of the following:

- **Size & Location of Your Winemaking Facility:** Are you sharing a garage with a vehicle in a residential area?, using a building on a ranch?, have a large property?, using a Tuff Shed? Etc...
- **Making Red Wine? White? or Both?:** When beginning home winemaking, red is the common grape to start with, it is more forgiving. White wines requires clarifying juice before fermentation. You'll need duplicate capacity storage containers. The same with red wines when you rack. White wines can require different storage containers compared to reds, depending on the gallons you make. More equipment will be needed if making both.
- **Volume:** This can vary if you're making wine by yourself or with partners. Using your own grapes? Five vines or buying 1,200 lbs. of grapes for a 60 gallon barrel, which should give you enough top off wine through bottling. Whether you plan to make 5G, 20G, 60G or 100+G... the more gallons you make, the more grapes, equipment & supplies you'll need.
- **Your Personal Preference Re: Grapes, Equipment & Supplies:** *What variety will you make?* Will you use commercial or natural yeast? glass or plastic carboys? natural or synthetic corks? screwcaps? stainless steel tanks or kegs? french or american oak barrels? new or used? neutral barrels? oak alternatives? Equipment & supply choices are endless. Every member makes wine differently, has had good & bad experiences.... That developed their personal preferences.
- **Cost:** How much are willing to spend? You can rent destemmers, presses, filters, etc, except in 2020. Will you buy equipment? new or used? Use a local Lab to test your juice or wine? or buy your own testing equipment? At some point, you will purchase winemaking equipment. GENCO's website's "Links" is an excellent resource. Additionally, in the Member Only "For Sale" page you'll see equipment, supplies, and grapes posted for sale, trade or free, mostly around harvest. Talk with Members before you buy. Members will always be available to help new members!

## WINERY BUILDING

- Stainless Steel Sink with drying area - faucet w/ hose bib adapter, sink stopper, mesh sink screen, dish strainer
- Shelf above or close to sink
- Standard Water Heater - capacity depends on your winery size & electrical capacity
- Tankless Water Heater - size will depend on your electrical capacity
- Electrical outlets - plenty
- USB charging ports
- Shelves - lots
- Means to secure items stored above floor ie: carboys, kegs, bottles, ie: eye bolts & straps, welded wire, etc...
- Countertop area
- Good Lighting - lamp & overhead-consider LED's, no heat
- Concrete Crush Pad - w/ drainage
- Select a location to mount a bulletin board - for Your Winemaking Competition Awards!
- Locations for wine related art & signs: "Friends Gather Here," "Squeeze Me, Stomp Me, Make me Wine" etc...
- Wine Glass Rack w/ Glasses - for evaluation purposes!

## DESTEMMER-CRUSHER & ACCESSORIES

- Electric or Manual - rent first to enjoy the experience of a hand crank! Or... friends or family can crank!
- Stainless Steel or Paint Grade
- Buckets/shovels/pitchfork, etc... used to load grapes into destemmer
- A means to secure destemmer above or on Fermentors or Macrobin.
- A stand to store destemmer-crusher on when not in use. A pair of saw horses works well, a folding mortar board stand w/ chain (on the ground) has the benefit that only one is needed. An additional one would allow you to lay a stainless steel tank on for cleaning. PVC pipe insulation on the steel bars prevents scratching.

## TEMPERATURE CONTROL

- 1G Water Bottles - Dollar Store, etc.. 30+, Depends on the volume of juice/must to cool. ie: 100+G? 20G? 5G?
- Dry ice - pellets or block... regardless, dry ice will begin dissolving as soon as you buy it.
- Chest Freezer - to freeze water bottles or use to store L.H. fermented wine. Use a temp. controller
- Refrigerator - size depends on your winery space
- Glycol chiller
- Wine cooler/air conditioner
- Jacketed stainless steel tank
- AC Controller to lower temp beyond the lowest setting
- Johnson Controller - adjusts temp 10° - 212° used to raise freezer temp. to refrigerator temps, 35° - 40°
- UNISTAT IIa & III - adjusts temp - 10° - 220°
- Aquarium Heaters - warm up must or warm up wine to complete MLF
- Heating Blanket: Use on barrels, tanks or carboys - to warm juice to complete fermentation or wine to complete MLF.
- Adhesive Temperature Strip - Apply to side of carboy, stainless steel tank, plastic containers

## FERMENTORS w/ LIDS

- Food Grade "Trash Cans" - Round or Square - size will depend on the amount of grapes
- Piano dollies can be modified to hold fermenters - makes it easy to move them
- MacroBin 1/2 ton - 47" x 47" x 28" - 176G
- Macro T-Bin 1 ton - 47" x 39" x 42" - 240G
- Lids cost extra - drill hole for airlock
- Punch Down Tool - large potato masher or similar tool
- A means to reduce fruit flies - Many theories & options. Talk with members. Fly strips are effective but unsightly.

## WINE PRESS & ACCESSORIES

- Bladder Press: water or air - size/capacity depends on you. consider going larger than smaller
- Basket Press: Manual or hydraulic - size/capacity depends on you. consider going larger than smaller
- Additional Wood Blocks for Basket Press
- Plastic Sheeting: cover outside of press - so you don't get covered in must
- Container to collect pressed juice & pump to storage vessel
- Buckets/shovels to scoop must into press
- SS Strainers, various sizes - use with pressed juice, samples into beakers, etc. 10", 5", 3"
- Pump: Self priming - diaphragm, centrifugal
- Tubing clamps
- Bettl;e BottleMon
- Rice Hulls - to increase ease of drainage during the pressing - generally with a basket press

## WINE STORAGE CONTAINERS & ACCESSORIES

### **Carboys:**

- Glass: .5G, 1G, 2.5G, 3G, 5G, 6.5G, 7G - piano dollies can be modified to hold carboys
- Plastic: Better Bottle, FerMonster. 1G, 3G, 5G, 6G, 7G

### **Speidel Plastic Fermenter Storage Tanks:**

- 12L to 500L - piano dollies can be modified to hold these containers as well

### **Stainless Steel Variable Capacity Tanks:**

- 100L - 500L or larger - 100L can sit on a piano dolly
- Consider a jacketed tank
- TankTopper airlock riser
- Consider upgrading clear vinyl lid gasket to rubber
- Consider adding a sampler valve on tank
- Buy or make a stand for tank, ie: concrete blocks w/ plywood base & shims , etc... be sure to level!? If not, air gap.

### **Stainless Steel Barrels:**

- Vertical & horizontal
- 61L, 95L, 114L, 208L, 227L, 303L

### **Stainless Steel Kegs:**

- 15.5G, can be 13.2G... know what capacity you're buying - Piano dollies can be modified to hold kegs
- Consider modifying with Tri-Clamps.

### **Oak Barrels: - various sizes**

- French, American, Hungarian - 60G, 30G, 20G, 15G are common sizes.
- New barrels? Used barrels? Neutral barrels? Often, opportunities & cost will dictate your choice.

### **Accessories:**

- Barrel stands - consider modifying: add wheels, cut doubles into singles... allows more flexibility
- Airlocks for carboys, barrels & tanks
- Bungs: Variety of rubber – solid, drilled (for airlocks)
- Silicon Bungs - can be used for all containers
- Breather Bungs - can be used for all containers
- Breathable carboy fermentation hood
- Sulfur Sticks for Barrels - device is needed to suspend stick, ie: wooden bung w/ hex socket & "J" bolt
- Sulfur Discs w/ hanging basket - works better in smaller barrels, 20 gallons or less.
- Consider making a barrel light - use lamp equipment - socket, tube, wire, plug, bright LED bulb
- Barrel Maintenance Supplies - barrel wax, spiles, wedges, barrel sealer, etc...
- BIC style multi-purpose lighter - to light sulfur sticks & discs

## COMMON CHEMICALS TO HAVE ON HAND

- Proxycarb
- Citric acid
- Tartaric acid
- Potassium metabisulfite
- Campden "sodium metabisulphite" tablets - 1 tablet per gallon, 65ppm or mg/L
- Inodose effervescence SO<sub>2</sub> tablets - 2g & 5g
- Hydrogen Peroxide - reduces excessive SO<sub>2</sub> levels

## TESTING EQUIPMENT

- Vinemtrica-SC-300 Pro Package: pH, TA, FSO<sub>2</sub> TSO<sub>2</sub> (includes stand, 50ml sample cylinder, 25ml or 10ml glass burette & double burette clamp, electrodes & holder, sampling & transfer pipettes, rinse bottle, magnetic stirrer & bar)
- Vinemtrica-MLF Analyzer: SC-50 or 55A
- Chemical solutions to have on hand:
  - pH:** 4.01 & 7.0 reference solutions, pH electrode storage solution
  - Sulfite:** Titrant, Acid solution, Reactant **TA:** Titrant - 0.13N NaOH
  - MLF:** Biopressure agent, 1M Malic solution, 0.0 g/L, 0.1 g/L & 0.4g/L Malic Acid standards

## If not using Vinmetrica:

- pH meter
- Electrode holder & electrodes for pH & SO<sub>2</sub>
- Burette clamp - single or double
- Glass burette/s - 10ml, 25ml or both
- Magnetic stirrer w/ stir bar
- Support stand
- Chemical & Reference solutions - as w/ Vinmetrica

## TESTING ACCESSORIES

- Rinse bottle
- 2.5G w/ spigot or 1G jug Distilled water
- Spray bottle w/ distilled water
- Various ml size pipettes - 1ml, 3ml, 5ml, 10ml, 25ml
- Pipetting safety bulb
- Various size syringes - 1ml, 3ml, 5ml, 10ml, 20ml, 50ml
- Various size containers: to hold pipettes, rinsing, dump bucket, etc...
- Plastic Bulb Pipettes - 3 ml
- Wine sample vials
- Telescoping pencil magnet - to retrieve magnetic stirrer from dump bucket
- Drying Rack, ie: "Boon Grass" countertop style "baby bottle" drying rack - very practical & holds quite a few items
- A similar drying rack for beakers, pipettes, sample vials, containers, etc...
- Testing residual sugar - Test tube w/ wood holder & Clinittest tablets (AIM Tabs) & color chart

## LABWARE - common sizes

- Various sizes graduated cylinders - 150ml, 250ml
- Various sizes glass beakers - 100ml, 250ml, 500ml
- Various sizes Erlenmeyer flasks - 50ml to 5,000ml - 150ml to 500ml common sizes
- Plastic beakers w/handles - 500ml, 1000ml, 2000ml

## FILTERING

- Plate filter & filter sheets .5, 2.0, 8.0 microns - ie: Buon Vino Super Jet is common
- Cartridge filter - cartridge sizes .5, 1.0, 3.0 microns
- Tenco Enlomatic Tandem inline filter housing - filters .2, .5, 1.0, 5.0 microns. Use w/ Enlomatic during bottling

## BOTTLING

- Bottle washer - the Blast - threads onto a hose bib adapter on a faucet
- Bottle tree drain
- Multi spout bottler-paint grade or stainless steel
- Enlomatic bottler
- Floor corker
- Device to lay bottles on when adhering labels
- Capsules - regular or x-large - depends on type of bottle
- Horizontal capsule heat shrinker or heat shrink gun: pvc capsules; Spinner: tin or polylam capsules
- NovaTwist capsules for screw cap bottles

## TOOLS

- Screwdrivers
- Crescent wrenches
- Nut Driver - for tubing clamps
- Pliers
- Cordless Drill w/ charger
- Level
- Claw Hammer
- Measuring Tape-Stainless steel, ie: Komelon: self-locking
- Rubber mallet
- Regular & Skinny Pruning Shears
- Corona Quick Sharpener Tool
- Hand Truck
- Step Stool
- Power Washer
- Self-Priming Centrifugal or Diaphragm Pump w/ 110v cord - Shurflo is a reliable & a durable diaphragm pump
- Hand-held sledgehammer & hoop driver or cold chisel-you can grind edge flat - to reposition barrel hoops
- Outlet power strip or similar with an on-off switch

## STORAGE CONTAINERS FOR WINERY ITEMS

- Equipment - bungs, airlocks, tools, etc..
- Chemicals
- Supplies - capsules, screw caps, fining agents, etc...
- Wall Rack - mop, scrub brush, broom, dust pan, etc...
- Towel rack/s - microfiber cloths, flour sack towels - no lint
- Heating blanket
- "Key Holder" for strainers, funnels, brushes, etc...
- A means to store, support or hang variable tank lids
- Paper Towel Rack
- Desk with pens, pencils, sharpies, cork puller, etc.. & chair
- Hangers for racking tubes, stirring rods, dowel rods
- Garden hose holder to dry & hold tubing
- Plastic bins with sliding drawers to sit on shelves, small & medium sizes
- Larger plastic bins: ie: store heating blanket, #35 basket press accessories, larger items, etc...

## MISCELLANEOUS EQUIPMENT

- Funnels: Anti-Splash 10" w/ screen, spray bottle funnel & other various sizes
- Hydrometer w/ thermometer & clear cylinder
- Proof Hydrometer - used for determining the alcohol content of the spirit used for port, if you don't know what it is.
- Floating Thermometer
- Digital Thermometer
- Stainless Steel Fusion Tube - barrel or carboys - use with oak cubes
- Stainless steel stirring rod - use with standard cordless drill
- Digital Scale - gram, ounces
- Blue tape
- 1L bottle for making/storing 10% potassium metabisulfite solution
- Wine Thief: glass, plastic or stainless steel - at least one with a narrow diameter to fit inside carboys
- Hot plate
- Microwave
- Various pots for rehydrating yeast & nutrients
- Collapsible tables
- Bottle rinsing or purging rack
- Food grade lubricant - silicon spray, tube gel
- Manual or digital refractometer - testing brix prior to fermentation
- Nitrile/cloth gloves or similar
- Multiple picking bins for harvesting grapes - can hold 40 lbs.
- Garden hose w/nozzle - consider a valve between nozzle & hose when rinsing barrels
- Office size trash can or larger
- Multiple 10 quart buckets w/ pour-out lip & handle
- Vinometer
- Muddler - to break up clumped powder or glandular chemicals
- Inert gas cylinder w/gauge - argon, nitrogen - secure to wall
- Consider: an air hose reel w/ rubber hose and mounting to wall or ceiling to reach throughout your winery
- Air blow gun nozzle with extension
- Pallet Jack - if you plan to move equipment on pallets
- Scale - weigh grape lugs/buckets. bathroom scale to commercial scales, kg & lbs., 200-600 lbs. available
- Riddling Rack - Acquire one or make one should you decide to make bubbles - contact GENCO member Kevin Holloway

## CLEANING & SANITIZING

- Brushes - various size diameters & lengths: for carboys, tubing, bottles, scrubbing, toothbrush, etc...
- Carboy cleaning tool - use with cordless drill
- Barrel cleaning nozzle
- Carboy drains
- Various measuring cups & spoons
- Spray bottles: distilled water, sulfite solution, star san solution, etc...
- 1G hand pump sprayers-sanitizing solutions: sulfite, star san, mildewcide, etc...
- Star San sanitizer
- TDC glassware detergent
- BTF iodophor sanitizer
- ENOL Clean - granular detergent/disinfectant for cleaning cartridge filters
- Disposable gloves
- Hot water resistant gloves
- Mop w/ bucket
- Distilled water, 1G jugs or 2.5G w/ spigot
- Liquid hand soap-fragrance free, Dawn soap - cleans grease well
- Hand sanitizer
- Various size sponges for multiple purposes
- Paper towels

## DEVELOPING A WINE/VITICULTURE LIBRARY

\* **SUBSCRIBE TO WINEMAKER MAGAZINE** - a worthy resource for new & experienced home winemakers. Magazine, digital or both - <https://winemakermag.com> (digital will give you access to 20 years of articles)

**\*\* By no means am I suggesting purchasing all these books. Below are excellent resources. Talk with other members, get their opinions. There are many sources that will assist your research should you choose to buy. So. Co. Wine Library should be the first.**

The books below are available in the **Sonoma County Wine Library**, physically housed within the Healdsburg Regional Branch. Every member's winemaking knowledge base is dependent on their experiences and educational background. Have you grown grapes? Have you made wine? Taken viticulture, enology, chemistry, biology, microbiology classes? Attended GENCO meetings, webinars & seminars? All this, plus an interest in wine related information will guide your preference for your personal library.

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### **Winemaking-BASIC:**

- From Vines to Wines: Complete Guide to Growing Grapes & Making Your Own Wine - 5th edition, Jeff Cox, 2015 \$18
- Understanding Wine Technology: The Science of Wine Explained-A book for the Non-Scientist - David Bird, MW, 2010 \$17
- Home Winemaking: Step by Step - Jon Iverson, 2009 \$19
- The Backyard Vintner: An Enthusiast's Guide to Growing Grapes & Making Wine at Home - Law, 2005 \$15
- The Wine Maker's Answer Book - Allison Crowe, Winemaker Magazine, 2007 \$15
- To Making Your Own Wine: Everything You Need to Know Simply Explained - John Peraginer, 2015 \$15

**\*\* Blue denotes these 2021 Titles have yet to be released. \*\* Green denotes release date**

### **Winemaking-INTERMEDIATE:**

- Flawless: Understanding Faults in Wine - Jamie Goode, 2018 \$15
- Modern Home Winemaking: A Guide to Making Consistently Great Wines - Daniel Pambianchi, 2021 \$25
- Techniques In Home Winemaking: Comprehensive Guide to Making Château Style Wines - Pambianchi, 2014 \$20
- The Science of Wine: From Vine to Glass - 3rd edition, Jamie Goode, 2021 \$40.

### **Winemaking-ADVANCED:**

- Postmodern Winemaking: Rethinking the Modern Science of an Ancient Craft - Clarke Smith, 2014 \$35
  - Principles and Practices of Winemaking - UC Davis - Boulton, Singleton, Bisson, Kunke, 2010 \$120
  - Handbook of Enology: Vol. 1 - The Microbiology of Wine and Vinification's - Ribéreau-Gayon, Dubourdieu, et al., 2021
  - Handbook of Enology: Vol. 2 - The Chemistry of Wine - Stabilization and Treatments - Ribéreau-Gayon, Dubourdieu, 2021
- Volumes 1 & 2 set, \$175 each current edition 2006
- Chemical Analysis of Grapes and Wine: Techniques & Concepts - iLand, Bruer, Edwards, Caloghiris, Wilkes, 2013 \$165
  - Wine: A Scientific Exploration - Sandler, Pindler, 2003 \$51
  - Understanding Wine Chemistry - Waterhouse, Sacks, Jeffery, 2016 \$120
  - Wine Science: Principles & Applications - 5th edition, Jackson, 2020 \$123
  - Wine Tasting: A Professional Handbook - Jackson, 2017 \$70

### **VITICULTURE:**

- Sunlight into Wine: A Handbook for Winegrape - Richard Smart & Mike Robinson, 1996 Out of Print-but can be found
- The Grapevine: From the Science to the Practice of Growing Vines for Wine - Iland, Dry, Proffitt, 2011 \$165
- Wine Grape Varieties in California - Bettiga, Golino, McGourty, Smith, Verdegaal, Weber, 2003 \$23

### **PLEASURE:**

- Wine Folly: Magnum Edition: The Master Guide, Madeline Puckette & Justin Hammack, 2018 \$22
- The Wine Grape's Journey: The Farmer's Year (Sonoma County) - Donald Wallace, 2004 \$18
- The Grapes Grow Sweet: A Child's First Family Grape Harvest - Lynne Tuft, 2007 \$20 (8 y.o. & under) Great Illustrations!
- \* This book describes a fall grape harvest from the perspective of a young boy growing up in a Geyserville family's vineyard.  
(\*\* This book is highly recommended for grandparents, parents, aunts & uncles reading books to little ones.)
- Wine in Words: Notes for Better Drinking - Teague, 2015 \$10
- The Taste of Wine: The Art & Science of Wine Appreciation - Peynaud, 1987 1<sup>st</sup> English Translation, 2<sup>nd</sup> edition 1997 \$40-\$100+
- Judgement of Paris - Taber, 2006 \$35
- California Vines, Wines & Pioneers - Sherry Monahan, 2013 \$15

- When The Rivers Ran Red: An Amazing Story of Courage & Triumph in America's Wine Country, Sosnowski, 2009 \$35
- How to Taste: A Guide to enjoying wine, Robinson, 2008 \$19
- The New California Wine: A Guide to the Producers & Wines Behind a Revolution in Taste, Bonne, 2013 \$26

## WEBSITE RESOURCES

### Website:

SEE GENCO Website: [www.gencowinemakers.com](http://www.gencowinemakers.com) Links & Documents

- Square & Vertical Tank conversions - G/L - <https://www.calculatorsoup.com/calculators/construction/tank.php>
- Winemaker Magazine Sulfite Calculator, v.3.0 - <https://winemakermag.com/resource/1301-sulfite-calculator>
- Hectoliters to Liters - <https://www.convertunits.com/from/hectoliters/to/liters>
- Vino Calculators: Sp.Grav., Area, Mass, Temp, Volume, Water dilution, etc... - <http://www.musther.net/vinocalc.html>