

Grower Winery Relations- Consider a Wine Grape Contract that Promotes Quality Grape Production

Introduction

This is the first of what we, the Outer Coastal Plain Vineyard Association, intend to be a series of publications on enhancement of grower and winery relations (1). The goal of this document and our future publications is to promote development of good grower-winery relations in an effort to optimize incentives for both vineyard and winery to efficiently and sustainably produce high quality grapes for wine. We propose that there are two elements that are fundamental to this relationship. First both winery and vineyard need to understand the principles involved in the production of high quality grapes and wine and second there must be unfettered and open communication between both entities in order that both understand each others desires and expectations. While this document is written with the growing conditions of our AVA in mind, it is likely to be useful for many grape growing regions, particularly other maritime climate regions like much of the mid-Atlantic region. Please make use of the excellent reference material listed at the end of this document for a more complete understanding of some of the issues discussed here. Also we have attached a sample contract in the Appendix which may be of value to establish a grower winery contract. Although it is by no means a standard contract we think it can promote the the production of quality grapes for our region.

It is useful then to review some of the growing condition fundamentals that our organization has established regarding quality wine growing. We have, in conjunction with Rutgers University and with the assistance of Rowan University, established comprehensive maps for the New Jersey grape grower in addition to the Outer Coastal Plain AVA (2). These maps yield climate information such as growing degree days, growing season length, rainfall during the growing season, winter minimum temperatures as well as other useful facts. Also available through that website are maps regarding soil and geology data such as land usage, soil drainage, elevation and slope. There is also an analysis, largely based on many of the preceding factors, regarding the location and number of acres of sites which have suitable potential for grape growing in

New Jersey. For example, in our Outer Coastal Plain AVA alone we have identified over 670,000 acres which are most suitable for grape growing and over an additional 137,000 which are considered moderately suitable. At the time of writing, 2015, there are only about 2,000 acres of grapes planted in New Jersey. Clearly there is great potential to increase the supply of New Jersey grown grapes. A reasonable expectation is that with production of high quality grapes and wine we reach nearly 8,000 acres of grapes planted in the next 10-20 years, an acreage that would match that of blueberries currently under commercial cultivation in New Jersey.

Currently the supply of high quality grapes produced in New Jersey does not meet winery demand. It is fundamental that in order to increase the number of acres of grapes grown in the State, the profit margin for growing grapes must be at least that for growing other crops. Establishment costs for a vineyard are over \$12,000 per acre, much higher than other successfully grown fruits, vegetables and grain crops thus limiting the number of growers who can afford to try their hand at grape growing. On the other hand there are generally less annual input costs per acre with grapes than with most other crops, especially as they need less nitrogen and water. One can in fact argue that there is therefore less of a negative environmental impact with growing grapes than most other crops (3). Rutgers University is developing an "Enterprise Budget" that will be helpful to the wine industry in estimating vineyard and winery costs and potential income and the reader is referred to that source for up to date regional information and help with budget formation and business analysis.

What is the profit margin needed to be competitive with other crops? Many factors determine this however it is not unreasonable that currently a profit of \$2,500 per acre would be competitive. Grape production costs may run from \$2500 /acre (native varieties) to \$4,500/acre (*Vitis vinifera*) depending on variety grown and vineyard management techniques. Thus a competitive margin would require a grower income of \$5,000/acre (native) to \$7,000/acre (*V. vinifera*). This translates to a price per ton of \$625 (native at 8 tons/acre) to \$2,000 (*V. vinifera* at 3.5 tons /acre).

Relatively current prices per ton for wine grapes in states or regions near New Jersey are available (4). Note that when examining these surveys you will often find disparate average prices for a given variety in one region versus another. Generally regions are known for excellence in several wine varieties but not all. Time will help us sort this out. What we do know now is that for the wine to represent value to the consumer, the wine made from these grapes must be of superior quality. The climate and soils in New Jersey can afford significant advantages over many other growing regions in the East, and award winning wines that are highly valued can be produced in New Jersey, especially from hybrid grapes and *Vitis vinifera*. Furthermore, with modern specialized management techniques the grower can further increase the quality of grapes. It should

be noted that there is a relationship between grape and wine quality and yield per acre. In general higher tonnage can result in inferior quality however this relation holds only after a certain maximum yield is reached. That maximum yield should be determined for each variety at each growing site and with specific management techniques. For example we have shown that for Cabernet Sauvignon and Cabernet Franc that cluster thinning to 1 instead of 2 clusters per shoot does not improve wine or grape quality. Our data would suggest that there is no gain in quality when yield for these varieties is reduced to below 3 tons per acre. On the other hand most growers and wineries would agree that producing more than 5 tons per acre for these varieties would likely result in inferior quality. Occasionally special techniques such as those that increase the ratio of leaf area to fruit yield ratio through canopy division can result in high quality despite relatively high yields. (5)

An important way to distinguish our region from others is to plant and grow grapes that grow and produce well in our region and that can be sensorily unique. The winery needs an understanding of which wines it can produce well and which wines will be in demand from its customers. Determining such as these can unfortunately take years. In addition once these factors are determined and communicated to the grower it is at least another 4 years before such grapes can be planted, grown and produce grapes commercially. Over 80 varieties of grapes are growing in New Jersey. In the Outer Coastal Plain AVA the 5 most frequently grown varieties are: Cabernet Sauvignon, Cabernet Franc, Merlot, Chambourcin and Chardonnay. It is generally recognized that native varieties can be grown to produce grapes with less production costs per ton than *Vitis Vinifera*. While our organization supports the growth of native varieties if they can be grown and made into high quality wines competitive with others on the market, there are many varieties of *Vitis vinifera* that show great promise for New Jersey. Besides “French” varieties mentioned above our growers are finding success with varieties from Austria (Blaufrankish, Zweigelt, Gruener Veltliner), Spain (Tempranillo, Albarino) and Italy (Barbera, Sangiovese and Nebbiolo) (6).

We do not have data on the grapes which are in greatest demand at New Jersey wineries however the following varieties of hybrid and *Vitis vinifera* grapes can grow well at many sites in the Outer Coastal Plain SVA and have been shown to produce award winning wines:

Vitis Vinifera white- Chardonnay, Viognier

Vitis Vinifera red- Cabernet Franc, Cabernet Sauvignon, Merlot, Petit Verdot

Hybrid White- Vidal, Traminette, Vignoles

Hybrid Red- Chambourcin

Of note is the success of Chardonnay wines and Bordeaux style blends in the 2012 blinded wine tasting known as the “Judgement of Princeton” where wines from New Jersey essentially were statistically indistinguishable from some of the best French

whites of Burgundy and reds from Bordeaux. (7) Also wineries of the Outer Coastal Plain have had great success in the release of a new proprietary wine blend called "Coeur d'Est". The name means "heart of the East" to reflect the central role we feel our AVA and our region should have in production of quality wine. There are 5 grape varieties that can be included in that blend- Cabernet Sauvignon, Cabernet Franc, Merlot, Chambourcin and Syrah. No variety can make up more than 50% of the blend (25% for Cabernet Sauvignon and Syrah) and Chambourcin must comprise at least 25% of the blend.. The wines all must undergo independent testing by a third party and receive a score equivalent to a Silver or Gold Medal. For more information about this wine blend see www.coeurd'est.com (8).

Other varieties with great promise for the region include 4 imported varieties from the Trentino Alto Adige region of Italy- Casetta, a V.vinifera white native to that region as well as Sant'Irene, a proprietary trademark white V.vinifera of the OCP that was developed at the Foundation Edmund Mach (FEM) in that region of Italy. Also from the FEM, the Outer Coastal Plain Vineyard Association has imported 2 crosses of Lagrein and Teroldego that will shortly be released from quarantine for trial in our region. Furthermore trials of many different varieties by a multistate evaluation of wine grape cultivars and clones known as the NE10-20 should also provide information regarding outstanding varieties for our region (9).

Now that we have a rudimentary understanding of some of the factors involved in the production of high quality wine in New Jersey the question is what is the best way to foster the grower winery relationship towards high quality grape and wine production. We have already mentioned the keys to the relationship are understanding and communication, however perhaps equally important are trust and an appreciation of each others work, desires and needs. Agreements between winery and grower may be successful with as little as a handshake when these fundamentals are observed. However we recommend that a contract be used to facilitate and memorialize the terms of the agreement. Since the initial agreement may have been made months or years earlier, the contract is very helpful in serving as a reminder to both parties of what is expected of each, especially at busy times of harvest or festivals. In our opinion it is the superior way to foster high quality grape and wine production.(10,11)

Wine Grape Contract Fundamentals

Parties Involved- We will limit this presentation to a relatively simple two party contract since two parties are usually involved in a grape sales contract- the party selling the product and the one buying it. These two are usually separate entities, a winery and a grower. However a winery may find it useful to have a contract with its own vineyard even if it is not a separate entity, if for nothing else but to specify and record what is

needed from the vineyard and what the vineyard thinks it can produce. While a lease arrangement between winery and grower can also be very useful to promote high quality grape production it is beyond the scope of this document though we hope to present it as a future topic.

Time Period (Term) - There are several possible term periods for grape contracts. These include a very short term such as buying on the “spot” market usually to fulfill an unforeseen need of the winery or unforeseen surplus of grapes from the vineyard. Such agreements are usually made without a contract, however if the sale will be several months after the need is seen and an agreement is reached then a contract may be helpful. While it may be helpful in emergency situations, this type of sale is not conducive to high quality wine grape production and does little to foster understanding of grower and winery desires in the long run.

A common contract is of one year term, typically completed by March of the year it is to be in force. This type of contract may be recommended when there is little prior experience between buyer or seller. It is also useful when the grower has only a short (less than 5 years) experience in wine grape production or from the winery perspective when consumer demand is not well established for the winery. One year contracts can also be the basis of so called “evergreen” contracts which renew every year, perhaps with some allowable alterations in quantity desired or prices to adjust for changes in demand or costs of production. Such evergreen contracts usually have a clause that requires continuation of the agreement for one growing season after the contract is not renewed to allow both winery and grower time to make appropriate adjustments.

Perhaps the most important contract to promote long term commitment for growing high quality grapes is the multiyear contract- typically 3 to 5 years. This type of contract term usually requires both grower and winery to have an established track record in the wine industry. It is very helpful if the 2 parties have had prior buyer seller relationships, that their goals in quality wine and grape production are aligned, and that trust exists that expectations of both can be met. In our opinion this term of contract is most likely to result in sustainable production of high quality grapes and wine.

One other type of contract which is of long term and is conducive to quality grape production is that of a vineyard establishment type arrangement between winery and grower. Usually in such a contract a winery wants a specific variety or varieties of grapes to be grown at a specific location by a grower often with the financial assistance and oversight of the winery. That contract may include a lease-to-own agreement between vineyard and winery or other form of agreement in which the winery supports the grower through the establishment phase of the vineyard. This type of contract generally

requires substantial experience, trust, commitment and understanding between the parties and will not be discussed further here.

Item Bought/Sold- Clearly wine grapes are what the grower supplies and the wineries purchase, however there are generally two ways in which this can be done- a “tonnage contract” or an “acreage contract”.

Tonnage Contract- First and most commonly, the contract states the variety and quantity of grape to be bought/sold and this is often referred to as a “tonnage” contract. If the winery is buying all of the grapes of that variety produced by the vineyard then the contract will state so and no quantity need be indicated. However, if only a portion of the grapes of that variety are bought then the winery needs to indicate the quantity, usually as number of tons or number of pounds it is interested in purchasing. The winery may also wish to stipulate which specific vines (usually by row or field number) of that variety are to be bought/sold as it may be important if there are significant differences in the age of the vines, differences in variety clones or other factors which might affect quality.

Acreage Contract- A second type of contract also indicates grape variety but instead of quantity in tons or pounds of grape, the winery instead agrees to accept grapes produced by a specific acreage and therefore this type of contract is referred to as an “acreage” contract. With an acreage contract the winery assumes more risk than with a tonnage contract because it pays a set price for the grapes produced by that acreage rather than a specific quantity of grapes. There are many factors which can affect the crop yield from a given acreage, such as those related to climate and are unrelated to vineyard management practices of the grower. Such a contract should be long term and should not be entered unless the grower and winemaker have a long history of winemaking (10 or more years) with good data to support an understanding of average yields and variation in yields. Such data can aid in the development of an acreage contract which lessens risk for both winery and grower.

There are of course many potential variations of the tonnage and acreage contracts which can take into account the experience and relationship between winery and grower. We propose a variation of the tonnage contract which can be especially useful in promoting high quality grape and wine production and potentially decrease the risk of either excessive yields or very low yields. In addition to a price per ton established based on average yields and profit expectations of the grower and winery, this modified tonnage contract also specifies a maximum price and a minimum price to be paid.

Modified tonnage contract- This contract combines the aspect of paying for the quantity of grapes produced but has maximum and minimum price stipulations. The maximum

price stipulation protects the winery from too high a crop yield while the minimum price protects the vineyard from unexpectedly low yields. An example of the modified tonnage contract is attached as Appendix A.

The maximum price is determined by agreement between grower and winery as to what the maximum yield should be for production of the high quality of grapes. For example lets assume that a grower produces an average of 3.5 tons per acre of Cabernet sauvignon but both he and the winery agree that a yield maximum of 4.0 tons an acre can still produce grapes of acceptable high quality. If the sales price is \$2,000 /ton, the average expected price will be \$7,000 while for 4 tons it will be \$8,000. However if the grower produces more than 4 tons, for example 4.5 tons he will not receive \$9,000 as he would with a pure tonnage contract but rather just \$8,000. This agreement gives an incentive to the grower to limit his yield to the specified maximum level for high quality grape production. Sometimes despite his best efforts in estimating yield the yield is higher than expected, usually due to climate conditions. The year 2011 is an example of a year where heavy rainfall resulted in larger berry and cluster size that resulted in a higher yield than estimated, despite good grower management.

The minimum price is a bit more difficult to determine but 2 factors come into play regarding what we will call **crop loss** that can result in a lower expected yield with no reduction in quality.. First establishing a minimum price requires an estimate of or determination of the variation in yields from year to year. In our region it is not unusual for annual yields to vary by plus or minus 20% despite good vineyard management practices including crop estimation and cluster thinning. If the grower has many years of yield data then the variation can be predicted by the standard deviation in yield which can be calculated from the data(12). In approximately only one in six years will the yield be more than one standard deviation below the mean yield and in only one in twenty years will it be more than two standard deviations below the mean yield. While there is no advantage to producing such low yields, occasionally conditions might prevail that restrict tonnage. The year 2010 was associated with high quality grape production but the yield was often lower than estimated because the berry size and cluster weights were lower than expected due to low rainfall. If there were was no minimum price established the grower would be in effect penalized for this lower yield despite the fact that the quality of grapes is often better under such circumstances. The second factor to consider is that the grower can purchase crop insurance that covers losses if over 50% of the crop is destroyed by some calamity like cold injury, winds or hail. Such events, even with good site and variety selection may occur in one in 10 or 20 years in our AVA. A section in the contract which defines **crop loss** resulting in minimum price payment should be considered

For illustration, assume then that taking these two things into account the winery and grower agree to pay at least a specified minimum amount if at least 60% of the average crop yield is harvested. If less than that is harvested the price will revert to a price per ton harvested. Let us use the prior example of Cabernet Sauvignon with a mean production of 3.5 tons annually and also indicate that the grower has determined that the standard deviation in yield is 0.5 tons. The winery and grower agree that they will accept 3.0 tons as the minimum yield (1 standard deviation). Therefore the minimum price to be paid is \$6,000 even if the yield is less than 3 tons but more than 2.15 tons (60% of 3.5). While this puts some risk on the winery, that risk can be estimated and is relatively low. For example, less than a 3 ton yield would occur only 1 out of 6 years and less than a 2.5 ton yield would occur only 1 out of 40 years. Furthermore the winery will have to pay only the price per ton for a yield of under 2.15 ton (60%) and the grower will receive insurance compensation (if he has purchased insurance protection) when the yield is less than 1.75 tons (50% of average). Key to this type of contract is the reasonable estimation of harvest yield variation. This estimation is best obtained when harvest records exist for 10 or more years but reasonable estimates can be made with lesser harvest yield data when the deviation in harvest is small (less than 10%). Again this type of modified tonnage contract requires that the grower can estimate crops well and does appropriate shoot and cluster thinning to try to reach the target yield.

Price Determination and additional fees- The price paid for grapes produced in our region will eventually be determined by supply and demand. Both supply and demand for grapes, as for most products, are inelastic in the short term and more elastic in the long term. That means that the quantity demanded and the quantity in supply changes less in response to changes in price in the short run than in the long run. This is especially true for grapes where there is a long interval from planting to commercial production and therefore it is difficult to rapidly adjust the quantity of grapes supplied. We hesitate to suggest specific prices for grapes just as we hesitate to suggest price floors or ceilings. Establishing price ceilings prevent the market price from rising and thus a shortage results, while price floors on the other hand will result in a supply greater than demanded and thus a surplus results. However we can offer some guidelines which should be considered when establishing a price for grapes:

1. In general price paid must be in line with grower costs of production and the cost of production is related to the type and variety of grape grown. We can classify type of grape into 3 broad categories- Native (Concord, Niagara, etc.), Hybrid (Chambourcin, Vidal, etc.) and V. Vinifera (Chardonnay, Cabernet Sauvignon, etc.). The cost of production of V. vinifera is greater than that of Hybrid which in turn is greater than the cost of production of Native grapes. It would be useful if the grower has data to support the cost by type and variety as there are exceptions to this general rule.

2. A rule of thumb used for many years that can be very useful in establishing grape price guidelines is that the price per ton is 100 times the bottle sale price. Therefore if the bottle of wine sells for \$20 then the price for one ton of the grapes used to make that wine is \$2,000. This has the great advantages of linking the wine sales price to the grapes used to make it and it takes into account the value over time. In general this rule of thumb results in about 15% of the sales price of the wine going to the grower for payment of grapes provided to make it. One problem with this approach is that often the price of the wine sold from the grapes grown is unknown or hard to track as the sale may not occur until at least a year after the sale of the grapes. Furthermore the grapes sold may be part of a blended wine and this could make it difficult to determine the specific grapes contribution to the sales price. For this reason we suggest that the winery and grower discuss and estimate the anticipated bottle sales price. This can be particularly useful when the winery and vineyard are the same entity- In the situation in which the winery uses only estate grown grapes then it could pay its vineyard department 15% of its sales of wine.
3. For contract terms of greater than 1 year there should be an annual price adjustment for inflation. One of the simplest means for doing so is to use the Consumer Price Index (CPI) from one specific date to a year later for each year the contract is in force (13). Generally the CPI has been less than 3% annually however over a several year contract this can amount to a difference in price per ton that can significantly affect grower sustainability as the grower must deal with increased production costs due to inflation. While the winery usually does not adjust prices annually due to inflation it can adjust wine prices periodically based on its production costs and demand.
4. We have stated earlier but we will now repeat -Grower profits must be comparable to that of growing alternative crops. This is of fundamental importance in order to attract and retain growers in the wine industry.
5. The grower should consider charging for activities such as cold storage, delivery fees and container usage if applicable. Also if the grower is charged with periodic determination of harvest maturity parameters consideration should be given for the cost of labor and equipment needed to do so.
6. Bonuses can be paid for achievement or fees can be charged for failure to achieve certain quality parameters. This on the other hand is a very contentious issue and we would recommend not heavily basing the contract on such issues. Instead refer to quality parameters section below.
7. Similarly the grower can charge for special management practices such as shoot thinning, leaf pulling, cluster thinning, hand-harvesting, and predation prevention but we feel that for a high quality grape production contract these should be standard management practices.

Quality Standards- Some contracts use bonuses or charges if grapes meet or fail to meet certain perceived quality parameters. Instead we offer the following guidelines that should help specify the quality of grape desired from the grower.

1. Yields- As we have indicated earlier each variety may have a range reflective of high quality grapes. We encourage that a range of acceptable yields be established and if that maximum yield is exceeded then no additional payment should be made for additional tonnage exceeding that yield.
2. Rot and spoilage- There is a range of ripeness when maturity is reached and harvest is conducted and some degree of rot and spoilage may be acceptable and may not affect the quality of wine produced. However an upper limit of acceptable rot or spoilage should be established by the contract. Typically that limit is 3% but under some circumstances and with certain varieties 5% may be acceptable. Protection of grapes from disease, insects and predation is the responsibility of the grower and failure to do so can often result in grape damage or spoilage.
3. Material other than grapes (MOG)- When harvesting grapes a small amount of MOG, typically leaves and woody parts, may enter the container with the grapes. These are undesirable and can impart a “vegetal” taste in the wine made from them. A maximum acceptable amount of MOG (e.g. 1% by weight) should be established by contract whether the grapes are harvested by hand or by machine.
4. Objective chemical parameters- Some contracts use Brix alone or in combination with other parameters such as total acidity and pH in determining grape quality. For example a range of Brix levels may be defined for Brix deemed unacceptable (charge against), acceptable (agreed price) or superior (bonus paid). We caution use of such parameters for our region since Brix alone is not a good determinant of quality. Many a red wine has won awards in competition with Brix of only 19 against wines with higher Brix content. Furthermore, Brix may increase simply due to dehydration past maturity with no accompanying improvement in wine flavor or quality.

Payment Terms- The contract should indicate when payment should be made and if applicable over what period of time. Vineyard expenses are incurred throughout the year and the majority of expenses are incurred prior to harvest. Therefore wineries and vineyards with a longstanding relation may chose to spread out payments quarterly by estimation of the yield and then the final payment can be adjusted for the exact amount of the product delivered and according to contract terms. More commonly payment is made at the time of delivery of the product to the winery. Much of the winery sales occur in the last quarter of the year so some wineries may ask for 30 to 90 days to payment post delivery. Delays in payment are problematic for growers who only receive income at harvest and in our opinion do not foster good winery grower-relations.

Harvest - Establishing the date of the harvest should be relatively easy and straightforward- just choose when the grapes are at maturity and harvest them (14). Unfortunately choosing the harvest date is often difficult and may even be a source of controversy between winery and vineyard with the former often choosing a later date and the latter often advocating an earlier one. We offer the following guidelines in choosing a date of harvest.

1. Optimal harvest dates are not usually a fixed day but rather is a range of 7 to 10 days.
2. Optimal harvest intervals can be estimated by careful measurements of maturity parameters beginning up to 4 weeks prior to anticipated harvest. Such parameters include objective ones like Brix, pH, Total Acidity and more subjective or difficult to measure ones like skin color, taste and turgor; seed color, taste and texture and juice taste, as well as others. Harvest should occur when there is little likelihood in improvement in these parameters based on changes in measurements and current measures. Consideration should also be given to upcoming weather predictions such as temperatures and rainfall.
3. Varieties differ significantly in harvest dates but can often be classified into season of usual harvest- such as early, mid or late season. Having a harvest date occur for one variety may in a given season then help to determine the harvest date for a later variety.
4. It is very useful for the grower to have a data set for harvest dates and variations in harvest dates over a number of years for that variety. The grower can then establish an average date of harvest for that variety and base harvests around that date but adjust for variations in growing conditions for the season.
5. Younger plantings of a given variety (for example years 3 through 5) usually produce fruit that matures prior to older established plantings.

It is understandable that the winery may want the final determination of the harvest date due to constraints at the winery and desire for control over the quality however the winery should make that determination in conjunction with the grower who also may have constraints such as labor availability and delivery capabilities. After all it frequently is the grower who is in the best position to understand vineyard conditions that existed prior to harvest and the likelihood that grapes have reached maturity by a certain date. One suggestion is that the harvest be based on a period of time before and after the average harvest date. Whatever time interval is chosen it should represent the interval in which at least 80% of all harvests of that variety at that vineyard have taken place. Should the winery demand that the harvest date is past that interval then it should bear some of the risk associated with the additional “hang” time. The grower during this time will need to maintain diligence in preventing rot and protecting the crop from other pests and predators. Furthermore, weight loss is common with additional hang time due to

dehydration, or by loss due to wind or hail. In the contract example given in the appendix we suggest a time interval of one week before and after the average harvest date. This may need to be shortened or lengthened depending on specific varieties and conditions.

There is no simple or accurate method to calculate the loss in yield if it is agreed to harvest after the stated interval but some payment for that yield loss will be expected by the grower. One method is to first determine the yield at the average harvest date by actually harvesting a relatively large number of selected vines of that variety (for example, at least 20 vines). The weight of that harvest per vine can then be compared to the weight harvested from the same number of vines at the actual harvest date. The percentage loss in grape weight can then be used to adjust the actual tonnage of the later harvest to what it would have been had the grapes been harvested within the specified time interval. This method, used in some parts of France, has some drawbacks. First it may require the grower to store the "early" harvested sample of grapes until the winery is ready to receive the remainder of the harvest. This may represent well over 200 pounds of grapes. Also choosing the vines to be sampled may not accurately reflect the vineyard yield even with random selection since there can be local, systematic differences in yield which are unknown to the grower. Then a much more complex and larger sample may be required (15).

Other adjustment methods for late harvest include payment to the grower for additional labor, spray material and cluster weight loss due to dehydration or wind or other loss from the cluster. Finally the winery and vineyard could simply agree to increase the price per ton or pound by a specific percentage for every day that the crop harvest is delayed past the specified last date of the interval. Lets use an example of \$2,000/ton for Merlot , 1% per day late charge and an acceptable harvest interval as one week with an average harvest date of September 12th. Then for every day past September 19th the winery will pay the grower an additional 1% . If at the request of the winery the grower harvests one ton on September 15th he will be paid \$2,000 but if he harvests it on the 22nd of September he will be paid \$2,600 (basically an additional \$200/day/ton) . Additionally the grower may not wish to harvest if the date requested is far past the average harvest date (for example more than 2 weeks) and in this case there should be some language in the contract that relieves him of that responsibility.

Delivery- The winery may request that the grower deliver the grapes to the winery at a mutually acceptable time. A delivery fee based on the number of miles traveled and tonnage delivered is usually stated in the contract. The contract should specify how soon after the harvest the grapes are to be delivered to the winery or picked up at the vineyard by the winery. It may be necessary to stipulate items needed for delivery-

labor, forklift, delivery pad, but often this can be ascertained and agreed upon without mention in the contract.

The type of storage container to be used by the grower should be stated so that the winery is prepared. While grapes are frequently harvested in 20 to 30 pound lugs, both vineyard and winery may prefer delivery in larger containers. Bins of 500 to 1000 pounds are often used, especially if they are made so as to not cause breakage of the grapes. Machine harvested grapes are usually collected directly in such containers and without any stems as well. Some wineries do not have the capacity to load or unload large containers so the vineyard may need to charge more if extra handling of small containers is required. The vineyard may also charge a fee if they are providing the containers to deliver the grapes.

Conclusion

These guidelines can help vineyards and wineries with the efficient production and transfer of high quality grapes and are meant to serve as reminders of commitments particularly during the busy time of harvest. However, without understanding, communication, patience and trust in each other as well as commitment to the production of high quality grapes and wine these guidelines can not insure a successful long term relationship between vineyard and winery. Complimentary discussions are helpful in building relations. It also helps if the winery and vineyard make periodic visits to each others place of work in order to gauge progress toward the common goal of quality grape and wine production. Each vineyard and winery should determine the type and content of their wine grape contract and we hope this document can help foster good sustainable vineyard and winery relations.

Notes and References

1. For an introductory description of the Outer Coastal Plain Vineyard Association and the Outer Coastal Plain AVA , go to www.outercoastalplain.com and click on OCPVA Information- What is the Outer Coastal Plain AVA?
2. For information about the geography and climate pertinent to grape growing in N.J: The Outer Coastal Plain Vineyard Association in conjunction with Rutgers University received a specialty crop block grant for 2010-2011 from the USDA/NJDA to study grape growing potential in NJ and one of the products of that grant was the “**Viticulture Map of New Jersey**” which actually consists of multiple maps. Also listed are Grape site suitability **Quick facts** (suitability modeling facts and model results), **Quick maps** (maps relevant to NJ wine grape production) and **GIS maps** (interactive GIS based maps). This info is attainable through the OCP website listed above or through njvines.rutgers.edu.

3. In 2012 a New Jersey Wine Growers Workshop was held in conjunction with the Annual Meeting of the American Association of Wine Economists. One lecture presented there can be found at the OCP website- Economics of Grape Growing in New Jersey- The case for premium grape production (with permission, L. Coia)

4. Prices for grapes in several Eastern U.S.states can be found on the internet. Of particularly interest are the Virginia Commonwealth Grape Report(2012)and the Finger Lakes Grape Price Survey (2014). Reports from Long Island may also be available and may more closely reflect the types of varieties grown in the OCP than that of the Finger Lakes.

5. On the OCP website one can find the article “*Cluster thinning effects on crop yield and quality of Cabernet Sauvignon and Cabernet Franc grown in the Eastern United States*”. This was a 3 year study funded by a Sustainable Agriculture Research and Education grant from 2010-2012 at a local OCP vineyard.

6. Some information on grape varieties grown in the OCP AVA can be found on the OCP website.

7. Further information on the “Judgment of Princeton” can be found in the internet at several sites including Wikipedia, the AAWE and blind taste as well as others.

8. The first wines of the new wine blend **Coeur d’Est** were released in March of 2014. see www.coeurd'est.com or the OCP website for further information

9. The Outer Coastal Plain Vineyard Association has held several symposia featuring the grape varieties of Bordeaux and the Trentino- Alto Adige regions. On the OCPVA website one can find the following three presentations- Optimizing New Jersey Viticulture for Quality Wine Production- Bordeaux, an Old World Terroir with Lessons for New Jersey (2010,Coia), Part II-Selected Climate, Site and Variety Considerations (2011,Coia), The Concept of Terroir: What New Jersey can Learn From Bordeaux (2010, van Leeuwen)

10..The **Wine Grape Production Guide of Eastern North America** is one of the most important references for growers in the region. It covers fundamental aspects of grape growing and includes a well written chapter: *Grape Purchase Contracts and Vineyard Leases* by Mark Chien.

11. Much can be found on the internet regarding contracts. A useful article is “*Eight keys to a better wine grape growing contract*” published at westernfarmpress.com

A sample contract is offered by the PA wine Grape Growers Network at www.pawinegrape.com

12. If you have several years of harvest yield data you can use one of many hand calculators which have a built in Standard Deviation calculation button. You can also find sites on the internet such as www.rapidtables.com that can help with the calculation.

13. We suggest the CPI be obtained from the Bureau of Labor Statistics as the Consumer Price Index Summary. Check the percentage change for "All Items", unadjusted for 12 months ending in the month the contract is signed (usually by March of the year of the harvest).

14. Much is written about maturity determination and can be found in the **Wine Grape Production Guide** mentioned above. Also of interest may be the article entitled "*Understanding the ripening chemistry of cold hardy wine grapes to predict optimal harvest times*" by the northerngrapesproject.org

15. The grape grower must know how to estimate crops. Guidelines are suggested in the **Wine Grape Production Guide**. Also of interest may be the **Grape Growers Handbook- Crop Estimates in Vineyards** by Ted Goldhammer (Apex Publishers,2012)

Appendix A

Wine Grape Contract Modified Tonnage Contract

Vintage 2015-2019

This agreement made between Great Grapes Vineyards, hereinafter referred to as Grower, and Great Wine Winery, hereinafter referred to as Winery, who agrees to buy wine grapes at the prices and subject to the conditions of sale as set forth below. This contract is valid for a period of 5 years and is to include the 2015 to 2019 harvests.

Grower agrees to sell, and Winery agrees to buy, the total production of all of the following grape varieties. Quantities are approximate based on historical data. All grapes will be purchased at the price per pound listed for each variety.

Variety	Price (\$/lb)	Expected # pounds	Expected Total \$ Price	Minimum Total \$ Price	Maximum Total \$ Price	Average Harvest Date & Acreage
Cabernet Sauvignon	1.00	14,000	14,000	12,000	16,000	10/3 (2)
Viognier	0.93	5,000	4,650	4,000	5,400	9/10 (1)
Chambourcin	0.75	10,000	7,500	6,000	9,000	9/25 (2)
Merlot	1.05	7,000	7,350	6,300	8,400	9/12 (1)
Petit Verdot	1.10	2,000	2,200	1,980	2,420	10/5 (0.5)
Chardonnay	0.93	10,000	9,300	8,000	10,800	9/5 (2)

The price per pound model shall be used unless the total cost per variety is outside the maximum or minimum limits. If the total cost per variety is greater than the maximum, the amount paid to the grower shall be equal to the maximum cap. If the total cost per variety is less than the minimum cap, the amount paid to the grower shall be equal to the minimum cap.

Pricing per Pound

Pricing of grapes named within this contract is for the 2015 vintage. The price of each variety of grapes sold per pound will be adjusted annually using the [Bureau of Labor Statistics](#) Consumer Price Index (CPI). The price will be adjusted using this formula: Previous Years Price x Current Year Ending March 30 Avg CPI. (CPI if used as % should be multiplied x100).

Grape Quality

All Grapes delivered by Grower shall be sound, merchantable and suitable for the making of high quality wine. The above prices are based upon 3% or less MOG, rot and mildew at the time of harvest and no later than one week after average harvest date. Fruit that does not meet these criteria can be refused by the winery or renegotiated in price.

Extended time to Harvest

If extended ripening time is requested by the winery, as evidenced by harvesting of the particular grape variety more than one week past the average harvest date, the winery will accept 5% or

less MOG, rot and mildew but cannot renegotiate price. Preliminary sorting shall take place at time of picking to ensure the lowest possible percentage of unsound fruit and MOG being delivered to the winery. When extended ripening time is required the grapes will be considered sold to the winery as of the average harvest plus one week (sold date). If there is evidence of rot, dehydration or other grape loss after the "sold date" then the total weight used in determining the sale price for these "late harvest" grapes will be determined by the actual harvest weight multiplied by the ratio of cluster weight at the average harvest date divided by the actual cluster weight at harvest. Cluster weight sampling will be performed on a sufficient number of clusters to ensure an accuracy of 1% in estimating the true cluster weight on the dates of sampling. If there is rot or dehydration during the extended harvest time, then the sale price as calculated by sampling should not be less than that calculated by actual harvest weight and price per ton. If there is no rot or dehydration during the extended harvest time then the sale price as calculated by sampling should not be more than that calculated by actual harvest weight and price per ton.

Crop Loss

A crop loss event is defined as the grower not being able to deliver at least 60% of the expected fruit for a given variety except if such a loss occurs one or more weeks after the average harvest date. In the event of a crop loss event the winery shall purchase any sound, quality fruit for that variety at the per ton pricing as described in this contract and the minimum cost cap shall not apply.

Harvest, Delivery and Transportation

Grower and Winery will cooperate to determine harvest dates however the winery shall have the final decision on when to pick. The harvest dates are based on a combination of factors: the relationship of brix (sugar count), pH, and TA (total acidity), flavor, overall condition of the Grapes, upcoming weather factors, tank availability at the Winery's premises, and prior grape delivery schedules. Grower agrees to report to Winery at regular intervals as to the progress and condition of the Grapes. Sampling and lab testing in these reports shall be the responsibility of the grower and will consist, at a minimum, of brix, TA, and pH. Grower will charge \$50 per test if more than 4 tests are requested prior to harvest. The grower shall to the best of their ability protect the grapes from damage until delivery to the winery. Winery will supply containers for delivery of the harvest. Grower will charge \$50 per ton of grapes delivered up to 30 miles..

Winery is responsible for the Acceptance, Delivery and Transportation to the Winery of these grapes which shall take place as soon as possible after harvest. Grapes not accepted and transported by Winery within 24 hours of harvest shall be held in cold storage up to 1 ton for no more than 3 days by the Grower if space exists in Grower's cold storage unit. Winery will receive Grapes only in half-ton capacity boxes provided by Winery or in boxes of similar capacity and dimensions unless Winery and Grower agree on other means of holding grapes.

Payment

The purchase price of the grapes shall be payable upon delivery.

Modifications

Only by mutual consent of both Winery and Grower can this contract be modified or amended during the term of the contract.

Date

Big John
Great Wine Winery, LLC

Date

Slim Jim
Great Grapes Vineyard ,LLC