

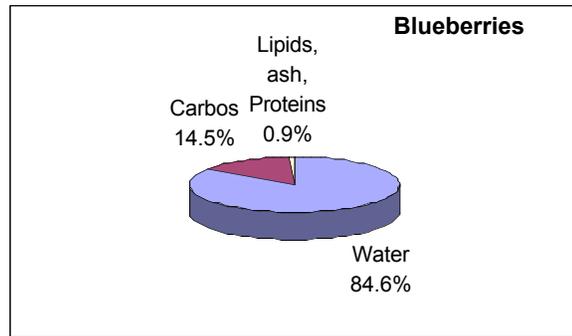
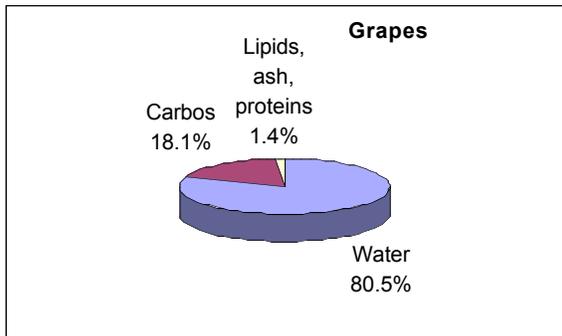
## BLUEBERRY WINE PRODUCTION

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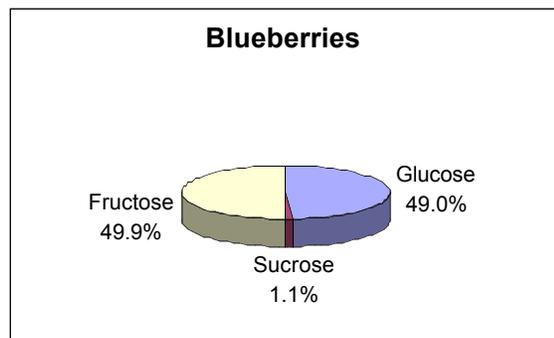
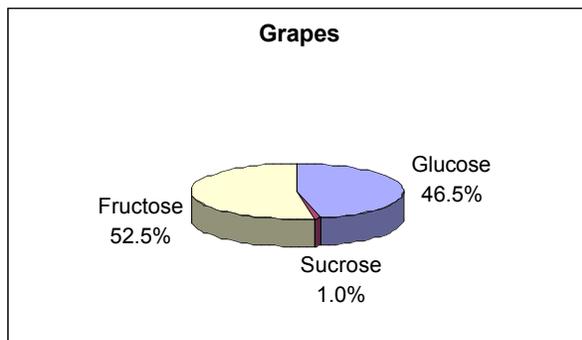
The Chester Hill Winery is the third smallest Winery in Massachusetts. We were founded in 1999 and last year we made about 900 cases of wine consisting of mostly Blueberry, with some Riesling and French Hybrid White Wines. To provide a sense of scale, we make in a year what Gallo makes in 54 seconds. But why blueberry wine, why not grapes? Aren't blueberries very different than grapes? Can blueberries create a decent wine? How is it made? Is this guy nuts?

The winery is located in the middle of blueberry country, high up in the "Hidden Hills" of western Massachusetts. Our elevation, approximately 1,370 above sea level, is too high for wine grapes and cannot guarantee, on a consistent basis, the 150 frost-free days necessary for their maturation. Within a 5-mile radius of the Winery there are approximately 50-60 acres of highbush blueberries under cultivation. As an amateur, I had been making wine for about twenty years from many different fruits including grapes and blueberries. It was found that blueberries are high in tannins and acids, similar to a red wine grapes, and when made always clarified significantly faster than the grape wines.

The USDA's Human Nutrition Center has analyzed many foods for their nutritional components including wine grapes and blueberries. If we look at these components we find that they are not that different.



Also that their constituent sugars are quite similar as well:

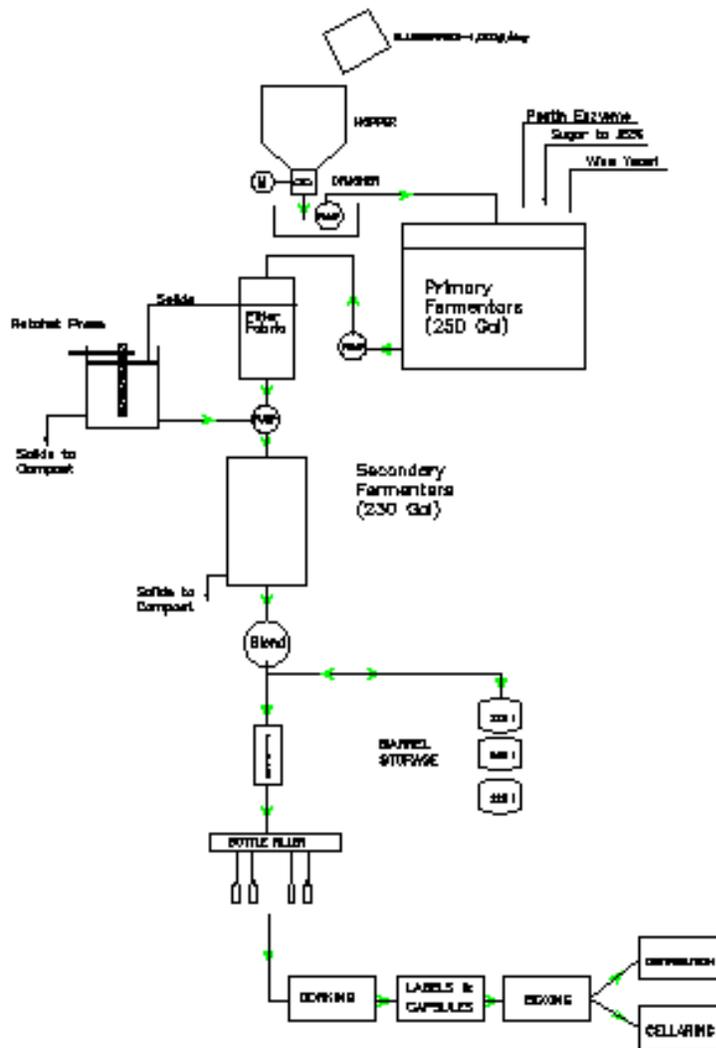


Overall blueberries have a sugar content of 8-12% while wine grapes are in the order of 20-24% sugars. The conversion of the sugars by the yeast to alcohol is approximately 1.8 to 1. With naturally occurring sugars, blueberries would yield an alcohol content of from 5-6% with grape wine in the range of 10-14%. In order to preserve wine for long periods we need the alcohol content to be above 10%, so to make a blueberry wine of about 12% alcohol we need to add sugar. Sugar can only be metabolized by yeasts in its simplest form or glucose. Therefore, in order to get at the useable glucose the yeast must “invert “ the sugars, or convert all existing forms into glucose. The major difference in grape and blueberry wine production is the addition of cane sugar at the rate of approximately 1 to 1.5 pounds per gallon. This sucrose is immediately inverted to glucose anyway so it is the writer’s contention that there is in effect no material difference.

Starting a winery under any circumstances is a difficult and a time-consuming process. Therefore creating a winery producing a relatively unknown wine, a Blueberry Wine, would, no doubt, be particularly difficult. Luckily, most everyone loves blueberries, and once having tasted the wine, we think this will apply to Blueberry Wine as well. The wine can be made into a variety of product styles ranging from a fruity off-dry after dinner wine to a full bodied dry red wine with an oak finish. We have created three unique blueberry wine styles:

1. ***OFF-DRY BLUEBERRY WINE*** – Our original pioneer wine is in the nouveau style with a minimum of vinification, thereby intensifying the fruity characteristics of the wine. This wine is targeted for quick release from the current year’s harvest, bottled in October and released in November in time for the holiday season. This is the perfect wine for ***Thanksgiving...An American Wine for an American Tradition***. This product is 12% alcohol with 1.5% residual sugar and is our "**NEW BLUE.**" It goes great with spicier foods like chili and Italian red sauces.
2. ***FULL BODIED BLUEBERRY*** - A wine vinified in the classic method and bulk aged in American oak barrels for four to six months for character addition and bottle aged for at least six months with release in mid summer after the harvest. This product is 12 % alcohol with less than 1% residual sugar and is termed our "**BEST BLUE.**" This goes well with hearty meats and cheeses including roasts, salmon, steaks and game dishes.
3. ***BLUEBERRY PORT STYLE WINE*** - An oaked blueberry wine to which grape brandy has been added to produce an alcohol content of approximately 18%. This is a sweet after dinner wine with 6% residual sugar and definite aging capabilities. This product is placed in 375-ml bottles and has been named our "**BAY BLUE.**" Serve with cheesecake or any dessert with the word chocolate in it.

The basic wine making process for both the semi-dry and the full-bodied blueberry wine is the same. The berries are hand picked to minimize stems and leaves. They are lightly crushed and deposited into the fermentation tanks where sulfur dioxide and pectin enzymes are added. Blueberries have a lot of naturally occurring pectin that needs to be removed prior to fixing the alcohol, or else clarifying problems could occur. After a “cold soak” of about a week, the temperature goes up to 80 Deg F. Then, yeast, sugar, organic chemicals to aid in fermentation are added. After primary fermentation is complete, in about two weeks, the wine is separated from the lees on a free run basis with the residual material being lightly pressed for juice extraction. At this point, the wine is returned to the storage tanks after fining material is added. The settled wine is then either placed in American oak barrels for additional aging for the full-bodied wine or filtered and placed in bottles for the off-dry type. A certain percentage of the wine is fortified with grape brandy to create the port style wine. The Winery also produces white grape wine from juice delivered from the Finger Lakes Region of New York. It is the only portion of the products produced from a non- Massachusetts source. White wine is stored in stainless steel tanks to prevent oxidation.



**SCHEMATIC DIAGRAM**

The wine making equipment consists of high density polyethylene or stainless steel fermentation and storage tanks, American oak barrels, lab equipment, press, filters, pumps, automatic filler, manual corker, labeler and bottling equipment. Outside are some storage areas for the primary fermentation tanks, crusher, wine press and portable wine making equipment. The attached sketches describe the various production areas and equipment to be utilized.

Blueberry wine is a unique product. There is a certain amount of sales resistance because the general public, and even those who should know better within the wine industry, expect it to be sweet. Blueberries are not sweet, but are sweet and tart at the same time, yielding a range of taste components that lend themselves to the production of a complex wine. Some say "It doesn't taste like blueberries." Who among us have tasted a merlot grape and can say, with any amount of certitude, that the Merlot wine tastes like the grape. Whether or not blueberry wine is worthy of your consideration, well, you may just have to try some.