



AWOnews

A forum for the exchange of news and opinions
on homewinemaking in Ontario

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- * In my President's Corner I talk about some of the proposed changes that we will be bringing to the AGM in 2010.
- * Steve McDonald, the AWO Chief Steward, outlines proposed changes to AWO competition classes to harmonize with AWC competition classes.
- * Steve McDonald provides some tips on how we can help interested winemakers form a new club and join the AWO.
- * An article about hydrogen sulphide, H₂S, and its evil twins - mercaptans and disulphides - and how you can combat them if they show up in your wines.

President's Corner

Another fall has come and gone (I know that technically fall isn't over until December 21st, but I saw snow the other morning and that's the sign for me that fall is over) and another vintage is safely tucked away in the basement, completing fermentation or undergoing malo or starting to clear, depending on whether they were California or Ontario grapes.

Although you may not have heard much from the AWO for a while, a number of things have been going on. The AWO bylaws have been given a long-overdue revision and a draft of the revised bylaws will be forwarded to club representatives shortly. Please take the time to review

them, discuss them at your club and forward any of your concerns or suggested changes to myself or any of the other board members. The proposed new bylaws will be tabled at the next AGM.

Steve McDonald has been reviewing AWO competition classes to see how they can be harmonized with AWC classes. The results of his review are provided in this newsletter.

It doesn't look like there will be an AWO Festival in 2010 as no club or clubs have volunteered to host one. We will be looking at potential options for an Annual General Meeting in lieu of holding one at the Festival. We still don't have any volunteers to host a 2011 Festival either, so that may be in jeopardy as well. If the annual Festival is going to continue to be a part of AWO, we need clubs to step up and be willing to volunteer as hosts.

One of our other priorities is finding ways to attract new members so that the AWO continues to be a vibrant and viable organization in the long term. One of the easiest ways to add new members is to encourage the formation of new clubs. In this newsletter, Steve McDonald has provided some ideas on how we can help facilitate this. If you or any of your club members have any other ideas for improving membership please forward them to Steve

Cheers
Burton McClelland

Changes to Wine Classes for the AWO 2010 COMPETITION

It is time to start thinking about the AWO provincial competition and what entries you will be putting into your club competition and hence possibly moving on to the provincial competition.

We are looking at a few changes to the classifications so that members of AWO are better able to compete at the national level if they are so inclined. This past year Ontario members were eligible to submit 155 wines and beers in total up from 74 in 2008. With the increased numbers of entries allowed it was thought that there would be less confusion for our members if we were more closely aligned with the AWC. The following changes have been approved by the AWO executive.

A comprehensive list of all class descriptions for the AWO 2010 competition will be sent to club reps for distribution within the next few days. They will also be on the AWO web site as soon as we can get them uploaded.

Specific changes being made are as follows:

Class 23 - White Hybrid change name of class to White Non Vinifera so that AWO is using the same terminology as AWC. AWO is requesting that AWC lower their current requirements that the wine consist of 95% white hybrids to 85% white hybrids which would then be in line with Ontario

Class 41 - Cabernet family change name of class to Red Bordeaux Style to align with AWC and that AWO aligns their class specifications to that of AWC. Currently under AWO Cab. Family 85% must be any one or combination of Cabernet Sauvignon, Cabernet Franc or Merlot.

Small percentages of Petit Verdot and Malbec may be used. The new class description will be Varietal wines in the Red Bordeaux Style Class must contain at least 85% of one of the following grapes: Cabernet Franc, Cabernet Sauvignon, Carmenère, Malbec, Merlot, or Petit Verdot. The remaining 15% may be any ingredient. Blended wines in this class must contain at least 85% of two or more of the above varieties blended to create an elegant combination rather than a wine resembling one of the components. The remaining 15% may be any ingredient.

Class 42 - Pinot Noir/Gamay Family Pinot Meunier will be included in this class. Zweigelt which is currently in this class will remain in this class for 2010 but will be moved to other red for 2011 as it is not in the Pinot/Gamay family.

Class 43 - Red Hybrid Change the class name to Red Non Vinifera so that AWO is using the same terminology as AWC. AWO is requesting that AWC lower their current requirements that the wine consist of 95% white hybrids to 85% white hybrids which would then be in line with Ontario

Class 44 - Syrah / Rhone Blend Recommend that AWO change the name to Red Rhone Style to align more closely with AWC.

Class 62 - Country Wines this class is now broken down into 2 classes similar to that of AWC - that being Country table wine and Country Social wine allowing AWO members to enter both classes. See below for class descriptions.

NEW Country Wine Class descriptions

A country wine is any wine made from at least 95% non-grape ingredients. The Country Wine Classes are intended for those country wines which depend heavily on their non-grape origins for their interest and character and have been made in a functionally table or functionally social style. Still meads and melomels are appropriate for this class and should be entered in either class depending on sweetness.

Competitors will be required to list the juice varieties and to quantify basic aspects of their eligible entry in the Country Wine Classes, including: approximate alcohol content, approximate sweetness, and any intentional hint of bitterness.

NEW Class 62A - COUNTRY TABLE WINE - dry to medium dry (0-3% Residual Sugar) country wine intended as table wine. Balance is of great importance in determining a successful wine. Flavour may range from very delicate to very intense. A touch of "spritz" is acceptable, especially in lower alcohol or lighter flavoured wines.

NEW Class 62B COUNTRY SOCIAL WINE - country wine intended to be appreciated on its own, rather than to accompany food. Country Social Wines are medium dry to medium sweet (3-8% Residual Sugar) and are not sweet enough to be dessert wines. The Country Social Wine class is intended primarily for wines which are outside the parameters of Class 61 (Social) because of their fruit characteristics and often, sweetness. Country Social Wines typically have one or more dramatic "peaks" in their profile - an immediately recognizable intensity of fruit aroma and/or flavour, or noticeable acidity and freshness, or a hint of bitterness, or a higher alcohol level through fermentation than is suitable for Class 61 (Social). Astringency and/or

bitterness and/or high acidity are not faults in themselves but must have been balanced by appropriate sweetness and/or flavour intensity and/or mouthfeel. A touch of spritz is acceptable, especially in lower alcohol or less intensely flavoured wines.

Class 71 - Sparkling Cider and Perry This classification will also include Perry by changing the name of the class to Sparkling Cider and Perry. The definition is changed to Defined as an apple based or pear based sparkling beverage between 5% and 8% alcohol.

We will leave the rest of the class definition the same.

We have also added two new lifetime achievement levels for brewers and cider makers to correspond to the additional lifetime achievement levels added for winemakers a couple of years ago. These achievements will be recognized by standup trophies similar to the ones provided for other lifetime achievement levels. The new levels and points required are as follows:

Lifetime Cider Award	Lifetime Cider Points	Lifetime Beer Award	Lifetime Beer Points
Master Cider Maker	100-199	Master Brewer	200-299
Senior Master Cider Maker	200-299	Senior Master Brewer	300-499
Grandmaster Cider Maker	300-499	Grandmaster Brewer	500-999
Senior Grandmaster Cider Maker	500-749	Senior Grandmaster Brewer	1,000-1,749
Ultimate Grandmaster Cider Maker	750+	Ultimate Granmaster Brewer	1,750+

Submitted by
 Steve McDonald
 Chief Steward

AWO New Club Success Formula

Members join and remain in an organization for a reason and will pay dues and contribute time for the betterment of the club providing they are getting value for their time and money. This value can be in several different forms depending on why they joined originally. Value to a member will change over time and the organization needs to understand these changing needs in order to maintain membership.

Four key areas that create value in a non-profit (volunteer) organization

1. Knowledge/training opportunity expertise within the club shared to others or opportunity to receive valuable training in the form of courses or seminars
2. Common equipment opportunity to use quality equipment that one doesn't own themselves.
3. Access to quality source of supply for grapes, supplies and equipment.
4. Social, networking and fellowship members need to enjoy the fellowship of other members. Plan social functions as well as regular meeting.

Clubs need to have regular scheduled meeting so members can plan ahead and schedule these club meetings into their own busy schedules. Keeping meeting nights consistent is important. (ie first Thursday of every month)

Every organization needs to have some form of hierarchy and as such it is suggested that a new club starts with at least a President, Secretary, Treasurer and a program chair.

Role of President

- * develop agenda and chair meetings.
- * Provide leadership in terms of initiating activities and setting time frames.
- * Be central person for club communications. Send out regular communications to each member. Make members feel they are a part of something and are appreciated. Praise in public and criticize in private.
- * Take responsibility for the well being of members. Respond to concerns promptly, track attendance and follow-up non attendance, help members solve problems and CARE for your members if you want to keep them.
- * Become the leader of your club.

Role of Secretary

- * maintain and distribute minutes of meetings.
- * Send out notices of meeting one week in advance. (time, place and general topic)

Role of Treasurer

- * Set up bank account
- * Establish annual budget in consultation with the president
- * Collection of dues from members
- * Maintain and report financial records of club.
- * Pay expenses and keep records of all expenses.

Role of Program Chair

- * establish in consultation with president a program or activity for each meeting.
- * Schedule and book speakers well in advance and then ensure that Secretary has information for meeting notification. Always book your speaker three or four or more weeks in advance and then reconfirm 1 week in advance. Ensure that they know the date, time, place and that they tell you of any special equipment that may be needed for their program. The success or failure of most programs are in the details.

It is important that there is a constant membership recruitment program in place and that all members are constantly reminded and encouraged to bring out new members. Establish an orientation program for all new members so that they are informed and made to feel welcome. A mentoring system works well with new members. Make sure that they are encouraged to attend meetings and club functions so that they become integrated within the club as soon as possible. Possibly give them a small task for the first three or four functions (ie. pick up a commercial bottle of wine and bring it to meeting make sure they are reimbursed. Another function could be acting as host location make sure you inform them what they need to do as hosts). Follow-up with them if they miss a meeting so that they know they are valued.

Encourage members to compete in competition. Competing can be stressful so make it as easy as possible and as comfortable as possible. Praise successes and offer constructive comments on how to improve. Competition in itself will encourage members to seek information as to how to improve the quality of their wine making. Making quality wine will provide immense satisfaction.

Club dues - every organization will need money to operate and should charge sufficient dues to cover operating and capital expenses. Clubs will pay AWO annual fees on behalf of each member. (\$30.00)

Initially a club may need to acquire some commonly owned equipment usually purchased used from an existing club or individual that is leaving the hobby. There should be some money in the account for miscellaneous expenses throughout the year. (a control bottle of wine, program expenses etc) Club dues range from about \$50/year to over \$200/year.

Bylaws - every club should establish a general set of bylaw under which the will operate. This is just setting up some ground rules for running the club. They need not be long and full of legalese but something that will cover most situations of running a club.

Some areas that need to be looked at under bylaws are - Name of club, purpose of club, club hierarchy, (executive structure), membership expectations, requirements of admission to membership, dues and assessments, meeting frequency, ownership of equipment, procedure for resigning from club, procedure for dissolving the club etc.

Steve McDonald

Yeast Flatulence - Burnt Rubber, Rotten Cabbage, Onions, Garlic and Other Things You Don't Want to Smell in Your Wine

After suffering through another cool, wet summer, one of the most animated topics of discussion at a recent club meeting was who had hydrogen sulphide (H₂S) in their wines - what grape varieties were affected, what yeasts were used and what had been done to try to eliminate that characteristic rotten egg smell.

Hydrogen sulphide is a colourless, but certainly not odourless gas. Its noxious odour is perceptible at very low concentrations - the threshold concentration (the point where 50% of

humans can detect the odour) is only about 5 ppb. Exposure to very high concentrations, over 700 ppm, is invariably fatal. While it is highly unlikely that home winemakers would ever be exposed to fatal concentrations, much lower concentrations of H₂S and other volatile sulphur compounds (VSC) can be fatal to your wine.

In this article, we'll look at the reasons for H₂S formation in your wines, what you can do to treat it and what can happen if you don't treat it. I won't focus on the chemistry of the processes but rather on generally how these compounds are formed and what it means to you as a winemaker.

H₂S Formation in Wine

H₂S is a natural by-product of fermentation and usually isn't a significant problem. Most of it is gassed off with CO₂ during the most vigorous part of fermentation or during subsequent rackings. Some of it is converted to elemental sulphur and is eliminated during racking and filtering. Some of it may even be converted to other sulphur compounds, which in low concentration add complexity to your wines.

Excessive H₂S production that can become a problem can have many different causes but the following are some of the most common:

- * residual sulphur on the grapes from a late spray for powdery mildew,
- * some yeast strains, such as BM45, VL1 and UDC522 (Montrachet), are prone to producing higher levels of H₂S,
- * some varieties, such as Merlot, Gamay and Pinot Noir, are more prone to producing higher levels of H₂S,
- * wine kept too long on the gross lees,
- * low nutrient levels, primarily nitrogen, in the must, and
- * high temperature (over 30 °C) fermentations in red wine.

If H₂S is not dealt with quickly, it can morph into other sulphide compounds, such as mercaptans and disulphides, which are more persistent and difficult to treat. I'll talk about those later in the next section.

Volatile Sulphur Compounds (VSC)

Hydrogen Sulphide (H₂S)

As discussed above, H₂S is the first sulphide compound you'll encounter in the fermentation process. It is a natural by-product of the fermentation process and generally isn't a problem, as it is quite volatile and is gassed off with the CO₂ produced in fermentation. It is only when it is produced in high quantities and is not eliminated that it becomes a problem. The problem occurs when it morphs into other noxious and more difficult to remove sulphide compounds. The most common of these are listed in Table 1 below:

Table 1 - VSC Sensory Descriptions and Thresholds

Compound	Structure	Sensory Description	Threshold Range (ppb)
Hydrogen Sulphide	H S_2	rotten egg, sewage	0.9-1.5
Ethyl Mercaptan	$\text{CH}_3\text{CH}_2\text{SH}$	burnt match, sulfidy, garlic, onion, earthy	1.1 - 1.8
Methyl Mercaptan	CH_3SH	rotten cabbage, burnt rubber, onion, garlic	1.5
Diethyl Sulphide	$\text{CH}_3\text{CH}_2\text{SCH}_2\text{CH}_3$	rubbery	0.9 - 1.3
Dimethyl Sulphide	CH_3SCH_3	canned corn, cooked cabbage, asparagus, vegetal	17 - 25
Diethyl Disulphide	$\text{CH}_3\text{CH}_2\text{SSCH}_2\text{CH}_3$	garlic, burnt rubber	3.6 - 4.3
Dimethyl Disulphide	CH_3SSCH_3	vegetal, cabbage, onion-like at high concentrations	9.8-10.2

Mercaptans (Thiols)

- * Methyl Mercaptan this is the most common sulphur problem found in wines after fermentation. In low concentrations it smells like swamp water while at higher concentrations it has odours of rotten cabbage, burnt rubber, onion or garlic.
- * Ethyl Mercaptan this has odours of rubber, burnt match, onion or garlic. At high concentrations it can have a fecal character.
- * These two compounds are the mercaptans most often found in wine. What complicates matters somewhat is that different people have considerably different sensitivities to mercaptans and even smell different odours from the same level of mercaptans. Even when mercaptans are below the threshold levels they can mask the fruit that you would expect in the nose. If you have a wine with no perceptible nose you may have a low concentration mercaptan problem.
- * To complicate things even more, there are some mercaptans, that at low level, can add complexity to your wine and are a desirable feature. If you treat your wine to get rid of the bad mercaptans you will also could be eliminating the good mercaptans. Some of these

include:

- " 2-furfurylthiol, the mercaptan of furfuryl alcohol, has attractive roasted coffee aromas at low concentrations.
- " Mercaptohexanol, the mercaptan of hexanol, carries aromas of blackcurrant, grapefruit, and passion fruit.
- " 4-mercapto-4-methyl-pentan-2-one (4MMP) is responsible for the varietal (catty, gooseberry) character of Sauvignon Blanc.

Sulphides and Disulphides

Development of sulphides in wine do not appear to be connected to H_2S production. There are two common sulphides that appear in wines:

- * Diethyl Sulphide is usually present in wine, but below its sensory threshold. At low concentrations above the threshold it has a rubbery character. At really high concentrations it takes on onion and garlic aromas.
- * Dimethyl Sulphide (DMS) is probably a product of amino acid breakdown. At low concentrations it can contribute roundness, fruitiness and complexity to a wine. As the wine ages, DMS concentration can increase. Above a certain threshold it can exhibit vegetal, canned corn or asparagus aromas.

Disulphides can form directly from mercaptans if enough oxygen is available. They generally have a much higher threshold of detection than mercaptans. You can be deceived into thinking that you have corrected a mercaptan problem through oxidation by converting the mercaptan into disulphides. The problem is that disulphides can revert back to mercaptans in the low-oxygen environment in the bottle and you can get a very nasty surprise when you open the bottle. I had that happen to me once with a batch of Landot that smelled fine when it was bottled, but was absolutely dreadful when I opened a bottle six months later. The two common disulphides are:

- * Diethyl Disulphide which has a relatively low threshold (3-5 ppb) for a disulphide. It presents aromas of burnt rubber and garlic. I think this was the culprit in my Landot.
- * Dimethyl Disulphide has vegetal or rotten cabbage aromas, which can become onion-like at high concentrations.

Dealing with H_2S and Other VSCs

Pre-fermentation and Early Fermentation

If you are concerned that you might have the potential for an H_2S problem, such as the last two cool, wet summers where growers were forced to spray often to combat potential mildew and other problems, or you are fermenting a variety, such as Merlot, which is susceptible to H_2S problems, select a yeast strain that is not prone to excessive H_2S production, such as D254 or 1118.

Do not add excessive metabisulphite to the must. For most reds and whites that you want to take through malolactic fermentation, you should keep sulphite levels under 20 ppm. For wines that you do not want to undergo malo, sulphite levels should still be less than 50 ppm.

Even the shape of your fermentation vessel can have an impact on H₂S production and retention in the wine. Tall narrow vessels with a small surface area to volume ratio tend to slow the dispersal of H₂S and other gases, especially in red wine fermentation where this shape promotes the formation of much thicker cap.

Make sure that your yeast has adequate nutrients for a clean fermentation rehydrate your yeast with Go Ferm. Add the recommended dose of a yeast nutrient containing Diammonium Phosphate (DAP) to the must a day or so after fermentation has started. A yeast nutrient, such as Fermaid-K, with additional vitamins and other trace nutrients is preferable to straight DAP. I often split my nutrient dose for multiple applications, about half at the beginning of the fermentation and the other half when the specific gravity has dropped to about 1.040-1.050. Avoid adding yeast nutrient towards the end of the fermentation as additions at this stage may increase, rather than reduce, your H₂S problem.

Ferment at moderate temperatures. Red wine fermentations at over 30 °C can contribute to high H₂S production, especially where other causal factors are present (low nutrients, residual sulphur, susceptible variety, etc). Some white wines fermented at very low temperatures, less than 13 °C, can develop a trithiane problem which can lead to H₂S and mercaptan formation later in the bottle.

Mid and Late Fermentation

In the fermentation stage, the best thing you can do to combat H₂S is vigorous aeration. H₂S is very volatile and will gas off readily if allowed the chance. For red wines frequent stirring that breaks the cap and allows the gases to escape can help to dissipate H₂S quickly. One of our club members, who is retired, said that he was able to eliminate the H₂S odour in the first couple of days of fermentation by stirring his must every hour. That is a difficult regimen to follow if you are still working but it does demonstrate the effectiveness of frequent stirring. Délestage (basically draining the juice off the pulp and then reflooding) can also help deal with H₂S by aerating the must and gassing off the hydrogen sulphide.

In white wines where H₂S is detected vigorous splash racking can help to gas off the H₂S. This is one time when oxygenation is good for your wine. The racking should be really vigorous to fully aerate the wine and disperse any dissolved gases. Splash your wine through a sieve or colander in a funnel to fully aerate it as it goes into the wine. If you are concerned about potentially oxidizing your wine at this stage you could bubble CO₂ or nitrogen through instead.

One concern with vigorous aeration is the potential to convert any mercaptans present in the wine into disulphides through oxidation as discussed earlier.

Post-Fermentation

If you can still smell H₂S or mercaptans after the fermentation is finished, you can add SO₂ and splash rack once again. The danger here is that splash racking at this stage will introduce enough oxygen to convert the mercaptans into disulphides. Another technique that has been suggested by French researchers is to rack the wine off the lees and then re-introduce some of the lees back into the wine after about 48 hours for an extended lees contact, ensuring that the

lees are stirred at least one a week. If you are worried about potential off-aromas being introduced by the lees, substitute yeast hulls or yeast fining (fining with yeast that has been deactivated by rehydration in hot water) instead.

The other option is to proceed directly to treatment with copper. You need to be very careful in using copper, as it is poisonous in fairly low doses. Regulations in Canada only permit 0.5 mg/l of copper. The traditional method was to pour the affected wine over a sheet of copper or insert clean copper pipes into the wine. That gives the winemaker little or no control over how much copper is introduced into the wine. A much better approach is using a measured amount of copper sulphate solution.

The first step in using copper is to determine if your odour problem is a result of mercaptans. The simple penny test will suffice for this. Pour a small sample of the suspect wine into a glass and then drop a well-cleaned penny or piece of clean copper into the glass. If the problem is indeed a mercaptan, the odour should disappear quickly. The penny test can also be used for wines where there is no discernible odour, but no perceptible nose either and the suspicion of a low-level mercaptan problem. If there is a mercaptan problem, you should be able to pick up a nose on the suspect wine after the penny test.

George Gibson of the BC Amateur Winemakers Association suggests a more sophisticated approach to analysing the problem. It requires three glasses of the suspect wine, a 1% solution of copper sulphate (CuSO_4) and an ascorbic acid solution (10 grams of ascorbic acid in 1 litre of water). Use the first glass⁴ as your control, in your second glass add 5 drops of the CuSO_4 solution and in the last glass add 5 drops of the ascorbic acid solution, wait a minute or so⁴ and then add 5 drops of the CuSO_4 solution. Table 2 outlines what this test will tell you:

Table 2 Test for Sulphide Problems in Wine

Possibilities	Glass Number 1 Control	Glass Number 2 CuSO_4	Glass Number 3 Ascorbic Acid/ CuSO_4	Results
First	No change in smell	No change in smell	No change in smell	Not a sulfide problem
Second	No change in smell	No change in smell	Reduction or elimination of smell	Disulfide
Third	No change in smell	Reduction of smell	Elimination of smell	H_2S , mercaptan ² and disulfide
Fourth	No change in smell	Elimination of smell	Elimination of smell	H_2S and/or mercaptan ²

If the problem is a straight mercaptan problem, you can move directly to copper treatment. You'll need your 1% CuSO₄ solution, a couple of glasses and a one-litre container. Pour some of the affected wine into a glass to use as your control and one-litre into your other container. Add the CuSO₄ solution to the litre of wine one drop at a time. After each drop stir the container and pour a little into your other glass. Compare with the control sample. If the smell has not disappeared, pour the wine back into the litre container and repeat the procedure adding two drops of CuSO₄ solution the next time. Continue repeating until the smell disappears. Each drop of CuSO₄ solution is 0.5 ml, so if you used six drops to eliminate the smell you would need to add 3 ml per litre to the rest of your wine. You shouldn't need to add more than 4 ml per litre to eliminate a mercaptan problem.

If the problem is the result of disulphides, you will need to treat your wine first with ascorbic acid to try to convert the disulphides back to mercaptans as disulphides can't be treated with copper sulphate. The amount of ascorbic acid required is fairly small, a quarter teaspoon per carboy should be adequate. Mix the ascorbic acid into the wine and leave for a couple of days before adding the CuSO₄.

If you are concerned about any residual copper left in the wine after treatment you can yeast fine and filter. As you can imagine you will probably lose some character and complexity from your wine if you need to go to this level of intervention, so it is preferable to treat the H₂S problem before it becomes mercaptans or disulphides.

Conclusion

Sulphide in wine is a common by-product of fermentation and can be expected. However, in some situations you can get excessive H₂S production which can lead to off odours in your wine, especially if it is not treated quickly and becomes mercaptans or disulphides. The greater the intervention required to cure the problem, the greater potential for affecting the character or complexity of the finished wine.

There is hope for a simpler solution to H₂S problems in the future. Two companies have announced yeast strains that minimize or eliminate H₂S production. The Mauri Yeast company in Australia has introduced Maurivin in Australia, while Phytterra Yeasts in B.C. announced earlier this year that they have licensed low-H₂S yeasts developed at the University of California at Davis and will be producing Napa-S, Napa-M and California Red.