Keys to Making Award-Winning Wines

V. 2020 Best of Show Estate Grown – V. 2021 Best of Show White

AGENDA

1 – Background Of Our Vineyard and Winemaking
2 - Key #1 – Quality Wine Starts With Quality Grapes
3 - Key #2 – Planning For Success
4 - Key #3 – Winemaking Lessons Learned
5 - Key #4 – Aging and Cellaring

Growing Grapes in Sierra Foothills

The Sierra Foothills wine region in California is one of the largest AVAs in the entire United States. It covers 2.6 million acres (1.05 million hectares) across 5 counties extending 160 miles.

Elevations range from 500 feet (152 m) to 3,500 feet (1,067 m).

Our Location and Background

First vintage in 2011 where we traded labor in a commercial vineyard for grapes making about 6 gallons of wine.

Second vintage in 2014 where we purchased grapes, expanding production to both red and white varietals.

Amador County
Fiddletown AVA

In 2015 we bought a home and property in Amador County CA with about 3/4 acre of planted vines.

The Vineyard

Elevation: 2200 ft

Surrounding area is moderately to heavily wooded with seasonal pond next to the vineyard.

Planted Varietals

- Zinfandel
- Barbera
- Grenache
- Petite Sirah
- Sauvignon Blanc

The Vineyard

Barbera - 20 year old vines

Zinfandel - mix of 20 and 5 year old vines

SB, Grenache, PS - 5 year old vines

All blocks 6x10 vine and row spacing

Vineyard is on a South facing slope

All are head trained, with the exception of Sauv Blanc which is on VSP trellis

LESSON 1

QUALITY WINE STARTS IN THE VINEYARD

Considerations For Fruit Quality

Q. What is the 1st step in the winemaking process?

A: The sorting table (quoting Society of Wine)

Our Quality Control takes place at the time of harvest and throwing out compromised (bad) clusters into mid-row.

(Clusters will be disked into vineyard soil after harvest is over.)

Fruit Quality

What is meant by quality grapes?
What do you look for?
How do you know you have quality grapes?

Things to look for, or do, for quality control.

- Netting to reduce bird damage (or alternatives).
- Comprehensive canopy management
  - What does the canopy look like? Filtered sunlight.
- Always look for signs of “trouble”, or stress.
  - Managing Powdery Mildew.
  - Inadequate or excessive water.
- Ratio of clusters to vine and its canopy.

Sourcing/Harvest Considerations

Using your (estate) grapes vs. a commercial grower.

- Don’t expect that a commercial grower is going to give you good grapes.
- Sort for quality.

Who is doing the picking and when?

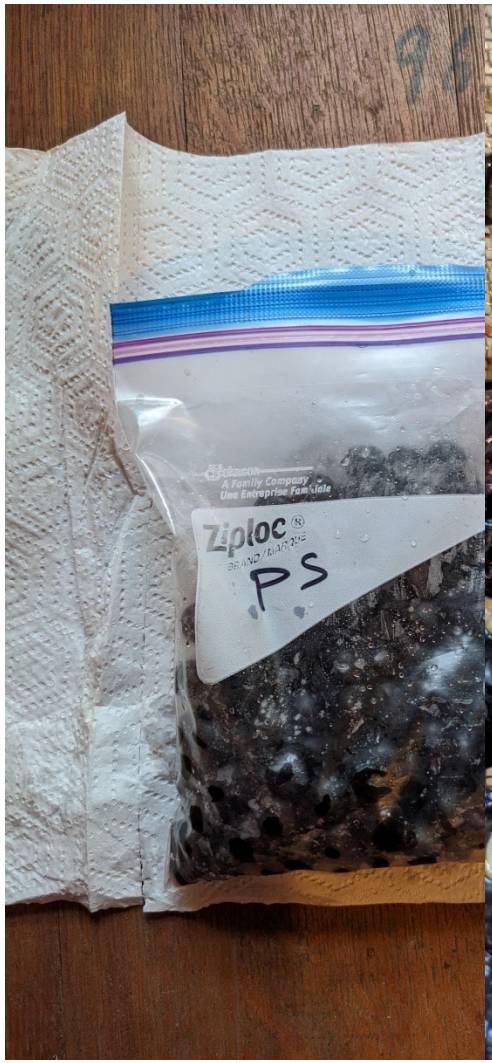
- Newbies, commercial crew, etc.
- Night vs day picking.

Judging ripeness for harvest?

- Phenolics, sugar level
- Some varietals, like Barbera, are good to factor harvest date also on pH (acidity) to make sure acids are in check for an inherently acidic wine.

“Ripe and Ready”

Vineyard Testing Informs Harvest



LESSON 2

PLANNING FOR SUCCESS

Project Planning

Whether you only make a single wine or multiple wines from multiple varietals, it can be challenging to prepare for and execute the initial fermentation process.

Do Your Planning <u>Before</u> Harvest

Plan for time to order and receive materials

Advanced Planning

Plan for the expected volume of wine production

- Having the right amount of products for fermentation
- Having the right number/volume of harvest containers
- Having the right number/volume of fermentation containers
- Having the right number/volume of storage/aging containers
- Getting bottles and labels ordered

What do we do?

Plan Harvest Volumes

Spreadsheet takes the following into consideration for each varietal:

- Number of vines > spurs and canes/vine > total clusters
- Average weight of clusters
- Yield (loss) based on quality issues (birds, disease)
- Expected lbs of fruit > gallons of must > gallons of finished wine

Harvest estimates - 2023

Assumptions: *1 macro bin holds 176 gal and ferments 135 gal, 44 gal container ferments 35 gal, 32 gal container ferments 25 gal*

Must gal/100 lbs 10

	Vines	Spurs/vine	Canes/vine	Clusters/cane	Weight/Cluster (lb)	Yield %	lbs fruit		Reduction Factor	Gal	Container
Petite Sirah	99	5.5	11	2	0.6	65%	849.42				Do not drop clusters
							-200	club			
Total lbs							649.42				Use macro bin for harvest
											33 gal + 32 gal
Must - Fermentation										65	0.75 gal (2.5 %) cofermentation in Zin
Finished Juice									0.6	39	
Sauv Blanc	65	12	24	2	0.3	75%	702				
Total lbs							702				Used 4 full 32 gal containers for harvest
Must										70	Go directly into press
Pressed									0.5	35	200 L
Fermentation: Juice after solids									0.85	30	60 L + 60 L
Finished Juice									0.95	28	

Plan for Winemaking Supplies

Harvest volumes drive supply calculations

SUPPLIES - 2023		Petite Sirah	Sauv Blanc		Total	On Hand	Purchase
	Fermentation Volume (gal)	65	30		**SUM(C2:K2)**		
	Finished Juice (gal)	39	28		**SUM(C3:K3)**		
	Addition (g/gal)						
Red Additives (g)							
Opti-Red	1	64.94	29.84		365.98	240	125.98
Lallyzme-EX	0.1	6.49	2.98		36.60	50	0.00
FT Rouge	1.3	51.95			404.51	200	204.51
White Additives (g)							
Lallzyme-C MAX	0.06		1.79		1.79	12	0.00
Polycacel	2		59.67		59.67	200	0.00
Opti-White	1.9		56.69		56.69	170	0.00
FT Blanc Soft	0.4		17.90		17.90	5	12.90
Albumex Betonite	8		238.68		238.68	400	0.00
Fermentation (g)							
Go-Ferm Protect	1.5	97.41	44.75		548.97	300	248.97
Fermaid-O	3	194.83	89.51		1097.93	500	597.93
Acti-ML	0.84	54.55			282.36	160	122.36
Opti-Malo Plus	1	64.94			336.14	200	136.14
Yeasts (g)							
VRB (Barbera, Zin)	1.25				243.00	90	153.00
ICV-GRE (SB G, PS)	1.25	81.18	37.29		214.47	160	54.47
CH16 Malolactic	0.04	1.56			8.07		8.07
Other (g)							
Tarteric (assume 0.3 g/L change)	1.2	0.00			648.96	50	598.96
KMBS						300	450.00
PVPP						50	

Plan for Containers

Harvest volumes drive container calculations

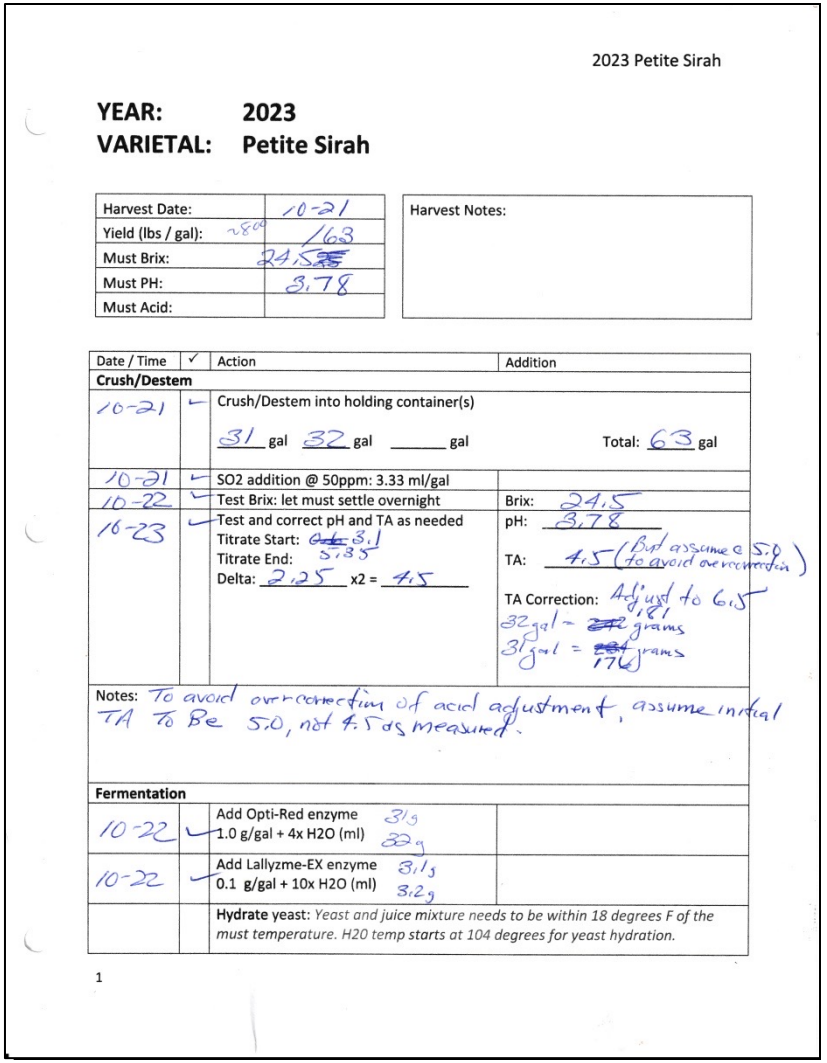
Storage estimates - 2023

Assumptions: *1 macro bin holds 176 gal and ferments 135 gal, 44 gal container ferments 35 gal, 32 gal container ferments 25 gal*

Fermentation Vessels	Total Volume	Macro Bin	300 Liter	44 Gal Bin	32 Gal Bin	200 L Speidal	100 L Speidal	60 L Speidal	Excess Wine
White/Rose									
Zinfandel Rose	0								0.00
Barbera Rose	0								0.00
Grenache Rose	0								0.00
Sauv Blanc	30							2	1.84
Red									
Zin 1 - single varietal	27			1.00					-8.33
Zin 2 - 5% petite co-ferm	56			2.00					-13.67
Barbera	114	1.00							-20.60
Petite Sirah	62			1.00	1.00				1.94
Grenache	27		1.00						6.80
Total		1.00	1.00	4.00	1.00		0.00	2.00	
On Hand		2.00	1.00	5.00	7.00	1.00	6.00	6.00	
Excess		1.00	0.00	1.00	6.00		6.00	4.00	

Secondary Ferm/Final Storage	Total Volume	300 L Stainless	100 L Speidal	60 L Speidal	Excess Wine	
White/Rose (final)						
Zinfandel Rose	0				0.00	
Barbera Rose	0				0.00	
Grenache Rose	0				0.00	
Sauv Blanc	28		1		1.94	
Red (Intermediate)						
Zin 1	24			2	-5.70	
Zin 2 / co-ferm PS	26		1		-0.40	5 gal carboy
Barbera	69	1			-1.36	
Petite Sirah	33		1		12.57	6.5 gal carboy
Grenache	46		1	1	4.83	
Total Usage		1	4	3		
On Hand		1	6	6		
Delta		0	2	3		

Winemaking Notes



2023 Petite Sirah

YEAR: 2023
VARIETAL: Petite Sirah

Harvest Date:	10-21
Yield (lbs / gal): ~80	163
Must Brix:	24.5 ~~25~~
Must PH:	3.78
Must Acid:	

Harvest Notes:

Date / Time	✓	Action	Addition
Crush/Destem			
10-21	✓	Crush/Destem into holding container(s) 31 gal 32 gal _____ gal Total: 63 gal	
10-21	✓	SO2 addition @ 50ppm: 3.33 ml/gal	
10-22	✓	Test Brix: let must settle overnight	Brix: 24.5
10-23	✓	Test and correct pH and TA as needed Titrate Start: ~~5.1~~ 5.1 Titrate End: 5.35 Delta: 2.25 x2 = 4.5	pH: 3.78 TA: 4.5 (But assume @ 5.0 to avoid overcorrection) TA Correction: Adjust to 6.5 32 gal = ~~242~~ 181 grams 31 gal = ~~234~~ 176 grams
Notes: To avoid overcorrection of acid adjustment, assume initial TA To Be 5.0, not 4.5 as measured.			
Fermentation			
10-22	✓	Add Opti-Red enzyme 31g 1.0 g/gal + 4x H2O (ml) 32g	
10-22	✓	Add Lallyzme-EX enzyme 3.1g 0.1 g/gal + 10x H2O (ml) 3.2g	
		Hydrate yeast: *Yeast and juice mixture needs to be within 18 degrees F of the must temperature. H20 temp starts at 104 degrees for yeast hydration.*	

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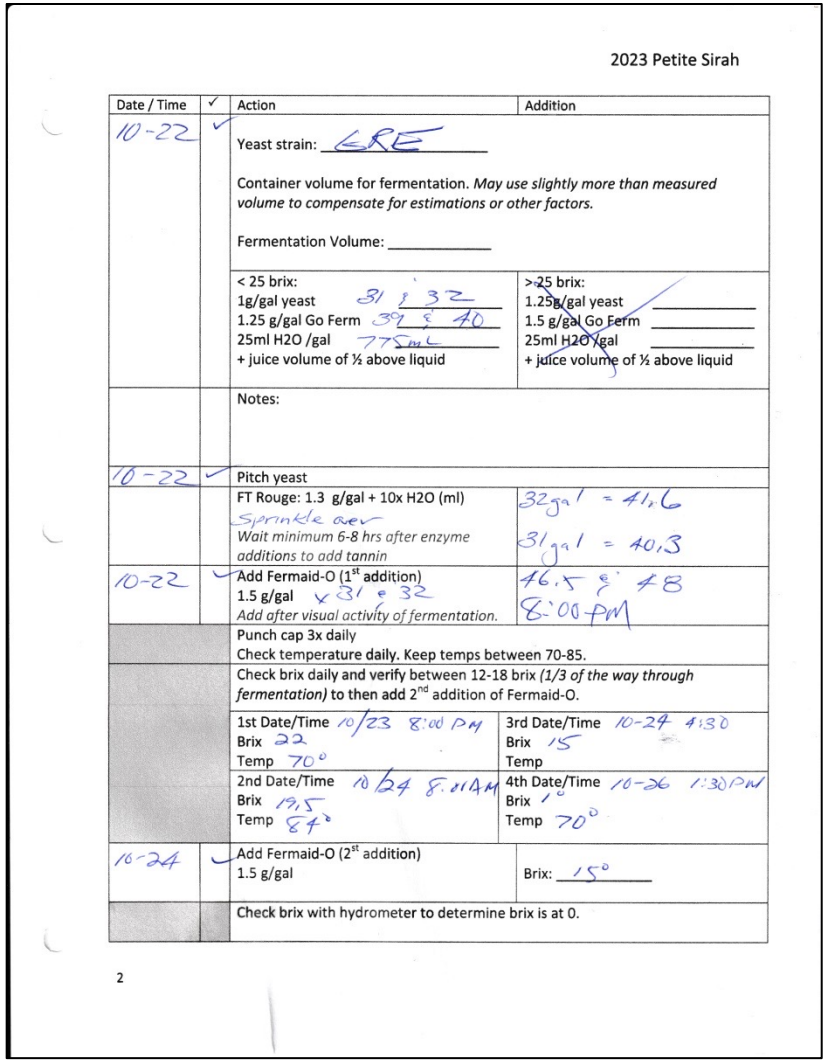

2023 Petite Sirah

Date / Time	✓	Action	Addition
10-22	✓	Yeast strain: ERE Container volume for fermentation. *May use slightly more than measured volume to compensate for estimations or other factors.* Fermentation Volume: _____	
		< 25 brix: 1g/gal yeast 31 & 32 1.25 g/gal Go Ferm 39 & 40 25ml H2O /gal 775mL + juice volume of ½ above liquid	>25 brix: 1.25g/gal yeast _____ 1.5 g/gal Go Ferm _____ 25ml H2O /gal _____ + juice volume of ½ above liquid
		Notes:	
10-22	✓	Pitch yeast	
		FT Rouge: 1.3 g/gal + 10x H2O (ml) Sprinkle over *Wait minimum 6-8 hrs after enzyme additions to add tannin*	32gal = 41.6 31gal = 40.3
10-22	✓	Add Fermaid-O (1st addition) 1.5 g/gal x 31 & 32 *Add after visual activity of fermentation.*	46.5 & 48 8:00 PM
		Punch cap 3x daily Check temperature daily. Keep temps between 70-85.	
		Check brix daily and verify between 12-18 brix *(1/3 of the way through fermentation)* to then add 2nd addition of Fermaid-O.	
		1st Date/Time 10/23 8:00 PM Brix 22 Temp 70°	3rd Date/Time 10-24 4:30 Brix 15 Temp
		2nd Date/Time 10/24 8:00AM Brix 19.5 Temp 84°	4th Date/Time 10-26 1:30PM Brix 1° Temp 70°
10-24	✓	Add Fermaid-O (2st addition) 1.5 g/gal	Brix: 15°
		Check brix with hydrometer to determine brix is at 0.	

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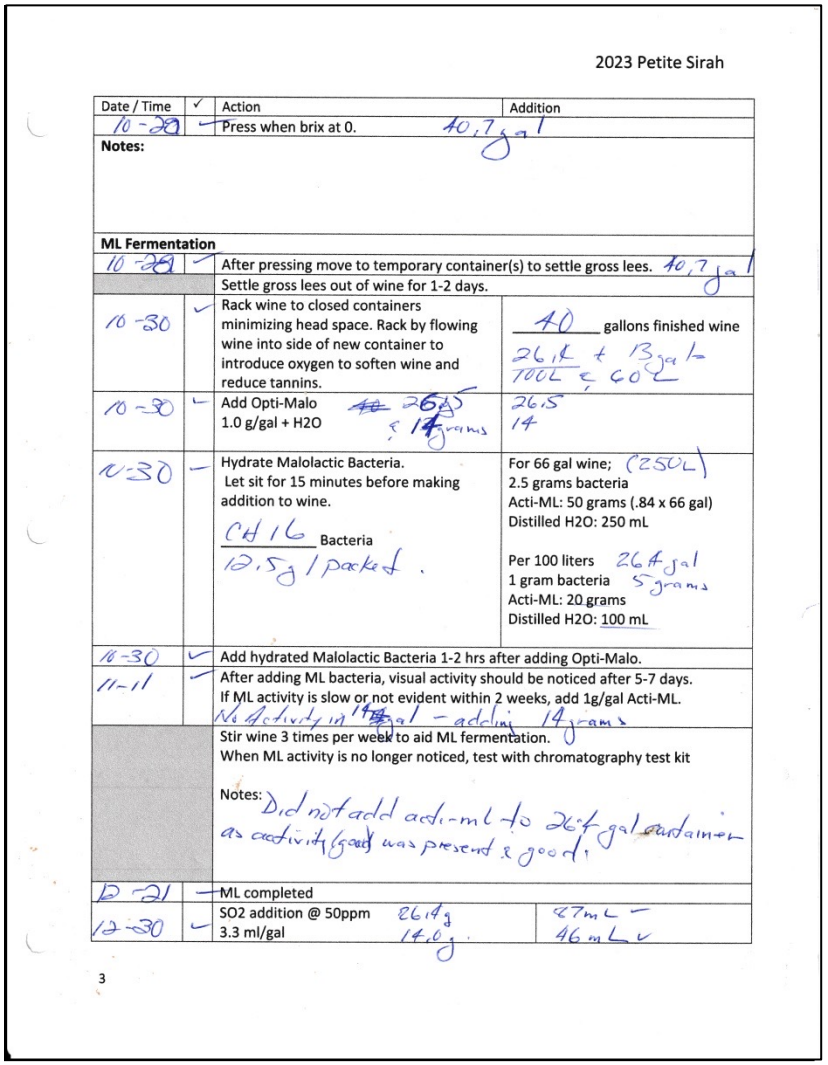
Notes - Continued



2023 Petite Sirah

Date / Time	✓	Action	Addition
10-29	✓	Press when brix at 0.	40.7 gal
Notes:			
ML Fermentation			
10-29	✓	After pressing move to temporary container(s) to settle gross lees.	40.7 gal
		Settle gross lees out of wine for 1-2 days.	
10-30	✓	Rack wine to closed containers minimizing head space. Rack by flowing wine into side of new container to introduce oxygen to soften wine and reduce tannins.	40 gallons finished wine 26.4 + 13 gal = 100L + CO2
10-30	✓	Add Opti-Malo 1.0 g/gal + H2O ~~40~~ 26.5 & 14 grams	26.5 14
10-30	✓	Hydrate Malolactic Bacteria. Let sit for 15 minutes before making addition to wine. CH16 Bacteria 12.5g / packet.	For 66 gal wine; (250L) 2.5 grams bacteria Acti-ML: 50 grams (.84 x 66 gal) Distilled H2O: 250 mL Per 100 liters 26.4 gal 1 gram bacteria 5 grams Acti-ML: 20 grams Distilled H2O: 100 mL
10-30	✓	Add hydrated Malolactic Bacteria 1-2 hrs after adding Opti-Malo.	
11-11	✓	After adding ML bacteria, visual activity should be noticed after 5-7 days. If ML activity is slow or not evident within 2 weeks, add 1g/gal Acti-ML. No activity in ~~14~~ 26.4 gal - adding 14 grams	
		Stir wine 3 times per week to aid ML fermentation. When ML activity is no longer noticed, test with chromatography test kit Notes: Did not add acti-ml to 26.4 gal container as activity/gas was present & good.	
12-21	✓	ML completed	
12-30	✓	SO2 addition @ 50ppm 3.3 ml/gal 26.4g 14.0g	87mL ~ 46mL ✓

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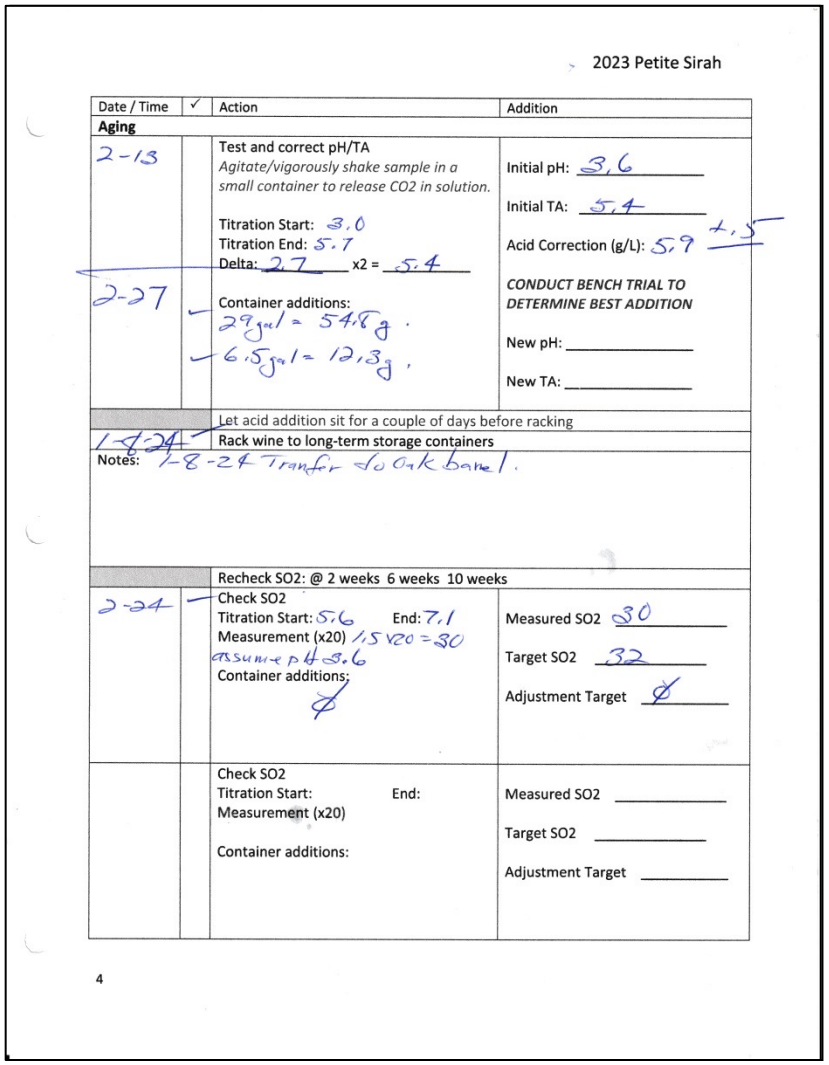


2023 Petite Sirah

Date / Time	✓	Action	Addition
Aging			
2-13		Test and correct pH/TA *Agitate/vigorously shake sample in a small container to release CO2 in solution.* Titration Start: 3.0 Titration End: 5.7 Delta: 2.7 x2 = 5.4	Initial pH: 3.6 Initial TA: 5.4 Acid Correction (g/L): 5.9 +1.5 ***CONDUCT BENCH TRIAL TO DETERMINE BEST ADDITION*** New pH: _____ New TA: _____
2-27	✓	Container additions: 29 gal = 54.8g. 6.5 gal = 12.3g.	
		Let acid addition sit for a couple of days before racking	
~~1-24~~	✓	Rack wine to long-term storage containers	
Notes: 1-8-24 Transfer to Oak barrel.			
		Recheck SO2: @ 2 weeks 6 weeks 10 weeks	
2-24	✓	Check SO2 Titration Start: 5.6 End: 7.1 Measurement (x20) 1.5 x20 = 30 assume pH 3.6 Container additions: Ø	Measured SO2 30 Target SO2 32 Adjustment Target Ø
		Check SO2 Titration Start: End: Measurement (x20) Container additions:	Measured SO2 _____ Target SO2 _____ Adjustment Target _____

4

LESSON 3

WINEMAKING LESSONS LEARNED

Be A Good Janitor

Fermentation Tips

- Give damaged grapes more S02 before fermentation. 50 ppm after crush is standard for “good” grapes.
- Clean and sanitize EVERYTHING in contact with grapes.
- Proper yeast hydration, nutrients and temperatures.
- Provide oxygen exposure and skin contact.

Fermentation Tips - Continued

Make sure your yeast selection for both primary and secondary fermentation compliment your varietal and must brix.

- Consider experimenting with different yeasts in small fermentation batches to find something you prefer.
- What is the alcohol level your yeast (primary and ML) can ferment to?
    - Either select a different yeast or dilute wine to reduce brix and potential alcohol.
- If you add water to reduce brix, you are also reducing acidity, so an acid adjustment may be necessary.

Importance of Yeast Selection

Yeasts can influence the characteristics of your wine.

Yeasts can be selected that pair well with certain varietals. Don’t use a yeast because its popular. Guidelines are published to help with selection.

There are benefits to experimenting with different yeasts to find out what appeals to your desired style of wine and best enhances the fruit you are working with.

Yeast Selection - continued

We did trials of different yeasts in small batches of wine resulting in the following.

- Zinfandel, Barbera: VRB
- Sauvignon Blanc, Grenache, Petite Sirah: ICV-GRE

VRB: Handles high-alcohol (17%) while creating exceptional flavor complexity. Improves mid-palate mouthfeel, softens tannins, and enhances the varietal characteristics.

ICV-GRE: Enhances aromatics. Great for Rhone wines. Brings fresh, ripe fruit qualities, and helps to enhance the mouthfeel of a wine.

Comprehensive Testing

Test pH, TA at a minimum.
We also test SO2 regularly.

Lesson: CO2 is in solution shortly after fermentation is over in the form of carbonic acid, which will affect TA testing. (causing an increased acid measurement).

Boil wine test sample or put sample into a small (100 mL) sample container to shake and release CO2.

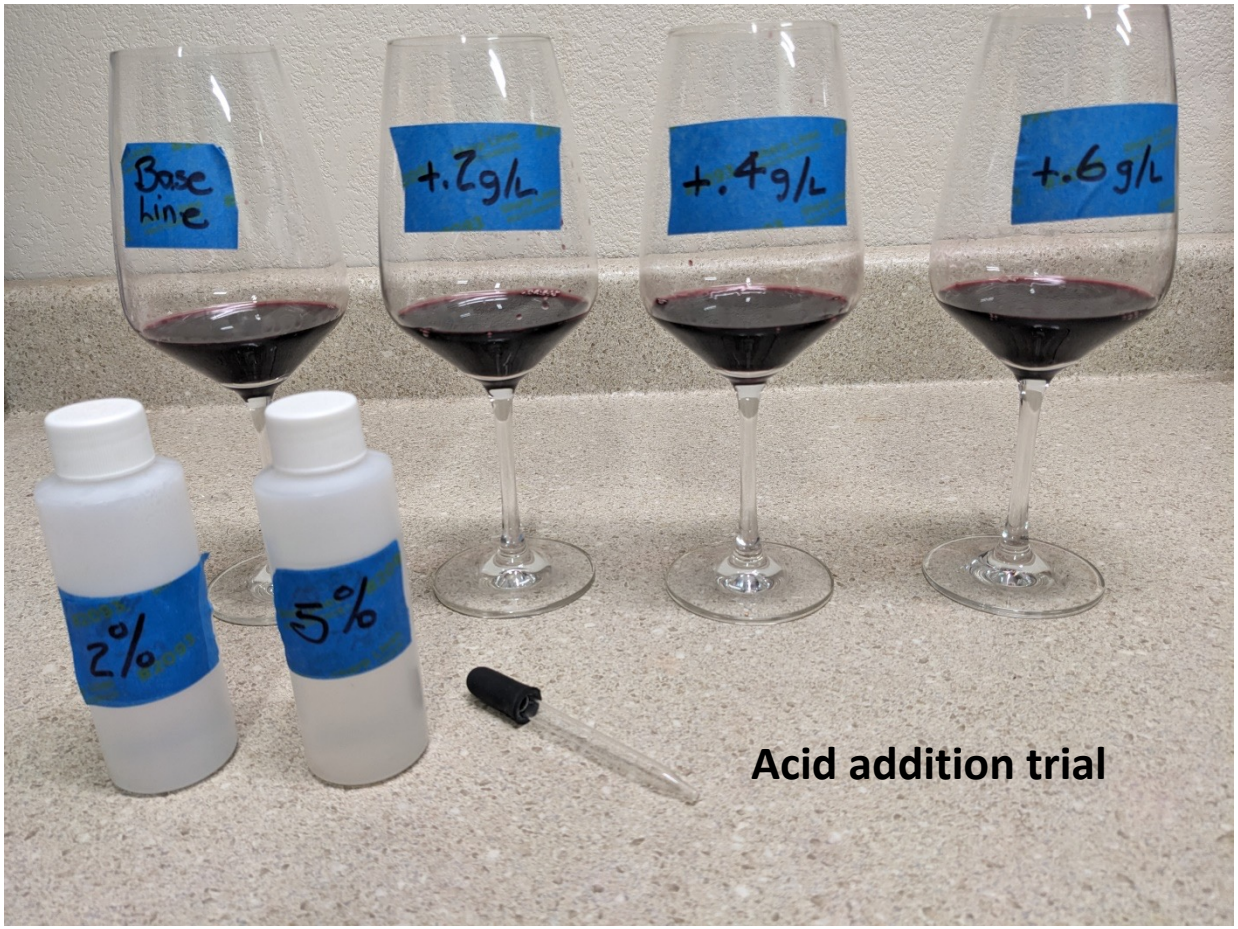
Testing Considerations

- Don’t make decisions based solely on pH testing.
  - Using pH to extrapolate acidity will lead to potentially incorrect adjustments.
- Test acidity before fermentation begins so that larger adjustments greater than 1 g/L can be made to the must without affecting taste and quality later on.
- Test acidity after fermentation again to make incremental adjustments based upon both numeric AND sensory considerations. Only make adjustments after a bench trial.

REMEMBER … sensory evaluations are key from vineyard to bottling!

Sensory Evaluation

Don’t make wine only “by the numbers”. Bench trials for additions after fermentation are essential! TASTE – TASTE – TASTE!

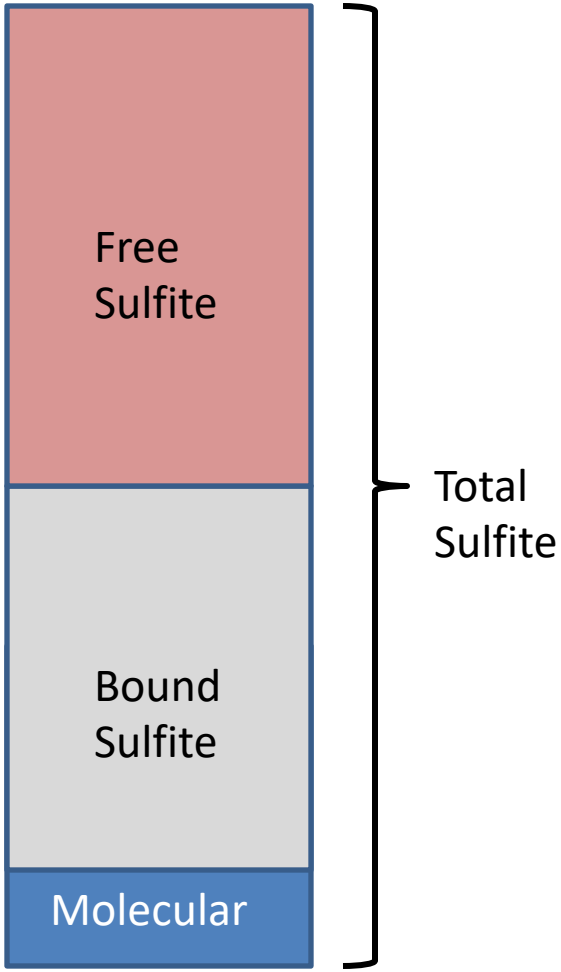


Acid addition trial

LESSON 4

GETTING TO THE FINISH LINE

SO2 Management

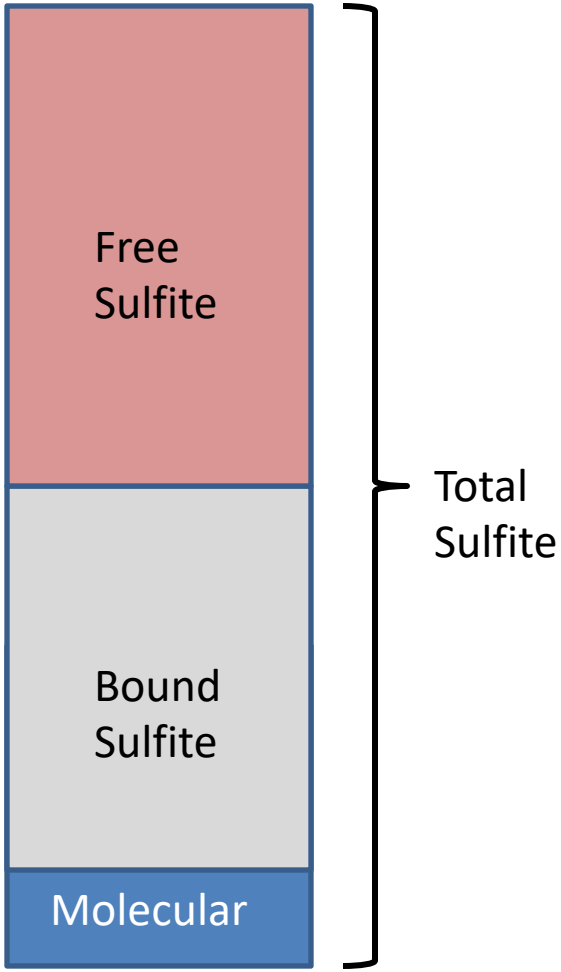


The goal in sulfite management is to maintain just enough free sulfite to get the preservative benefits of some molecular sulfite without the negative aspects of odor and taste.

Desired free SO2 is based upon the pH of the wine. The higher the pH, the greater the free SO2 needs to be to obtain,

- 0.5 ppm molecular – red wine
- 0.8 ppm molecular – white wine

SO2 Management



I test SO2 every 1-2 months during the aging period to keep SO2 at the appropriate level.

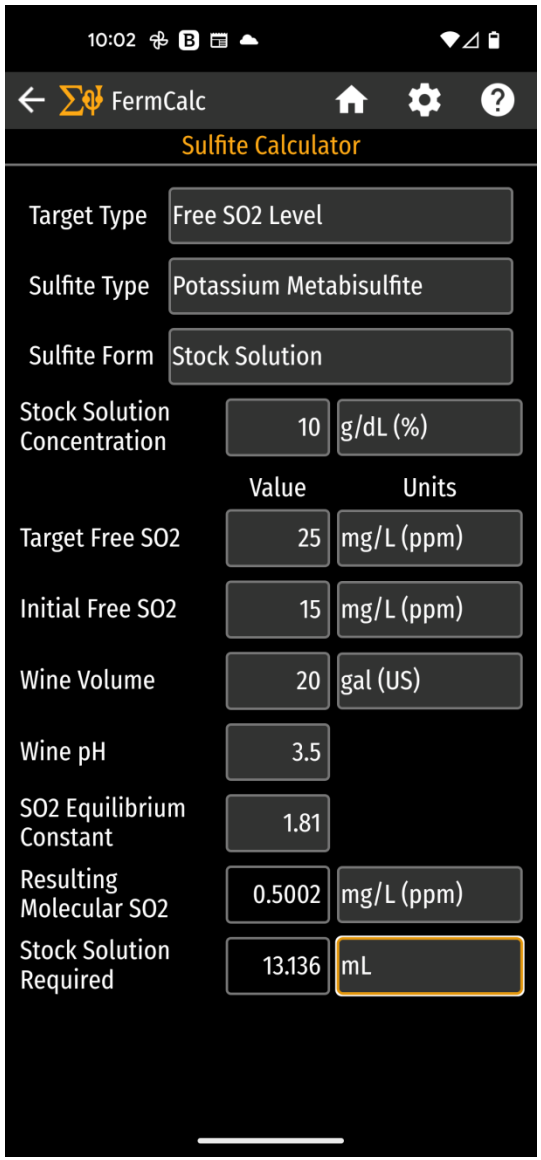
Lesson learned: A portion of the SO2 addition will get bound, which will not leave you with the desired free SO2 level. As an example …

- Measured: 15 ppm
- Needed for 0.5 molecular: 25 ppm (theoretical addition of 10 ppm)
- Actual Addition: 15-20 ppm (assuming a portion gets bound).

Winery Calculations - FermCalc

>>>>>>>>>>>

SO2 Example



Using Barrels for Aging

One of the best investments to improve wine quality was to transition to small format oak barrels.

- We use a combination of 14.5 gal and 29 gal barrels in addition to other containers.
- Our production lots are anywhere from 20 gal to 40 gal for each varietal.

Considerations for Barrels

- Using barrels sized for the small home winemaker.
- Ability to move around in the cellar (racks and wheels). Barrels are heavy!
- Keeping barrels full, not empty. If barrels are not filled with wine, there are protocols for storing wet or dry.
- Avoid overoaking in new barrels.
  - Using the right size for your production volume.
  - Regular monitoring of the wine for oak attributes.

Otherwise: Consider other oak alternatives for sensory embellishments.

Managing Container Headspace

Argon Tank Setup

Line Item	Cost
40 CF Tank	$125.00
Regulator	$70.00
Hose/Nozzle	$45.00
Refill ($ varies)	$50.00
	$290.00

Most items obtained from a welding supply shop. Costs may vary.

Competition Ready?

When has the wine reached its peak?

Don’t be in a rush to enter your (red) wine into a competition within the year of bottling.

- We have learned to let the wine mature in the bottle. That might take 1 or 2 years, or more.

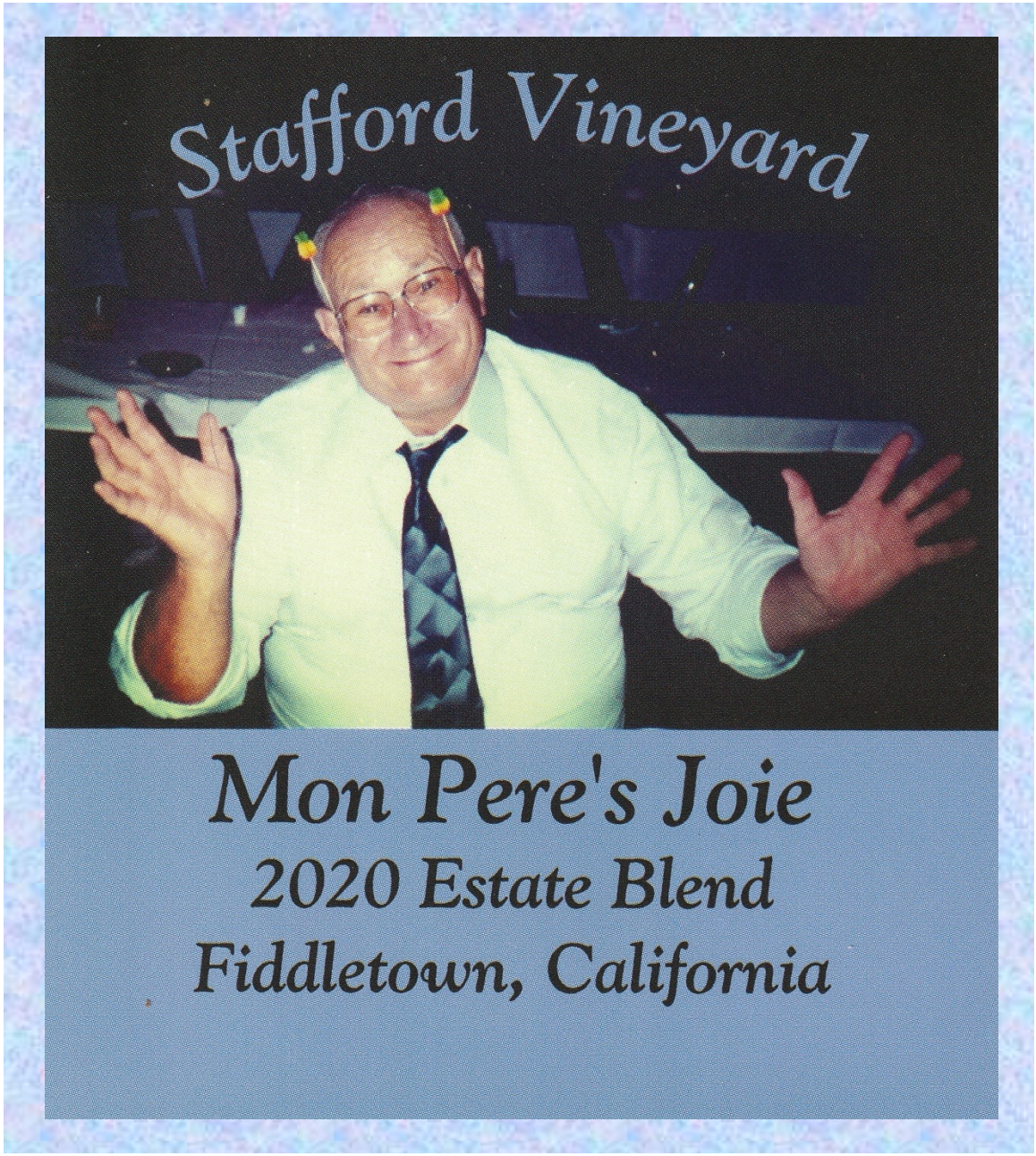
Sample your wines over time and make notes on how the wine is evolving.

- Assess the balance between varietal fruit expression, alcohol, acidity and tannins.

IN THE END ….

HAVE FUN

In honor of Norman Morrison, our father, father-in–law, and constant support in our lifelong passion of wine.



V. 2020 Best of Show Red

EXTRA

Equipment Can Make A Difference

However, you can still make a great wine without going to the expense.

Destemmer vs. Crusher/Destemmer to reduce astringent components from seeds and stems.

Glycol Chiller to facilitate low temp (slow) fermentation for white and rose‘ wines.

Filtering wine from coarse to sterile to give clarity and stability. Note that wines are judged on clarity.

Bladder press to have a more gentle press which reduces astringent tannins from seeds. More control on pressure.

Destemmer

Glycol Chiller

Filtering

Bladder Press

Crushpad

Winery and Cellar

Temperature Control

Standard room air conditioner plus Coolbot controller.

Lab


2021 WineMaker WINE COMPETITION
2022 WineMaker WINE COMPETITION
2023 WineMaker WINE COMPETITION
W
WINE
WINO
WHY NO
WINE OH
WINE NO
blotto
soused
toasted
lubricated
DISTILLED
ARROWHEAD