

UNIVERSITY OF  
MARYLAND

EXTENSION

*Solutions in your community*



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GRAPE & WINE QUALITY  
EASTERN U.S. INITIATIVE



# Recommended and “Trial” Winegrape Varieties for Diverse Regions of Michigan

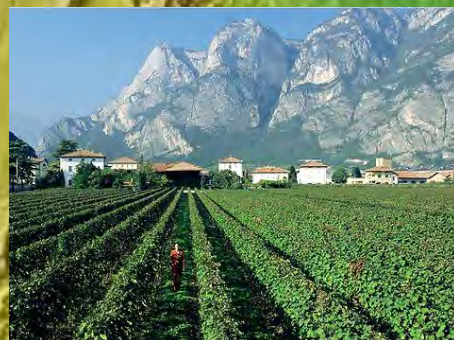
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# UME R&D Vineyard Locations



Hardy Russian Varieties



European Varieties

WMREC - Keedysville

CMREC - Upper Marlboro

“Golden Run Vineyard”  
- Sudlersville

WyeREC - Queenstown

“Summerseat” - Lusby

LESREC - Salisbury

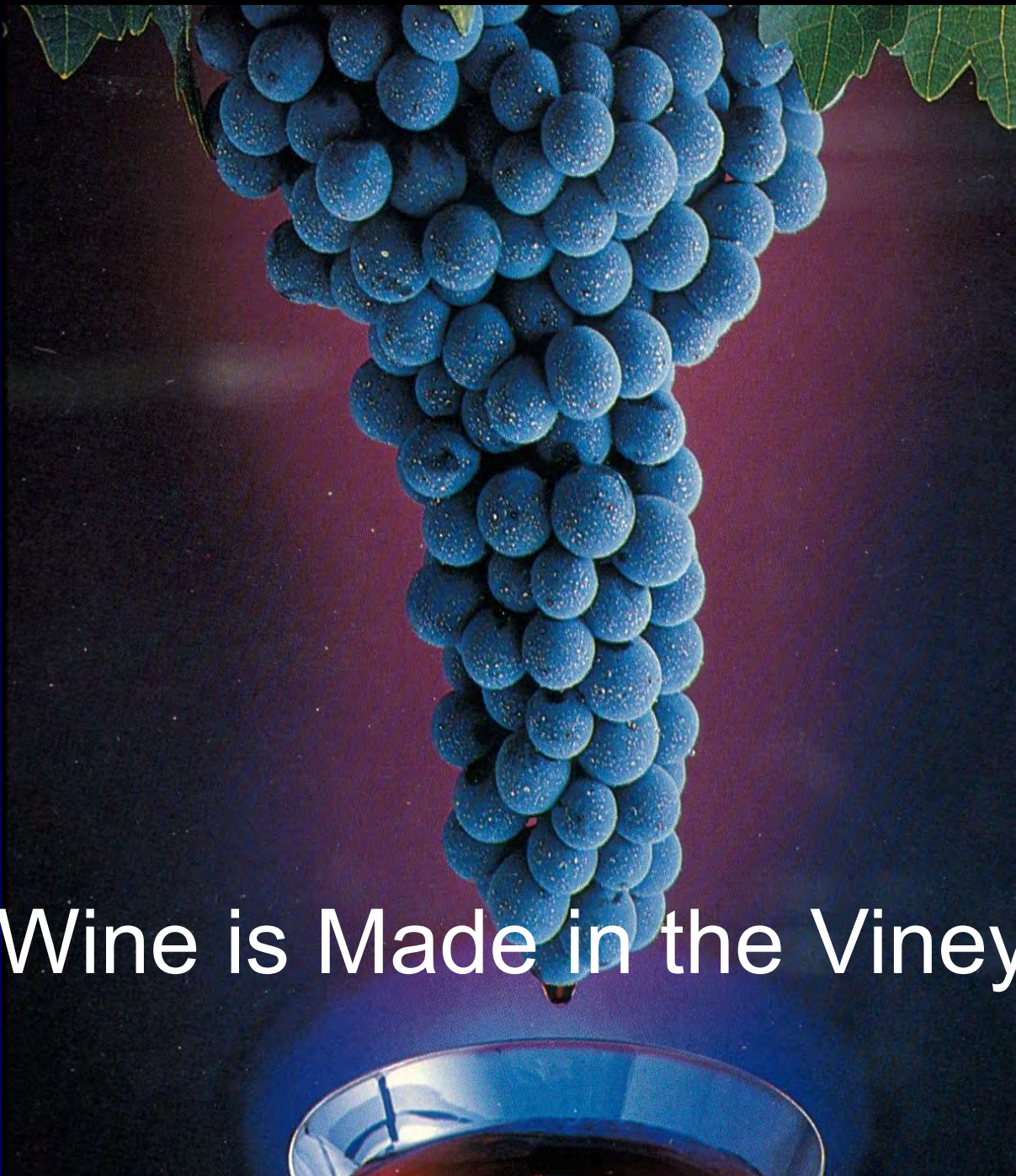


# Enology (Winemaking) R&D



George Barber – wine technician





The Wine is Made in the Vineyard!

# General considerations

- Climate/Variety interaction critical
- Consistent production at your site
  - Adequate cold hardiness
  - Resist disease and pest pressure
- Consistently high quality at your site
  - Desirable ripening temperatures (cool nights)
  - Ripe all or majority years!!
- Demand by existing wineries
- Demand by consuming public (own winery)
- *Crop value consistently exceeds cost of production!*



# “Pest” Resistant

- Disease
- Insect
- Cold!



Disease tolerant  
Cold tolerant  
Hybrids

# “Preferred” conditions for producing high quality grapes:

- Moderate winters and
  - Preferably minimums  $>0^{\circ}\text{F}$  ( $>-4^{\circ}\text{F}$ )
  - Adequate snow insulation
- Limited frosts
  - late spring
  - early fall





# “Preferred” conditions for producing high quality grapes:

- Warm sunny days during ripening
  - Preferably maximums <90°F
- Cool nights during ripening
  - Preferably minimums <60°F
- Long ripening season
- Well drained, low fertility soil
- Limited precipitation
  - manage vigor
  - final ripening



**The Great Lakes moderate the climate to allow Michigan to grow 140,000 acres of fruit crops.**



# Wine Grape Varieties

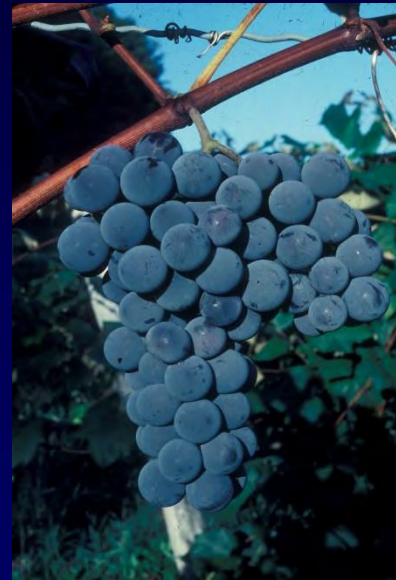
Vinifera, Hybrid, Native, Super Hardy



Pinot blanc  
*Vitis vinifera*



Vignoles  
Hybrid



Concord  
*Vitis labrusca*



Frontenac  
*Vitis riparia* based

# General consideration of *vinifera* relative to other species/hybrids

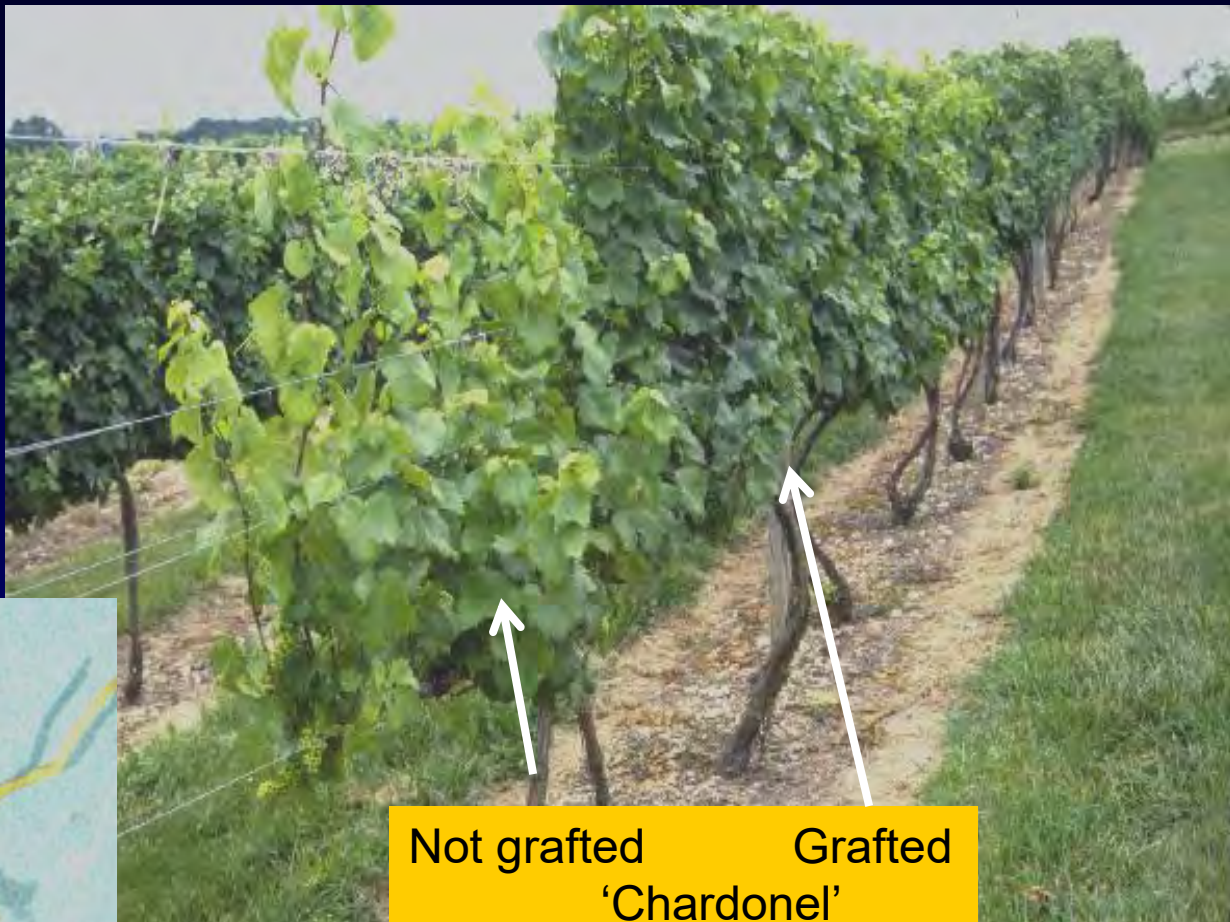
- *Vinifera* must be grafted to pest-tolerant rootstock
- As a group, *vinifera* are more susceptible to fungal and certain other pathogens
- *Vinifera* are more susceptible to cold injury
  - SHH > Native American spp > hybrids > *vinifera*
- *Vinifera* grape prices are roughly twice that of hybrids or Americans



# Vinifera/Hybrids vs. Species

- Must be grafted to pest tolerant rootstock
  - C3309
  - 101-14
  - Riparia Gloire

## Phylloxera



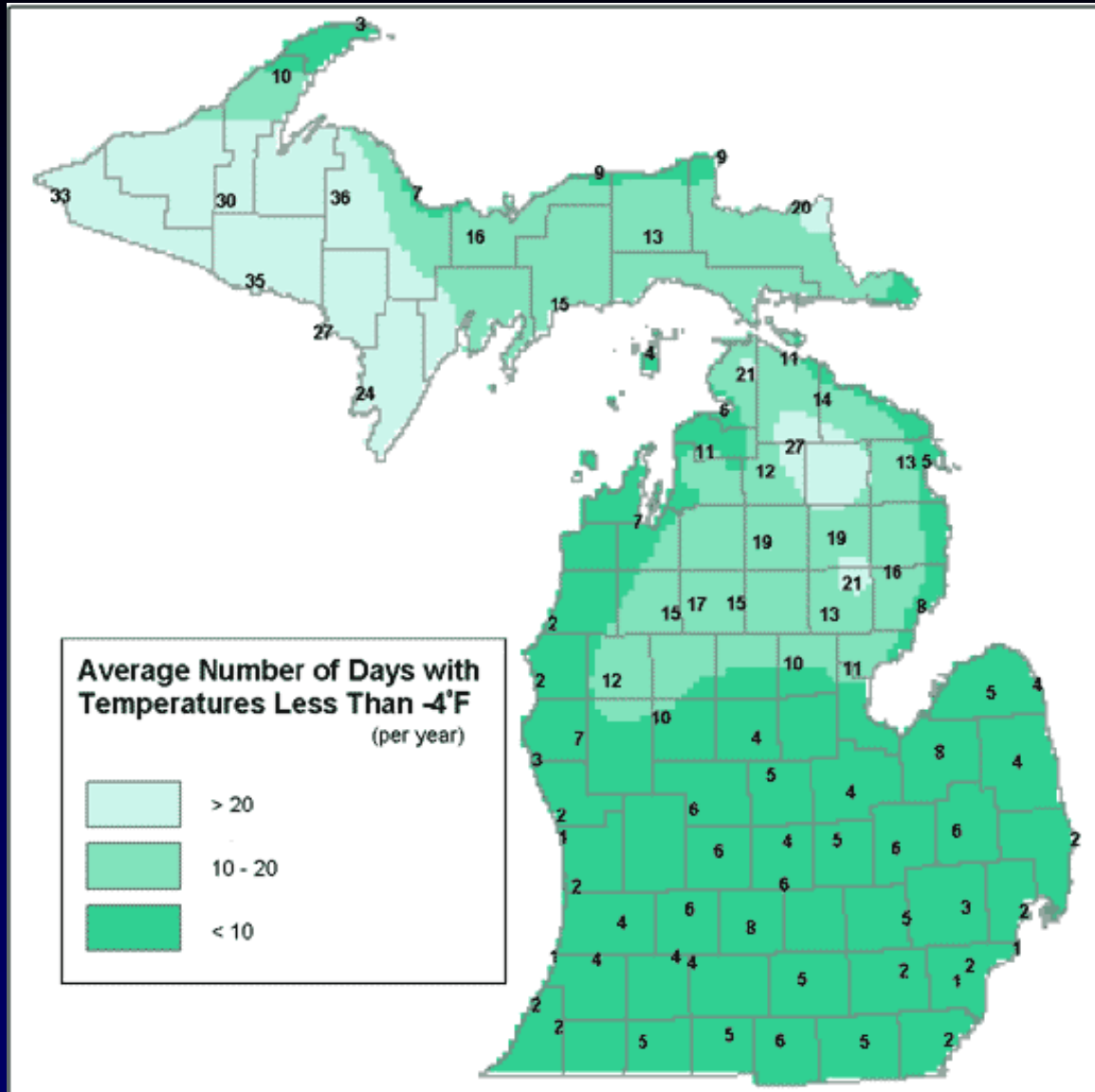
Not grafted      Grafted  
'Chardonel'

# Average Number of Days with Temperatures Below -4°F

## Know your site!

## - Minimum temperatures

Data and maps prepared by Aaron Pollyea, Peter Kurtz, and Tracy Aichele, Michigan Climatological Resources Program, Michigan State University Department of Geography, based on data from the NOAA, 1952-2001.



[www.grapes.msu.edu/climate.htm](http://www.grapes.msu.edu/climate.htm)

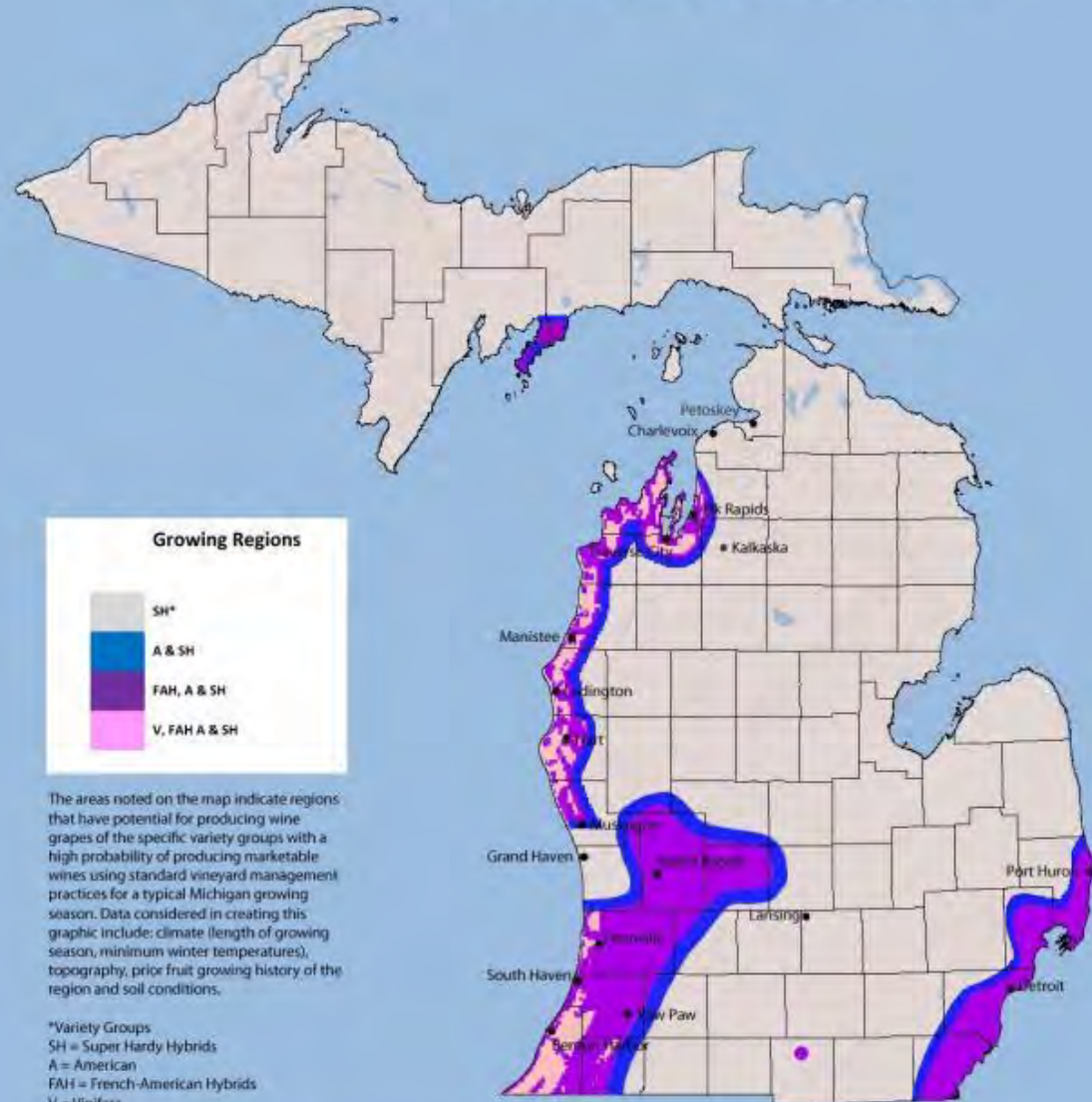


**Variety  
choices:**

**Match  
Variety  
to your  
site!**

**- Cold!  
- Growing  
season**

## Suitability of Regions in Michigan for Wine Grape Production



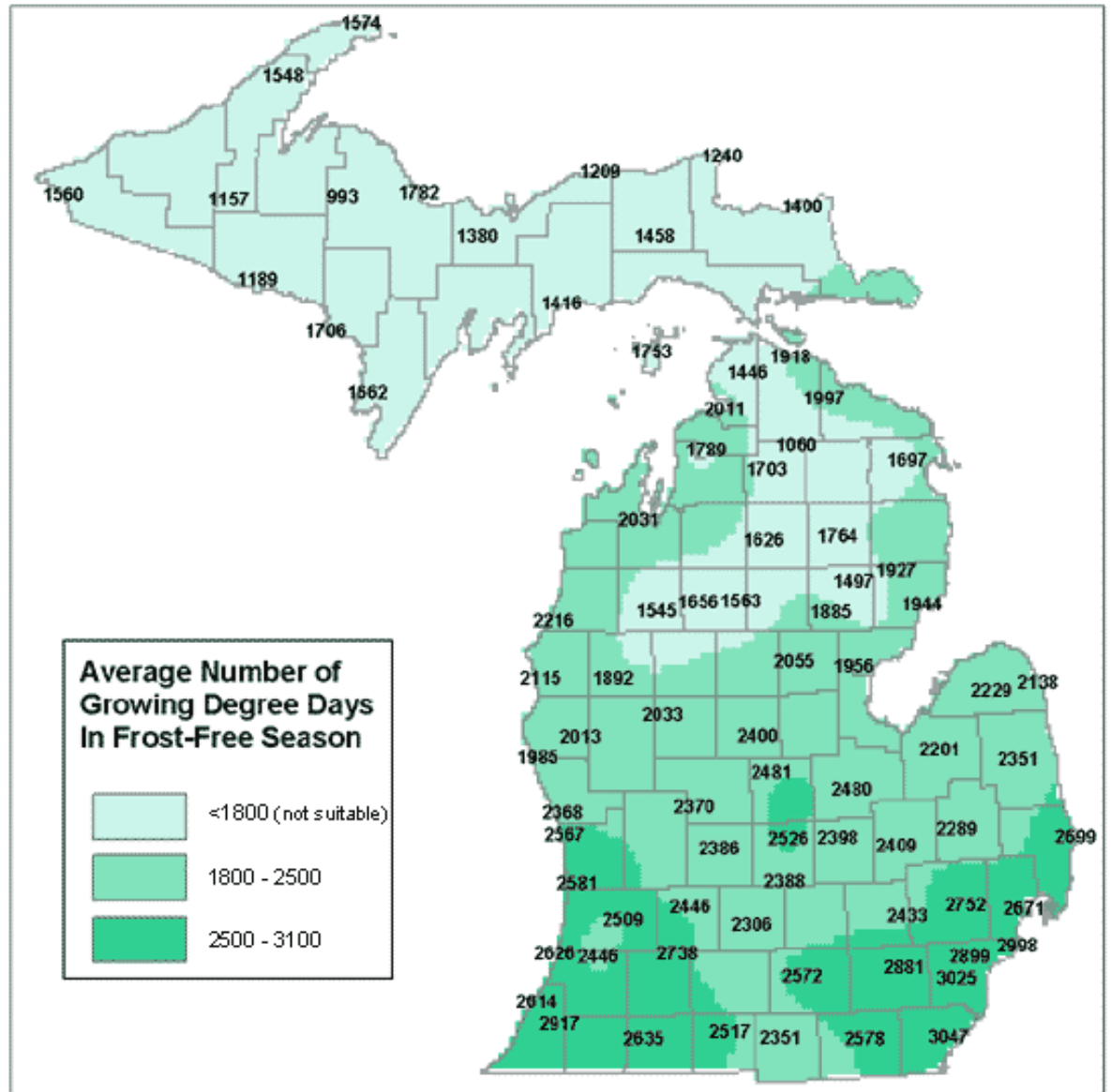
Graphic developed by Dr. Ron Perry, Dr. Paolo Sabbatini and James Burns, Michigan State University as a resource for Horticulture 430 "Wine and Vines" class (Fall 2011) as a supplement to Electronic Textbook: Borchgrevink, Carl and Ron Perry, 2011, Wine and Other Hospitality Beverages. Great Rivers Technology, Dubuque, IA. ISBN 978-1-61549-184-1 (Online).

# Mean Length of Growing Season

Variety choices:

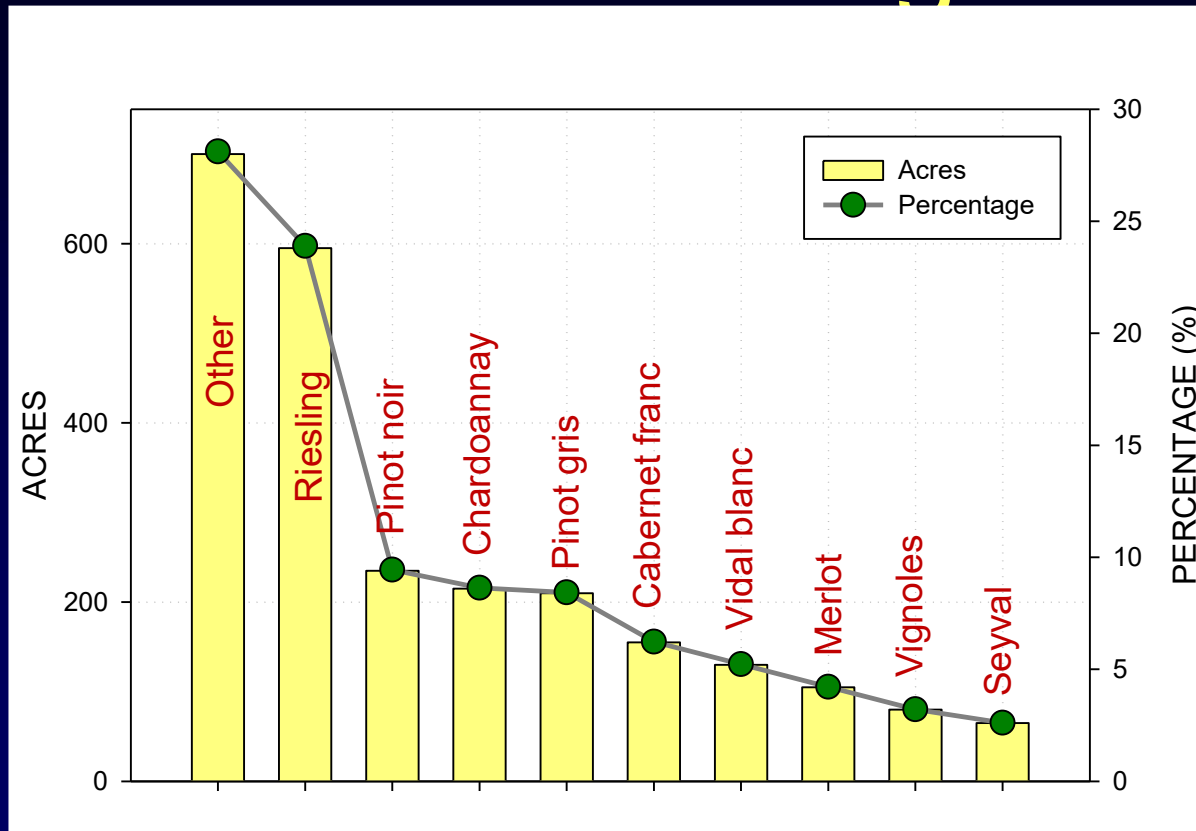
Know your site!

- Length of Growing season
- Especially reds





# Top 10 wine grape varieties in Michigan



Riesling



Pinot noir

# 'Vignoles'

(hybrid – 'Ravat 51')

- **Strengths:**

- Moderately hardy
- Late bud break
- Early-mid harvest
- Excellent wine
  - Aromatic
  - Late harvest wines

- **Weaknesses:**

- Mod PM DM
- Susceptible to Botrytis
  - Tight clusters
  - Trace bloom leaf pull

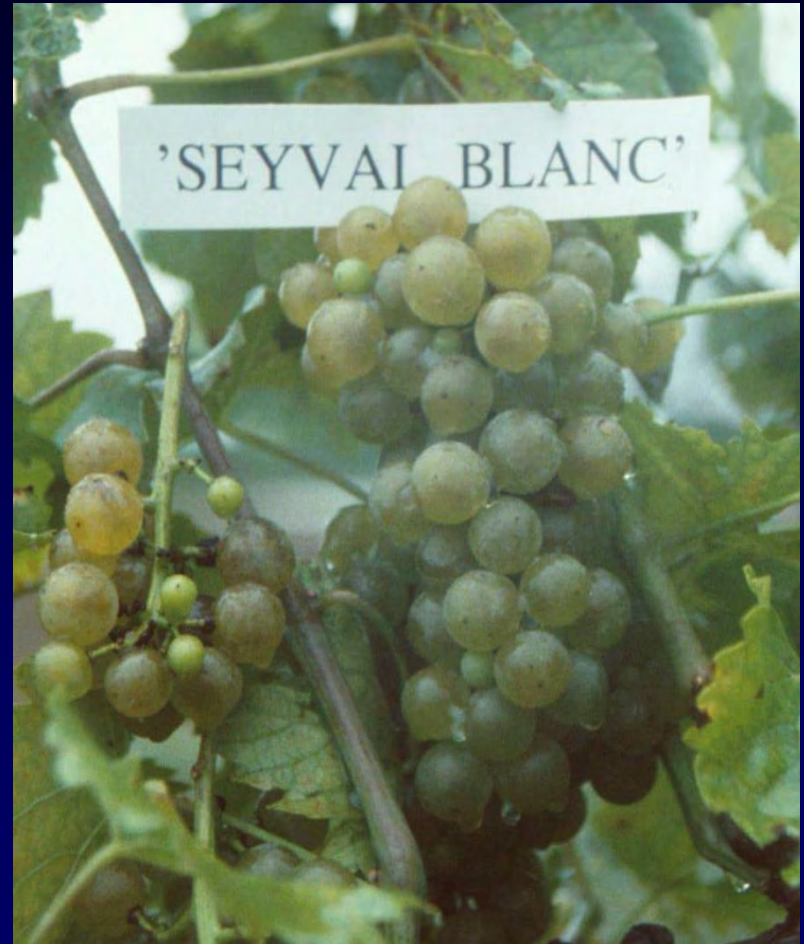




# 'Seyval Blanc'

(hybrid)

- **Strengths:**
  - Good cold hardiness
  - Good yields
  - Versatile
    - Style
    - Blending
- **Weaknesses:**
  - Over cropping
  - Establishment
  - Sour rot



# 'Chardonel'

(Cornell - 'Seyval Blanc' x 'Chardonnay hybrid')

- **Strengths:**
  - Good cold hardiness
  - Good heat tolerance
  - Good disease resistance
  - Versatile
- **Weaknesses:**
  - Over cropping?
  - Ripe rots?
  - Limited local testing
  - Phylloxera susceptible





# 'Vidal Blanc'

(hybrid)

- **Strengths:**
  - Good cold hardiness
  - High yields
  - Late bud break
  - Versatile – work horse
    - BF to Ice!
- **Weaknesses:**
  - Over cropping
  - Susceptible to DM (leaf)
  - Susceptible to tomato & tobacco ringspot viruses
    - Must graft to rootstock



# 'Traminette'

(Cornell - JS 23-416 x 'Gewürztraminer' hybrid - 1996)

- **Strengths:**
  - Good productivity
  - Moderately hardy
  - Mid season harvest
  - Good disease resistance
  - Excellent fruit quality
    - Spicy, aromatic
- **Weaknesses:**
  - limited DM?
  - Vigor
  - Late ripening?
  - Vertebrate pests!





# 'Pinot Gris'/'Pinot Grigio' (*vinifera*)

- **Strengths:**
  - Widely adapted
  - Fair cold hardiness
  - Early harvest
  - Consumer recognition
  - Good cool climate quality
- **Weaknesses:**
  - Susceptible to botrytis
    - Tight clusters
    - Trace bloom leaf pull



# 'Pinot Blanc'

(*vinifera*)

- **Strengths:**
  - Similar to Pinot Gris (sport)
  - Fair cold hardiness
  - Early-mid harvest
  - High quality wine
- **Weaknesses:**
  - Consumer recognition
  - Susceptible to botrytis?
    - Tight clusters



# 'Riesling'

(*vinifera*)

- **Strengths:**
  - Regional recognition
  - Consumer recognition
    - Quality wine
  - Regional Adaptation
  - Fair cold hardiness
  - Mid harvest
- **Weaknesses:**
  - Susceptible to botrytis
    - Tight clusters





# 'Chardonnay'

(*vinifera*)

- **Strengths:**
  - Adaptable cultivar
  - High fruit quality - recognition
  - Good Yields (4 t/a)
  - Fair cold hardiness
  - Clones available
- **Weaknesses:**
  - Early bud break - frost
  - Susceptible to botrytis, PM, DM, and GY



# 'Grüner Veltliner'

*(vinifera – Austria, Italy, Germany, Slovenia, Czech R)*

- **Strengths:**

- Cool climate
- Hardiness?
- Medium ripening
- Name recognition

- **Weaknesses:**

- Hardiness?
- Typical diseases
- Heat tolerance/acid?
- Limited testing;

- **Wine**

- Green apple, white pepper, lentil; to citrus
- Structure, minerality, full bodied; age like Burgundy
- Food friendly



# 'Pinot Noir'

(*vinifera*)

- **Strengths:**
  - Regional recognition
  - Consumer recognition
  - Early ripening
  - High quality fruit cool climate
- **Weaknesses:**
  - Susceptible to fruit rot
    - tight cluster
  - Narrow window of ripening





# 'Lemberger'

(red *vinifera*)

- **Strengths:**
  - Good cold hardiness (=CabFranc?)
  - Early harvest
    - < CabFranc at WMREC
  - Good color – manage crop
  - Good cluster disease resistance
- **Weaknesses:**
  - Name!
  - High yields – needs management!
    - color
  - Inconsistent – crop management?



# 'Merlot'

*(red vinifera)*

- **Strengths:**
  - High demand
  - Excellent fruit quality
  - Ripens early
- **Weaknesses:**
  - Cold tender
  - Susceptible to bunch rot
  - Sideways!



**Only best sites!**

# 'Cabernet Franc'

(*vinifera*)

- **Strengths:**
  - Good demand and value
  - Good rot resistance
  - Cold hardiness > Cab Sauvignon
  - Ripens earlier than CS
  - Clone choices (#1 and #214)
  - Quality wine
- **Weaknesses:**
  - Occasionally poor fruit set
  - Leaf roll virus
  - Herbaceous when under ripe





# American Varieties



'Niagara'



'Catawba'



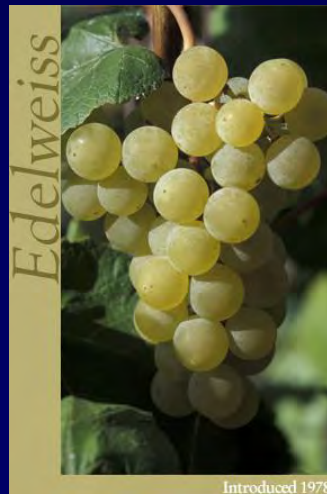
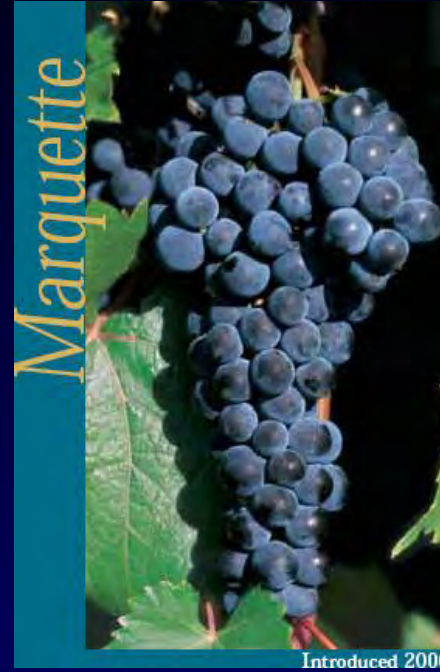
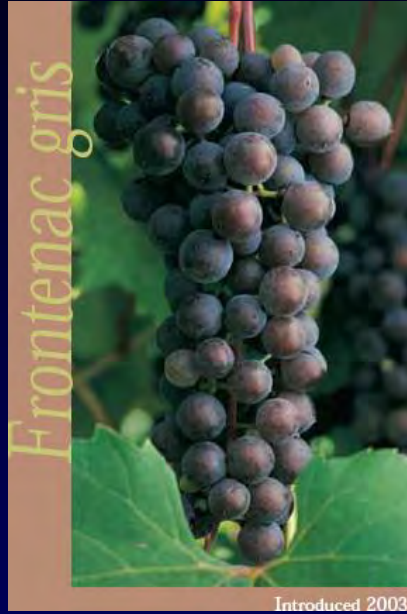
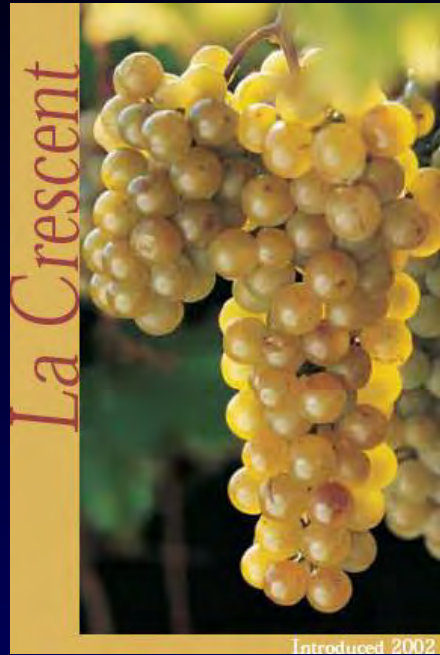
'Delaware'



'Concord'

Wine and Juice

# “Super Hardy Hybrids”





# 'Frontenac Blanc'

(MSHH sport - 2012)

- **Strengths:**
  - Earlier harvest
  - Disease resistant
  - High quality
    - versatile
  - White wine
    - Peach
- **Weaknesses:**
  - Vigorous
  - High acidity





# 'LaCrosse'

(Swenson hybrid – MxS X Seyval -1983)

- **Strengths:**

- Very cold hardy
- Mod-late bud break
- Mid-late maturity
- Productive
- Tolerant to 2,4-D
- Excellent wine

- **Weaknesses:**

- Vigorous but upright
- Susceptible to BR, Botrytis, DM
  - Not sensitive to S and Cu
- Subject to sunburn
- Suscept to Phylloxera



# 'LaCrescent'

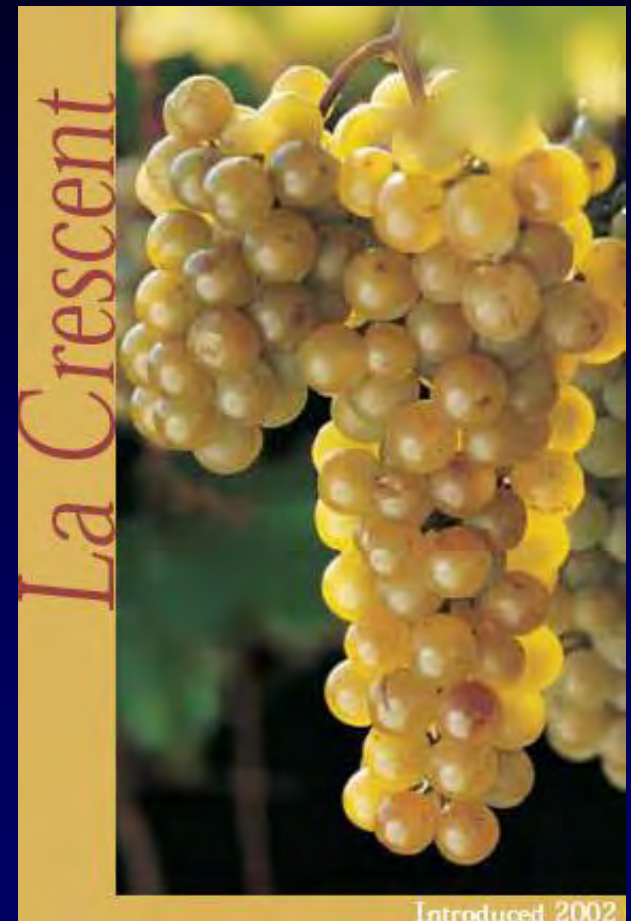
(MSH hybrid - MN1166 - 2002)

- **Strengths:**

- Very cold hardy
- Early bud break
- Sprawling habit
- Moderate disease resistance – BBR, CG, PCB
- White wine
  - Apricot, citrus, tropical

- **Weaknesses:**

- High vigor
- Mod susceptibility BR, A
- PM; High acidity



# 'Brianna'

(Swenson hybrid – “Kay Gray X ES2-12-13 -2001)

- **Strengths:**
  - Very cold hardy
  - Easy management
  - Early-mid maturity
  - Productive – no thinning
  - Aromatic wine
- **Weaknesses:**
  - Vigorous but semi-procumbent
  - Mod Susceptible to BR, Botrytis
  - Slight DM PM
    - Not sensitive to S (Cu?)
  - Highly susceptible to CG
  - Slight susceptible to 2,4-D





# 'St Croix'

(SH hybrid – Swenson 2-3-21 - 1981)

- **Strengths:**

- Hardy
- Mid-late bud break
- Small-med clusters
- Productive – thin?
- Resistant BR

- **Weaknesses:**

- Very vigorous; shoot thin
- Moderate DM, Botrytis, PM
  - Not S and Cu sensitive
- Mod acid/Neutral



# 'Marquette'

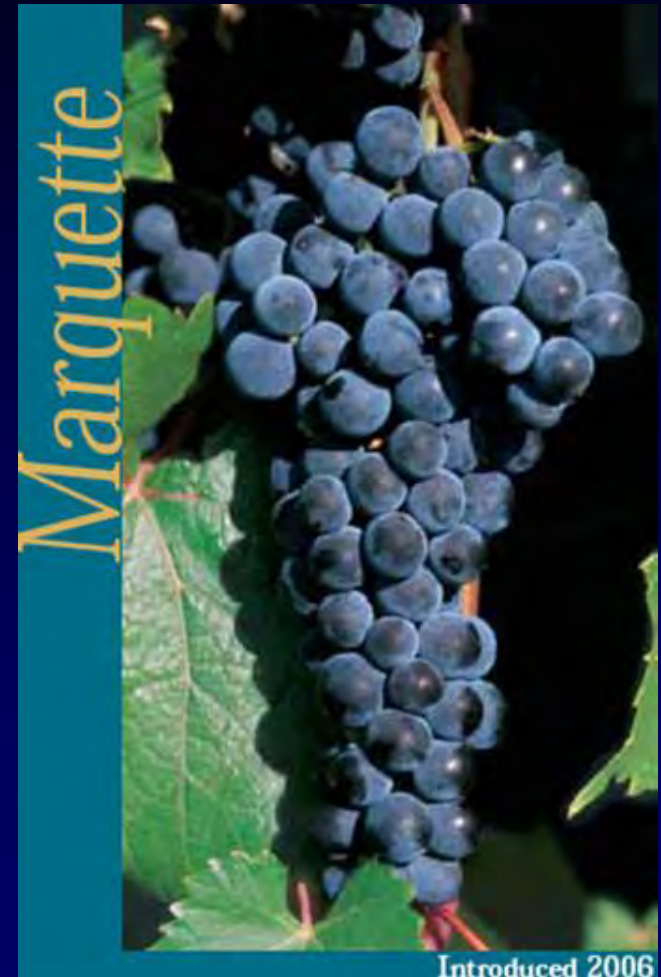
(MSH hybrid – MN1211 - 2006)

- **Strengths:**

- Very hardy
- Early bud break
- Early-mid season ripening
- Mod-resistant BR, DM, BBR, PM
- High quality/fruity
  - Acidity is manageable
  - Cherry and black currant
  - Pepper, tobacco, leather
  - Medium bodied

- **Weaknesses:**

- Sensitive to 2,4-D/Dicamba
- Crown Gall/Phylloxera?
- Sugar/acidity?





## SCRI Grant

“Improved grape and wine quality in a  
challenging environment”

<http://www.arec.vaes.vt.edu/alson-h-smith/grapes/viticulture/research/scri-index.html>

**NE1020 Variety Trial**

“National” Variety Trial

Dr. Paolo Sabatini



# Varieties planted

50% white and 50 % red  
40% hybrids and 60% vinifera



## Southwest

### Mandatory Core

Merlot, Cabernet Sauv

### Hybrid

Brianna, Chardonel, GR7, Marquette, Noiret, NY760844.24, Phoenix, Regent, Traminette, Valvin Muscat, Valvin Muscat

### Vinifera

Albarino, Barbera, Dolcetto, GM318, Gruener Veltliner, Lagrein, Marsanne, Merlot, Petite Sirah, Rousanne, Sauv. Gris, Sauv. Bl. Musque, Sauv. Blanc, Semillon, Tempranillo, Teroldego, Tocai Fruilano, Muscat Blanc

## Northwest

### Mandatory Core

Pinot noir, Cabernet Franc

### Hybrid

Brianna, Chambourcin, Corot Noir, Frontenac, La Crescent, Noiret, NY76.0844.24, NY81.0315.17, St. Croix, Vidal

### Vinifera

Albarino, Cinsault, Dornfelder, Gruner Veltliner, Lagrein, Rkatsiteli, Semillon Teroldego, Tocai Friulano, Zweigelt

# Preliminary recommendations



## Cool-cold climate vinifera cultivars

Core	Emerging from private and MSU evaluation in the NW and SW	Evaluated and not suggested
<p>                     Cabernet franc                      Chardonnay                      Gamey noir                      Gewürztraminer                      Merlot                      Pinot gris                      Pinot noir                      Riesling                      Pinot blanc                 </p>	<p>                     Dornfelder                      Gruner Veltliner                      Lagrein                      Rkatsiteli                      Teroldego                      Tocai Friulano                      Zweigelt                      Sauvignon Gris                      Sauvignon Blanc Musque                 </p>	<p>                     Albariño                      Cinsaut                      Feher Szagos                      Madeline Angevine                      Moscato Canelli                      Moscato Giallo                      Muscadella du Bordelais                      Muscat Ottonel                      Fiano                      Orange Muscat                      Semillon                      Siegerrebe                      Touriga National                 </p>

***““Wine was given by God, not that we might be drunken, but that we might be sober. It is the best medicine when it has moderation to direct it. Wine was given to restore the body’s weakness, not to overturn the soul’s strength.”***

**St. John Chrysostom  
(4th Century preacher)**



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