

Acid Additions through Bench Trials - by Rick Homer

Background

There is a growing trend for grape growers to leave the grapes hanging for extended periods of time to increase the aroma and flavour components in the resulting wine but this practice does leave the grapes with lower than ideal acid levels.

There are many articles written on how to scientifically measure acid in both grape must and in finished wines and how to then make acid additions to bring the must or wine up to the recommended levels. However, this does not always translate into what tastes best. The following article will show you how to set up practical bench trials samples so that you can experiment on what wine sample tastes better, allowing you to make acid adjustments based on your personal tastes.

If your wine tastes a bit flat or has some bitterness in the finish, then it will likely benefit from acid additions and the following will help you to determine if acid will help and also how much is required. Adding acid to white wine will intensify and change the aroma profile and will also add a freshness or crispness to the flavour.

Equipment required to do bench trials

- 1) 60ml syringe or other accurate measuring device to measure 50ml wine samples
- 2) 3ml syringe
- 3) 6 wine glasses
- 4) Non-permanent felt tip marker or masking/painters tape
- 5) Tartaric acid solution (see below)
- 6) Citric acid solution (see below) This is only used in white wine acid additions and then only in limited quantities

Solutions

Prior to doing bench trials you will need to make up a couple of solutions. The concentrations of these solutions correlate to 1 gram per liter in a batch of wine when 1ml of solution is added to 50ml of wine. This makes the calculations of how much acid to add to your total batch of wine very simple.

- 1) Tartaric acid solution - Add exactly 5 grams of tartaric acid to a 100ml graduated cylinder and then add warm water to bring it up to the 100ml mark. Transfer this solution to a clean 100ml bottle or other suitable storage container.
- 2) Citric acid solution - Add exactly 5 grams of Citric acid to a 100ml graduated cylinder and then add warm water to bring it up to the 100ml mark. Transfer this solution to a clean 100ml bottle or other suitable storage container.

Procedure for Red Wine

- 1) Place 50ml of wine into the 6 wine glasses
- 2) Using the non-permanent felt tip marker or masking tape write on one glass "Base wine". This will be the unaltered wine that you can compare to the other samples to ensure that you are going in the right direction with your acid additions.

- 3) Using the tartaric acid solution start by adding .5ml to one glass, 1 ml to the next, 1.5 ml to another and so on. Label the glasses with the amount of solution added.
- 4) Now the fun part, start tasting the wines starting with the base wine and then working your way from the lowest acid addition to the highest. Eventually you will find a point where the acid is too much. It is helpful to have others taste to confirm the best amount to add. For example you may eventually determine that 1.5ml is best and that 2ml is too much.
- 5) You can further refine the amount of acid that needs to be added by redoing the bench trials, starting at 1.5ml and working up in .25ml or even smaller increments based on the sensitivity of your pallet until you find the ideal amount that you like.
- 6) **NOTE:** It is generally recommended that you do NOT make any acid adjustments to your whole batch of wine on the day of the bench trials. Wait at least 1 day and then repeat the above procedure to confirm that you are in fact happy with the amount of acid that you think you would like. It is time consuming to remove excess acid from you wine.

Procedure for White Wine

- 1) The procedure for white wine is the same as the procedure for Red Wine with the option of adding a small amount of citric acid for increased freshness or complexity.
- 2) Care must be taken with how much citric acid is added. It is recommended that most of the acid that you add to white wine is tartaric acid. First find the point where the tartaric acid improves the white wine then experiment with the citric acid. The amount of tartaric acid will need to be reduced by the amount of citric acid that you add.
- 3) Citric acid will change the overall aroma and flavour profile of your white wine and sometime not for the better. As a general rule you should keep the citric acid additions under 1 gram per liter (less than 1ml in a 50ml sample), however there is nothing preventing you from experimenting.

Adding acid to your wine

Once you have determined how many ml of solution is required to improve your wine the math for how much acid to add is very simple. If you found that 1.5ml of solution worked best then that equates to 1.5 grams of tartaric acid per liter of wine. So if you have 23 liters of wine then you need to add 34.5 grams of tartaric acid to your batch of wine ($1.5 \times 23 = 34.5$).

NOTE: Tartaric and Citric acid do NOT dissolve and mix very well in a wine solution. Always mix the acid powder with a small amount of warm water prior to adding it to the wine to ensure that it mixes into the wine and does not precipitate out.