

Choosing grape cultivars



UNIVERSITY OF GEORGIA
EXTENSION

Cain Hickey





If it's *easy* to grow in humid climates (southeastern US), people likely don't know about it.

- **Well known:**

- Cabernet Sauvignon

- Well known, can be very difficult to ripen

- Chardonnay

- Well known, extremely susceptible to spring frost and bunch rots

- **Good alternatives:**

- Cabernet franc, Petit Verdot

- Maybe lesser known, very adaptable and consistent fruit quality

- Chardonee, Vidal blanc

- Lesser known, but consistent yielders of high-quality fruit



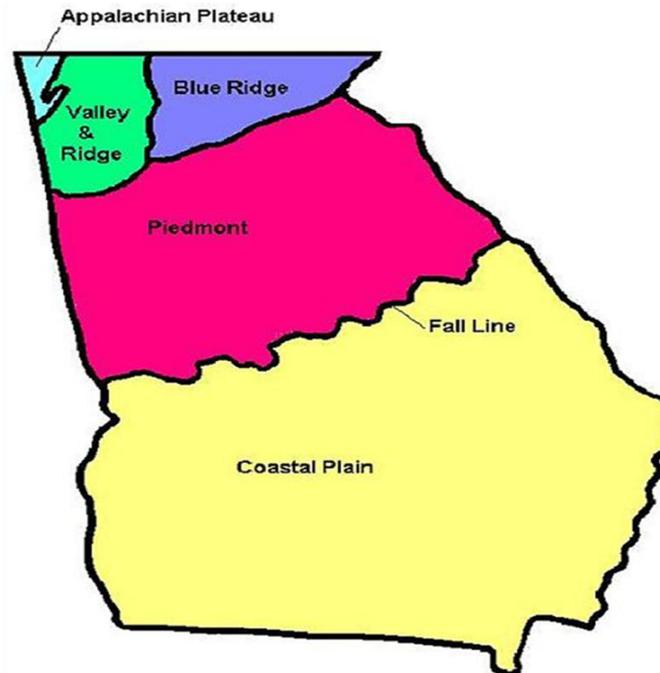
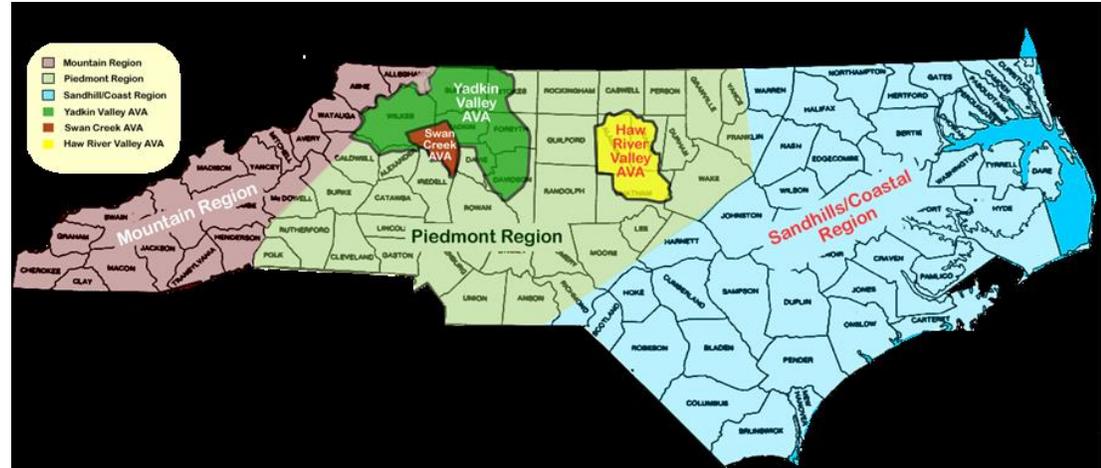
Thought process when choosing cultivars

- 1. Will it “work” in the vineyard?
 - Does it survive (cold, Pierce’s disease)
 - Does it produce crop (frost)
 - Does it produce an *economical* crop?
 - Is it RELATIVELY disease tolerant?
 - Does it ripen to acceptable composition (primary, secondary)?
- 2. Can I sell it?
 - Single “varietal” wine
 - Blend



How will I know if it will work in my vineyard?

- Talk and network with your neighbors
 - They want you to succeed
- Contact local / statewide extension personnel
 - They also want you to succeed
- Acknowledge the limitations of your site
 - Topography, soil, weather, etc.



Will it work in the vineyard?

- If it won't work, then don't grow it
 - Purchase cultivar from other regional grower(s), if possible...
 - It's your business...
- If it will survive and grow, that doesn't mean you should try to grow it...
 - Vignoles, Chancellor, Baco noir
 - Cabernet Sauvignon, Viognier, Riesling, Sauvignon blanc

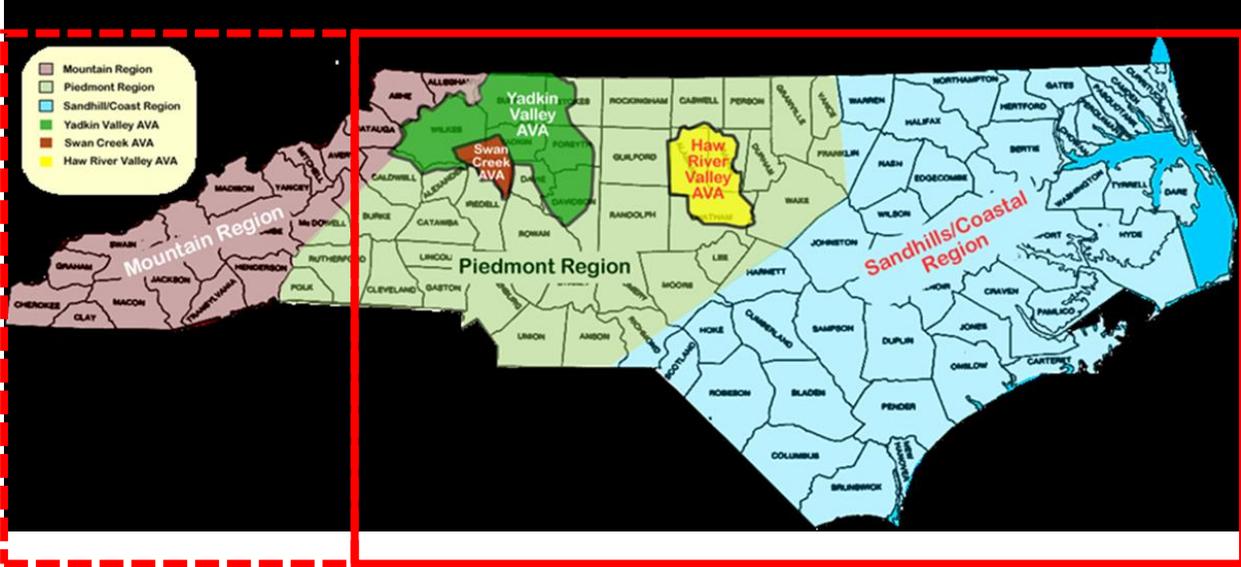
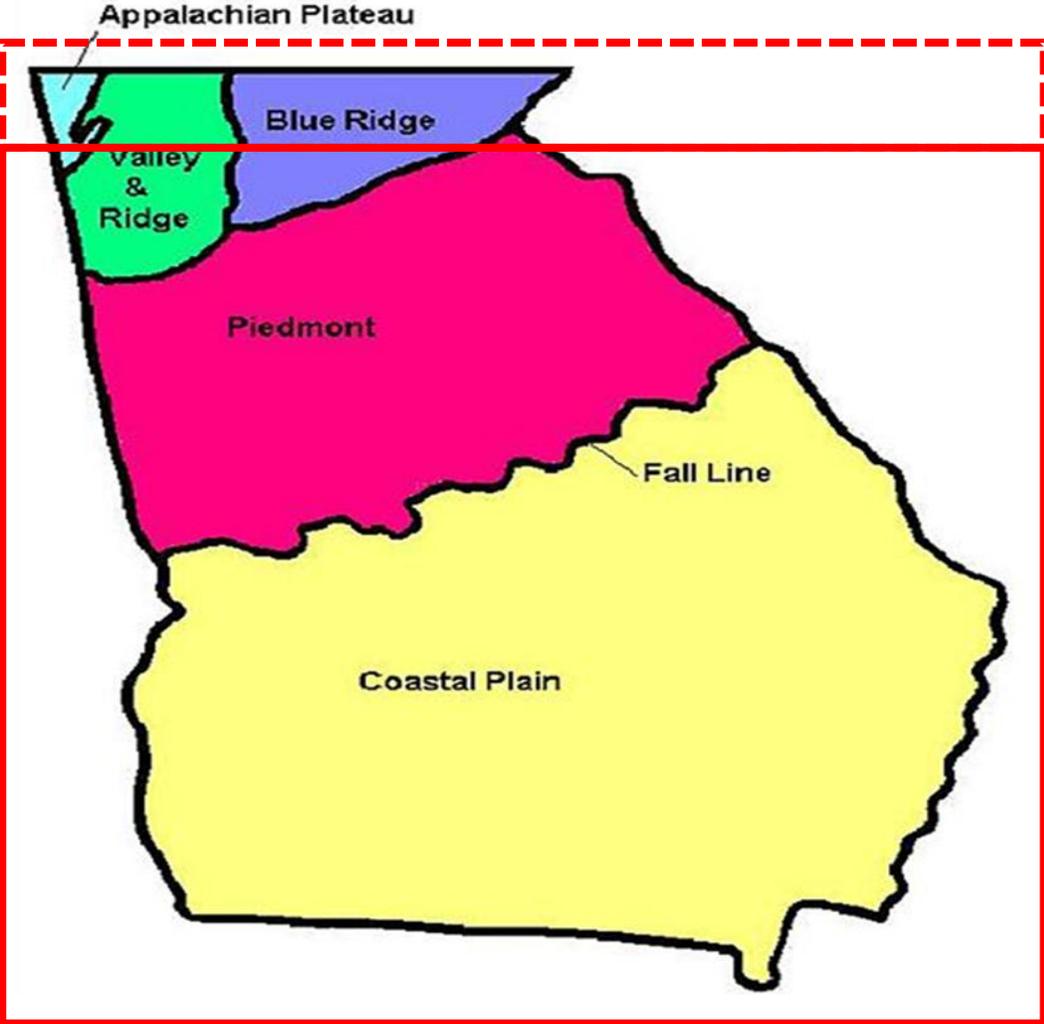


Some cultivar considerations

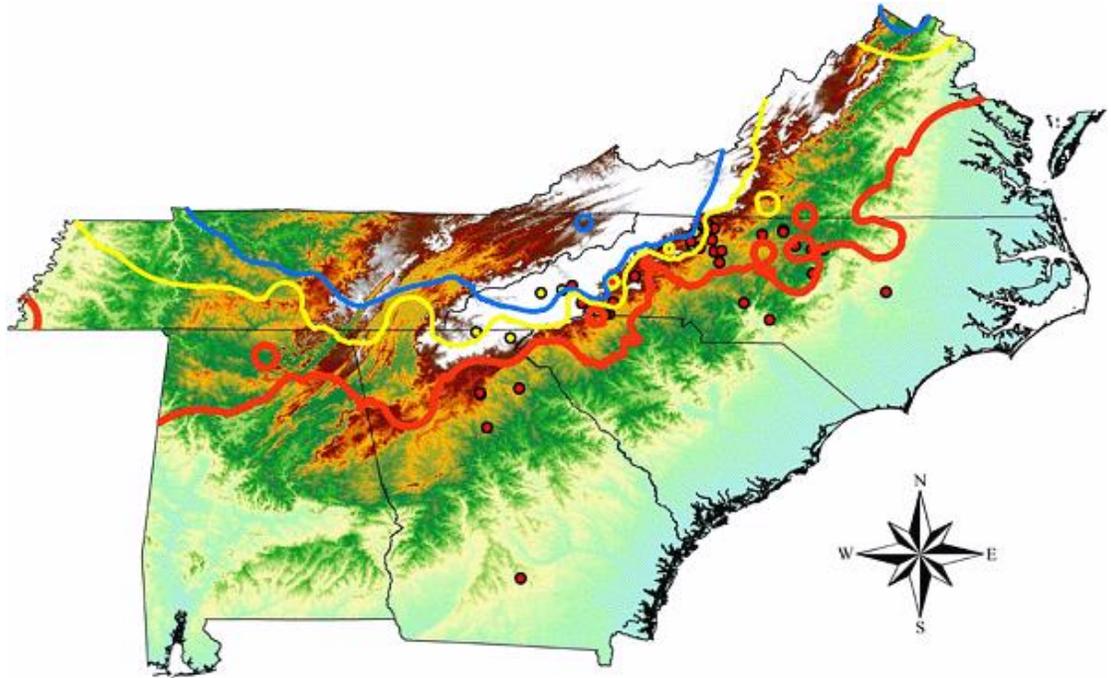
- Where (altitude / latitude) are you going to plant your vineyard?
- Does crop value exceed production costs?
 - Crop value is crop tonnage x price per ton
- How many resources do I have for vineyard management?
 - Managing vines takes longer than you think
- Are you willing to take risks?
- What wine styles are you aiming for?
 - What is your market?



Pierce's Disease - a major consideration for cultivar choice; threat related to climate and thus vineyard location



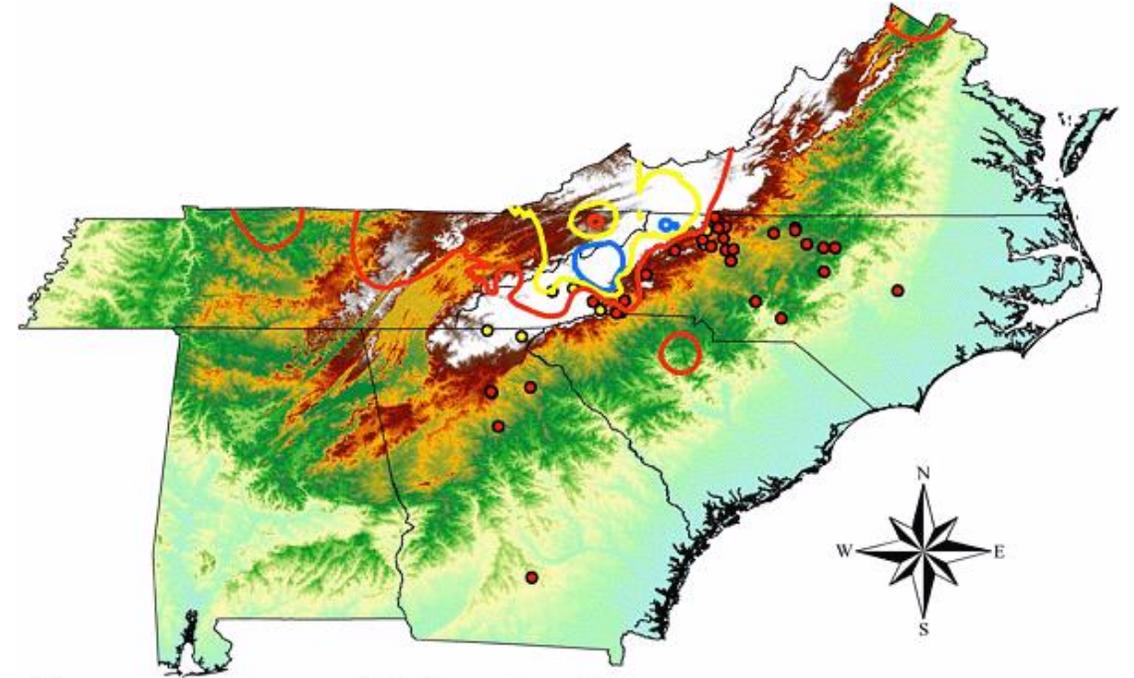
A MAJOR cultivar consideration - Pierce's Disease tolerance



Temperature $\leq -12.2^{\circ}\text{C}$ contour lines
1972-1997 (25-year average)

- 1 day (very high risk areas to the South and East)
- 2 days (high risk areas to the South and East)
- 3 or more days (moderate risk areas to the South and East and low risk areas to the North and West)
- Pierce's disease positive sites
- Pierce's disease negative sites

1972-1997



Temperature $\leq -12.2^{\circ}\text{C}$ contour lines
1997-2005 (8-year average)

- 1 day (very high risk areas to the South and East)
- 2 days (high risk areas to the South and East)
- 3 or more days (moderate risk areas to the South & East and low to no risk areas within boundary)
- Pierce's disease positive sites
- Pierce's disease negative sites

1997-2005

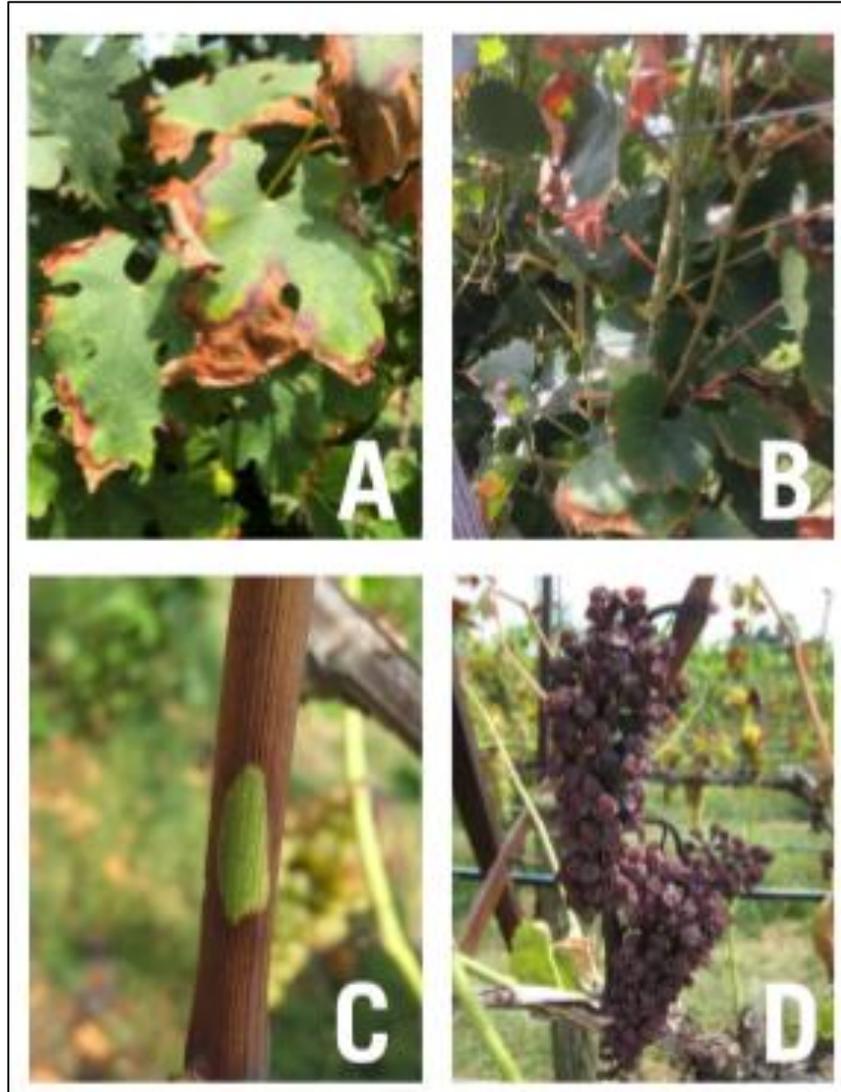
Fungal diseases make it *difficult* to grow *several* cultivars.

Pierce's Disease can make it *impossible* to grow *some* cultivars.



UGA Extension bulletin

https://secure.caes.uga.edu/extension/publications/files/pdf/B%201514_1.PDF



Pierce's Disease of Grape: IDENTIFICATION AND MANAGEMENT

Cain Hickey, Department of Horticulture | Brett Blaauw, Department of Entomology | Phil Brannen, Department of Plant Pathology

Introduction

Pierce's disease (PD) of grape is caused by the bacterium *Xylella fastidiosa* (*Xf*) (Wilcox *et al.*, 2015). *Xf* is a xylem-limited bacterium. "Xylem-limited" means that *Xf* only inhabits the xylem elements within the host plant. Xylem elements are the tissues that transport water and nutrients from the roots up to the shoots and leaves. *Xf* limits water and nutrient translocation by persisting and expanding in the xylem elements and causing the plant to produce tyloses, blocking the "pipes" through which those resources can pass. If the *Xf* bacterium multiplies and expands enough, the result can be complete obstruction of water and nutrient translocation to aboveground vegetative tissues of the grapevine. Vines will consequently die within one to two years of PD diagnosis, which is well before the anticipated 20- to 25-year productive lifespan of a vineyard in the Eastern U.S. There are many biotic and abiotic pests that make wine grape cultivation challenging in the Southeastern U.S. PD can make it impossible to grow many wine grape cultivars in certain sub regions, as it kills them outright. PD is thus a great threat to the sustainability of commercial vineyards located in warm, coastal, and/or subtropical grape growing regions of the Southeastern U.S. as well as regions in Texas and California.

Range and causal conditions

Xf is endemic to the Southeastern U.S. and is a threat to vine sustainability in sub regions (e.g. Piedmont, Coastal Plain, foothills, etc.) with mild winters. Pierce's disease can produce significant losses in vineyards from Florida to Virginia, but also in vineyards westward in Alabama, Texas, and Mississippi. PD is becoming increasingly common in susceptible cultivars (*V. vinifera*; popular hybrid bunch grapes such as Vidal blanc and Chambourcin) planted in northern Georgia and low-altitude North

Carolina and Virginia vineyards. The increasing PD prevalence in the Southeastern U.S. is likely a function of milder winter temperatures (Anas *et al.*, 2008; Lieth *et al.*, 2011). PD is generally less prevalent in vineyards located in northern, high altitude regions on the East Coast (Pennsylvania, New York) as well as inland regions that experience frigid winter temperatures, such as the Midwestern U.S. (Indiana, Michigan, Ohio). Pierce's disease has been identified, however, in Oklahoma and Missouri (Smith, 2013). It has generally been recommended that producers in Georgia not plant PD-susceptible vines at elevations below 1,300 feet above sea level, and rarely has PD been observed at elevations above 2,000 feet. However, PD has recently been observed to cause significant losses in vineyards at and above 1,300 feet; after warm winters, PD has even been confirmed in vineyards planted above 2,000 feet in northern Georgia, as well as in lower altitude vineyards in the North Carolina foothills.

Symptoms and identification

As with several systemic grapevine diseases and nutrient imbalances, PD symptoms first become evident around veraison, the growth stage characterized by berry softening, sugar accumulation, and coloration (in red-fruited cultivars). Veraison is also the growth stage at which carbon resource allocation is shifted from the canopy vegetation to the ripening fruit; stressors become visually manifested in the canopy thereafter. Veraison typically occurs in mid- to late- July in many Georgia and Southeastern U.S. vineyards, but this will vary by cultivar, vintage, and growing region. Scouting for PD should begin in mid-July in those regions. Symptoms will occur



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Farming (i.e. growing grapes) is a business



Does crop value exceed production costs?

- **Production costs per crop produced:**

- *vinifera* bunch grapes

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- Hybrid bunch grapes



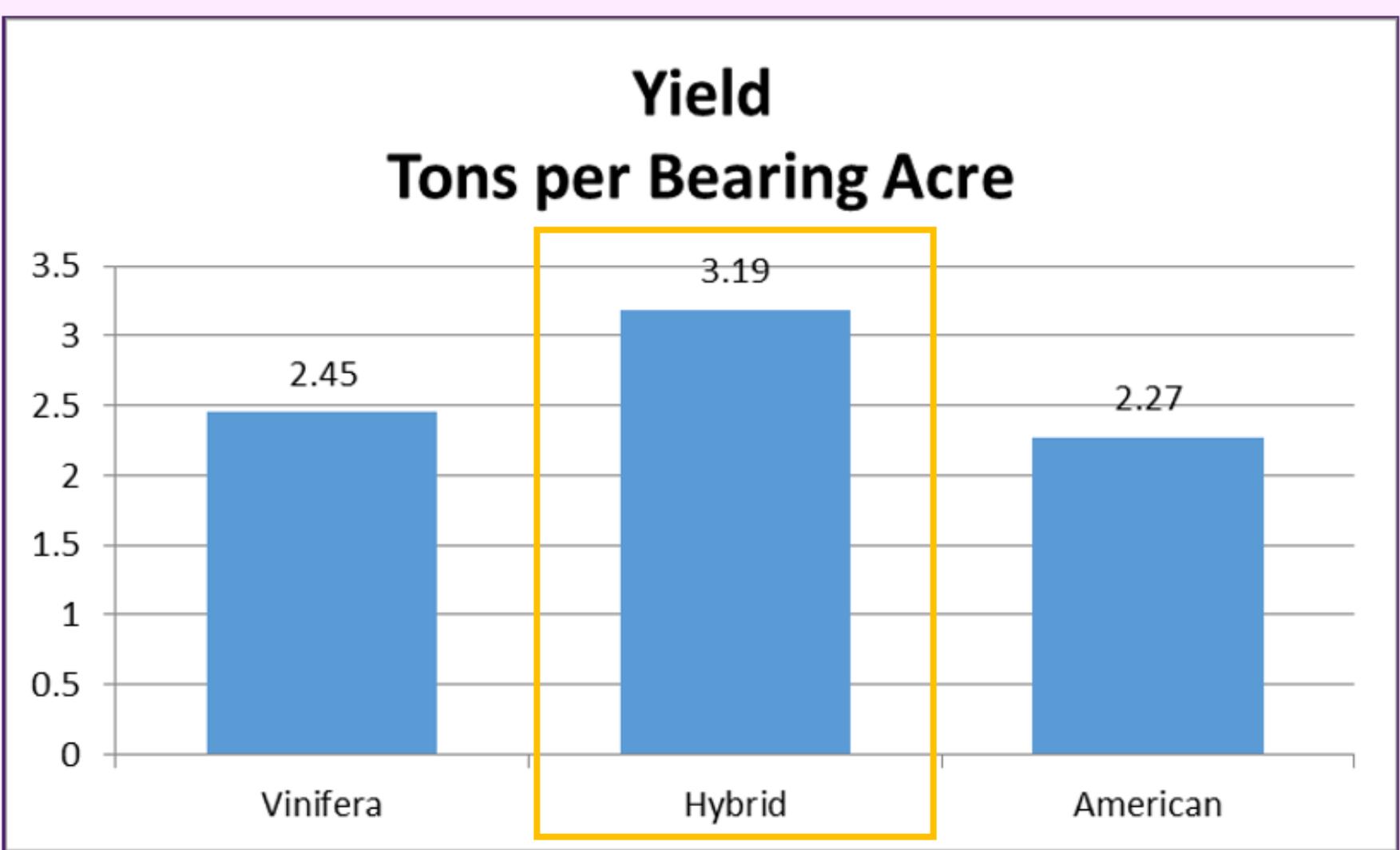
- **Crop value (per unit weight):**

- *Vinifera* bunch grapes

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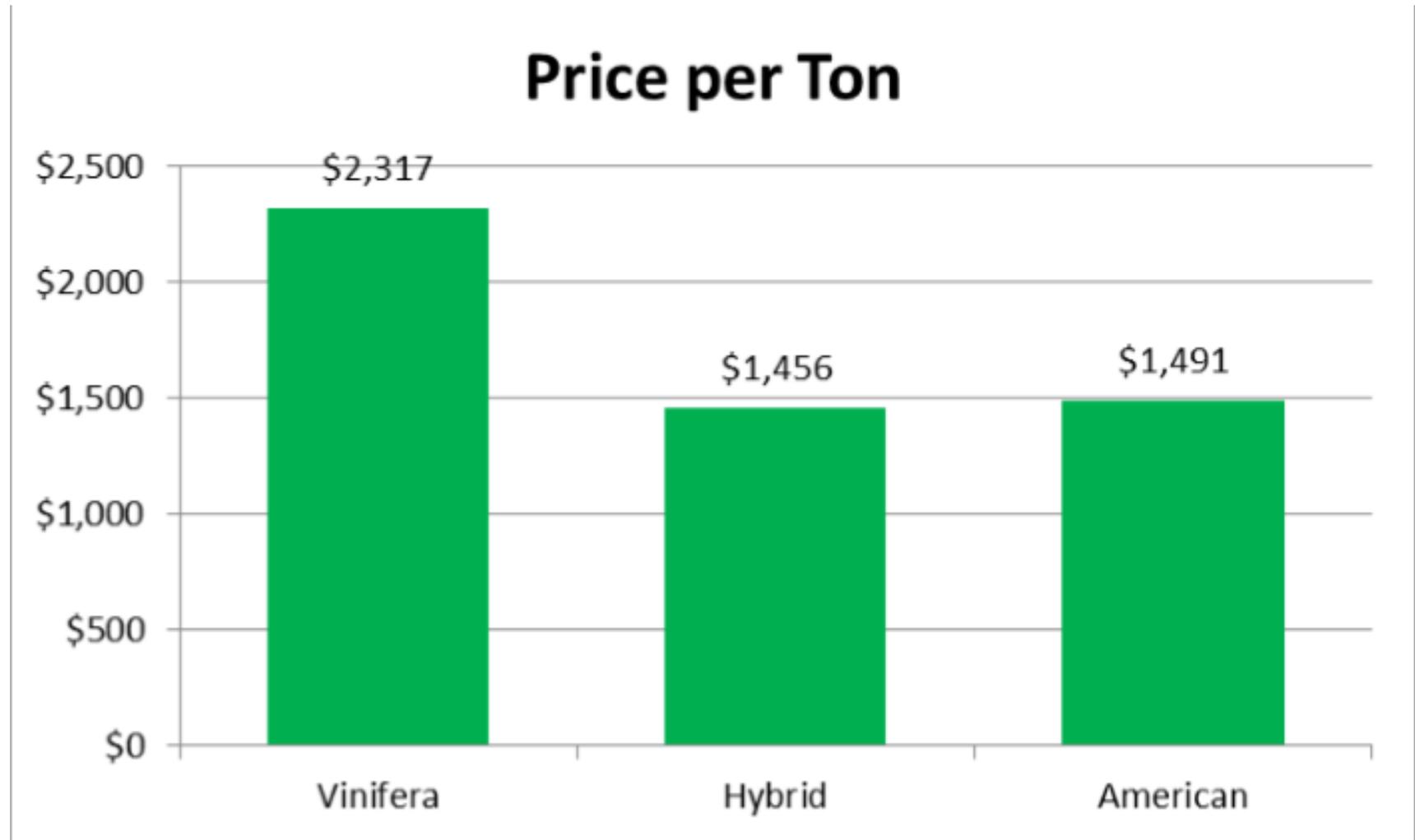
- Hybrid bunch grapes

Crop yield matters



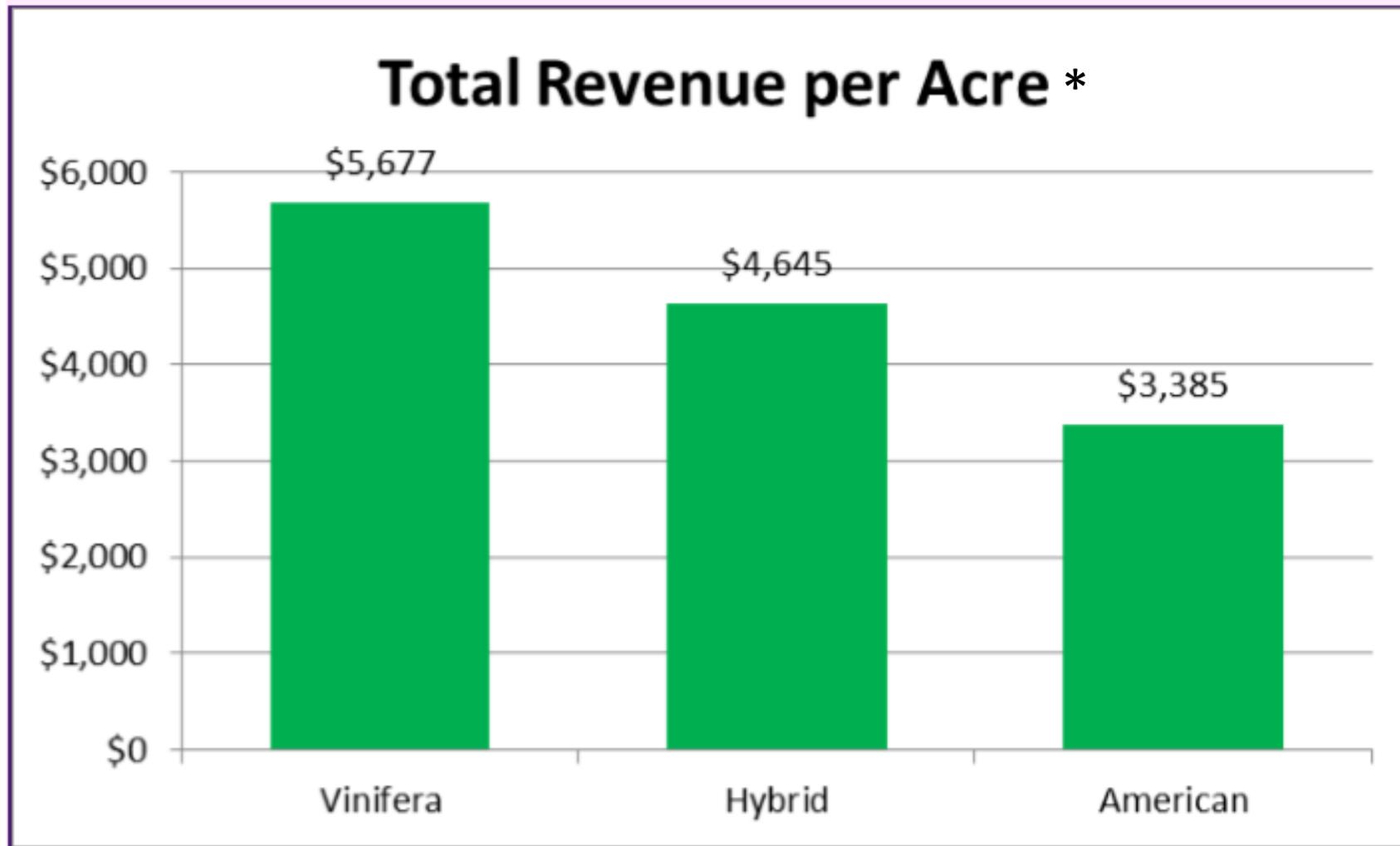
But so does price....

(2016 VA Commercial Winegrape Report)



So, the net revenue per acre (price X tons/acre)

(2016 VA Commercial Winegrape Report)



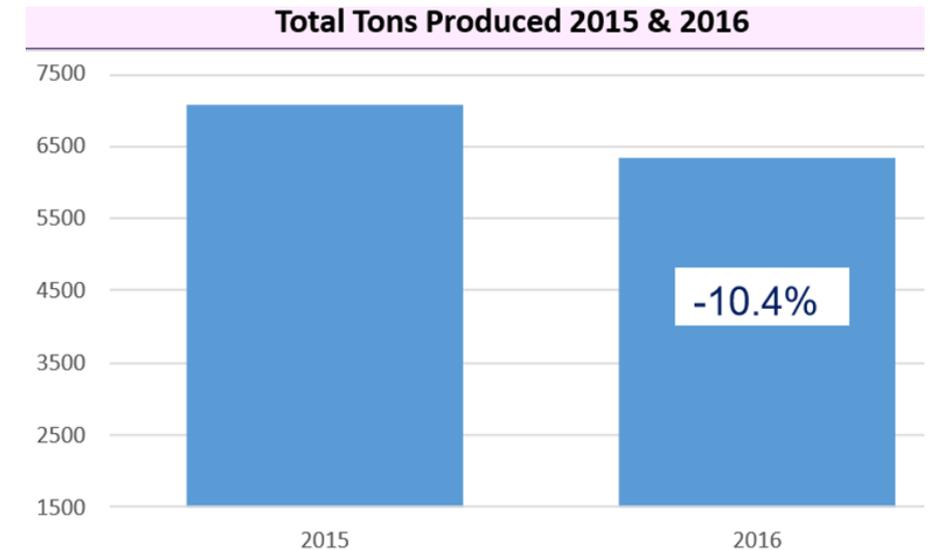
*INPUTS WERE NOT CONSIDERED

Specific cultivars - yield

(2016 VA Commercial Winegrape Report)

Cultivar	Average tons / acre	Average price per ton (\$)
Albarino	1.8	2,433
Cabernet franc	2.9	2,188
Petit Manseng	2.7	2,315
Petit Verdot	2.4	2,573
Chambourcin	3.8	1,523
Vidal blanc	3.9	1,513

2016 was a “low crop year”

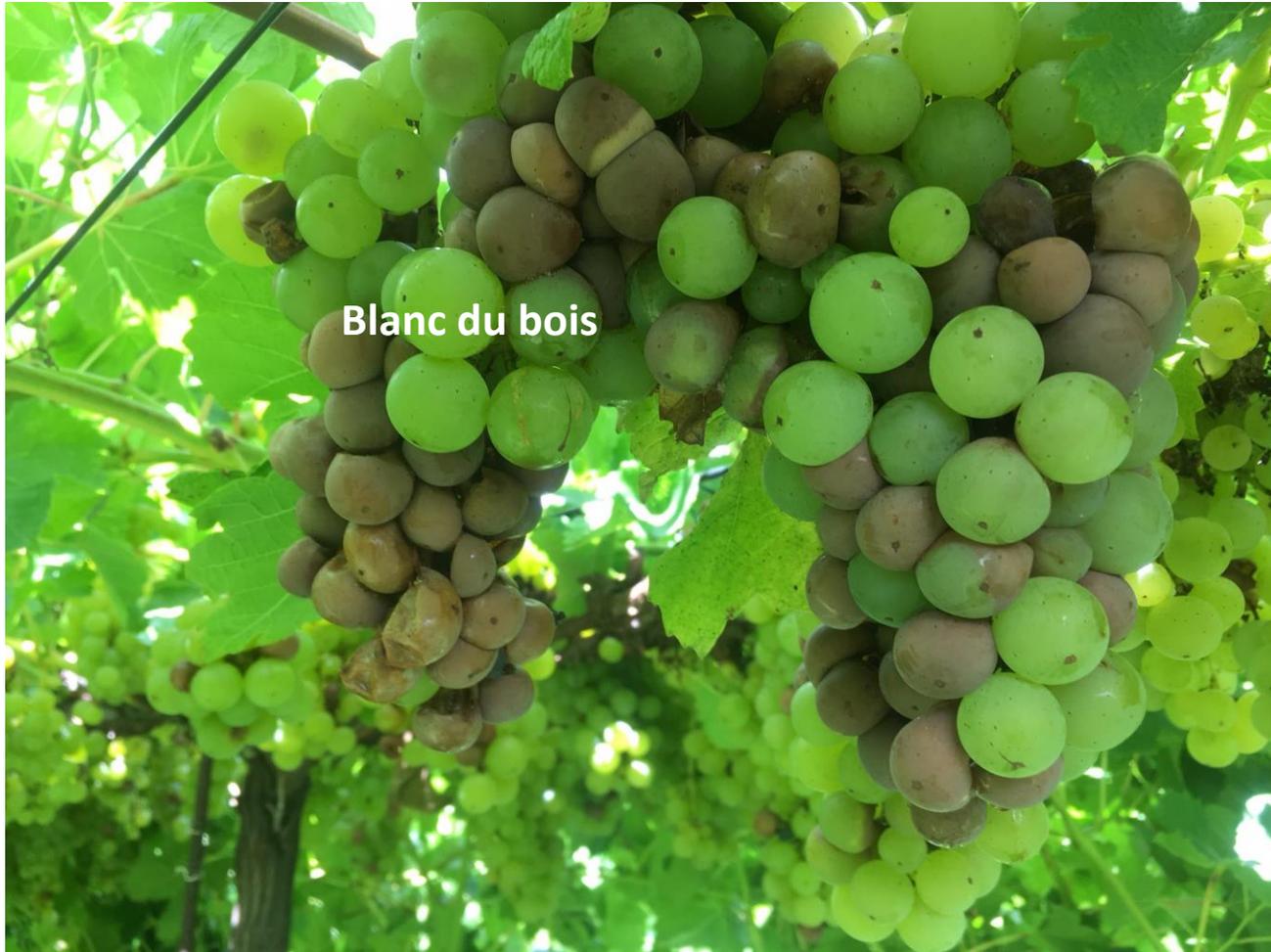


How many resources do I have for taking care of my vines?

- Are you going to manage on the weekends alone?
 - Best of luck to you...
- Do you have finances to pay someone to manage the vineyard full time?
- How many acres will you plant?
 - 1 **full-time** person can *maybe* manage 4-5 acres... then they need help...



How many resources do I have for taking care of my vines?



Are you willing to take risks?

- Tom Slick (Habersham): 30-35 years ago
- Eric (Crane Creek): > 20 years ago
 - Riesling
 - Cabernet Sauvignon
- Jim Law
 - Noted for “pulling and planting”
- The first person who planted (cutivar)
in (place) .



Cold injury to buds (not trunks, cordons, etc)

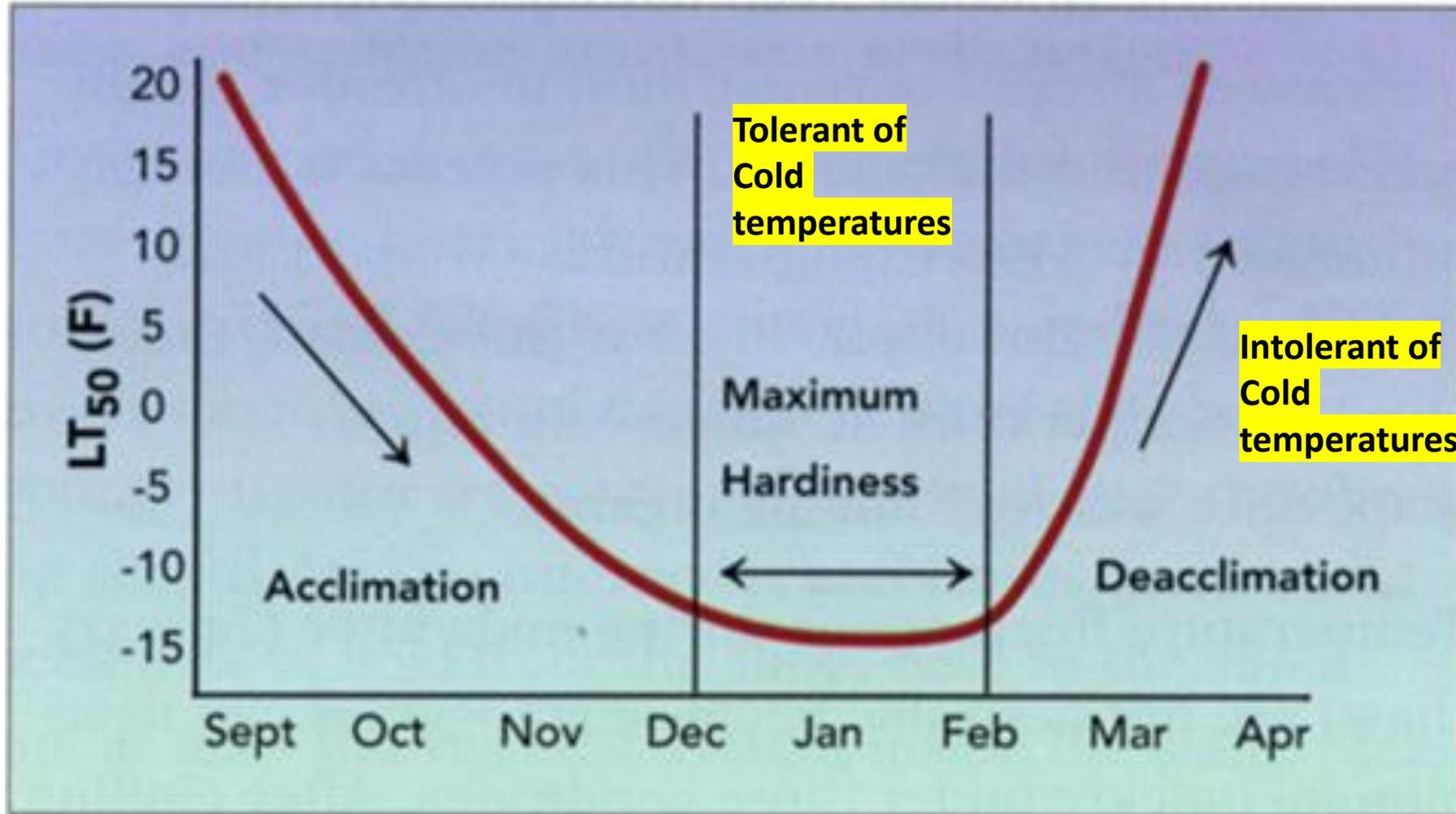


Figure 1. Vine Acclimation from Fall thru Spring

(Zabadal et al. 2007)

Choosing hybrids wisely...

- All had $\geq 60\%$ of “normal crop”
 - All from shoots borne from secondary or basal (non-count) bud
 - (Allen 2007) – Missouri in 2007
- Chambourcin
- Chardonel
- Vidal blanc



What wine styles are you aiming for / what is your market?

- Judicious cultivar choices can give you a wide range of wine styles to offer consumers
- Chardonnay
 - Barrel, stainless, sparkling
- Chambourcin
 - Red, rosé, port
 - Blends
- Blanc du Bois
 - Sweet, semi-dry, dry



A thought process about cultivar choice / wine styles...

- I will not be able to produce Bordeaux reds that taste like the ones that our customers identify as “quality”
 - I will therefore not try to grow them.
- I will choose hybrids and regionally-adaptable vinifera cultivars to grow
 - Use education in tasting room

- Chambourcin, Vidal blanc, Chardonnay
- Petit Verdot, Petit Manseng, Chardonnay



A contrasting thought process about cultivar choice / wine styles...

- I am not apologetic about our *vinifera* / Bordeaux reds
 - I will grow them and make styles that reflect the season
 - Bold in dry / warm seasons
 - Light/rose in cool/wet seasons
- Use education in the tasting room to educate about differences in conditions between eastern US / western US
 - Wines are a reflection of the regional terroir.



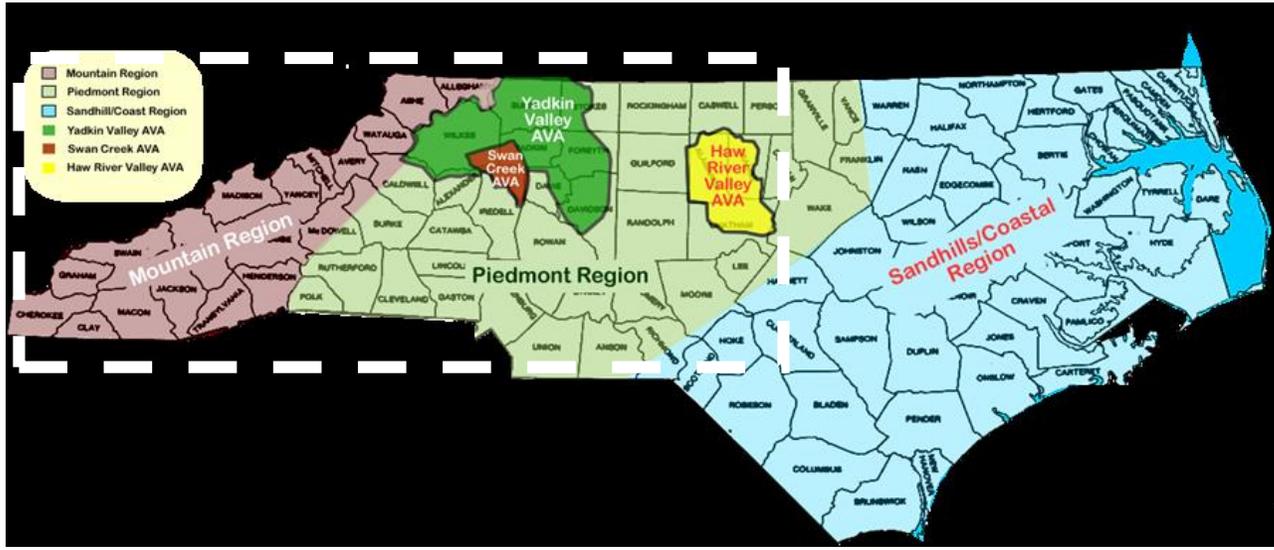
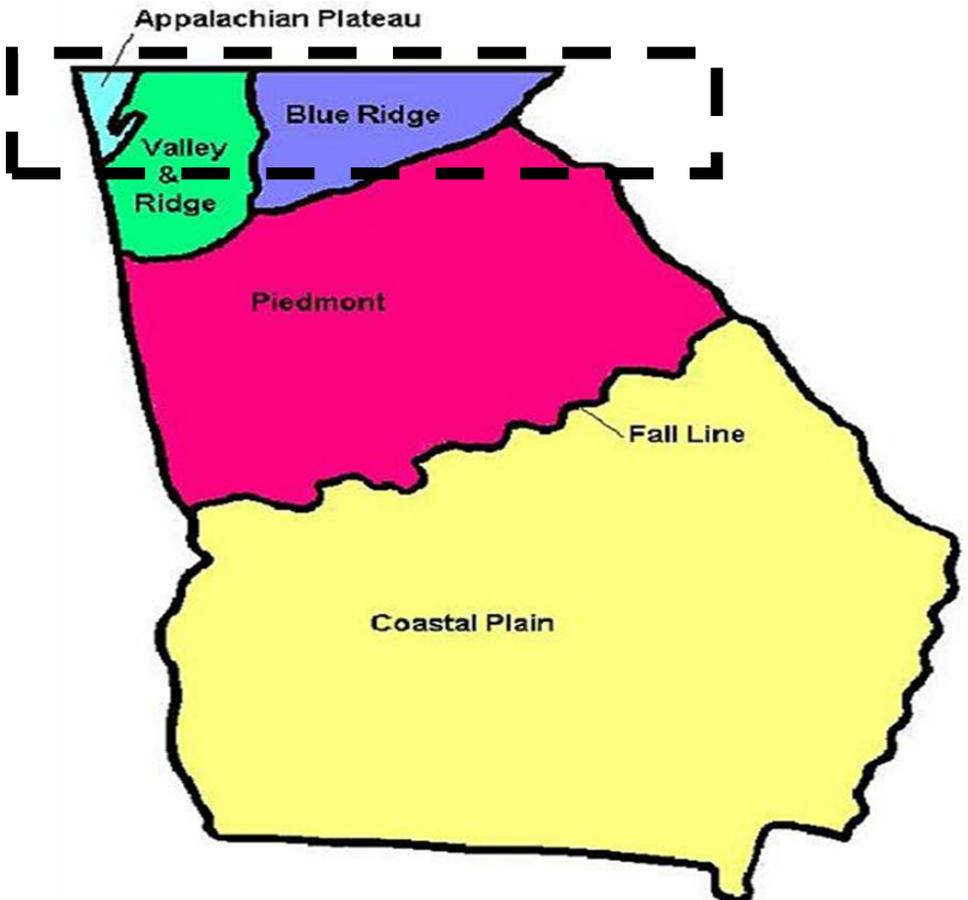
Breaking it down for cultivar choice in Georgia and North Carolina

- *Vinifera* / hybrid bunch grape cultivars
 - Wine
- PD-tolerant bunch grape cultivars
 - Wine
- Muscadine (also PD-tolerant)
 - Wine and/or Fresh market



Vinifera / non-PD-tolerant hybrid cultivars

MAXIMUM CARE REQUIRED IN
OUR HUMID ENVIRONMENT



Vinifera and hybrid bunch grape cultivars that perform reasonably well and can make good wines

Vinifera

- Cabernet franc
- Petit Manseng
- Petit Verdot
- Merlot
- Cabernet Sauvignon (+/-)
- Albarino
- Chardonnay

Hybrid / American

- Chambourcin, Chardonel, Vidal blanc, Traminette, Seyval blanc

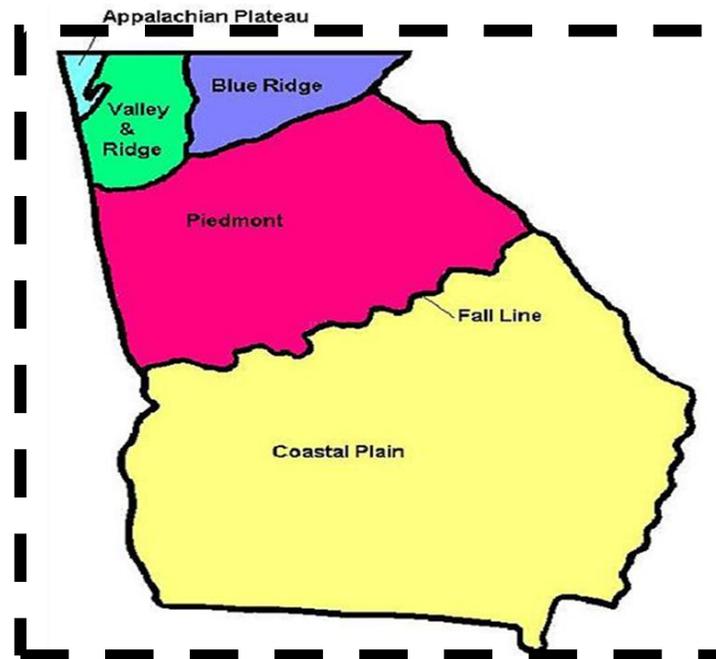
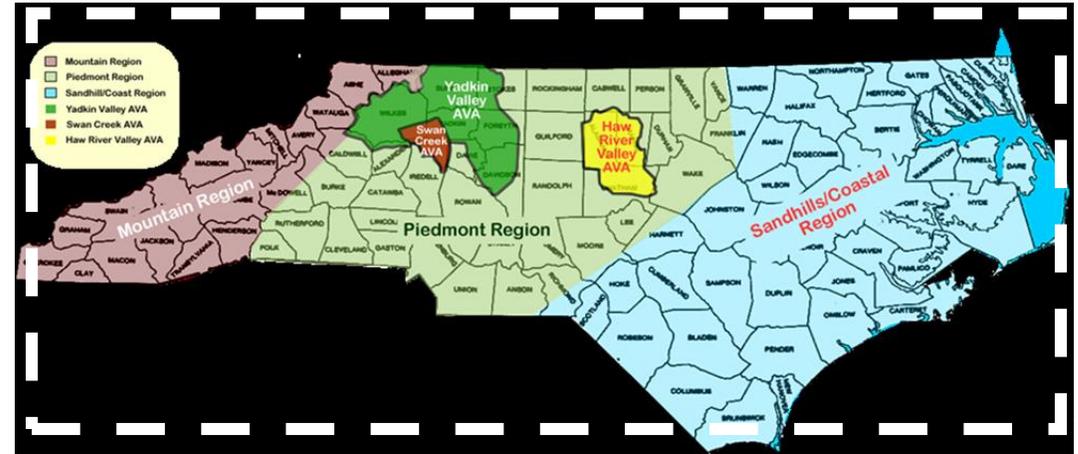


PD-tolerant cultivars

- Blanc du Bois, Lenoir, Villard blanc, Norton, Lomanto

- UC Davis selections
 - 87.5 to 97% *vinifera* genetics

- Norton x Cabernet Sauvignon crosses:
 - Crimson Cabernet*
 - *observational PD tolerance
 - Cabernet Dore



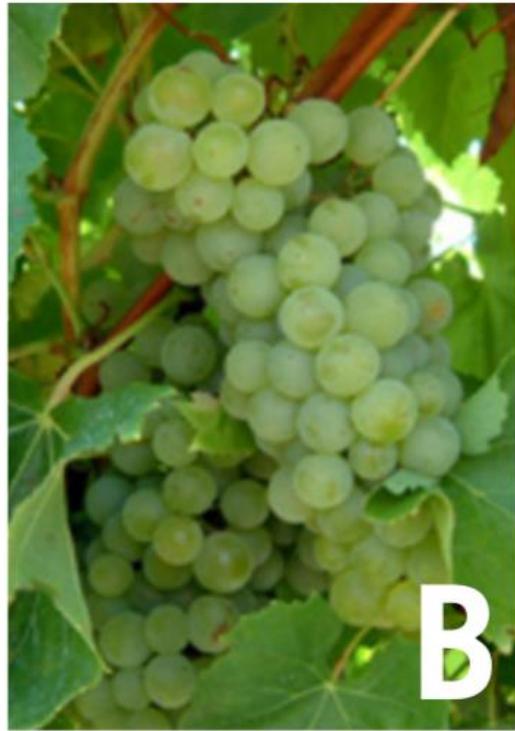
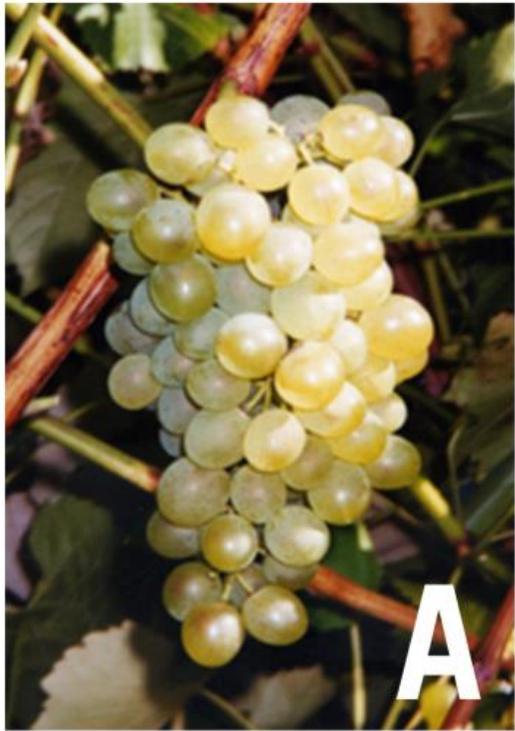
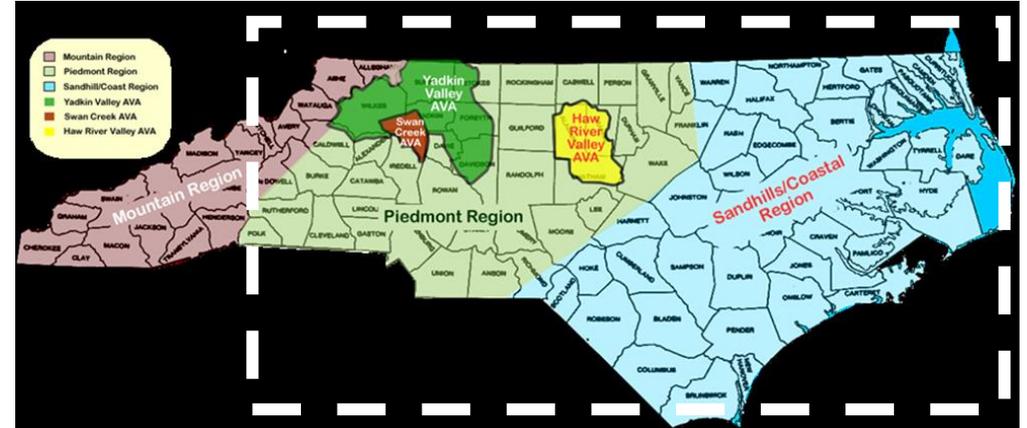


FIGURE 3. Popular wine grape cultivars that are generally proven to be PD-tolerant and produce acceptable consumer wine quality, including 'Blanc du Bois' (A), 'Villard blanc' (B), 'Lenoir' (C), and 'Lomanto' (D). 'Blanc du Bois' and 'Villard blanc' photos courtesy of Fritz Westover; 'Lomanto' and 'Lenoir' photos courtesy of Joey Muller.

Muscadine production for fresh market and wine

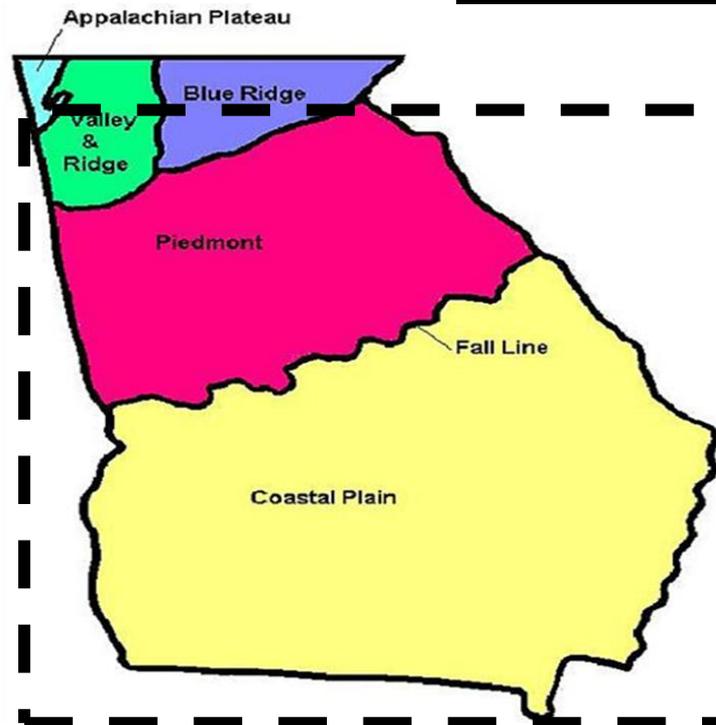
- Wine

- Two cultivars dominate
 - Noble and Carlos



- Fresh market

- SEVERAL cultivars to choose from
- Flower-type can drive decisions
 - Female
 - Self-fertile



Some viticulture “truths”

- **Cultivars do better in some places than others (understatement).**
- 21-24 °Brix is *not* imperative to make good wine.
---- “Food reds”, whites, rosés, blends, sparkling...
- Site selection is a paramount decision and can make life easier in the long run (vineyard life).
- **Quality is important; crop yield and vineyard health are equally important.**
 - Quality-quantity is not an inverse relationship.



Grape cultivar selection smartphone app

Southern Region Small Fruit Consortium

Home SRSFC Activities Crops Regional Experts IPM/Production Guides County Agent Training Weather



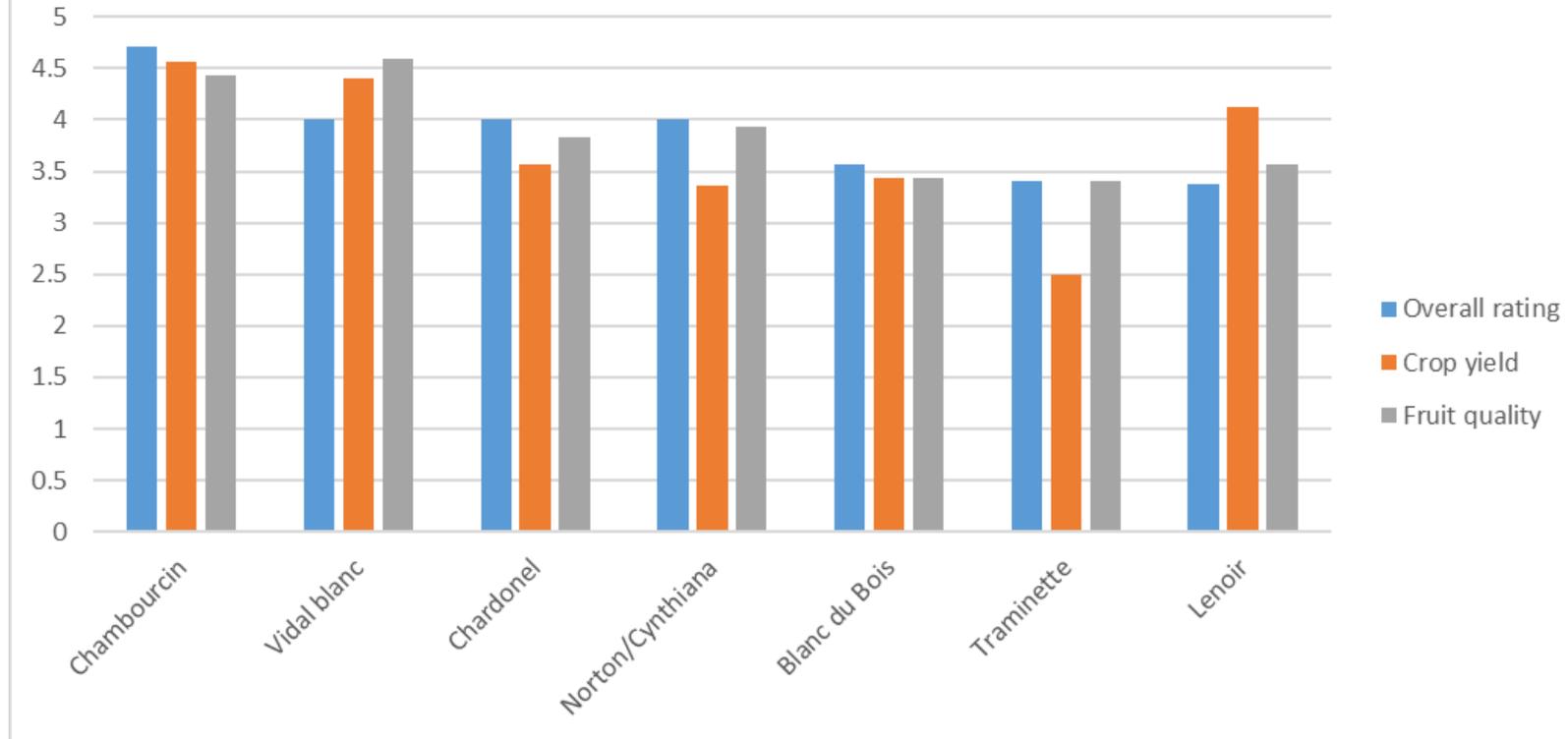
Mission

To involve collaborative efforts at various sites across the region between small fruit growers and grower organizations, industries and service organizations allied with and/or serving small fruit growers, agricultural extension programs and research stations working together to enhance the development of the small fruit industries in the region.

[Read More](#)

- **Goal:**
 - Provide grower- and specialist-based feedback on best grape cultivars throughout southeastern US
- County-based refinement for responses
 - Allows user to “see what works” near where their vineyard will be planted

Hybrid / American bunch grape cultivar ratings (to date)



Thank you

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