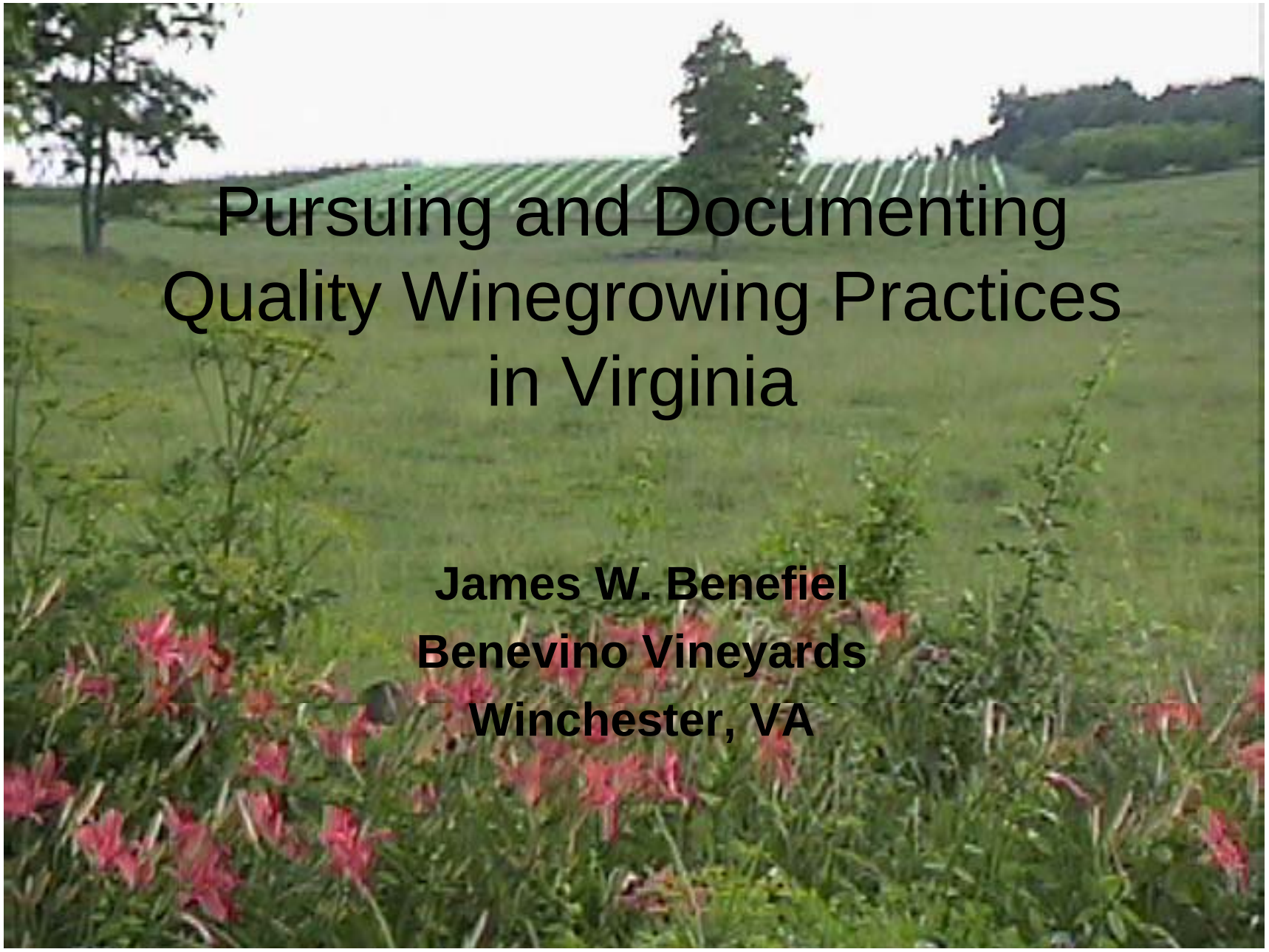

Pursuing and Documenting Quality Winegrowing Practices in Virginia

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Benevino Vineyards

Winchester, VA

Quality Virginia viticulture

"Wine is made in the vineyard."

- **Then why do we see:**
  - **Virginia-grown grapes largely contracted as a commodity (dollars per ton), with little consideration for superior quality?**
  - **Some Virginia wineries purchasing bulk juice and grapes from California because that's cheaper than Virginia grapes?**

- **However, there is some movement:**
  - **VWA agreed this year to require at least 95% Virginia-grown grapes in the Governor's Cup Competition.**
  - **VWA is developing a wine quality program to assure consumers of the product in the bottle.**
  - **Some recognized vineyards are contracting with wineries on the basis of:**
    - **per-acre or**
    - **percent-of-bottle-price .**

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Overcoming inertia

- **Winemakers have told me that purchasing Virginia winegrapes can be a gamble.**
  - **We don't have a long legacy of recognized producers. Many growers don't come from established farming families.**
  - **We don't have an extensive training syllabus or apprenticeship for new growers.**
  - **We haven't developed long-term commercial relationships.**

- **Over the past year, I have been working with several groups to draft a program of quality winegrowing that would:**
  - **Identify practices that consistently lead to superior quality grapes**
  - **Recognize growers who commit to such practices**
  - **Focus initial efforts on those varietals that have performed well in Virginia.**

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What are Benevino's qualifications?

Corcoran (then Waterford) Vineyards 2005 Cab Franc – Gold, 2007 Virginia State Fair; Silver, 2006 American Wine Society (no Va CFs earned gold)

Gadino Cellars 2006 Cab Franc – Silver, 2006 American Wine Society

North Gate Winery 2007 Cab Franc - Gold, (first ever Va CF) 2008 American Wine Society; Gold, 2009 Eastern Seaboard Competition

Fabbioli Cellars 2007 Cab Franc- Gold, 2009 Virginia Governor's Cup

Sunset Hills 2007 Cab Franc Reserve - Double Gold, Best in Category, 2009 Eastern Seaboard Competition

Of the five Cab Franc wines winning Gold in the 2009 Virginia Wine Classic, four sourced Benevino Vineyards fruit.

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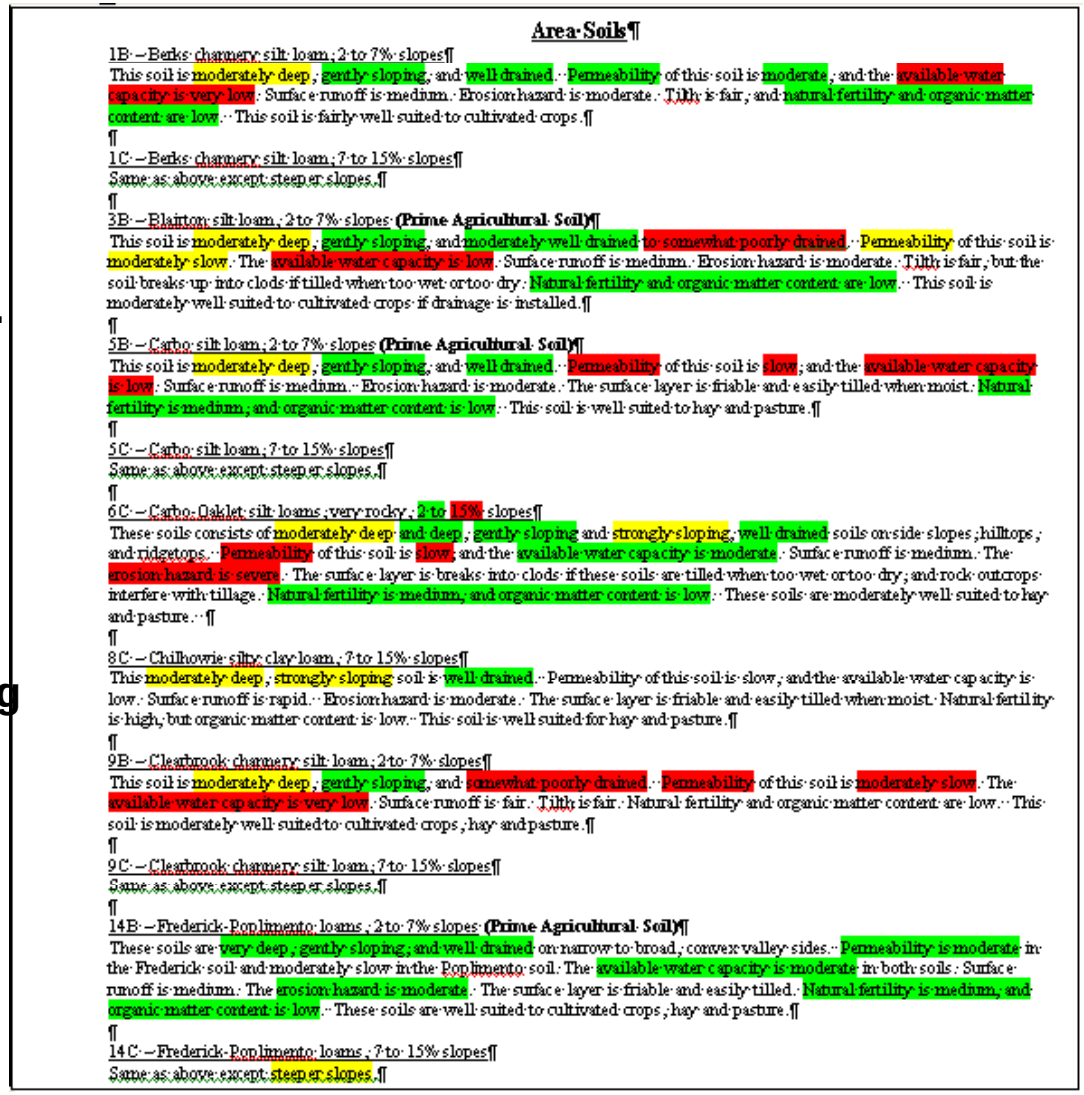
What did we do to contribute to these wines?

- **Our initial efforts at Benevino Vineyards consisted of considerable research into climate, soil, varietals, and techniques to:.**
  - **Identify quality sites (soil depth and drainage—air and water, pH).**
  - **Match variety to climate (GDDs, growing season length, aspect).**
  - **Select rootstock for soil (depth, drainage, organic matter, nutrients)**
  - **Determine trellis and vine spacing for vine vigor (soil, variety, rootstock)**
  - **Plan and coordinate vineyard practices with weather.**



Area Soils

1B—Berks channery silt loam, 2 to 7% slopes

This soil is moderately deep, gently sloping, and well drained. Permeability of this soil is moderate, and the available water capacity is very low. Surface runoff is medium. Erosion hazard is moderate. Tilth is fair, and natural fertility and organic matter content are low. This soil is fairly well suited to cultivated crops.

1C—Berks channery silt loam, 7 to 15% slopes

Same as above except steeper slopes.

3B—Blairton silt loam, 2 to 7% slopes **(Prime Agricultural Soil)**

This soil is moderately deep, gently sloping, and moderately well drained to somewhat poorly drained. Permeability of this soil is moderately slow. The available water capacity is low. Surface runoff is medium. Erosion hazard is moderate. Tilth is fair, but the soil breaks up into clods if tilled when too wet or too dry. Natural fertility and organic matter content are low. This soil is moderately well suited to cultivated crops if drainage is installed.

5B—Carbo silt loam, 2 to 7% slopes **(Prime Agricultural Soil)**

This soil is moderately deep, gently sloping, and well drained. Permeability of this soil is slow, and the available water capacity is low. Surface runoff is medium. Erosion hazard is moderate. The surface layer is friable and easily tilled when moist. Natural fertility is medium, and organic matter content is low. This soil is well suited to hay and pasture.

5C—Carbo silt loam, 7 to 15% slopes

Same as above except steeper slopes.

6C—Carbo-Oaklet silt loams, very rocky, 2 to 15% slopes

These soils consists of moderately deep and deep, gently sloping and strongly sloping, well drained soils on side slopes, hilltops, and ridgetops. Permeability of this soil is slow, and the available water capacity is moderate. Surface runoff is medium. The erosion hazard is severe. The surface layer is breaks into clods if these soils are tilled when too wet or too dry, and rock outcrops interfere with tillage. Natural fertility is medium, and organic matter content is low. These soils are moderately well suited to hay and pasture.

8C—Chilhowie silty clay loam, 7 to 15% slopes

This moderately deep, strongly sloping soil is well drained. Permeability of this soil is slow, and the available water capacity is low. Surface runoff is rapid. Erosion hazard is moderate. The surface layer is friable and easily tilled when moist. Natural fertility is high, but organic matter content is low. This soil is well suited for hay and pasture.

9B—Clearbrook channery silt loam, 2 to 7% slopes

This soil is moderately deep, gently sloping, and somewhat poorly drained. Permeability of this soil is moderately slow. The available water capacity is very low. Surface runoff is fair. Tilth is fair. Natural fertility and organic matter content are low. This soil is moderately well suited to cultivated crops, hay and pasture.

9C—Clearbrook channery silt loam, 7 to 15% slopes

Same as above except steeper slopes.

14B—Frederick-Poplimento loams, 2 to 7% slopes **(Prime Agricultural Soil)**

These soils are very deep, gently sloping, and well drained on narrow to broad, convex valley sides. Permeability is moderate in the Frederick soil and moderately slow in the Poplimento soil. The available water capacity is moderate in both soils. Surface runoff is medium. The erosion hazard is moderate. The surface layer is friable and easily tilled. Natural fertility is medium, and organic matter content is low. These soils are well suited to cultivated crops, hay and pasture.

14C—Frederick-Poplimento loams, 7 to 15% slopes

Same as above except steeper slopes.

Quality Virginia viticulture

Benevino contributions (cont.)

Once operational, we focused efforts on:

- **Standard/contingent sprays (rain since, visual treks)**
- **Pruning (node density, bud fruitfulness, shoot growth)**
- **Shoot thinning (density, length)**
- **Fertilizing/nutritional supplements**
- **Shoot positioning**
- **Visits from winemakers during the growing season**
- **Leaf pulling**
- **Irrigation**
- **Fruit dropping/green harvest**
- **Fruit chemistry**
- **Consultations with winemakers on picking decisions.**

For each of the efforts above, the practices highlight the best alternatives identified through research to date.

Quality Virginia viticulture

Why should growers care?

- **Other than yield (of minimally acceptable fruit), what are the revenue drivers under your current contracts?**
  - **If you're being paid per ton of grapes, why wouldn't you turn on your irrigation system 2-3 days before harvest? Perhaps a better practice would be to be paid on pounds of sugar (a gross measure of ripeness), rather than per ton of grapes, (a measure of yield, not quality).**
  - **If premium wine truly is made in the vineyard, winegrapes shouldn't be priced as a commodity. We adopted the tag line "Premium Wine Grapes" because we felt that more value is created by improving quality than by increasing yield.**
  - **We marketed the ability of client winemakers to increase their prices for premium wines. At our suggestion, several wineries initiated reserve categories for these wines, with a price premium of $4 per bottle. Subsequently, we've seen price premiums up to $10 per bottle.**

Quality Virginia viticulture

What's in it for the grower?

- **At Benevino, we do accept price-per-ton contracts (our reputation isn't yet big enough to force whole scale change in contracting practice), but**
  - **we assign specific blocks to client wineries and**
  - **invite each winemaker to visit his/her block twice during the growing season.**
  - **Also, at a minimum, we insist on a bonus provision for superior quality.**
  - **In return, we accept penalties for poor performance.**

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Isn't price a zero-sum game?

- **In general, grapes represent about 10% of the bottle price.**
  - **If the winemaker can charge $4 more per bottle ($2 at wholesale), he/she can afford a few dimes to the grower who made it possible. (Yes, the winemaker crafted the creation, which is why he gets the lion's share of the premium.)**
  - **An additional 20 cents per bottle is about $167 per ton. That's about 10% of your revenue, but 40% of your profit for many vineyards.**
  - **If you know that a second (or third) passage through a vineyard block is likely to improve ripeness or flavor profile by a perceptible amount enabling the winemaker to raise the wine's price (and your revenue), wouldn't you complete that practice?**

Quality Virginia viticulture

OK, what are the details?

- **The quality vineyard program we have outlined consists of four basic parts:**
  - **Registration**
  - **Certification**
  - **Verification**
  - **Harvest Specifications.**

Quality Virginia viticulture

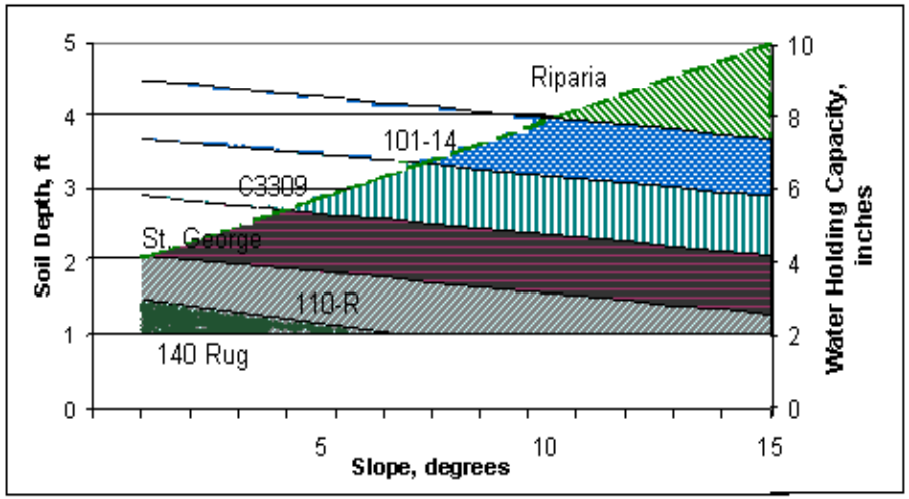
Registration

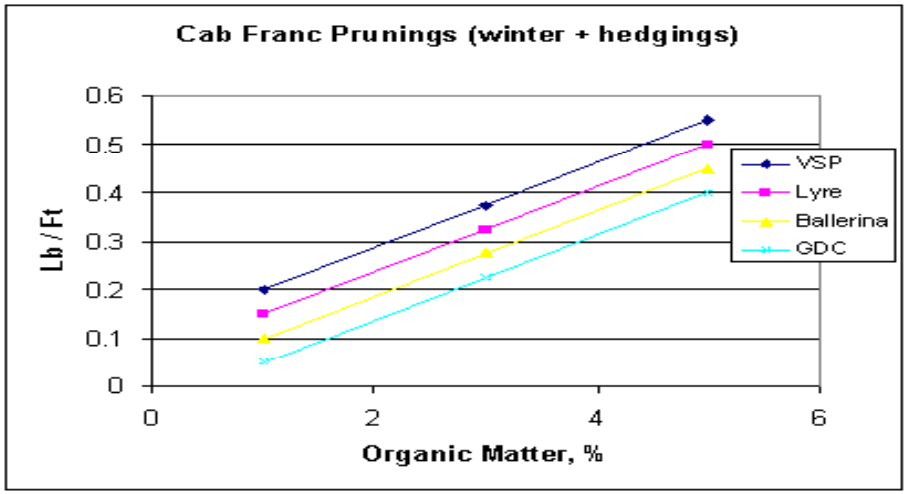
Registration allows for tracking participation, and building a database of successful activities.

The participants commit to information development and sharing—of site characteristics as well as vineyard practices, as we recognize that not all the quality factors have yet been identified.

World winegrowing regions are several centuries of practical knowledge ahead of us, and we don't have that long to catch up.

For quality Virginia wine, "a rising tide lifts all boats."





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Certification

- **Quantifiable, so that they are *defensible*, *replicable*, and *verifiable*.**

  ***Defense* of the practice initially follows from published research, but we may establish our own experiments. These will have expert oversight to ensure that our findings are defensible and have maximum grower applicability.**

  A *replicable* standard is implementable by multiple growers. To illustrate, a practice defined as 5 to 8 cm2 of leaf per gram of fruit is quantifiable, but hardly implementable by vineyard labor.

  A *verifiable* measure can be confirmed by an independent entity walking the vineyard.

Quality Virginia viticulture

Certification (cont.)

- **Growers will be asked to submit a spray plan before the season. That plan will be reviewed by a trained professional for reasonableness. Because sprays are subject to weather, each grower will be required to submit his actual schedule at the end of the season.**

- **Practices have been drafted so that they can be implemented with a minimal questions or interpretations. Growers will be asked to certify that they have performed the practices at the schedule on the checklist.**

- **The practices checklist cites activities that are time-dependent based on vine growth (e.g., bud break, 80% bloom, 50% veraison). Thus, they can apply to multiple varieties. Varietal specific conditions (e.g., the amount of leaf pulling) are listed on a separate sheet.**

Quality Virginia viticulture

Verification

- **Because different varieties require more or less accumulated heat (or days) during a growing season to achieve full ripeness, each variety may require specific actions to promote full ripeness.**
  - **Merlot may require maximum specifications for yield,**
  - **Cabernet Franc may require thinning of shoulders.**

  Thus some practices are specific to variety.

- **As noted above, because the practices are quantifiable, they can be verified. In addition to certifying practices, program participants agree to independent verification of the listed activities.**
  - **This encourages a vintner to establish new contract relationships, because the intended practices can be verified,**
  - **It provides for resolving disputes between grower and winemaker.**

Quality Virginia viticulture

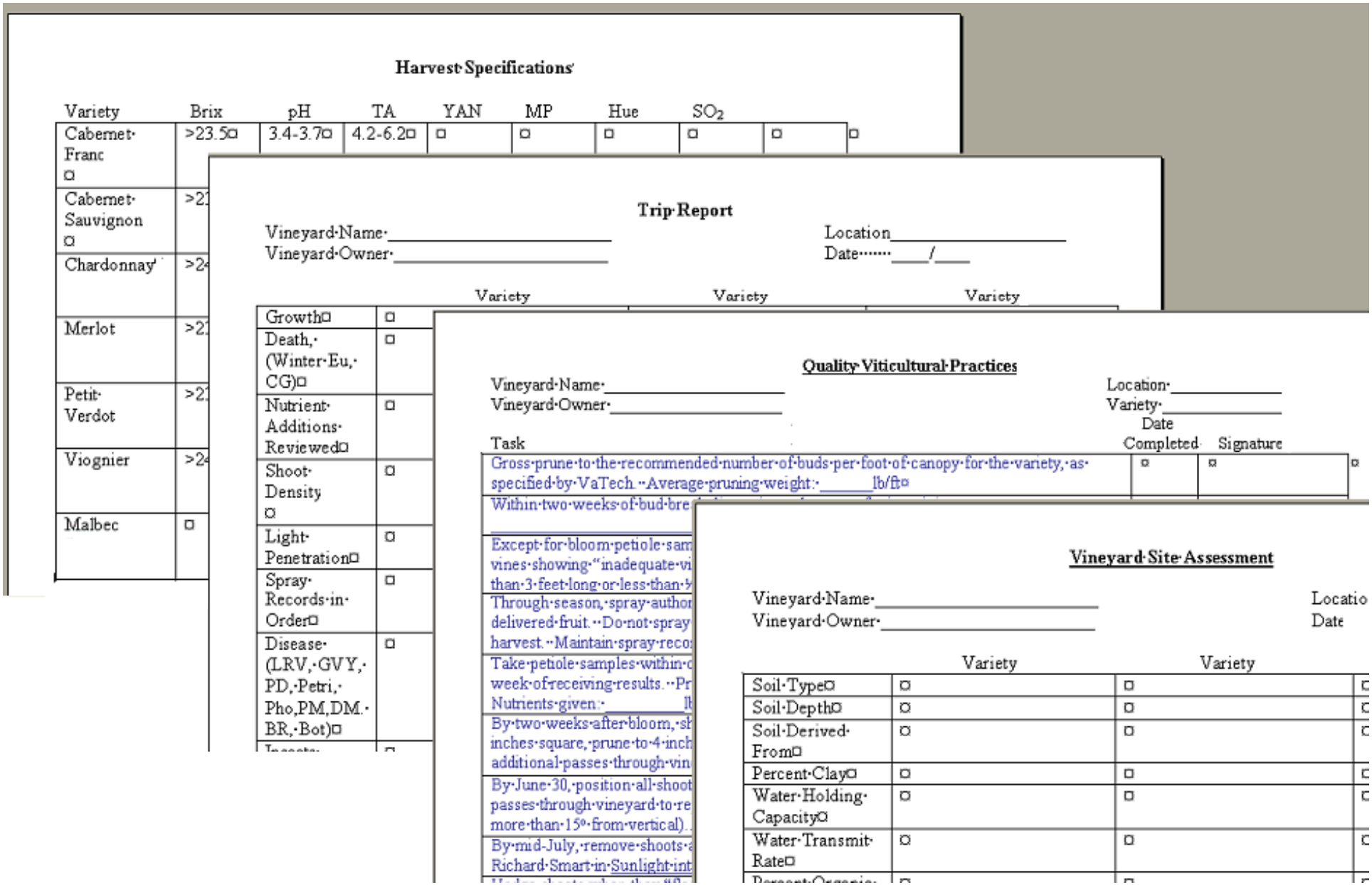
Harvest Specifications

At the end of the season, the proof of the grower's efforts will be measured by grape chemistry metrics denoting ripeness; e.g., Brix, acid, and pH. These measures are included to ensure that each grower has reasonably matched variety, rootstock, and trellis to his site. For example, no amount of vineyard practices might produce quality Cabernet Sauvignon on a site receiving only 160 frost-free days (or less than 2800 growing degree days) per season.

In addition, any quality program must rule out basic flaws, such as YAN, SO2, or MP in the lot delivered to the winemaker. The current practices are designed to minimize currently identifiable flaws. As the programs progresses, it is expected to include appropriate techniques to eradicate flaws that do arise.

Quality Virginia viticulture

checklists for documentation



Harvest Specifications

Variety	Brix	pH	TA	YAN	MP	Hue	SO_2		
Cabernet Franc	>23.5	3.4-3.7	4.2-6.2						
Cabernet Sauvignon	>2								
Chardonnay	>2								
Merlot	>2								
Petit Verdot	>2								
Viognier	>2								
Malbec									

Trip Report

Vineyard Name: _____ Location _____

Vineyard Owner: _____ Date ____/____

	Variety	Variety	Variety
Growth			
Death, (Winter Eu, CG)			
Nutrient Additions Reviewed			
Shoot Density			
Light Penetration			
Spray Records in Order			
Disease (LRV, GVY, PD, Petri, Pho, PM, DM, BR, Bot)			

Quality Viticultural Practices

Vineyard Name: _____ Location: _____

Vineyard Owner: _____ Variety: _____

Task	Date Completed	Signature
Gross prune to the recommended number of buds per foot of canopy for the variety, as specified by VaTech. Average pruning weight: _____ lb/ft		
Within two weeks of bud bre		
Except for bloom petiole sam vines showing "inadequate vi than 3 feet long or less than		
Through season, spray author delivered fruit. Do not spray harvest. Maintain spray reco		
Take petiole samples within week of receiving results. Pr Nutrients given: _____ l		
By two weeks after bloom, sh inches square, prune to 4 inch additional passes through vin		
By June 30, position all shoot passes through vineyard to re more than 15° from vertical)		
By mid July, remove shoots Richard Smart in Sunlight int		

Vineyard Site Assessment

Vineyard Name: _____ Locatio

Vineyard Owner: _____ Date

	Variety	Variety	
Soil Type			
Soil Depth			
Soil Derived From			
Percent Clay			
Water Holding Capacity			
Water Transmit Rate			

Quality Virginia viticulture

Vineyard Site Registration

Vineyard Name _____ Location_____

Vineyard Owner _____ Date ____/____

	Variety	Variety	Variety
Soil Type			
Soil Depth			
Soil Derived From			
Percent Clay			
Water Holding Capacity			
Water Transmit Rate			
Percent Organic Matter			
pH			
Minor Nutrients			
Slope, Percent			
Slope Aspect			
Frost Pockets/ Drainage Probs			
Average GDDs			
Average Season Length			
Average Winter Low Temp			
Record Winter Low Temp			
Average Yearly Rainfall			

Quality Virginia viticulture

Quality Viticultural Practices Certification

Vineyard Name _____ Location _____

Vineyard Owner _____ Variety _____

Task	Date Completed	Signature
Gross prune to the recommended number of buds per foot of canopy for the variety, as specified by VaTech. Average pruning weight: _____lb/ft		
Within two weeks of bud break, list estimated extent of winter injury:_____ _____		
Except for bloom petiole samples, limit any fertilizer addition to ½ cup of nitrogen to those vines showing "inadequate vigor" from prior year (more than ¼ of last year's shoots less than 3 feet long or less than ½ inch diameter).		
Through season, spray authorized chemicals as necessary to achieve rot specifications in delivered fruit. Do not spray sulfur within 60 days or copper within 45 days of (anticipated) harvest. Maintain spray records for inspection during visits.	N/A – other records	
Take petiole samples within one week of bloom and add recommended nutrients within one week of receiving results. Provide a copy of petiole results. Nutrients given: _____lb/A, _____lb/A, _____lb/A		
By two weeks after bloom, shoot thin to 1 shoot per leaf dimension; i.e., if average leaf is 4 inches square, prune to 4 inch separation of shoots. By July 20, and August 10, make additional passes through vineyard to reposition and rethin shoots as necessary		
By June 30, position all shoots vertically. By July 20, and August 10, make additional passes through vineyard to reposition shoots as necessary (fewer than 1 shoot per 3 vines more than 15º from vertical)..		
By mid-July, remove shoots as necessary to obtain light penetration recommended by Dr. Richard Smart in Sunlight into Wine.		
Hedge shoots when they "flop over" and begin to shade the older end" of the shoot. No more than ¼ of shoots are 25% longer than the contained space. Repeat as necessary.		
By August 1, pull (up to 3) leaves on the east side of the canopy to provide ventilation to the clusters. Based on specific experience with the variety in that vineyard (especially in wet years), may wish to pull leaves on the west side also by veraison.		
At veraison, thin fruit so that adjacent clusters don't touch horizontally (<5%). Remove any clusters where shoot is not at least 3 feet long. Remove any shoots less than one foot long. Record estimate of shot berries: _____%		
If veraison (as measured by "coloring up") lasts more than one week, remove pink		

Quality Virginia viticulture

Trip Report

Vineyard Name _____ Location_____

Vineyard Owner _____ Date ____/____

	Variety	Variety	Variety
Growth			
Death, (Winter Eu, CG)			
Nutrient Additions Reviewed			
Shoot Density			
Light Penetration			
Spray Records in Order			
Disease (LRV, GVY, PD, Petri, Pho,PM,DM. BR, Bot)			
Insects (GBM, root borer, JB, phyll, mealy, bees)			

Quality Virginia viticulture

Why might growers join?

- **Because you are probably already doing most of these activities already,**
  - **So additional effort should be small AND**
- **To document superior fruit**
  - **To avoid disputes**
  - **To show value to wineries.**

Quality Virginia viticulture

What are the costs?

- **Out-of-the gate cost limited to verification and fruit testing**
  - **Fruit testing to be accomplished between grower and winery during season.**
  - **Official harvest test to be sampled by verifier, sent to independent lab.**
  - **Verification cost expected to be limited to travel if Extension Agents used, else also verifier's time.**
- **If sufficient grower interest and extension agent commitment develops, would be looking to VDACS for admin funding.**
- **Expect first year to be ~$100/vineyard—goal: recoup that in bonus payments from winery clients.**

Quality Virginia viticulture

Next Steps

•We're looking to pilot the program this year for 2 varieties—

- **•Cabernet Franc**
- **•Viognier**

as representative of Virginia's capabilities. If this proves out, we would extend to other well-recognized varieties in future years.

•Need a minimum of 5 growers (and their winery clients) for each variety, to replicate our activities.

Quality Virginia viticulture

Questions?

Contact me at: jwbenefiel@aol.com

703-729-4609

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Thank You