



WESTERN COLORADO
COMMUNITY COLLEGE

A Division of Colorado Mesa University

Small-Scale Winemaking – Avoiding Common Pitfalls and Lab Analysis

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YES WEEGEE NO

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GOOD BYE



Today's Focus

- Identify **FOUR** common areas for pitfalls
- Use of ***Sensory*** and ***Lab Work***
- Proactive vs. Reactive
- The sooner we identify issues:
 - Eliminate progression
 - Fix
 - Prevention

Common Pitfall Areas in Winemaking

- **# 1 Picking/Ripening Decisions**
- **# 2 Fermentation**
- **# 3 Microbial Stability**
- **# 4 Oxidation/Aging**

1 Picking/Ripening

- Growing conditions
- Grape sampling
 - Combination of parameters:
 - Visual
 - Lab work
- Starting ingredient
- Adjust pre-fermentation



1 Picking/Ripening

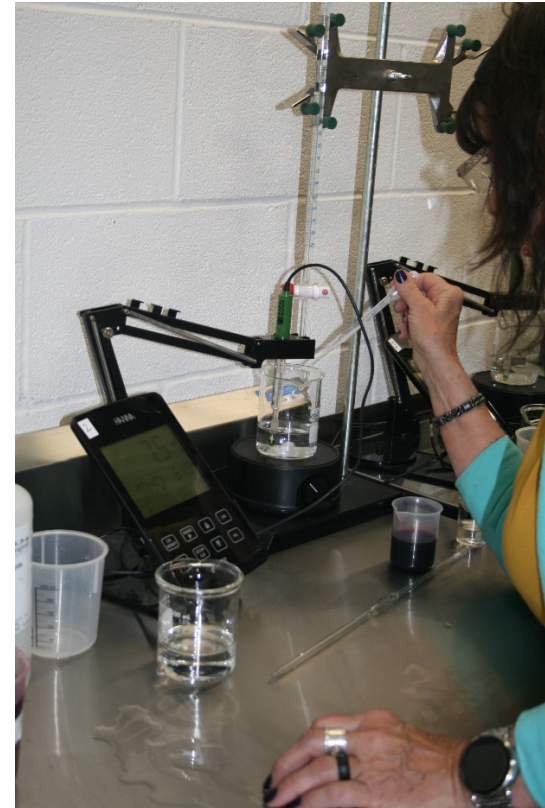
- **Visual inspection** of grapes:
 - Healthy clusters
 - Free of sour rot, powdery mildew, etc.
 - Plump berries
 - Free of split berries, bird/bee damage
 - Color development
 - Maximize color of wine
 - Tannin maturity
 - Color/taste of seeds



1 Picking/Ripening

- **Lab Work:**

- Brix
- pH
- Titratable Acidity (TA)
- Volatile Acidity (VA)
- Gluconic Acid
- Malic Acid



	Variety	Density (g/ml)	pH	Brix	TA (g/ l)	Tartaric (g/l)	Malic (g/l)	Gluconic (g/l)	VA (g/ l)	Alpha Amino N (mg/l)	Ammonia (mg/l)	
	Chambourcin	1.1060	3.12	25.1	9.60	7.07	3.43	0.5	0.07	161.7	119.2	
	Chambourcin	1.1100	3.21	25.9	8.77	6.54	2.84	0.4	0.06	196.6	123.4	
	Chambourcin	1.1146	3.16	27.0	9.08	7.47	2.84	0.3	0.06	134.2	106.9	
	Chambourcin	1.1102	3.25	25.7	8.94	6.90	3.05	0.6	0.09	181.7	111.0	
	Primitivo	1.1009	3.40	23.8	7.98	7.07	3.45	0.8	0.12	193.0	154.3	
	Riesling	1.0857	3.34	20.4	6.64	7.50	0.94	0.4	0.10	202.9	135.3	

2 Fermentation

- Issues with fermentation:
 - Production of off-aromas/flavors
 - Slow or stuck fermentation
 - Fermentation to dryness
- Combination of parameters:
 - Sensory
 - Lab work
- # 1 cause for stuck fermentations => improper rehydration technique

2 Fermentation

- **Sensory evaluation:**
 - Daily
 - Differences
 - Hydrogen Sulfide
 - Volatile acidity



2 Fermentation

- **Lab Work:**
 - Brix/temperature
 - Ammonia
 - Alpha amino acid
 - Clinitest / AimTab

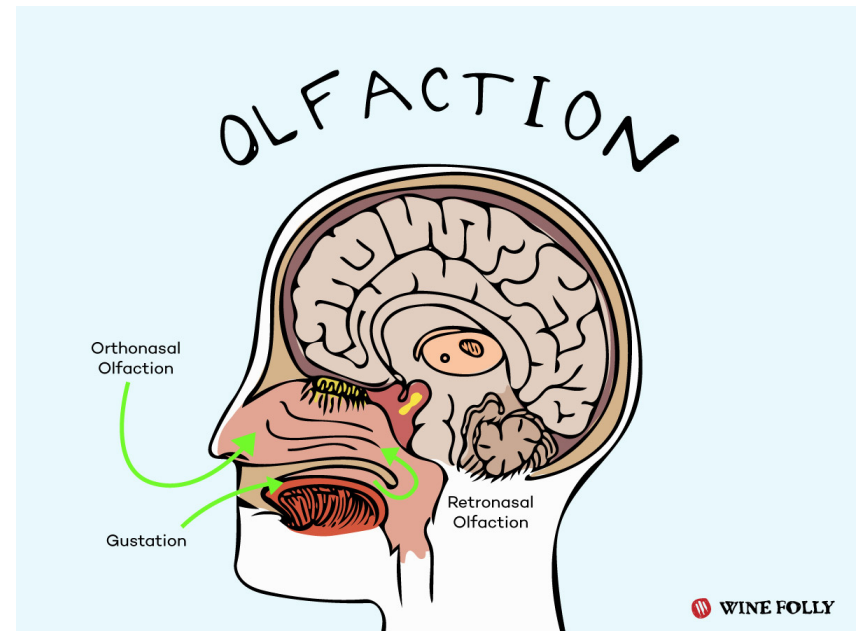


3 Microbial Stability

- Limit food source for spoilage microbes
- Proper use of .6-.8 ppm molecular sulfur dioxide
- Avoid oxygen coming in contact with wine
- Combination of parameters:
 - Sensory
 - Lab work
- Microbes in VBNC state
- Presence based on grapes, cleaning/ sanitation & oak barrels

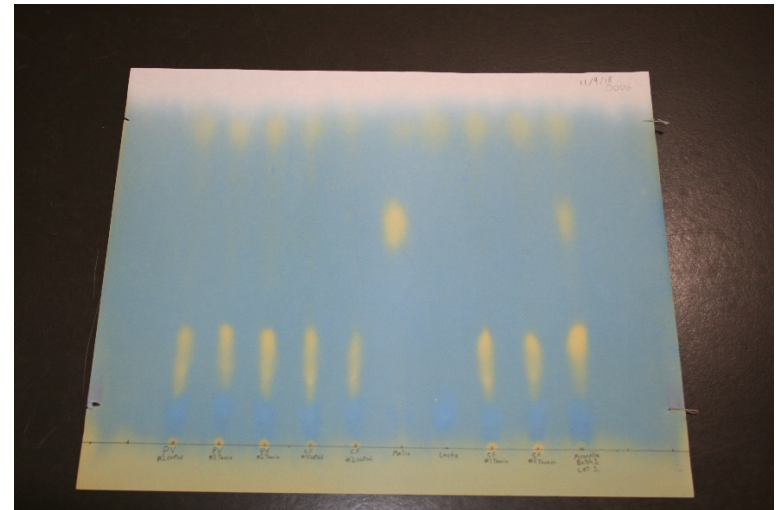
3 Microbial Stability

- **Sensory evaluation:**
 - Changes will be slower, weekly/monthly
 - Prior to movement
 - Prior to combining barrels
 - Off-odors, prickly, cloudy



3 Microbial Stability

- **Lab work:**
 - pH/TA
 - Volatile acidity (VA)
 - Alcohol percentage
 - Malic/Lactic acid



4 Oxidation/Aging

- Susceptible to oxidation
- Different time frames for aging
- Combination of parameters:
 - Sensory
 - Lab work
- Lowering the temperature of the wine
- Keep wine in smallest container possible
- Use of inert gas
- Keep barrels topped up

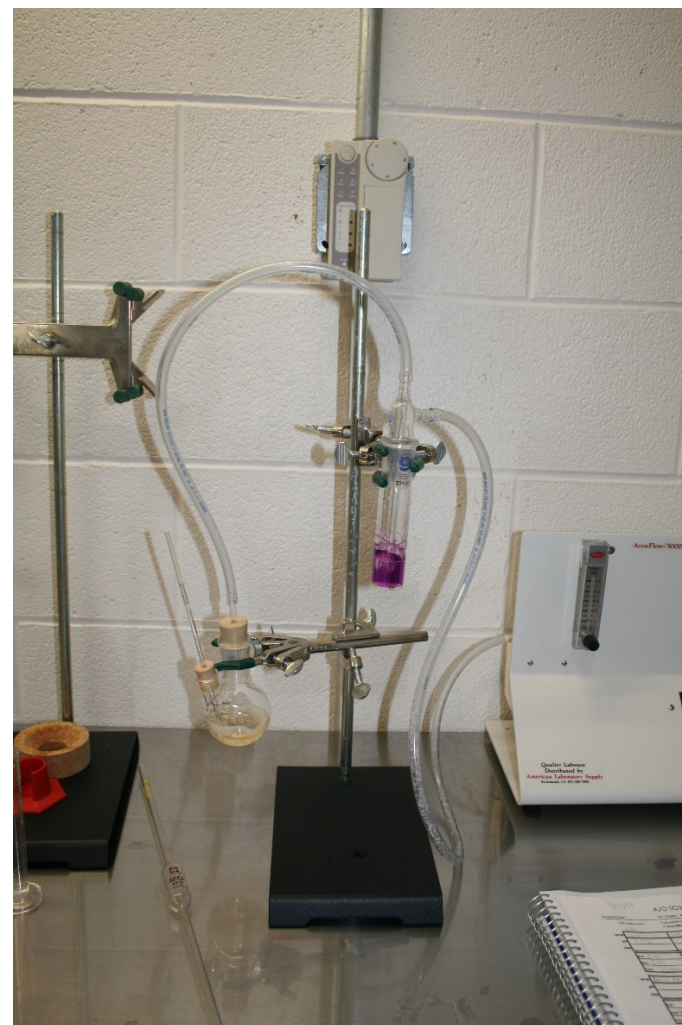
4 Oxidation/Aging

- **Sensory/visual evaluation:**
 - Off-odors
 - Film on surface of wine



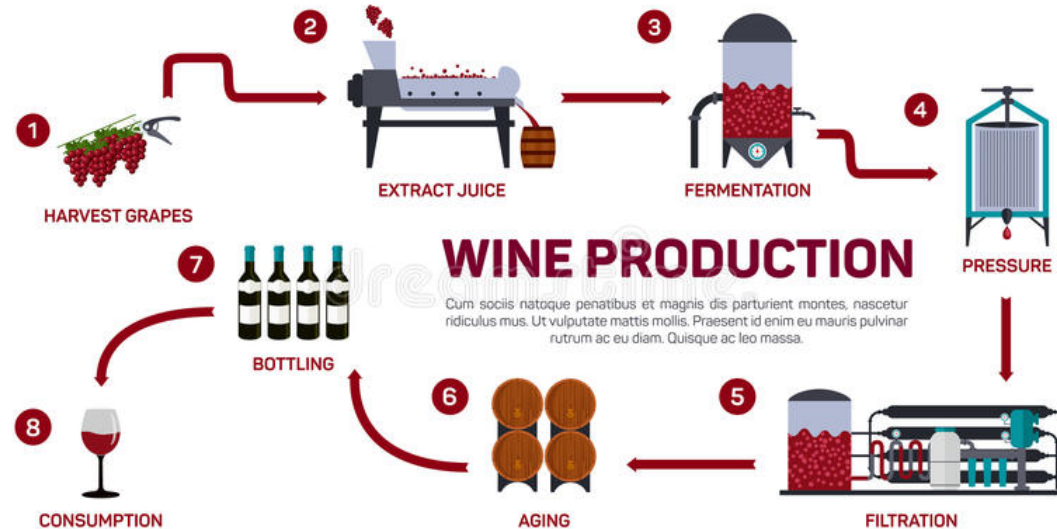
4 Oxidation/Aging

- **Lab work:**
 - pH/TA
 - Sulfur Dioxide (Free/Total)
 - VA



Winemakers Tools

- **Visual/Sensory Evaluation**
- **Lab Work**



Lab Equipment:

- On-site lab work with minimal equipment:
 - Brix
 - Hydrometer tube, various hydrometers
 - pH
 - pH meter
 - Titratable Acidity
 - pH meter, glassware for titrating
 - Residual sugar – Clinitest / AimTab
 - Kit purchased
 - Malic/Lactic acid
 - Chromatography kit

Lab Equipment:

- On-site lab work with a larger expense for equipment:
 - Sulfur Dioxide
 - Volatile acidity
- There is lab equipment out there that run several different tests or you can purchase the glassware needed to run individually
 - Vinmetrica, Enofoss, Accuvin, Megazyme

Third Party Analysis:

- All the mentioned lab work can be sent off, expensive.
 - ETS
 - Enartis
- Find someone local that can run lab work
 - School, Extension, larger local winery

Thank You!

- If you have any questions, please send me an email.
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