

Newsletter

October, 2003

Next Meeting: Thursday October 16, 2003 at 7:30 PM. Maplewood Community Center
 Secretary: Phil Tochtrop, 1546 Virginia Ave., Ellisville, MO 63011 (636) 391-6937
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HAPPENING THIS MONTH

Our meeting this month will feature Allan Dillard. He will speak about making white wine. He has a winery named Owl Creek located in Illinois. Come to the meeting and find out more about white wine and Allan's winery.

Notes on Ph

By Bernard Cleve

Introduction

pH is not easy to understand and is a mystery to many people. pH is not a total mystery since we use it or talk about it when discussing the condition of a swimming pool, hot tub, garden and in cosmetics when referring to a pH balance. pH in these instances is usually measured by the use of an indicator solution or a paper strip, which changes color. Unfortunately these methods of measuring pH are not precise enough for determining the pH of a wine. Most amateur winemakers would answer that pH is just not that important. Commercial wineries would say just the opposite. They would state it is extremely important, so much so that they use pH as one of the guides for harvesting grapes.

Wines with the proper pH will exhibit brighter colors, be more resistant to oxidation and when the proper level of sulfur dioxide is present the wine will resist microbes/bacteria that cause

spoilage. pH is also used as criteria in picking grapes and making wine. Various rules of thumb exist for picking grapes. Some of which are:

	Ph	Ph ² *Brix
White grapes	3.2 to 3.5	<200
Red grapes	3.3 to 3.6	<260

pH is used to determine how much SO₂ to add per the following table

PH	SO ₂ in ppm	
	White Wine	Red Wine
2.8	15	20
3.0	25	40
3.2	40	60
3.4	50	70
3.6	60	80
3.8	100	120

For wine desirable pH values are 3.1 to 3.6. Musts under 3.0 are hard to ferment and red wines with a pH of less than 3.3 resist malolactic fermentation.

Also, some people use it to determine acid balance and calculate an index of acidity (IA)
 IA = TA (total acid) – pH

Dry White wine	2.7 to 3.7
Off Dry White wine	3.8 to 4.8
Dry Red Wine	2 to 3

The above pH and IA numbers are for grape wine but are probably the same for fruit wines.

Definition of pH

PH is the scale of measurement of acidity or alkalinity in aqueous (water based) solutions. A neutral solution has a pH of 7. Solutions with a lower pH are termed acidic and solutions with a higher pH are termed alkaline. PH ranges from highly acid pH 0 to highly alkaline pH 14.

PH was introduced by a Danish biochemist Soren Peter Lauritz Sorensen in 1909 to measure the acidity of water in the brewing of beer. The letters pH are an abbreviate for pondus hydrogenii (translated as potential hydrogen) meaning hydrogen power as acidity is caused by a predominance of hydrogen ions (H+).

The numerical value of the pH is the negative of the exponent of the molar concentration. A mole is defined as the weight in grams that corresponds to the summed atomic weights of all the atoms of a molecule – its molecular mass. In the case of H+ the molecular mass equals 1, and the mole of H+ ions would weigh 1 gram. In the case of water (H2O) the mole of water ions

would weigh 18 grams (The sum of the atomic weights).

Low pH values indicate high concentrations of H+ ions (acid), and high pH values indicate low concentrations. Each pH unit downward represents a tenfold increase in the H+ concentration. A pH of 3 indicates a 10 to-3 molar concentration of hydrogen ions (1 in 1000 parts). A pH of 2 indicates a 10 to-2 molar concentration of hydrogen ions (1 in 100) or ten times the concentration for a ph of 3.

Wine acids are normally tartaric, malic and a few other minor acids. These acids produce the sour taste in wines. Here in the U.S. winemakers measure acid levels in terms of tartaric acid and it is usually between 0.6 and 0.9. In one reference book, the question is asked "What stimulates the tongue to provide a sour taste, is it pH or total acid?" Based on the analysis that the author used he determined that pH produces 1/10 of the total effect, with total acid measuring about 9/10 of the effect. In other words taste relates much more to total acid than to pH.

pH Adjustment

I have reduced the pH of Norton and Chardonel wines by adding tartaric acid to the finished wine. In theory one gram per liter of wine (3.79 grams per gallon) should increase the acid level by 0.1%. However, as is apparent from the table below the increase in acid was much less than this. The acid reacts with chemicals in the wine and reduces the pH. Acid also precipitates during cold stabilization.

PH REDUCTION STUDY

GRAPE	INITIAL		TARTARIC ADDED gr/gallon	PH		NEW ACID LEVEL	ACID INCREASE		PH/GR/ GALLON	ACID LOST
	PH	ACID		NEW	DELTA		POTENTIAL	ACTUAL		
CHARDONEL	4.12	0.85	18.16	3.42	0.70	0.90	0.48	0.05	0.039	90%
NORTON	3.82	0.72	6.00	3.52	0.30	0.76	0.16	0.04	0.050	75%

NOTES

- 1 3.79 GRAMS OF TARTARIC ACID IN THEORY CHANGES THE ACID IN WINE BY
- 2 ONE TSP OF TARTARIC ACID WEIGHS 3.73
- 3 ONE TSP OF TARTARIC ACID PER GALLON MAY DECREASE THE PH OF WINE FROM 0.14 TO 0.18

pH Measurement

When measuring pH a meter with a resolution and accuracy of 0.01 pH is desirable. A meter with a resolution of 0.01 will have a repeatability of 0.03 pH. Meters should be calibrated with at least a 4.01 reference pH solution. Using a second 7.01 reference solution is preferable. After the meter is calibrated it should be checked using a saturated solution of **cream of tartar** and distilled water. This solution has a pH of **3.55**.

I have checked the pH of grape juice immediately after pressing and again after cold settling and found no change. However the acid reading decreased by 0.2%.

References

- 1) Grapes into Wine by Philip M Wagner
- 2) From vines to Wines by Jeff Cox
- 3) Milwaukee pH meters web site
www.hydroponicequipment.com/sharpph.shtml
- 4) Acid/pH Adjustments
www.vawa.net/acidphadj.html
- 5) Volume 35 of The Vintner's Press
An Introduction to pH by Paul Brauch

SECRETARY'S CORNER

Reminder #1: \$3 per person in attendance is due to Alice Rau, Treasurer, upon arrival at each meeting to help cover the cost of cheese and bread for the evening's tasting. First-time guests do not pay.

BUSINESS MEETING MINUTES

OLD BUSINESS

- ? We had a positive response to the Wine Club from people attending the Folk Festival. Quite a few brochures were handed out. The organizers were happy to have an active ferment for the fair goers to see.

NEW BUSINESS

- ? The date of the 2004 Wine Fair is February 15 at DeSmet High School. More news to follow.
- ? New brochures have been printed. If anyone knows of locations to place the brochures, please call Bernard for brochures.
- ? We are looking for people to consider an office for next year. If you're interested, call Bernard. We need the slate for the October meeting.
- ? Joy and Dave have both volunteered to host the X-mas party. If anyone else is interested in hosting, please let the club know.
- ? We welcomed a new member, Sue Neulist. We also welcomed a visitor, John Schnellmann.
- ? You may enter the Kansas City Cellarmaster Wine Contest through Oct. 25. Information may be found at www.cellarmasters.org.
- ? Chris Hehner visited River Ridge Winery and had positive comments regarding the visit. The contacts at the winery were generous with their time. The web site is www.riverridgewinery.com.
- ? Congratulations to Alice Rau who earned a 2nd place at the Cape Girardeau Wine Competition. She tied with Tower Rock Winery. This competition was open to both professional and amateur winemakers.

WINE TASTING

- ? We had a vertical tasting of Dave Anderson's elderberry wine from '90, '91, '92, '93, '94, '96, '97, '98, '99, & 2001. Dave deserves a majoratta-boy for sharing his many years of elderberry wine with the club.

- ? Dave offered some tips on elderberry wine making. First you need to freeze the elderberries ahead of time and de-stem them while frozen. He uses about 2.5lbs. of berries per gallon of wine. They need to have water added to the must. After the must is racked to the carboy, it needs to ferment about 2 years with a racking every 3 months. Adjust for acid and sweetness before bottling. It blends well with other wines. It goes well with tomato- based foods.

THIS AND THAT

- ? Wine tools can be found at www.wineenthusiast.com or 1-800-295-2226
- ? Several interesting web sites are; www.winemakermag.org and www.mtngrv.smsu.edu/grapenews.htm