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Attention Kit Winemakers: Why Not Upgrade To Freshly Pressed White Grape Juice?

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If you are a relatively new amateur winemaker you may be growing a bit bored making wine from commercial wine kits because it may feel a bit like making a Betty Crocker prepackaged cake (see the September 2015 issue of *The Vintner's Press*). Perhaps you are ready to venture forth with a more substantial winemaking challenge and start making wine using some pure basic ingredients, such as recently crushed and pressed white grape juice. Here is an overview of how you might conduct such a fermentation.

First, Sanitize All Equipment!

At all stages in the winemaking process it is important to clean and sanitize any tools and equipment that will come into contact with the juice. Doing so will greatly minimize the presence of bacteria that could contaminate your juice/wine. If you want to create your own homemade sanitizer, simply fill a jug with a gallon of water and then add 2 teaspoons of potassium metabisulfite (SO₂) and 1 tablespoon of citric acid. If you prefer using a commercial product, try *Star-San* (CL26), which is a good all-around sanitizer with the same protective components as your homemade batch.

Receiving the Juice

There are two ways you might receive fresh white grape juice; completely frozen or simply very cold. Most likely, it will arrive in a six-gallon food-grade bucket. Sometimes SO₂ has been added to this juice prior to it being sealed in the bucket so that the natural yeasts—which were on the grape skins and are now floating in the juice—are less likely to begin fermentation during cold-storage shipment. An added benefit to mildly sulfited white grape juice is that it helps preserve low color levels (i.e., less browning). At other times no SO₂ is added because the distributor is counting on the cold-storage



Fresh white grape juice

refrigeration to sufficiently retard the natural yeasts' ability to get very far along in the fermentation process. Upon arrival, this juice will need to be unfrozen if it arrived in that condition, and/or slowly brought up to a temperature of about 60 degrees to commence fermentation. Don't rush the thawing out or heating up process because too much heat can damage the subtle flavors and aromas in the white grape juice. The watchword here is be patient!

As a side note, there is one other way you might receive white grape juice, namely juice that has been flash sterilized and aseptically packaged in a plastic bladder before being placed in a 6-gallon storage bucket. Flash sterilization kills natural yeasts in the juice. Sterile juice is not "fresh juice" and it is as stable and long lasting "on the shelf" as the tiny kiddy apple or grape juice boxes with the little straws that you see in the grocery store. Because this grape juice is sterile, it does not need to be shipped in cold-storage containers. Sterile juice has been processed, homogenized, and adjusted prior to packaging, so no acid or sugar adjustments are necessary. In essence, sterile grape juice is basically the same thing as a wine kit, except that you don't need to add any water, so we won't discuss this sort of juice further in this article.

Regardless of whether your fresh white grape juice arrives frozen or simply cold, I don't believe that there is a compelling need to add any sulfites before fermentation because the cultured yeast that you will shortly add to start fermentation will quickly overpower any natural yeast in the juice. I should mention that not all winemakers agree with this claim of mine regarding "no sulfite needed" at this point in the winemaking process, so add the SO₂ if you feel so inclined. Regardless of what you do with SO₂ at this point in the winemaking process, make sure that you stir up the juice thoroughly so that the thick sediment at the bottom of the bucket is mixed back into the juice, because that sediment is rich in tartaric acid and sugars, which are both important components for your soon-to-be wine.

You need to have an airlock on your fermenting bucket, so either place an airlock on a 6-gallon lid that you already have available for that purpose or pour the grape juice into a 6 ½ gallon carboy and place an airlock into a rubber bung and secure this into the carboy opening. Don't unduly worry about air exposure when pouring the juice from the bucket into the carboy, because a little extra oxygen at this stage actually helps with yeast growth. It's important to leave some head space in either the bucket or carboy so that during the most robust period of primary fermentation none of the fermenting juice overflows out of the airlock or actually blows



Carboy with fermenting grape juice and attached airlock.

off the airlock due to the carbon dioxide pressure inside the fermenting vessel. I speak from experience here! And that reminds me; you will likely make some mistakes the first time you make wine from fresh juice, but it most likely will still be drinkable. Oh, and that reminds me about something else; every time you make wine, you are assured of making at least one mistake, and if you are thinking right now that you will eventually make a "perfect wine" you just made your first mistake.

Preparing the Juice for Fermentation: Testing, Testing, Testing!

Before starting fermentation, do some testing on the juice. This is where you should definitely invest ahead of time in some relatively basic winemaking equipment that you may not have used when making wine from kits because everything in the kit was prepared for you.

Use a hydrometer (cost: \$10-\$15) or a refractometer (cost: \$20-\$40), to measure the sugar level of your juice, because the sugar level will determine your wine's final alcohol content. A specific gravity reading of 1.090 or a Brix reading of 20.8 will probably result in a final alcohol level in your wine of 12%, which is a typical amount of alcohol for many white wines. If the sugar level is too low ($S.G < 1.075$ or $Brix < 18.2$, estimated final alcohol content 10.3%) you can add cane sugar to raise it up to your desired level. If you determine that your juice sugar level is too high (perhaps the grapes came from the hot Lodi region of California) you can add acidulated water, which is water with tartaric acid added to it. Doing so will lower your juice's sugar level to where you desire.



Hydrometer



Acid testing kit



Refractometer

Now that I've brought up the topic of tartaric acid, you should also measure your juice's acidity (lowest kit cost: \$10) or, at least measure its pH level using a pH meter (cost: \$50-\$100). The level of acidity in your grape juice will determine how tart/sour the finished wine will be, as well as how long the wine will remain stable after bottling, so acidity readings are very important. Acidity in wine grapes is a combination of several organic acids, but tartaric and malic acid makes up the vast majority of these acids, and when making acid adjustments most winemakers add only tartaric acid. Titratable acidity, or T.A., is a measure of the actual physical grams of acid in one liter of your wine and is expressed as grams per liter of acid, or in tenths of a percent of acidity as in "0.1% total acidity." Although different white wine varieties will somewhat vary in their levels of desirable acidity, if the T.A. level in your white grape juice is below the range of .70% - .90% you should add tartaric acid to move it within this range. Regarding pH level, pH is a measure of how strong the acids are in relation to all of the other compounds in the juice or wine. The lower the value, the more strongly acidic the sample will be. So, a pH equal to 3.30 is more acidic than a pH equal to 3.60. In white wines (and juice), most pH values will be between the 3.00 and 3.50 ranges. Although both TA and pH can be used to measure and adjust acidity, they are not directly related to each other in a predictable manner. In this article I won't further elaborate on this rather complicated relationship.



pH meter

Rehydrating Your Yeast

Most instructions that come with wine kits recommend that you directly pitch your freeze-dried yeast from the packet into the juice, but I recommend that you first rehydrate your commercial yeast prior to pitching and that you provide this yeast with some nutrients to enhance

their health and vitality. When a yeast cell rehydrates, its cell wall begins swelling and gaining back its elasticity, but this rehydration process results in a percentage of yeast cells becoming damaged. Rehydrating the yeast in water at the proper temperature—read the instructions on the



Go-Ferm

yeast packet—reduces the percentage of cells that are damaged compared to when you simply pitch the dried yeast directly into the juice. Adding a small amount of yeast nutrients to the water further strengthens the yeast prior to them being introduced to the sugar-rich juice. Scott Lab's *Go-Ferm* is an effective yeast rehydration compound that contains a good balance of micronutrients. After mixing Go-Ferm into your rehydration water and adding the freeze-dried yeast, wait 20 minutes before pitching this yeasty solution into your white grape juice. It is now time to attach your airlock to the primary fermenting bucket lid and secure it to the bucket. Now you don't want any air contact with the fermenting juice, which is why you have attached an air lock to your primary fermenter.

Fermentation

During fermentation, try to keep the temperature of your fermenting juice below 70° F because a higher temperature will cause a diminishing in the white wine's aromatic qualities. If possible, maintain a fermenting temperature of 50 °- 70 °F. When the yeast has consumed one-third of the sugar, add the other one-half of the Go-Ferm yeast nutrient. At least once daily check your wine's sugar level using a hydrometer. When the sugar level reaches S.G. = 1.020, stir the bottom of the fermenting bucket to ward off a stuck fermentation. When the sugar level reaches S.G. = 0.994 fermentation is essentially complete and you can rack the new wine off its sediment and add 50 ppm of SO₂.

Bulk Aging, Cold Stabilization and Bottling

About one month following the end of fermentation, rack the wine off the fine sediment and add another 25 ppm SO₂ and continue the aging. One month later, again rack the wine and add another 25 ppm SO₂ and also stir in Super-Kleer K.C. to clear the wine.

About one week after adding the Super-Kleer solution, stir-in ½ teaspoon per gallon of potassium bitartrate (dissolved in hot water) and place the carboy in a cold area that has a temperature of about 28° F so that tartaric crystals in the wine precipitate out of solution; this process is called *cold stabilization*. Three to four weeks later, carefully rack off the sediment from the wine. If you desire a dry wine, proceed to bottling, otherwise add dissolved sugar to your preferred taste, adding ½ teaspoon per gallon of potassium sorbate to impede the yeast from consuming this sugar after bottling.



Super-Kleer K.C.

Well, that's a summary of the winemaking steps for fresh white grape juice. This is a relatively basic description of how to make wine from fresh grape juice. As you become more experienced you will add more "technical" steps to this process, but this information here will get you going on the path to making some good-quality wine that moves you beyond the realm of the more simple "Betty Crocker" kit winemaking. Good luck!