Viticulture, enology and marketing for cold-hardy grapes

# Marquette and Frontenac: Ten Viticulture Tips

John Thull and Jim Luby
University of Minnesota

Photo by Nicholas Howard

Photo by Dave Hansen
Univ. of Minnesota

# Marquette

- Introduced in 2006 by UMN
- MN1094 x Ravat 262


Photo by Steve Zeller, Parley Lake Winery

# Marquette Site Selection and Vineyard Establishment

- Hardiness will be compromised on wet, fertile sites.
  - Always avoid low spots for planting.

Photo by David L. Hansen, University of Minnesota

# Marquette Site Selection and Vineyard Establishment

- Primary shoots are invigorated on VSP trellises.
  - Can be favorable on less fertile sites.
  - Yields will suffer if planted to VSP on very fertile ground.
- High Cordon training generally recommended for higher yields.

Photo by David L. Hansen, University of Minnesota

# Marquette
# Training and Pruning

- Heavier average cluster weights from longer spurs and even 10-12 bud canes than from short spurs.
- 6 to 8 buds per trellis foot can give good yields for vines spaced 6 feet apart.

Photo by David L. Hansen, University of Minnesota

# Marquette
# Training and Pruning

- Early Bud Break
  - some growers double prune or use dormancy inducing spray on Marquette.
  - Strong tendrils can slow down the pruning process.

Photo by David L. Hansen, University of Minnesota

# Marquette
# Training and Pruning

- Lateral shoot development is substantial.
  - Summer lateral shoots coming from the leaf axils should be removed around the fruit zone.

Photo by David L. Hansen, University of Minnesota

# Marquette
# Disease and Pest Management

- Black Rot, Anthracnose, and Powdery Mildew infections can become severe if not treated timely.
  - Very good resistance to Downy Mildew

Photo by David L. Hansen, University of Minnesota

# Marquette Harvest Considerations

- Fruit sugar levels can surpass 26 Brix.
  - Leaf pulling and canopy opening can be done later, but before veraison, to avoid high sugar and high acid situations.
- Fruit splitting or rot is rare if a good spray program was implemented during the season.
  - Harvest usually in mid to late September before the Frontenac Family.

Photo by David L. Hansen, University of Minnesota

# Frontenac Family

- Frontenac introduced 1996 by UMN
- Vitis riparia UMN 89 x Landot 4511
- Frontenac gris introduced 2003 by UMN
- Frontenac blanc (possibly several) introduced ~2010-2012 by several nurseries

.

Photo by David L. Hansen, University of Minnesota

# Frontenac Family

- The noir, gris and blanc versions of Frontenac behave similarly in the vineyard.
- Frontenac gris seems to yield slightly more than the original Frontenac in side by side comparisons.
- Frontenac gris several days earlier maturity

Photo by David L. Hansen, University of Minnesota

# Frontenac Family Site Selection and Vineyard Establishment

- Frontenac is very fruitful with large average cluster weights often of 1/3 pound.
- VSP or High Cordon work well according to the soil fertility, with High Cordon being favored.

Photo by David L. Hansen, University of Minnesota

# Frontenac Family Training and Pruning

- Very hardy vines make them best candidates to prune first if early pruning is necessary.
- Pruning to short spurs of 2-3 nodes on established cordons will give good yields.
- 4 to 6 buds retained per trellis foot is sufficient.

Photo by David L. Hansen, University of Minnesota

# Frontenac Family Disease and Pest Management

- Disease Resistance is high across the board, with some susceptibility to powdery mildew.
- Phylloxera infestation can become severe if left untreated.

Photo by John Thull, Univ. of Minnesota

# Frontenac Family Harvest Considerations

- Berry dimpling on late ripened fruit is favorable for wine quality, despite the lower yield resulting from water weigh loss.
  - Harvest is often in late September or early October in Minnesota.

Photo by David L. Hansen, University of Minnesota

# Thank you!

USDA NIFA

# Viticulture, enology and marketing for cold-hardy grapes

**Kalley Besler, Padmapriya Swaminathan, Anne Fennell – SDSU**

**Somchai Rice, Jacek Koziel, Murli Dharmadhikari, Devin Maurer – ISU**

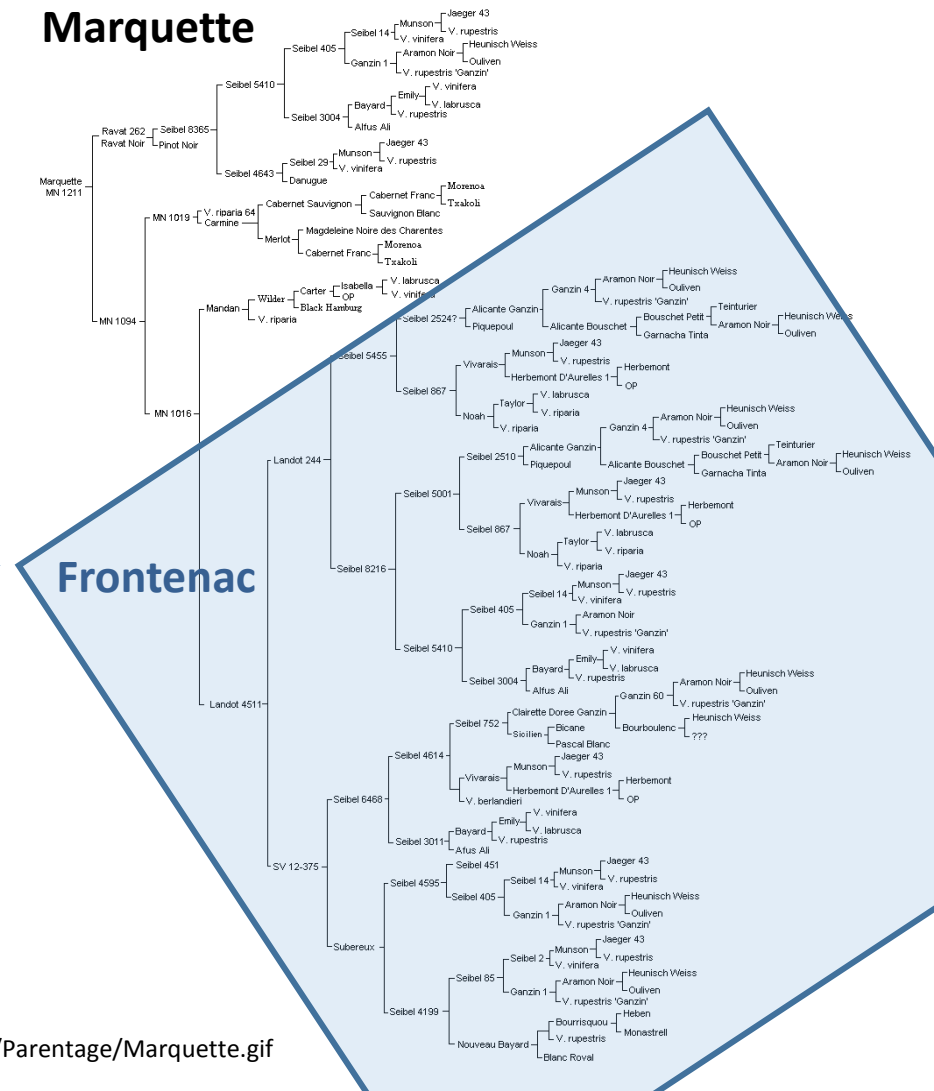
**Emily Del Bel, Soon Li Teh, Bety Rostandy, Jenna Brady, Zata Vickers, Adrian Hegeman, Jim Luby – UMN**

The Northern Grapes Project is funded by the USDA's Specialty Crops Research Initiative Program of the National Institute for Food and Agriculture, Project #2011-51181-30850 www.northerngrapesproject.org

# Marquette and Frontenac Fruit Ripening

- **Marquette**
- **Frontenac (*V. riparia* x Landot 4511)**

**Pedigree in common between Frontenac (parent) and Marquette (great grandparent)**




http://chateaustripmine.info/Parentage/Marquette.gif

# Genomics and Fruit Composition: Link Genetics to Sensory (SDSU, UMN, IA State)

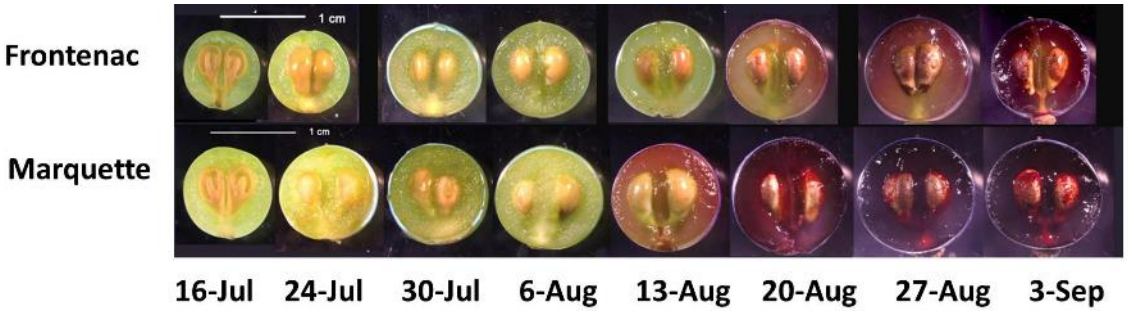



Fig. 1 Change in berry size, seed maturation and pulp pigmentation during ripening in Frontenac and Marquette.

## From veraison to harvest:

1. What genes are activated?
2. What metabolites are produced?
3. What sensory descriptors develop?
4. How do genes, metabolites and sensory descriptors correlate?

# Genomics and Fruit Composition: Link Genetics to Sensory (SDSU, UMN, IA State)

**Berry Samples**
**20 to 26°Brix**

↓

**Transcriptome**
**(genes)**

↓

**Metabolome**
**(sugars, acids, flavors anthocyanins)**

↓

**Sensory descriptors**

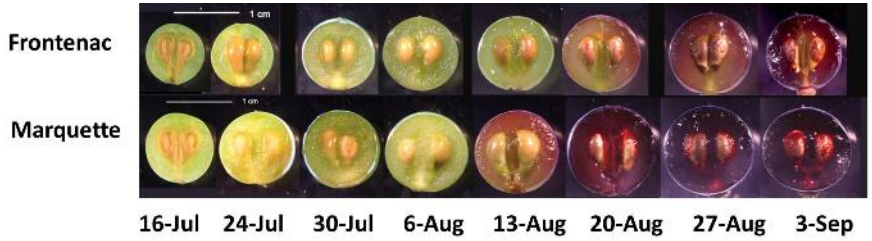
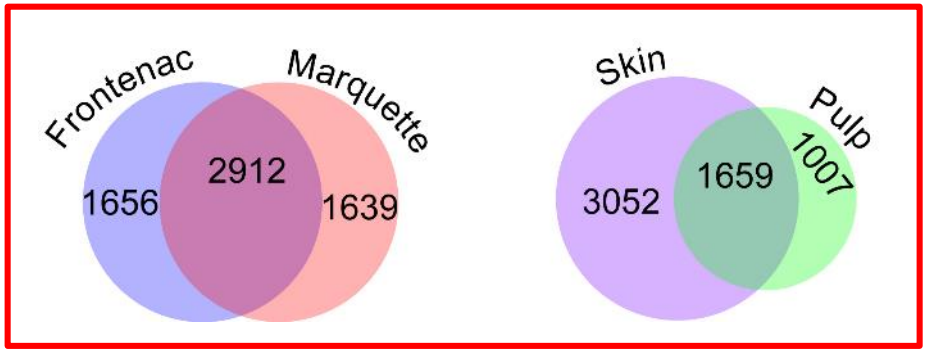



Fig. 1 Change in berry size, seed maturation and pulp pigmentation during ripening in Frontenac and Marquette.





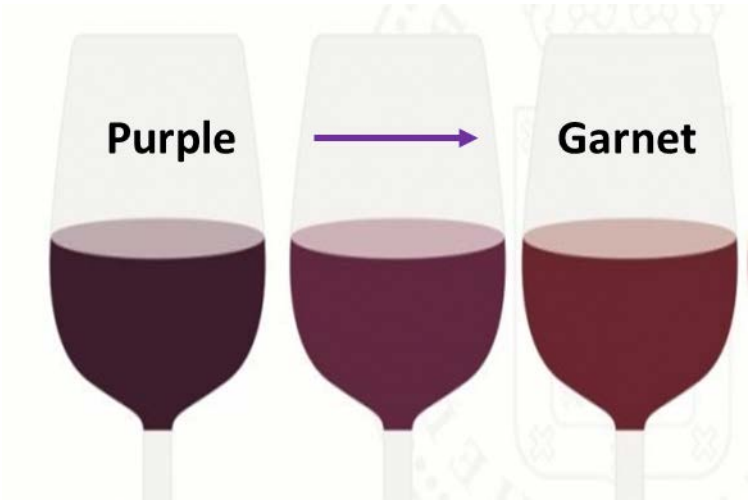

# Genomics and Fruit Composition: Link Genetics to Sensory (SDSU, UMN, IA State)

**Do gene expression differences conincide with existing knowledge?**

- Anthocyanin biosynthesis genes preferentially expressed in berry skins
- Expression of anthocyanin biosynthesis genes significantly greater expression in Frontenac than Marquette

| | Front Skin | Marq Skin |
|---|---|---|
| VIT_05s0062g00720 | 36 | |
| VIT_12s0034g00080 | 47 | |
| VIT_02s0033g00450 | 159 | 42 |
| VIT_02s0033g00390 | 165 | 84 |
| VIT_05s0049g01020 | 429 | 120 |
| VIT_02s0033g00380 | 531 | 219 |

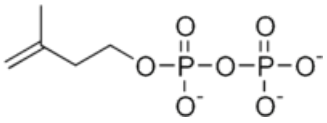
**Anthocyanin biosynthesis genes differentially expressed in between Frontenac and Marquette**



# Genomics and Fruit Composition: Link Genetics to Sensory (SDSU, UMN, IA State)

## Are differences in gene expression related to aroma or flavor?

- > number of genes significantly expressed in the berry skins than berry pulp
- distinct cultivar gene expression patterns for terpenoid biosynthesis genes



## Terpenoid biosynthesis gene expression

Marquette E-beta-ocimene synthase: Terpy, woody green, vegetable nuances

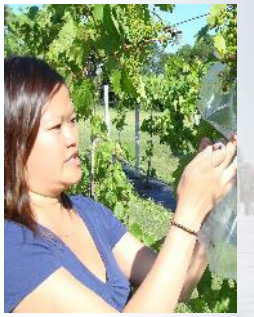
Frontenac Pinene synthase: eucalyptus and camphoraceous note with a spicy peppery and nutmeg nuance

| | Front Skin | Marq Skin |
|---|---|---|
| VIT_12s0134g00030 | 0.0 | 8.5 |
| VIT_06s0004g06480 | 0.1 | 2.0 |
| VIT_17s0000g05580 | 0.2 | 1.4 |
| VIT_01s0010g02320 | 0.5 | 2.5 |
| VIT_13s0067g00380 | 0.6 | 0.1 |
| VIT_15s0046g03600 | 0.8 | 3.5 |
| VIT_13s0067g00370 | 0.8 | 0.2 |
| VIT_19s0135g00200 | 1.9 | 4.9 |
| VIT_00s0253g00140 | 1.9 | 0.4 |
| VIT_19s0135g00190 | 2.4 | 5.2 |
| VIT_05s0049g00400 | 3.6 | 1.4 |
| VIT_15s0046g03570 | 3.7 | 1.2 |
| VIT_08s0032g00240 | 5.0 | 2.4 |
| VIT_15s0021g01060 | 6.7 | 3.2 |
| VIT_11s0016g01290 | 7.4 | 1.2 |
| VIT_19s0015g02500 | 9.1 | 1.9 |
| VIT_17s0000g09610 | 13.3 | 1.7 |
| VIT_15s0048g01490 | 22.3 | 4.8 |
| VIT_02s0025g04880 | 119.5 | 35.3 |

# Genomics and Fruit Composition:

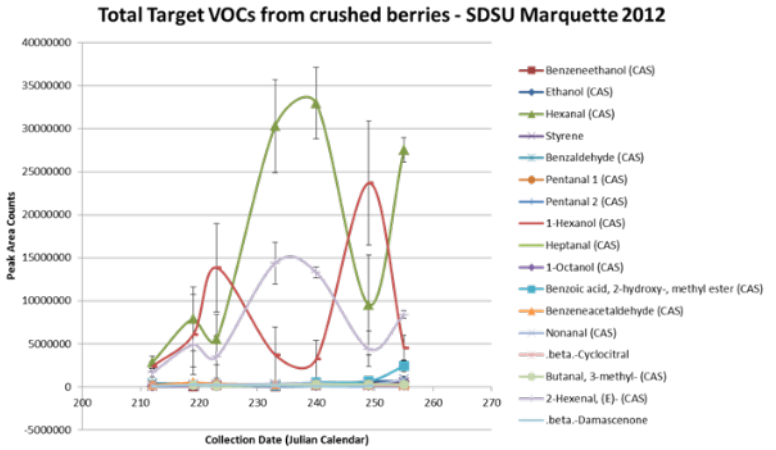
- **Distinct cultivar differences exist in gene expression patterns**
- **Differences in expression of genes related to aroma and flavor are found between Marquette and Frontenac.**
- **Results will be correlated with chemical data.**

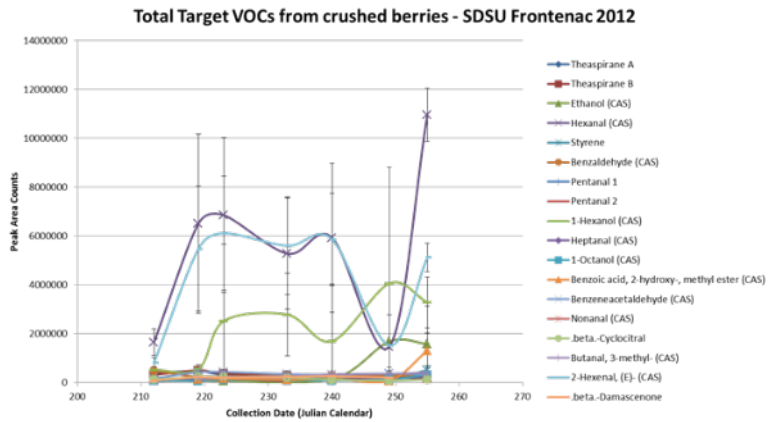
# Kosiel Lab:
## Volatile Organic Compounds (VOCs); Somchai Rice



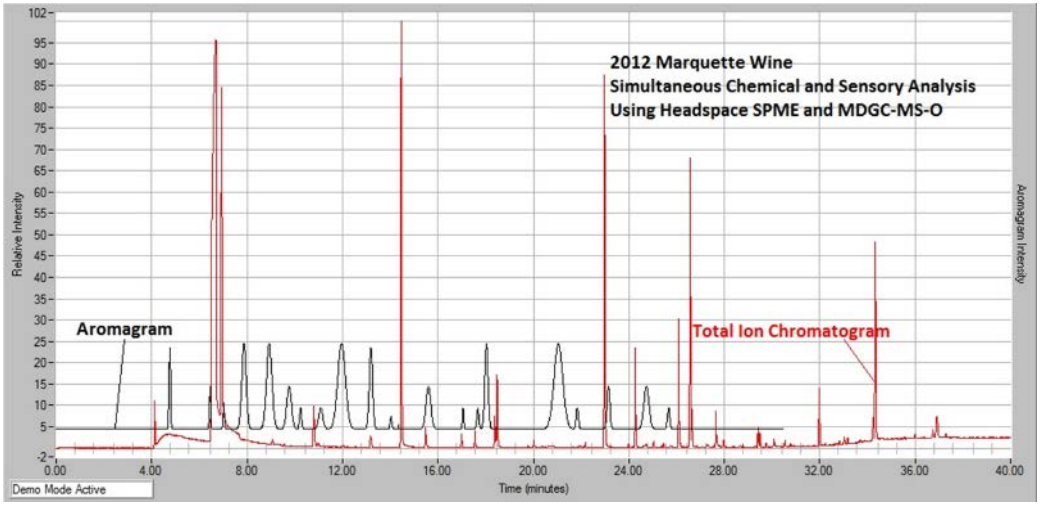
**VOCs emitted in-vivo or crushed berries from Frontenac and Marquette (SDSU).** Levels of these compounds varied by grape cluster maturity.

| Compound | Aroma Descriptor* |
|---|---|
| Hexanal | Grass, Tallow, Fat |
| Heptanal | Fat, Citrus, Rancid |
| Acetic acid | Sour |
| Octanal | Fat, Soap, Lemon, Green |
| Salicyclic acid TMS | |
| Nonanal | Fat, Citrus, Green |
| Decanal | Soap, Orange peel, Tallow |
| 15-crown-5 ether | |
| * www.flavornet.org | |



# Volatile Organic Compounds (VOCs)




Chromatagram Left to right

a) lighter fruity floral notes

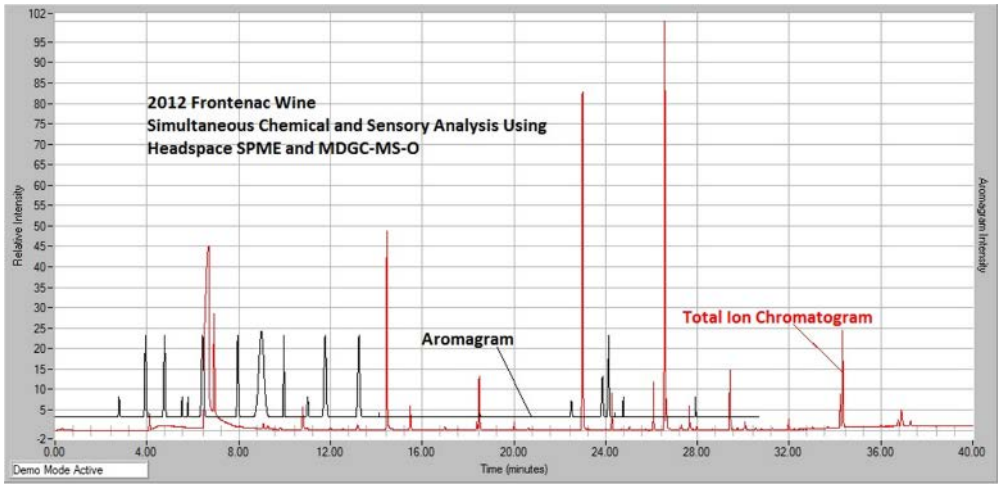
b) phenolics and green aromas

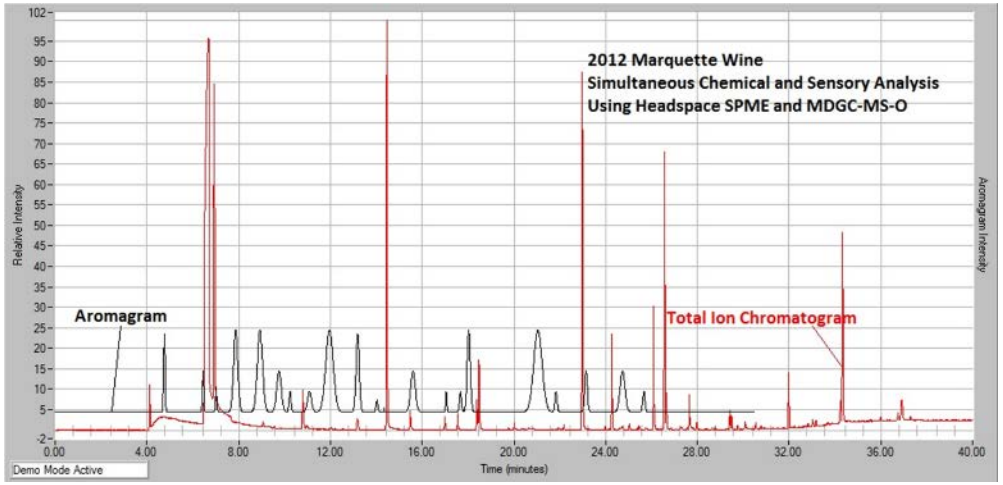
c) woody earthy

**Olfactory:**

**Marquette: more berry woody earthy notes**

**Frontenac: floral, banana, fruity, strawberry**



IOWA STATE UNIVERSITY
Agricultural and Biosystems Engineering

14th International Symposium on Hyphenated Techniques in Chromatography and Separation Technology
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# Farming for flavor: Impact of early and late harvest time on wine aromas of Marquette and Frontenac cultivars using multidimensional gas chromatography – mass spectrometry - olfactometry

## Abstract:

**Marquette and Frontenac are relatively recent cultivars developed and released by the University of Minnesota Fruit Breeding Program (Peter Hemstad and Jim Luby). Little is known about the flavor and aroma of wines made from these grapes.**

- **Marquette** is a complex hybrid that resulted from a cross between:
  - MN 1094 (a complex hybrid of *V. riparia*, *V. vinifera*, and other *Vitis* species) and Ravat 262 (an offspring of Pinot noir),
  - Marquette shares part of its complex pedigree with Frontenac as MN1094 is ~25% Landot Noir,
  - cross was made in 1989, vine selected in 1994, patented in 2005 and commercially released in 2006
  - Marquette is very cold-hardy below -29°C

- **Frontenac** resulted from a cross between:
  - Landot Noir and V. *riparia*
  - cross was made in 1978, vine selected in 1983, and introduced in 1996.
  - Frontenac is cold-hardy below -29 °C

**(1) Marquette - 22 °Brix**
**(2) Marquette - 24 °Brix**


**(3) Frontenac- 22 °Brix**
**(4) Frontenac - 24 °Brix**



**Automated headspace SPME, *simultaneous multidimensional* GC – MS – Olfactometry was used to evaluate sugar content at harvest on key aroma compounds in cold-hardy red wines.**

## Method:

- Lab scale batches of wine were made using a proprietary method from berries of Marquette and Frontenac cultivars.
- Each cultivar was harvested at 22 °Brix and 24 °Brix
- Each degree Brix is equivalent to 1 g of sugar per 100 grams of grape juice.
- 4 mL wine samples (n=3) were analyzed using automated headspace SPME coupled with multidimensional GC – MS – Olfactometry (MDGC-MS-O), described elsewhere.
- The 22 and 24 °Brix Marquette and Frontenac wine samples were characterized for key aromas; undiluted and diluted with model wine (**MW**) (1:2, 1:4, 1:8, 1:16, 1:32).
- The most persistent aromas detected in the most dilute wine samples were determined to be the major contributor to the total aroma profile of the wine.

## Results:

- **Fewer VOCs detected in-vivo than in crushed berries**
  - **Theaspirane detected in Frontenac but not in Marquette crushed berries. (odor:** tea herbal green wet tobacco leaf metallic woody spicy; **taste:** herbal and piney nuance)
  - **Benzene ethanol detected in Marquette but not in Frontenac crushed berries. (odor:** floral rose phenolic balsamic; **taste:** Sweet, floral, fruity with chemical nuances
- **Isoamyl alcohol and ethyl octanoate were the key aroma compound in 24 °Brix Frontenac wine, described by human panelist as chocolate, molasses, and dusty, respectively.**
- **Isoamyl alcohol was the key aroma compound in 24 °Brix Marquette wine, described by human panelist as chocolate.**

# Vickers Lab: Emily Delbel Berry and wine sensory analysis

**Trained Panelist: aroma, sweetness, acidity, bitterness, flavor descriptors and astringency**



**Berries:**

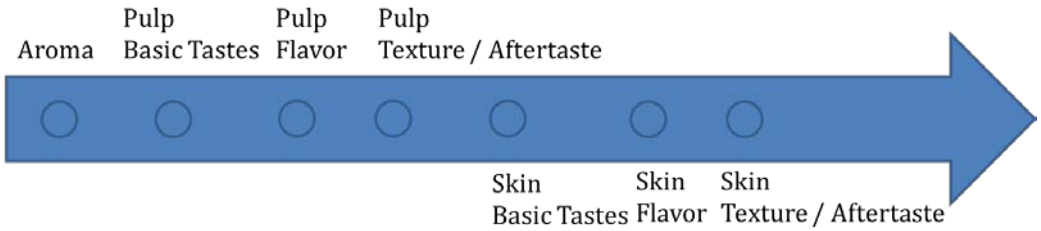
**Skin & Pulp**

**22, 24, 26 Brix**

**Replicated testing:**

**12 panelists**

**5 separate tests**



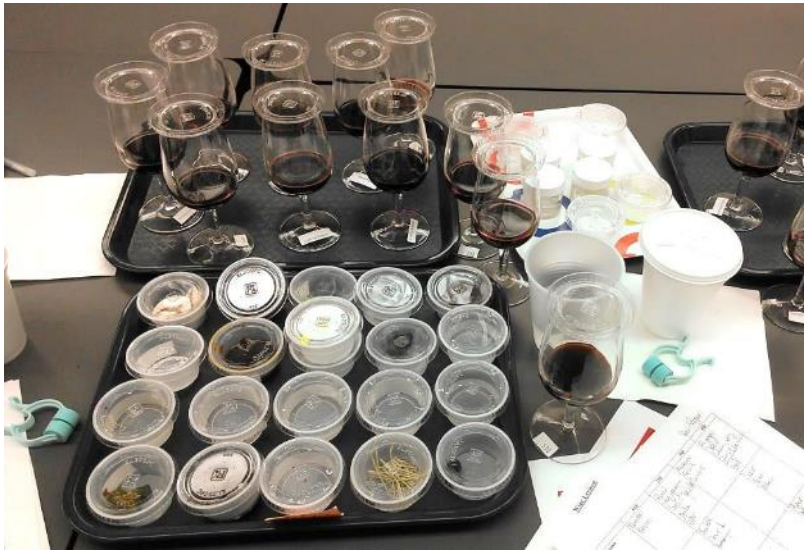

| Attribute | Composition |
|---|---|
| Fresh Fruit | Two pieces of each diced apples, pears, strawberries, plums, blueberries, and raspberries. intensity=10 |
| Dried Fruit | Raisins |
| Citrus Fruit | Lemon peel, lime peel, orange peel |
| Fermented Fruit | Previous day's "Fresh Fruit" stored in the refrigerator until use |
| Jammy | Blackcurrant preserves (Duerr's®) |
| Fresh Green | Green strawberry tops |
| Green Wood | Green table grape stems, cut into 2 inch pieces |
| Earthy/Musty | Potting soil, intensity=6 |
| Hay | Hay |
| Floral | Crushed violet candy (Chowards®) |
| Metallic | 0.005% Ferrous Sulfate |
| Artificial Grape | Grape hard candy (Jolly Ranchers®) |
| Sweetness | 5.0% sucrose in distilled water |
| Sourness | 0.075% citric acid in distilled water |
| Bitterness | 0.057% caffeine in distilled water |
| Astringency | 1.25g alum in 500mL water; intensity=12 |

**Wines:**

**12 panelists**

**5 separate tests**

**Wines produced for study by:**



| Attribute | Composition |
|---|---|
| Artificial Banana* | 3 banana Runt candies dissolved in 500 ml red wine, ½ runt in cup |
| Black Currant | Cassis gummy candy |
| Cooked Berry | Cooked berry blend |
| Dark Fruit | Tart cherry, plum and pomegranate juice, blackberry jam, red plum |
| Cooked Vegetable* | 5 ml each from canned asparagus and green beans im 500 mL red wine |
| Fresh Green | Fresh green beans and asparagus |
| Woody | Cedar shavings, French and American oak chips |
| Hay | Hay |
| Black Pepper* | Black pepper, crushed in wine |
| Spice* | Allspice, crushed in wine |
| Floral | Rose water- diluted |
| Ethanol | Ethanol on a cotton pad |
| Chemical | Diluted isopropyl alcohol |
| White Mushroom | Sliced white button mushrooms |
| Dried Mushroom | Water from rehydrated dried mushroom blend |
| Tamari | San-J brand organic tamari |

# Berry Aroma and Flavor

- **Frontenac**

  **Pulp:**fresh fruit, citrus, jammy, fermented fruit

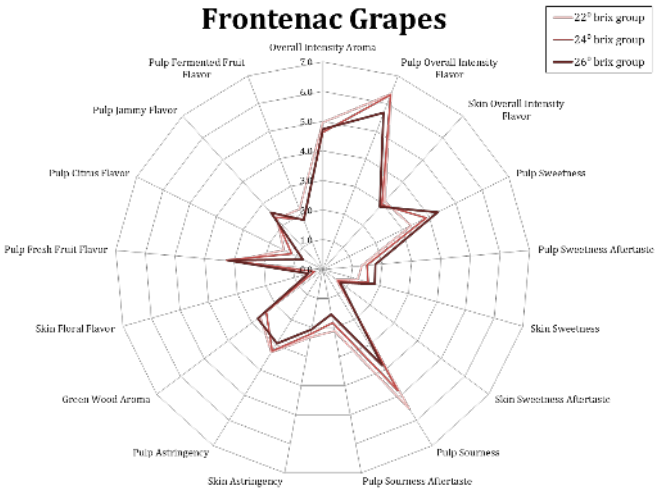
  **Skin:**bitterness

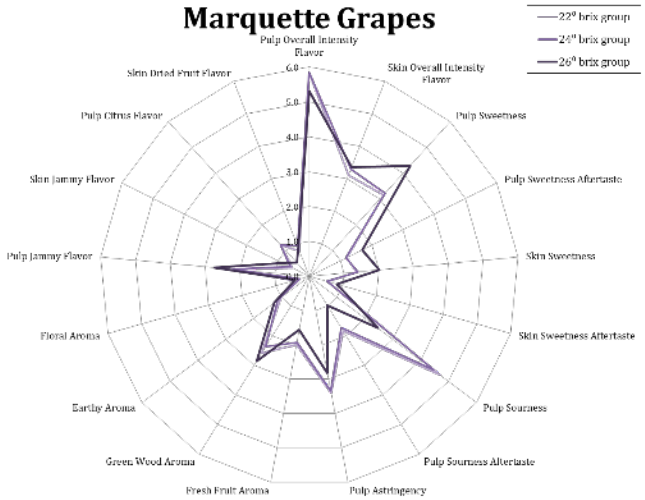
- **Marquette:**

  **Pulp:**citrus, jammy

  **Skin:** bitterness

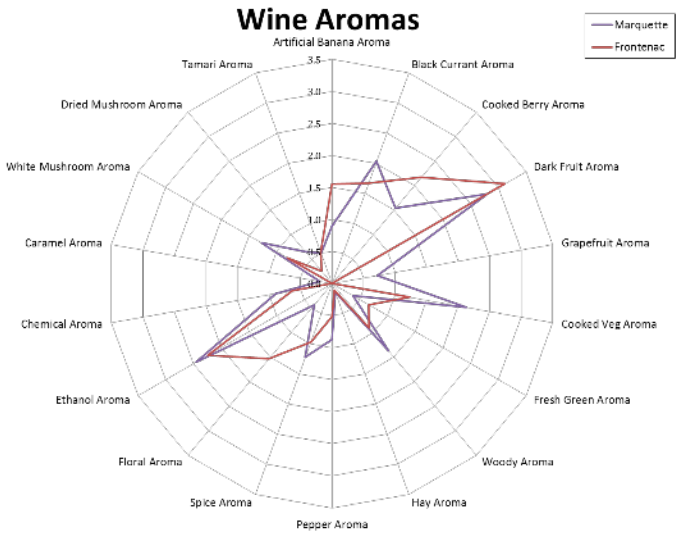
**Overall intensity of flavor, as well as the fresh fruit aroma, citrus flavor, and fermented fruit flavor decreased.**

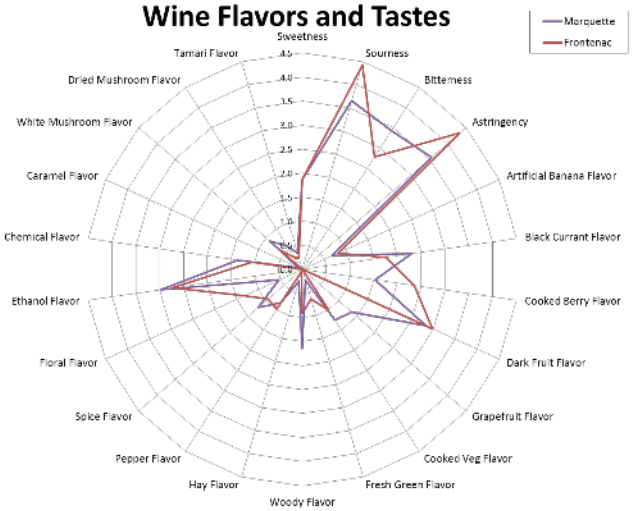


# Wine Flavor and Aromas

- **Frontenac**
  - **Aroma:** dark fruit, floral aroma, banana
  - **Flavor:** sourness, dark fruit, floral, astringency
- **Marquette**
  - **Aroma:** black currant, cooked berry and veg, woody, pepper, spice, white mushroom
  - **Flavor:** black currant, grapefruit, cooked veg, woody, spice, floral, white mushroom bitterness

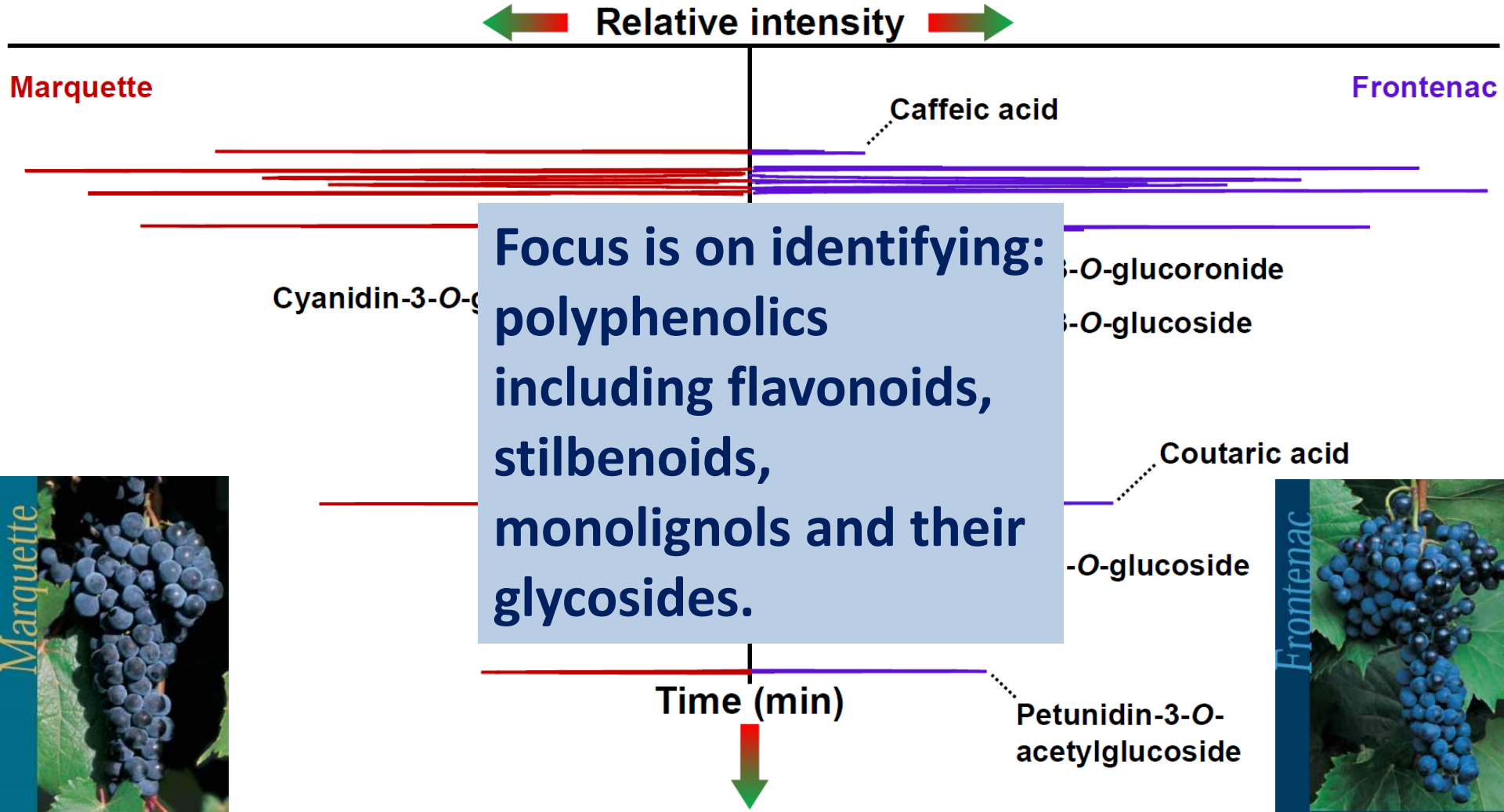


# Genomics and Fruit Composition:

- **Distinct cultivar differences exist in gene expression patterns**
- **Differences in aroma and flavor are found between Marquette and Frontenac.**
- **Results will be correlated with chemical data.**

# Metabolome




Focus is on identifying: polyphenolics including flavonoids, stilbenoids, monolignols and their glycosides.

NORTHERN GRAPES PROJECT

# Viticulture, enology and marketing for cold-hardy grapes

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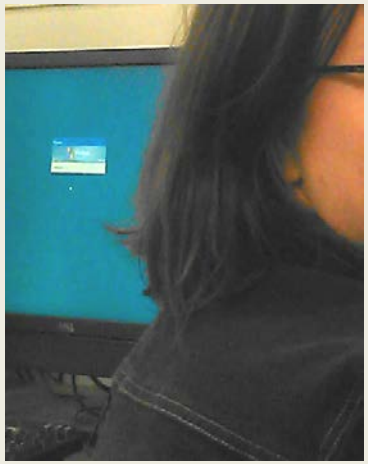






# Marquette and Frontenac

**Viticulture, Fruit Ripening  Enology and Wine Tasting**

Jim Luby, Anne Fennell,

Murli R Dharmadhikari, Somchai Rice

NGP Meeting ,Kalamazoo MI

2/24/16

# Styles of Marquette

- Nouveau 
- Fruit-forward with medium body and mouthfeel with soft finish 
- Dry barrel aged Marquette 
- Rose 
- Full bodied robust and big red with silky mouthfeel 

# Marquette & Frontenac Main
## Winemaking Challenges

- Low Tannins
- Pigment profile relatively un-known
- High acidity especially in Frontenac
- High Malate content

# Phenolics in
## Riparia-based hybrids mg/l

| | Marquette | | Frontenac | | Vinifera | |
|---|---|---|---|---|---|---|
| | Grapes | Wine | Grapes | Wine | Grapes | Wine |
| Tannins | 391 | 207 | 483 | 224 | -- | 1-3 g/L |
| Total Anthocyanins | 743 | 640 | 960 | 601 | 1610 | 1207 |

*Data represents one year and one Iowa location.*

- Relatively low tannin.... can enological tannin additions help produce high-end red wines?
- In vinifera an anthocyanin:tannin ratio of 1-4 is thought to result in harmonious aging.
  - E.g. 500mg/l of anthocyanin and 1-3 g/l of tannin

**(Ribereau-Gayon et al 2000).**

# Styles of Frontenac

- Nouveau

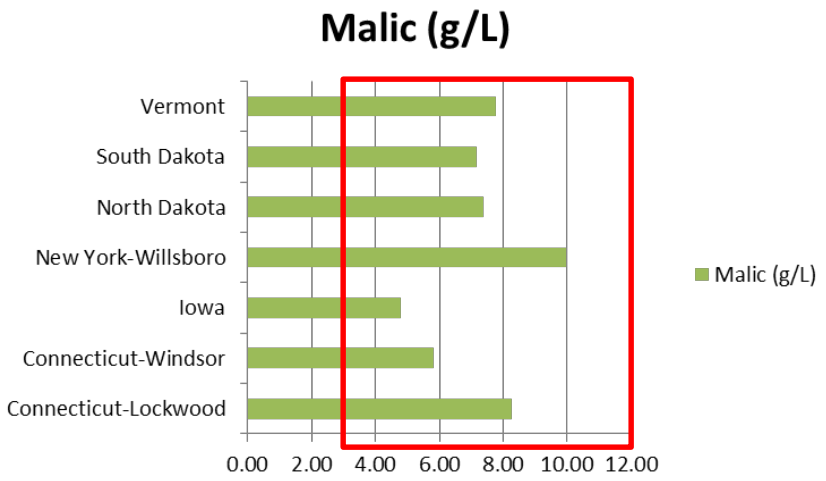
- Fruit forward with medium body and mouthfeel with soft finish

- Port style wine

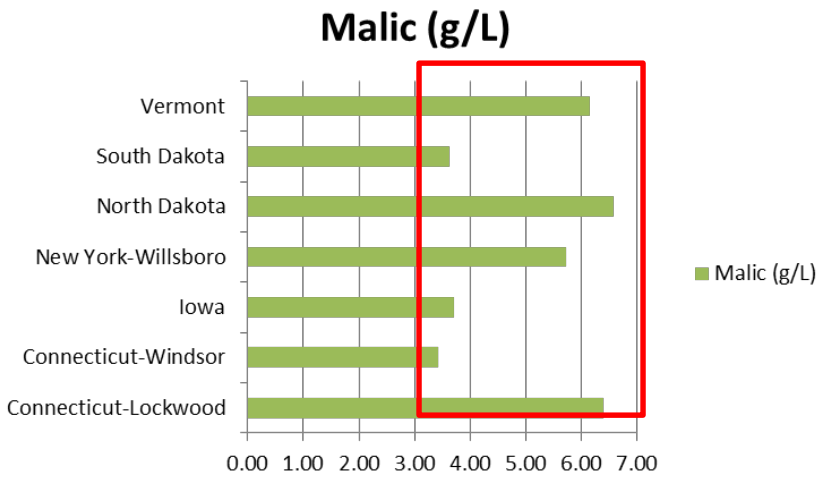
- Hearty full bodied Red

# Frontenac and Marquette Acid Profile

**Frontenac malic acid profile**




**Marquette, Malic acid profile**




The acidity in Marquette & Frontenac can be reduced by using malic converting/degrading yeasts 71 B, SVG, & Lalvin C, and MLF

# Marquette
## Winemaking Suggestions

- De-stem only, do not crush, for “whole berry fermentation”, which enhances fresh fruit qualities and intensity
- Use of “Color-Pro” or other color enzyme at de-stemmer/during pumping for added color development and retention
- Consider short overnight “12-24 hour” cold soak, below 60 $^{F}$
- Use a malic-reducing yeast if needed: **71B**, **SVG**, or Lalvin **C**, or use hybrid yeast **BM4X4** if TA is within a reasonable range, (i.e., below 6.5 g/l), cool fermentation from 68 to 78F
- Add tannin “FT Rouge Soft” at higher rate early in primary fermentation, to help bind color, build mouth-feel and as an additional anti-oxidant
- Inoculate with VP41 ML bacteria half-way through primary fermentation, don’t let temperature after this get over 75F

# Marquette
# Winemaking Suggestions, cont.

- Add DAP and Fermaid K at 1/3 Brix depletion, depending on YAN or detection of H2S aromas, and possibly again at 2/3 Brix depletion
- Press must when dry, use lower pressure during pressing, less than 1.8 bar
- Allow wine to settle a day or two and rack off gross lees into barrel (if the gross lees are very clean and sweet, one may add some small amount of lees to each barrel to promote autolysis)
- MLF may have to finish/complete in barrel, use of Laffort “Oeno-Lees” recommended along with weekly barrel stirring/lees suspension to encourage MLF and autolysis
- Use of “hybrid” barrels (AO staves & FO heads) and neutral barrels recommended, be cautious of using too much new oak or for too long, Marquette easy to over-oak, barrel maturation of 6 to 9 months is usually sufficient. Cold-stabilization can help reduce TA and should be considered
- Blending with lower pH red *vinifera* can be considered, many choices

# Dry Barrel-aged Frontenac Winemaking Suggestions

- Mostly same as dry Marquette , but always use Malic-converting yeast and complete MLF, one can also consider limited **amelioration** before inoculating to help reduce TA
- Can mature longer in barrel, up to 12 months or more, American and Hybrid barrels recommended
- Blending with Higher pH and lower TA *vinifera* wine highly recommended; Cabernet, Merlot, Zinfandel, Petite Sirah
- Cold-stabilizing can reduce TA and should be considered
- SLIGHT sweetening to 0.75% should be considered for balance

# Making Marquette Rose-Style wine

- Barrel-Fermented MARQUETTE ROSE (based on technique of Drew Horton)
- Hand-Harvest, whole-cluster press into settling tank, add pectic enzyme and SO2
- Add Bentolact-S at 50 g/Hl, after SO2 and enzyme have “rested” two hours and stir well
- Allow 1 or 2 days to settle, at lower temperature, less than 50F
- Rack clear juice into neutral oak barrels with 5 inches headspace
- Depending on TA, use malate-converting yeasts like 71B, SVG or Lalvin C. Use hybrid yeasts such as “Alchemy” and “Cross-Evolution” to promote additional aromatics if TA at reasonable level

# Making Marquette Rose-Style wine, cont.

- Watch/smell fermentation closely, add nutrients at 1/3 and 2/3 brix depletion and/or based on YAN, cellar ambient temperature 60F or below preferred
- Rack wine to tank after dryness is reached, check SO2, keep SO2 high enough and temperature low enough to inhibit MLF (55 to 60F is good)
- Use Laffort “Oenolees” at 30g/Hl while filling barrels with wine after first racking
- Stir/re-suspend lees every week, top & monitor barrel SO2 level every month
- Mature for 3 to 5 months in barrel, rack, blend if desired, cold-stabilize, fine, filter and bottle.
- SLIGHT amount of sweetening can be used, or not, not above 1% RS

# Port-Style Frontenac

- FRONTENAC PORT-STYLE WINE (Based on technique by Drew Horton)
- Hand pick at cool temperature if possible, below 60F
- De-Stem only for whole-berry ferment, add Color-Pro enzyme. Cold-soak one day if must was picked cool
- Inoculate 2nd day with D-21 yeast (Promotes soft mouth feel and reduces bitter or green flavors/aromas)
- Punch down or pump-over depending on lot size twice a day, monitor temperature, below 68F recommended
- Second day of ferment add tannin FT Soft Rouge at 50g/Hl
- Monitor Brix and temperature twice a day, when Brix of 10 to 12 is reached, fortify with Neutral Grape Spirit to reach 17 to 20 per cent alcohol by volume

# Port-Style Frontenac, cont.

- Mix in fortification spirit well, add 60ppm SO2 and mix well
- Next day press into tank and chill, let settle for a day or two
- Rack out of tank into barrels, add Laffort “Oeno-lees” at barrel-down at 30g/Hl
- Stir/re-suspend lees every month, during topping/SO2 monitoring schedule
- Rack and return every 4 to 6 months, maximum barrel maturation is 18 months
- Additional sweetening may be considered, heavy toast American oak barrels recommended
- Fine and/or cold-stabilize if needed for reduced TA, filter and bottle

# Marquette

## Parley Lake MI


Medium bodied, well balanced with vanilla and Chocolate .
2013
11 months French oak barrel aging
Alc.14%
Rs 0%
TA7,8g/l
pH 3.63

# Marquette
## Shelburne Vineyard VT

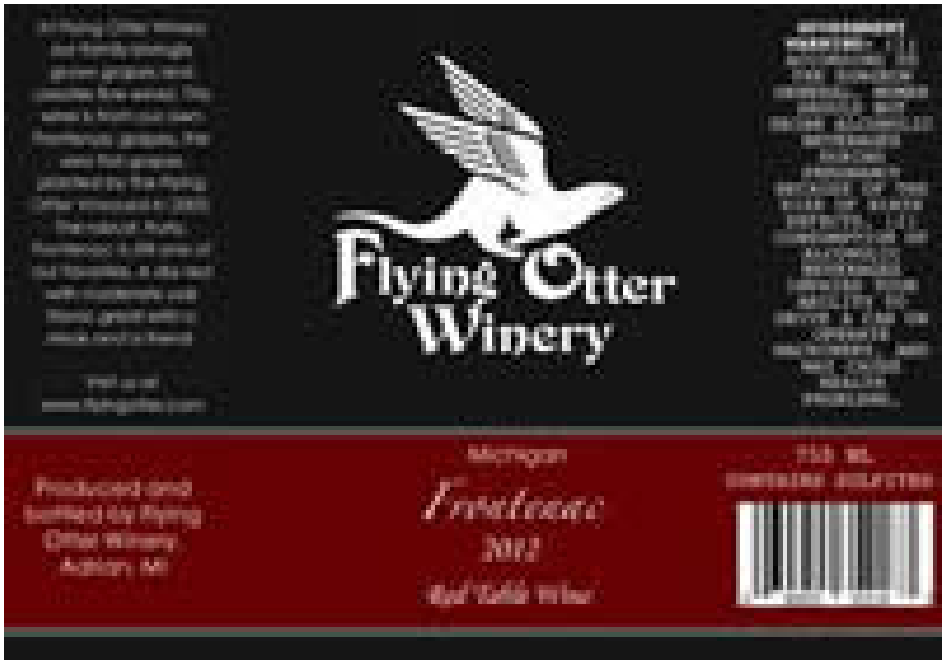
2013 Marquette Reserve Dry Red
2015 International Cold Climate Wine Competition – GOLD
2015 Finger Lakes Int'l Competition – DOUBLE GOLD

"Twelve oak barrels of our 2013 vintage were set aside to age sur lie for 15 months to amplify the fruit characteristics and obtain a fuller mouth-feel. The aroma of our 2013 Marquette Reserve is reminiscent of fresh cherry juice, red licorice, wet stone and spice. Expressive flavors of ripe, red berries, toasted vanilla beans, tobacco and baking coco burst on the palate. The texture is medium bodied with medium acid and finishes with a warm, lingering spice."

• 2013 Marquette Reserve Wine Information Sheet
Harvest Brix 26, alc. 14%, TA 6.6g/l, pH 3.8, RS 0%

# Frontenac

## Flying Otter winery, MI




Food Pairings
Honey Gorgonzola Bruschetta with Prosciutto or Granny Smith Garnish and Starboard Balsamic Reduction

# Frontenac

## Coyote Moon Winery, NY


This Northern Climate grape new to the scene has taken the wine world by storm. Delivering intense structure, the robust flavors of this full-of-life wine will take you to a place you have never been before. This Frontenac will make a statement and leave you wanting more of this old vine feel with new vine variety.

Flavor Description:

Bold flavors of black currant, plum, black cherries, warm oak spice and vanilla.

Chef's Pairing Suggestions:

Pairs with Italian dishes, savory meats, wild game, bold cheeses and chocolate.


Thank
You