

Sauterne Recipe: Sauvignon Blanc Botrytised Juice

Paul J. Rago

Copyright 2006

Not to be reproduced in whole or in part without written permission

Sauternes are white dessert wines from the Gironde community within the Bordeaux region of France. These wines are traditionally made from Sauvignon Blanc and Sémillion grapes that have been infected with *Botrytis cinerea*, the Noble Rot. *Botrytis cinerea* is a mold. The mold spores germinate and begin to grow on the mature grape bunches when conditions are right. Wet, cool weather combined with super-saturated soil mixed with brief periods of sun and warmth is the perfect condition for the mold to thrive. As the *Botrytis* matures, it partially desiccates the grape berries. This desiccation not only increases the concentration of fermentable sugars, it also concentrates the flavors of the grapes themselves. *Botrytis* itself has flavors of apricots and pears that it lends to the resulting wine. The *Botrytis* also increases the viscosity of the wine thereby enhancing the wines' mouth feel. When produced properly, botrytised juice can result in a golden wine that is more nectar than beverage. This is a wine with perfect balance of alcohol, residual sugar and acidity – a true Sauterne.

Botrytised grapes – grapes with an infection of *Botrytis cinerea* - are

rare. A grape grower does not want to have mold growing most buyers won't accept grapes with mold, fungus or other rot. Conditions are not always ideal for *Botrytis cinerea* to affect the dessert varietals. On most varietals The Noble Rot form of *Botrytis cinerea* will not produce good wine because the molds' own characteristics can overpower that of the wine itself. But when a Sauvignon Blanc, Sémillion, Chardonnay, or White Riesling vineyard gets infected with a high percentage of *Botrytis cinerea* and conditions allow these grapes to ripen and concentrate their flavors and sugars, the resulting wines are all truly special. At the wine store, French Sauternes are very expensive and sell in ½ bottles (375 ml). Rarity, flavor, and uniqueness make the price not only worth it, but expected for a true Sauterne.

As a winemaker, I was very excited when Peter said he had found some heavily botrytised Sauvignon Blanc. We had botrytised Sauvignon Blanc with Sémillion in 2001 that made a lovely wine. The 2001 juice was about 25% infected with botrytis and at 28 brix. What Peter found in November of 2005 was juice with over 50% of the grapes

Sauterne Recipe: Sauvignon Blanc Botrytised Juice by Paul J. Rago

covered in the Noble Rot with almost 34 brix. I had sampled Sauterne style wine before and from the 2001 juice Brehm Vineyards' offered. Now, I would be able to make a true Sauterne myself.

Peter's long time friend, Robert Rex, owner and winemaker of Deerfield Ranch Winery, purchased a portion of the botrytised grapes as well as processing our 2005 Sauvignon Blanc Botrytised Juice (05SSBOT) for sale to home winemakers. Robert has had decades of winemaking experience, including dessert wines. We were all too happy to take his advice on how to best make the wine.

Before I pitched my yeast, I wanted to find out more about traditional French Sauternes. Traditionally, Sauvignon Blanc grapes infected with more than 30% *Botrytis cinerea* are harvested with at least 33-35+ brix. After fermentation, the resulting wine usually has 15-16% alcohol and 5%-15% residual sugar. Our 2005 Sauvignon Blanc Botrytis juice, as I would find out, at 33.8 brix, is basically ideal for making this style of wine.

Yet I had never made a dessert wine before. When making a Sauterne style wine, there were a few things to take into consideration. As a dessert wine, it must have residual sugar. The wine will also have high alcohol

content because of the high starting brix. My questions were, how much of the sugar should be fermented? How would I leave residual sugar? With such high alcohol content, how much residual sugar do I need for balance? How does acidity affect this balance? Do I want oak complexity? Sauterne is not your average still white wine.

Having the residual sugar, acidity and alcohol be in balance was my main concern. Robert Rex felt that the starting Total Acidity (0.60 g / 100 ml) would be too low to simply ferment that wine and hope the TA would be in balance. Botrytis also used Tartaric Acid as its fuel source. His recommendation was to raise the TA in the juice prior to fermentation to compensate. Maintaining a bright acidity also meant that we would need to prevent malolactic fermentation in the juice. Malic acid, the fuel for malolactic fermentation, would be a component in my wine and play a role in the total acidity.

In order to prevent malolactic fermentation, a dose of Lysozyme to the juice prior to adding the wine yeast is necessary. Lysozyme affects Lactic Acid Bacteria (and other bacteria) by preventing them from replicating. The bacteria cannot survive in the presence of lysozyme at high concentrations and therefore can't initiate malolactic

Sauterne Recipe: Sauvignon Blanc Botrytised Juice by Paul J. Rago

fermentation (consumption of malic acid) in your wine. For 5.25 gallons of my botrytised Sauvignon Blanc juice (1 pail) I added 8.9 grams of Lysozyme. This adds approximately 500 parts per million of Lysozyme. (Note: Lysozyme is isolated from egg whites. Do not use if allergic to chicken eggs.)

To raise the Total Acidity of the juice prior to fermentation, I added 50 grams of tartaric acid to the juice. This raises the Total Acidity of the juice from 0.60 to 0.75 grams / 100 mls.

At this stage, my juice is almost ready for fermentation. Normally, a winemaker would add the yeast and yeast nutrient directly into the juice and start fermentation. However, since I wanted to have the wine finish with residual sugar, I needed to formulate a plan on how to achieve this. One method is to allow the wine to ferment, and when the residual sugar level gets to the desired level, stop fermentation by adding a large dose of potassium metabisulfite and a dose of potassium sorbate. This combination will kill any live yeast and prevent any re-inoculation of yeast. However, this is really, really difficult to monitor because fermentation rates change with temperature and atmospheric pressure.

A second method is to reserve a portion of the juice prior to

adding yeast and freezing this as a Muté. Then, ferment to dryness the rest of the juice and add the muté back into the finished wine before bottling to achieve the level of residual sugar that you want. This method is easier than the method above, but it does take a good deal of calculation to determine how much juice to freeze. There is also a danger of getting a second yeast fermentation in your wine after adding the muté back into the wine.

A third method, which I found the easiest to monitor and execute, was to ferment the wine using encapsulated wine yeast from Lallemend. Yeast cells are encapsulated in a double layer of calcium alginate beads. The juice and all the goodies within can freely enter and leave the encapsulated beads, but the yeast itself are never free to roam in the juice. Imagine a handful of dry couscous; this is what the encapsulated yeast looks like. The idea is, you can add the encapsulated yeast to your juice within a nylon bag and allow the juice to ferment. When the brix level reaches the level you desire, pull out the bag of yeast and "Bam!" fermentation has stopped!

The type of yeast I was going to use, Lallemend's Pro-Dessert BA11 encapsulated yeast, like most wine yeast, has an upper limit for the amount of alcohol that can grow in. This level is roughly 15-

Sauterne Recipe: Sauvignon Blanc Botrytised Juice by Paul J. Rago

16% alcohol before the yeast growth is inhibited and in effect, fermentation stops. As I was working out the calculations, I realized that if I let the wine ferment until the yeast died because of alcohol concentration, I'd be left with a 15-16% wine with a little over 6 brix residual sugar. This is exactly what I was looking for in my finished wine!

Since I was not fermenting in a traditional manner, I thought I'd make the fermentation process as easy as possible for myself. I'll just ferment right inside the pail the juice comes in. Somehow, I had to submerge my bag of encapsulated yeast into my juice. First, I tied some fishing line to each side of the pail where the handle attaches. I then put 14.5 grams of Lallemant's Pro-Dessert BA11 encapsulated yeast into a nylon bag along with a few glass beads to provide weight to the bag. I used the nylon bag's tie to secure the bag to the fishing line. The glass beads helped submerge the bag and yeast into the center of the juice. (I was also sure to add a dose of yeast nutrient right into the juice.) I then cut out a hole in the lid of the pail by tracing around my air lock's rubber stopper. I then put the lid back on securely and put the airlock into the lid hole. At that point, it was just a matter of time until the wine had made itself. My goal was to keep the juice cool during fermentation. I would achieve this by leaving the wine

outside in the evening and through the night if it wasn't going to be cold. During the day, I would keep the juice in a cool spot inside. When I checked temperatures, the wine was always below 65 degrees F.

Because this was the first time I made this style of wine, I wanted to monitor the process along the way. This meant checking the brix level of the juice as it transformed into wine. The problem that I experienced is that most normal refractometers won't measure brix accurately above 25 brix or below 10 brix. A hydrometer would be my best method of monitoring the brix. However, just like a refractometer, most hydrometers don't measure above 25 brix accurately. I would have to wait a little while and allow the wine to progress before I could get an accurate measurement of brix.

After about a week of fermentation, I pulled out a sample of juice and measured the brix using a hydrometer. (Make sure to use a clean hydrometer so you can add the juice back into your fermentor.) My overall fermentation took about 3-1/2 weeks. Once I noticed that there were no bubbles in my airlock for a couple of days, I opened up the pail to take another reading. The juice was still and I was excited. My hydrometer reading was 6-1/2 brix. This meant I had fermented out a little over 27 brix and my

Sauterne Recipe: Sauvignon Blanc Botrytised Juice by Paul J. Rago

wine should be about 15.5% alcohol.

I had tasted the wine each time I tested the sugar level. This time, the wine was still. There was no dissolved Carbon Dioxide in the juice to affect the flavor. What I experienced was like no other wine before. An initial rush of apricots and pears that was bright and balanced followed with a sugary sweet finish. WOW! This wine was amazing and it basically made itself.

I removed the bag of yeast and dropped it right into the garbage. No mess. I then racked the wine into a clean carboy and added 45 mg / liter Potassium Metabisulfite and 1/6 ounce of Potassium Sorbate to prevent any further fermentation of the residual sugar. The wine would now be allowed to settle and gain some oak complexity before I would fine the wine and bottle.

Stavin, the company who makes the oak cubes I was using, recommends 2-4 ounces of oak cubes for 5 gallons of a Bordeaux style wine for at least 6 weeks. Well, my delicate Sauterne was not going to need that much. I added ¾ ounce of French Oak Cubes to give some complexity to the wine. I let the wine rest for about 3 weeks with the oak cubes. After the 3 weeks, I removed the cubes (which were still floating at the top of the wine) using a clean spoon.

It was now time to fine the wine. Up to this point, the wine looked a lot like apple juice. The yeast nutrient I added was still in suspension in the wine as well as fine particles of grapes. I mixed up a batch of fresh bentonite and added an appropriate amount to my wine, stirred it all up and walked away. After a few days, the wine had completely cleared up with all the particulate matter settled neatly at the bottom of the carboy along with the bentonite. The wine is golden, bright and delicious.

I let my wine settle an extra couple of weeks. This is ok as long as there is no air space above the still wine in your carboy. What I do if I have more airspace than I would like is to simply fill up this space with compressed carbon dioxide and nitrogen. You can find these Wine Preserver air bottles at your local wine stores. The carbon dioxide and nitrogen gas is heavier than air. It will displace the air in the carboy filling the void with the inert gases. It is an easy way to protect your wine if you can't get to bottling right away.

When I was ready to bottle, I decided that I would keep this simple too. Traditional Sauternes and other dessert wines are often bottled in 375 ml Half-Bottles and corked. At my local wine shop, Half-Bottles cost basically \$1 each. Add in a nice \$0.25 cork and my

Sauterne Recipe: Sauvignon Blanc Botrytised Juice by Paul J. Rago

5 gallons of wine just cost almost \$50 more to bottle. For a fraction of that price, I could bottle my wine in beer bottles using bottle caps. What? A fine wine in a beer bottle that has a bottle cap? That's right. Using clear beer bottles with some nice caps, I saved about \$35. Clear bottles are nice because you can see the brilliance of the wine within.

For bottling, I racked about 1/3 of the fined wine into a clean carboy and then added 45 mg / liter Potassium Metabilsulfite. I racked the rest of the wine into the carboy which thoroughly mixed the wine and potassium metabisulfite. The rest was easy. Using a bottling wand, I filled up my beer bottles, sprayed a little Carbon Dioxide / Nitrogen gas into the air space and then crimped down my bottle cap. Done.

After producing a beautiful wine from moldy grapes, I found that this wine was probably the easiest batch I have ever made. With a few simple adjustments to the chemistry prior to fermentation and using state of the art encapsulated wine yeast, this wine basically made itself. I plan on securing myself another pail of this juice before it's gone. Who knows when we'll have this opportunity again.

Step by Step

1. Add dose of Yeast Nutrient
2. Prepare Encapsulated Yeast
3. Add prepared Encapsulated Yeast to wine.
4. Monitor Wine progress by using Hydrometer
5. Once fermentation stops and you have determined the amount of residual sugar, add 45 mg / liter Potassium Metabilsulfite and 1/6 ounce Potassium Sorbate
6. Add Oak Cubes and allow to age for 3-6 weeks with oak cubes.
7. Remove Oak Cubes and add appropriate amount of Bentonite to fine wine.
8. After fining period, rack clarified wine into clean carboy
9. Add 45 mg / liter Potassium Metabilsulfite to wine prior to bottling
10. Bottle
11. Enjoy
12. Go back to Step 1 and start again!

Web References

1) Lysozyme:

<http://www.scottlaboratories.com/products/fermentation/microbialcontrol.asp#lysozyme>

2) Lallemend Encapsulated Yeast:

<http://www.lallemendwine.com>

or

http://morewinemaking.com/product.html?product_id=6185

3) Stavin Oak:

<http://www.stavin.com/barrelsystems/bans.htm>