# Modning, Høst, Afstilkning, Presning, Forklarering

Studiekreds nr. 2

FDV Mousse Sjælland ERFA gruppen

Carl-Henrik Brogren

# Figure 108. Grape berry development & maturation. (Illustration by J. Koutroumanidis, Winetitles)

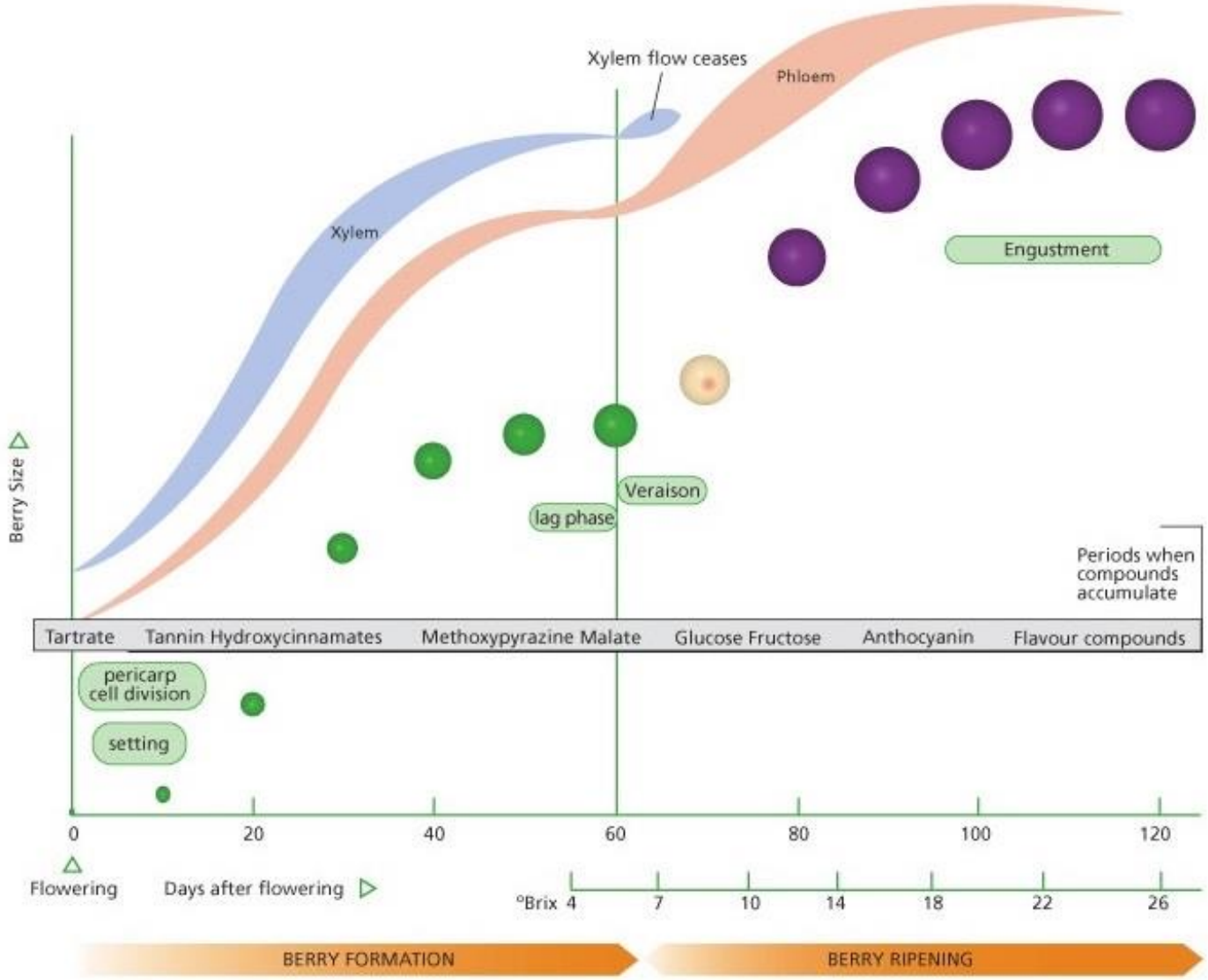


***Figure 1.*** *Changes in soluble solids (oBrix) and TA show the variation of sugar and organic acid concentrations throughout 'Marquette' grape ripening in Chaska, MN. Harvest dates were converted to corresponding accumulated heat units expressed as growing degree days (GDD). e red shaded area indicates the range of peak maturity.*

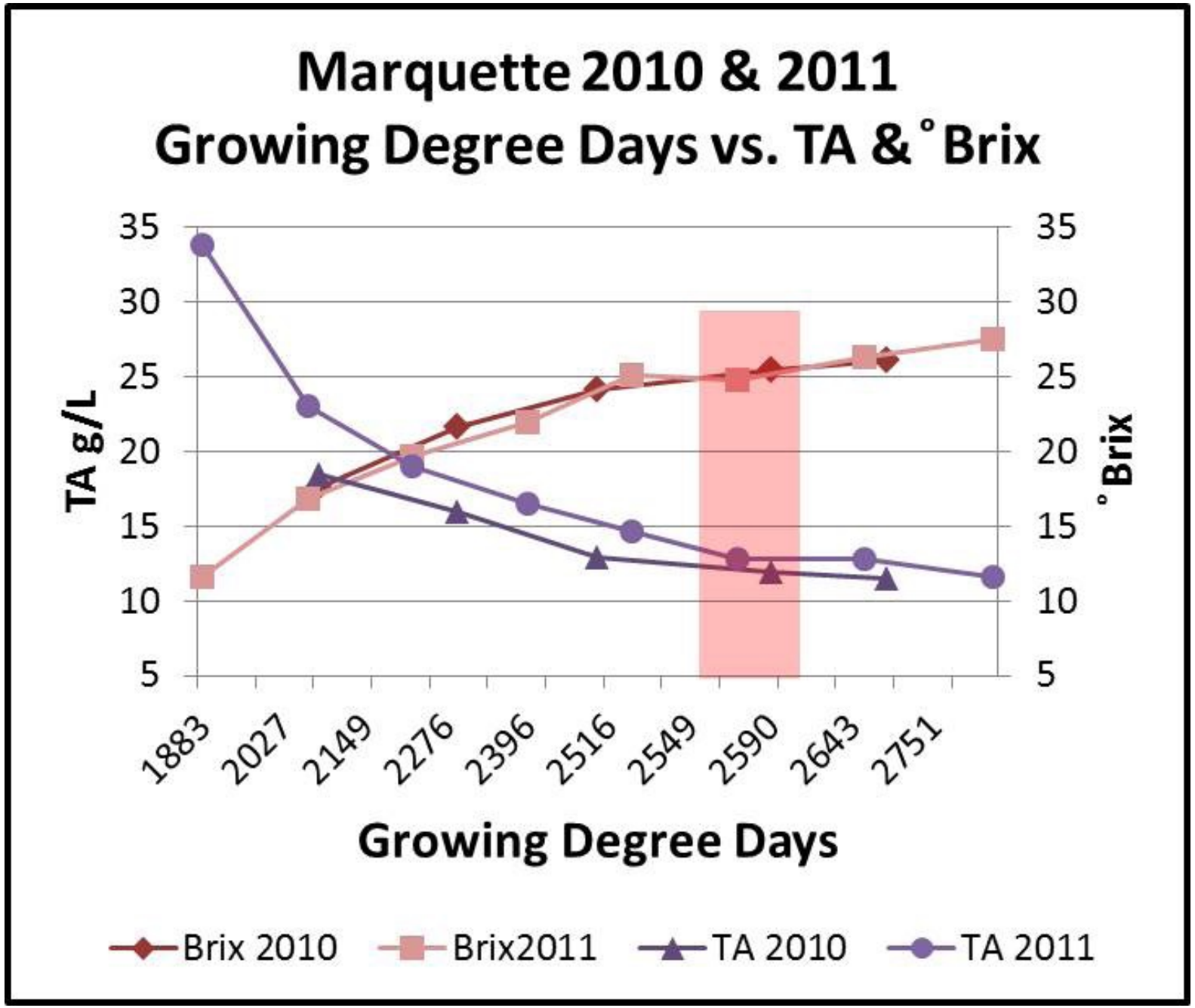
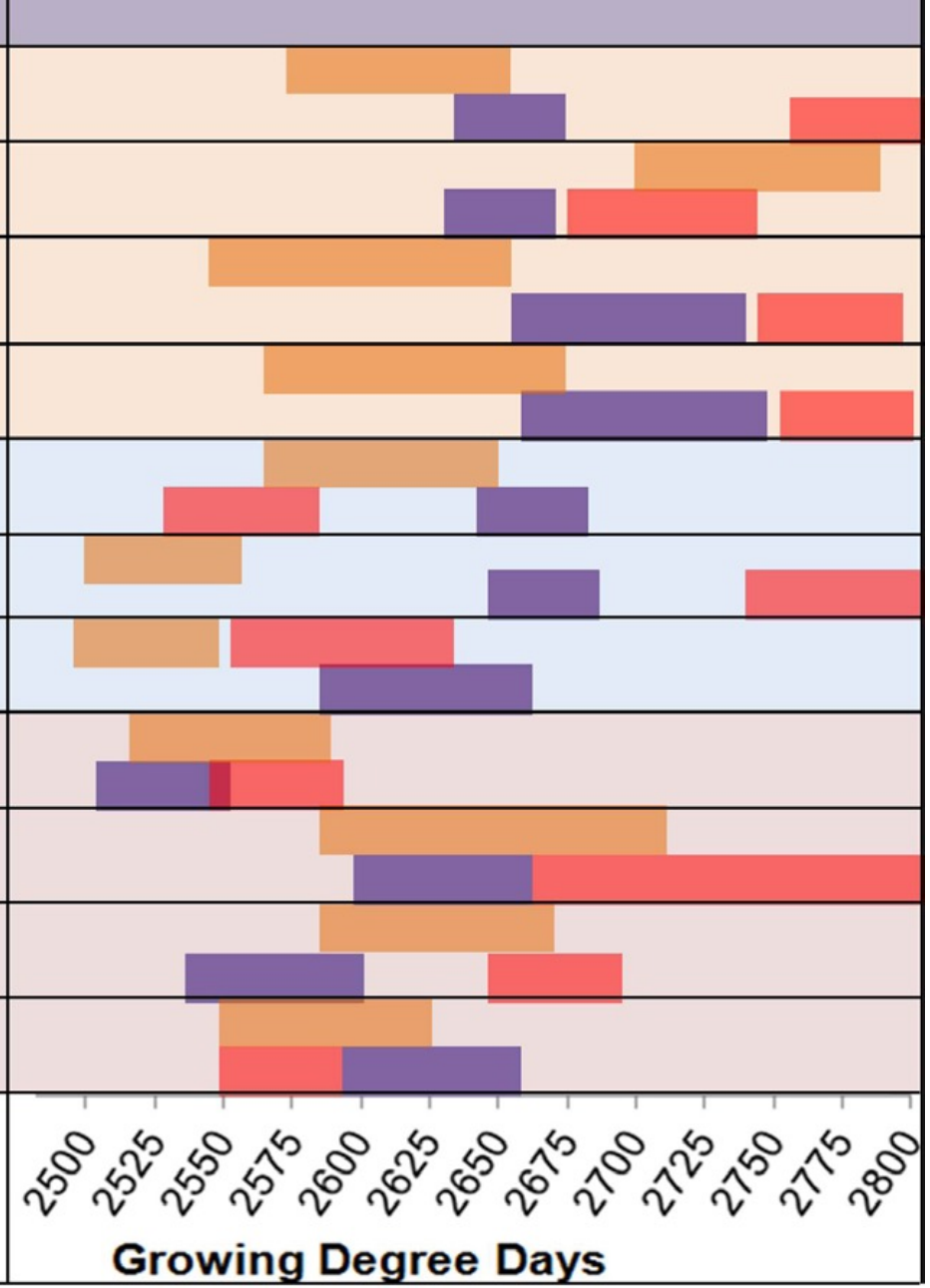
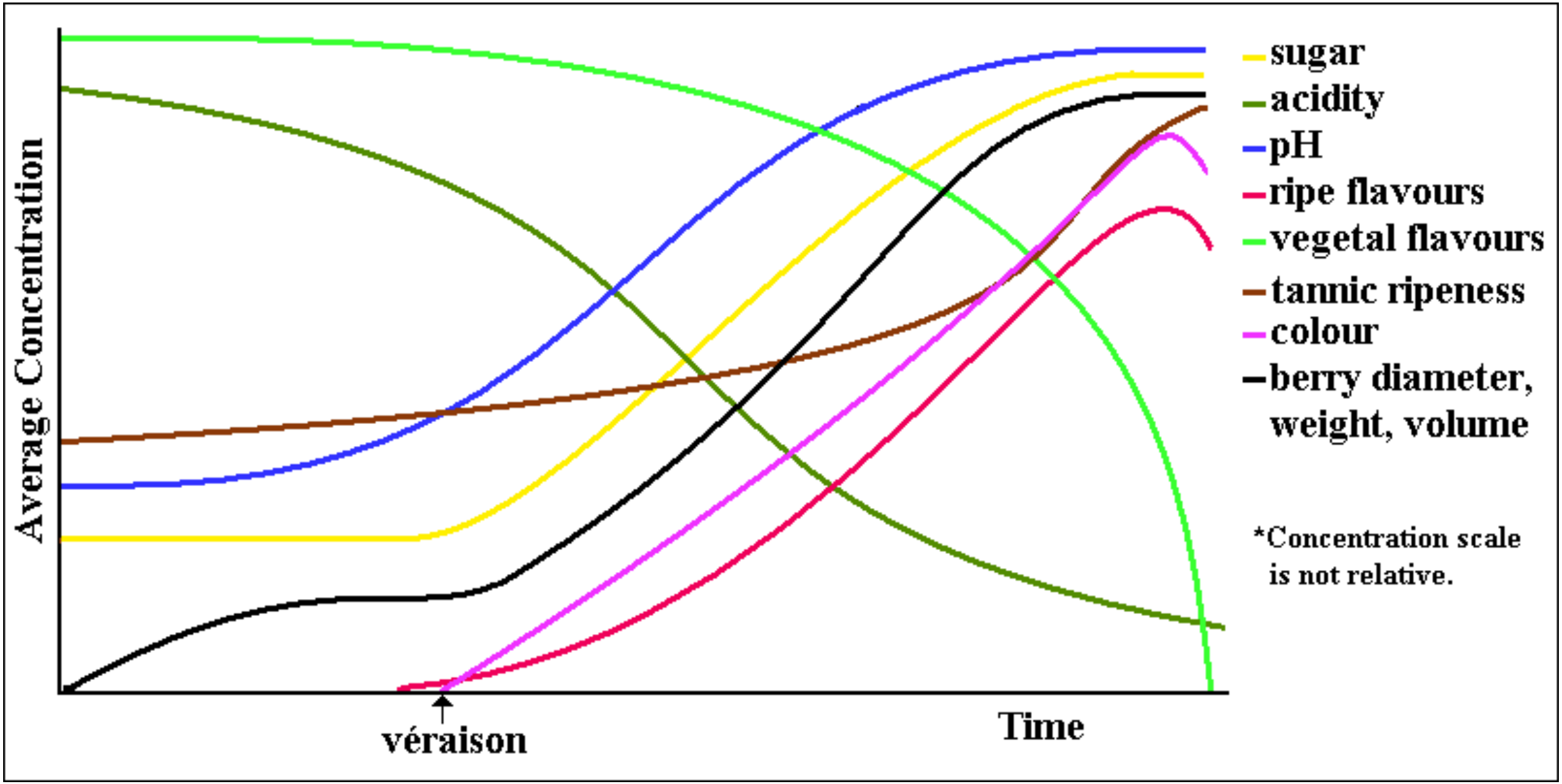


***Table 1.*** *Colored boxes indicate when there is no longer a signi cant change in oBrix, pH, and TA in respect to GDD, highlighting the range of peak maturity for each trait in grapes grown in Chaska, MN. Peak weight is the maximum weight achieved during the harvest season.*

| | Grape Cultivar | GDD of Peak Berry Weight |
|---|---|---|
| V. vinifera | Chardonnay | 2670 GDD |
| | Riesling | 2775 GDD |
| | Merlot | 2600 GDD |
| | Pinot noir | 2650 GDD |
| Misc. Cultivars | Marèchal Foch | 2500 GDD |
| | St. Pepin | 2550 GDD |
| | St. Croix | 2520 GDD |
| U of M Cultivars | La Crescent | 2525 GDD |
| | Frontenac | 2575 GDD |
| | Frontenac gris | 2575 GDD |
| | Marquette | 2600 GDD |




Average Concentration
véraison
Time
sugar
acidity
pH
ripe flavours
vegetal flavours
tannic ripeness
colour
berry diameter, weight, volume
*Concentration scale is not relative.

# Table 39. Optimal juice °Brix, initial pH and titratable acidity (TA) for different styles of wine.

[z] Dharmadhikari and Wilker. 2001. Micro Vinification, A practical guide to small-scale wine production.
[y] Wolf, editor, 2008. Wine Production Guide for Eastern North America.

| Wine Style | °Brix (% SS) | Initial pH | TA (g / liter) |
|---|---|---|---|
| White table wine [z] | 21 - 22 | 3.2 – 3.4 | 7–9 |
| Red table wine [z] | 22 - 24 | 3.3 – 3.5 | 6–8 |
| Sparkling wine [y] | 17 - 20 | 2.8 – 3.2 | 7.0 – 9.0 (9.0 -11.0) |
| White table wine [y] | 19 - 23 | 3.0 – 3.3 | 7.0 – 8.0 |
| Red table wine [y] | 20 – 24 | 3.2 – 3.4 | 6.0 – 7.5 |
| Sweet table wine [y] | 22 – 25 | 3.2 – 3.4 | 6.5 -8.0 |
| Dessert wine [y] | 23 – 26 | 3.3 – 3.7 | 5.0 – 7.5 |

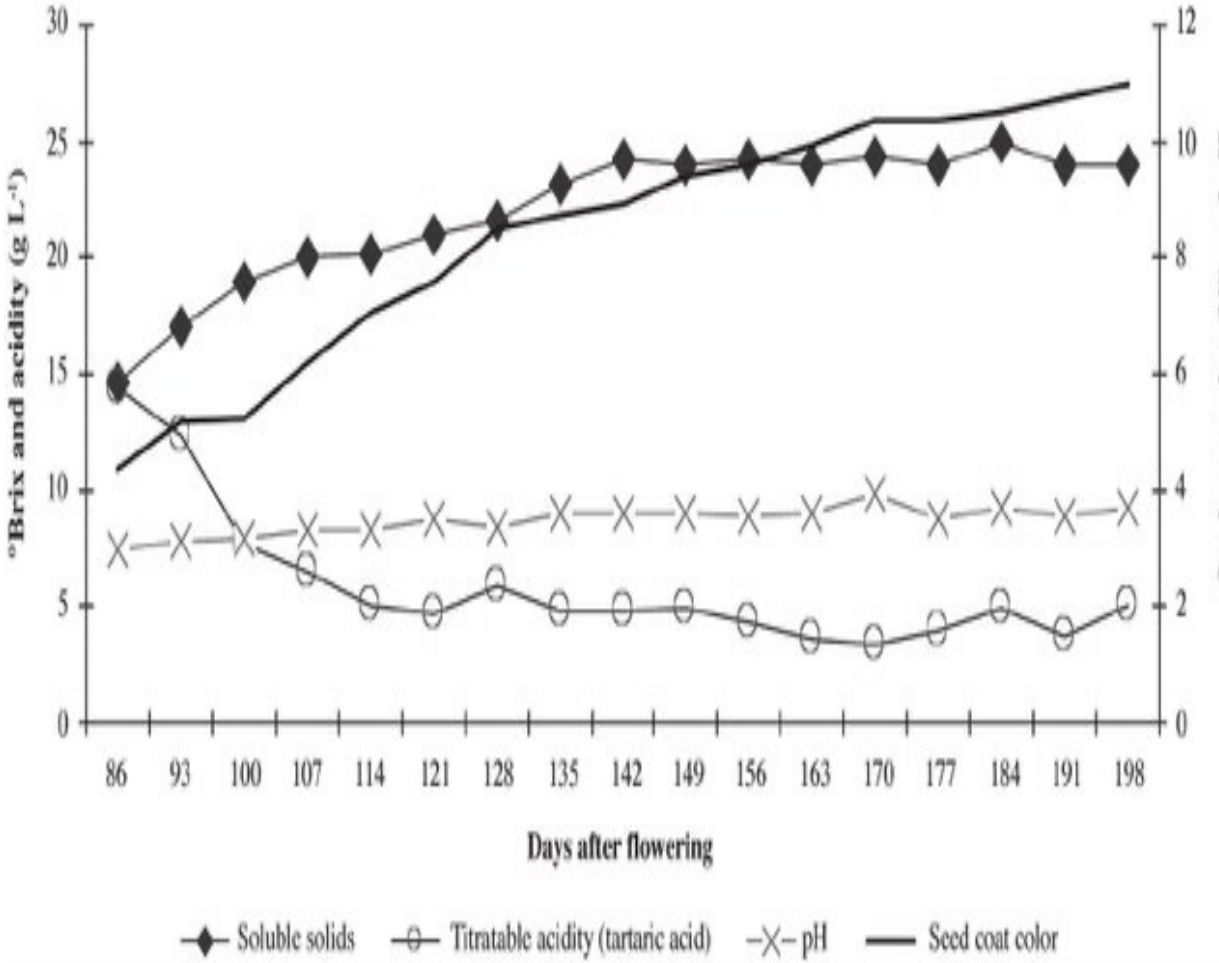
# Table 40. Harvest parameters that can be performed to determine when to harvest wine grapes.

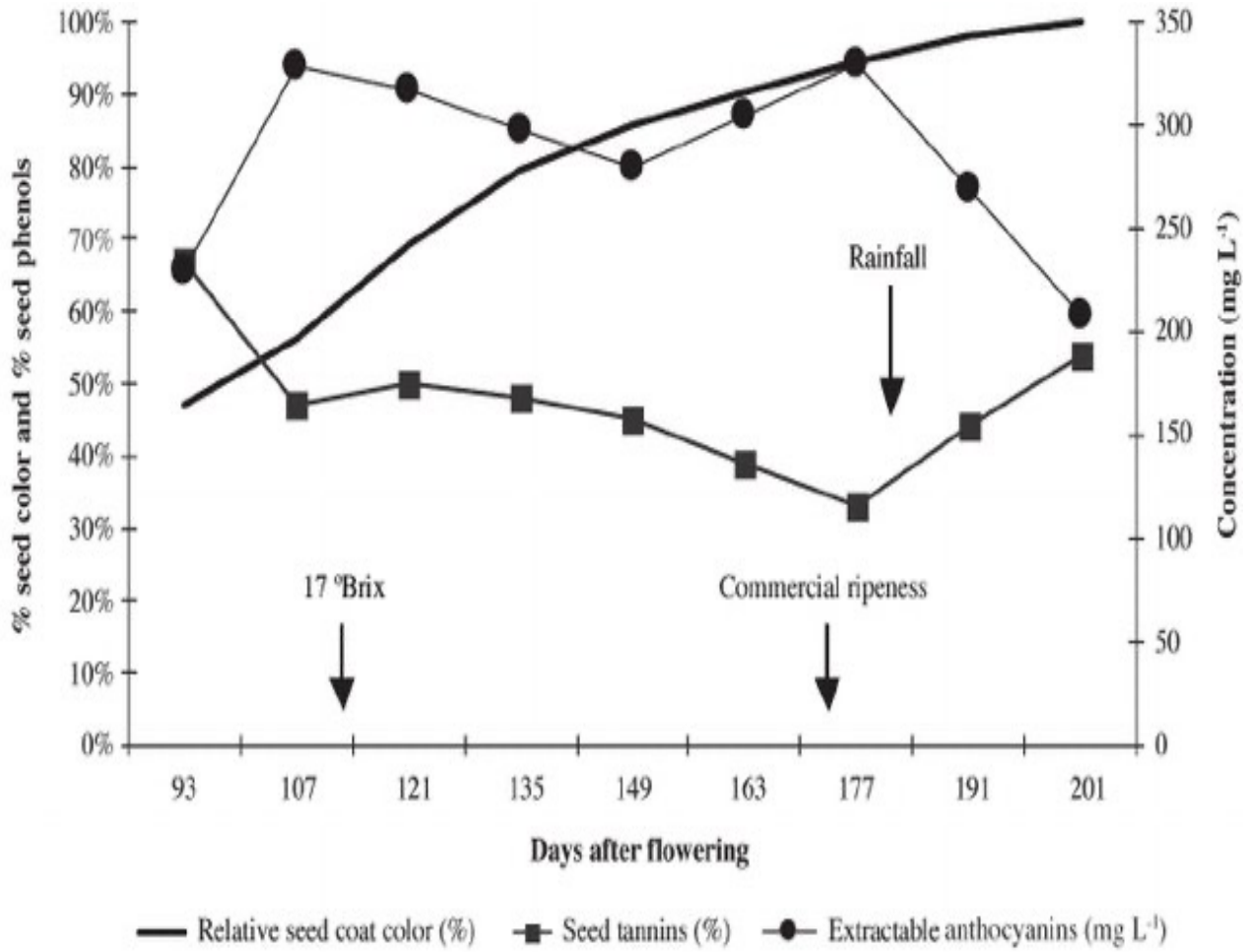
| Harvest parameter | Run the test? | Comments |
|---|---|---|
| °Brix | Yes | Test along with initial pH and TA. |
| Initial juice pH | Yes | Test along with °Brix and TA. |
| Titratable acidity (Malic acid only) | Yes | Test along with °Brix and initial pH. |
| Skin tannins | Check | Use along with °Brix, initial pH and TA. |
| Berry detachment | Check | Use along with °Brix, initial pH and TA as an indicator. |
| Aroma | Maybe | Along with °Brix, initial pH and TA, learn to develop the skill to detect changes for each cultivar. |
| Flavor | Maybe | Along with °Brix, initial pH and TA, learn to develop the skill to detect changes for each cultivar. |
| Seed color | Maybe | Use along with °Brix, initial pH and TA as an indicator. |

Figure 111.
Pedicel/berry abscission zone: immature (A), mature (B).
Seed maturity: immature (C), mature (D).

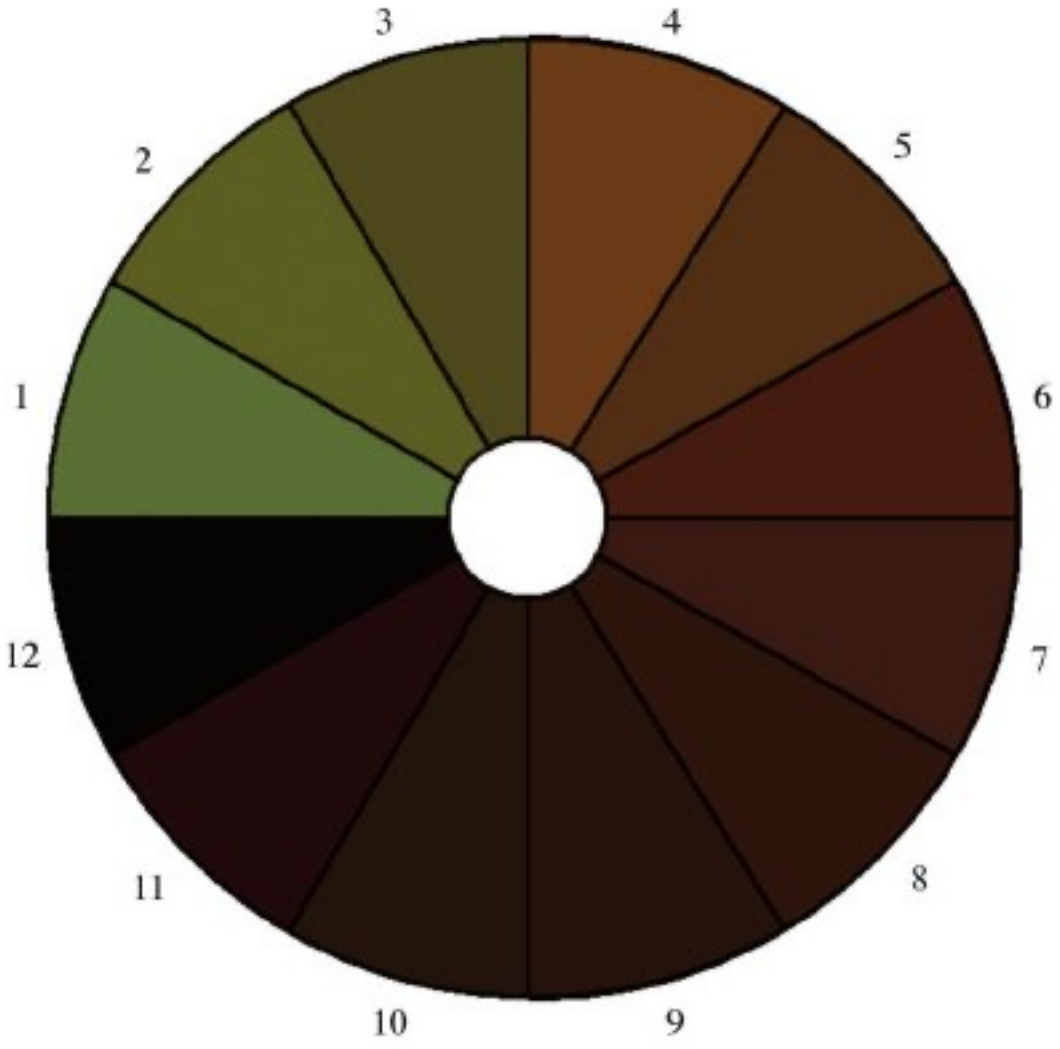


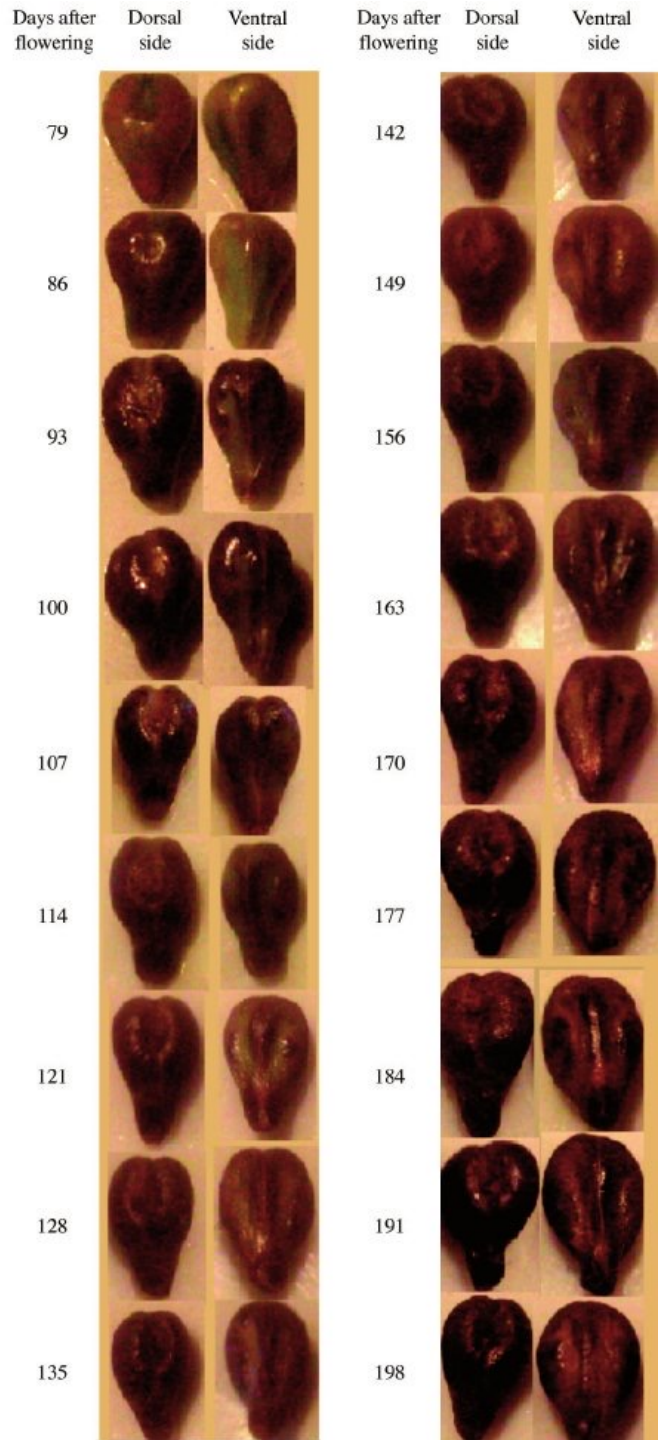

# Relation between Seed Appearance and Phenolic Maturity: A Case Study Using Grapes cv. Carménère



# Figure 1. Color wheel of seed coat of Vitis vinifera cv. Carménère.



# Figure 110. Changes in °Brix, titratable acidity (TA) and initial pH following veraison.

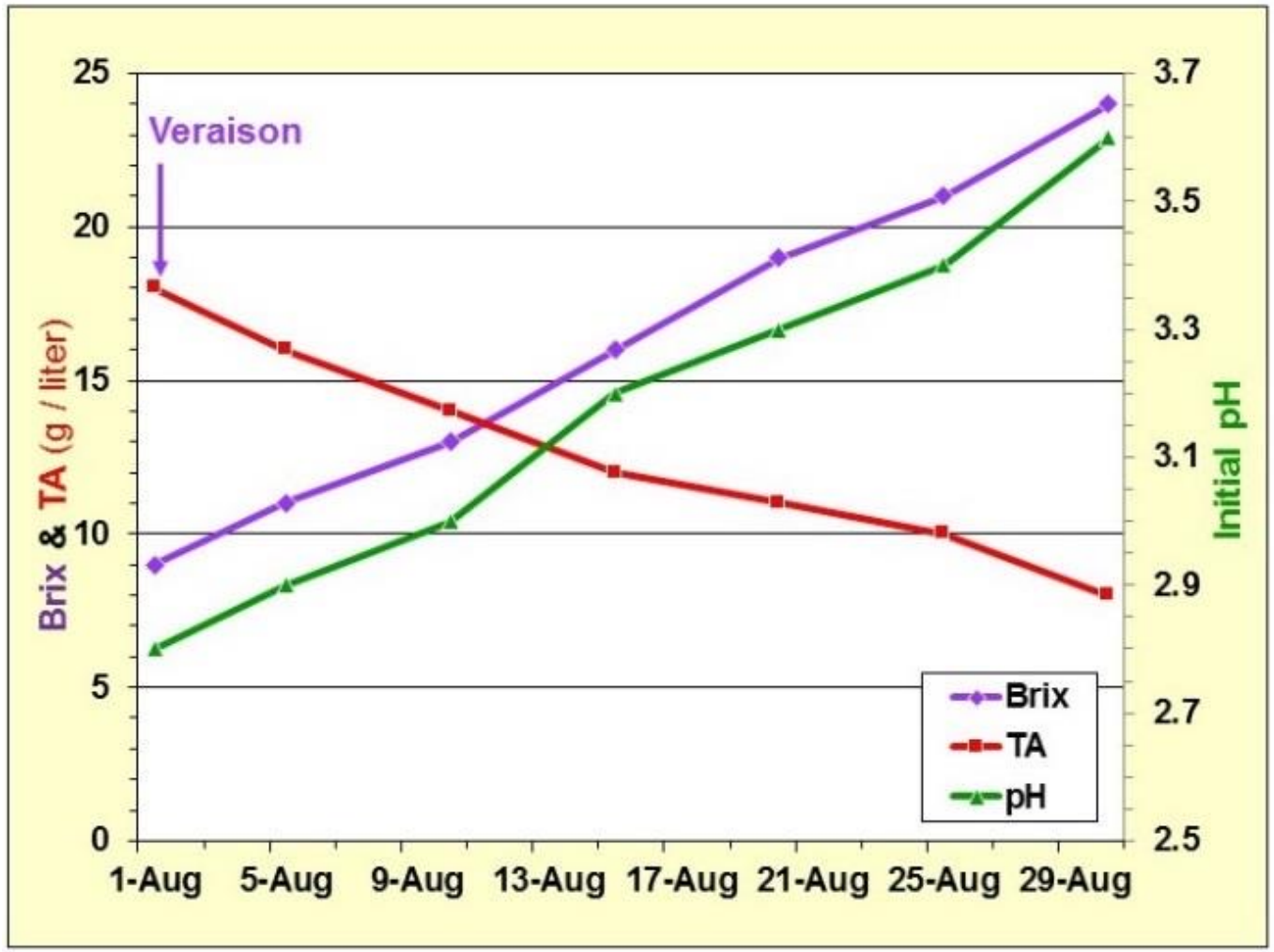
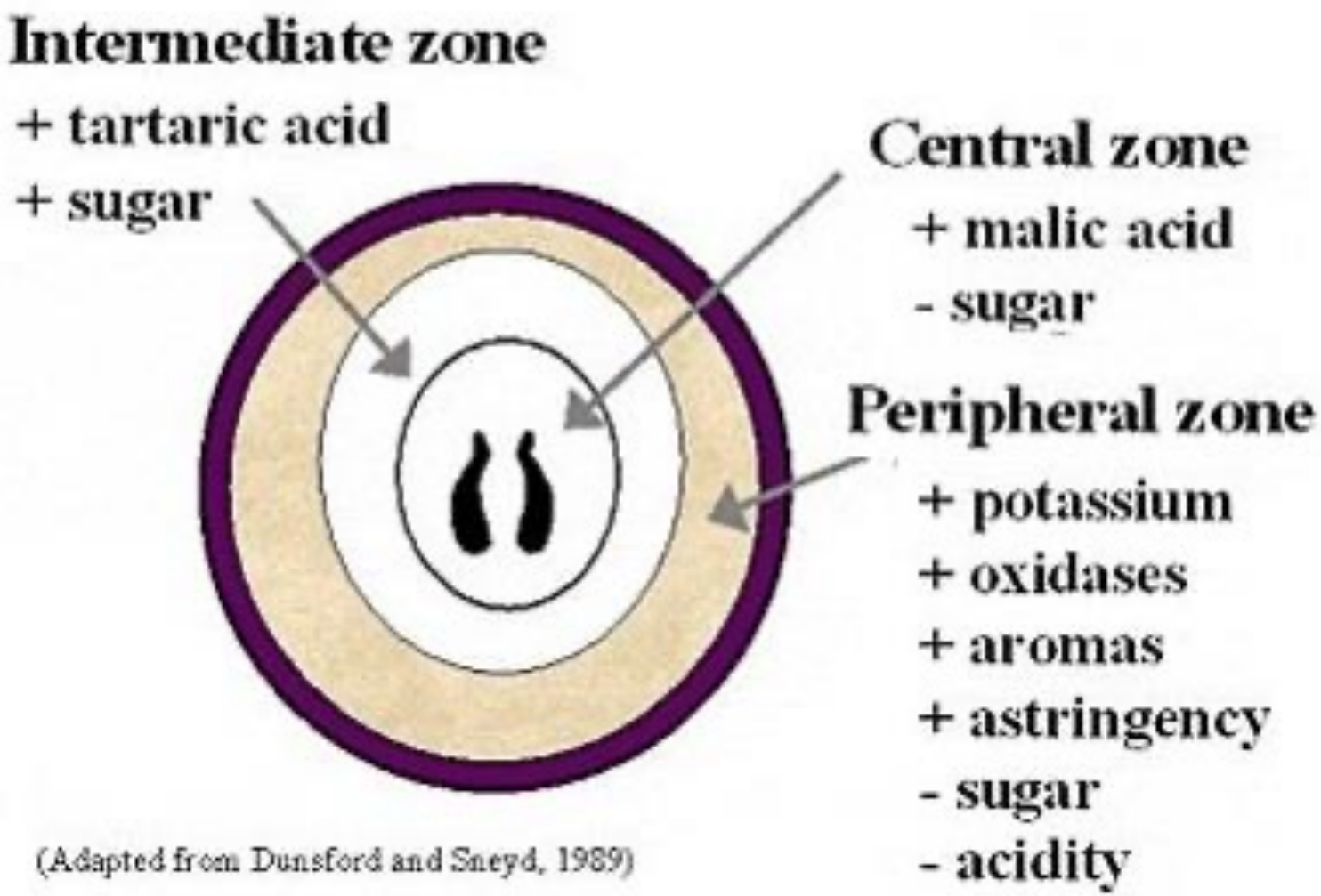
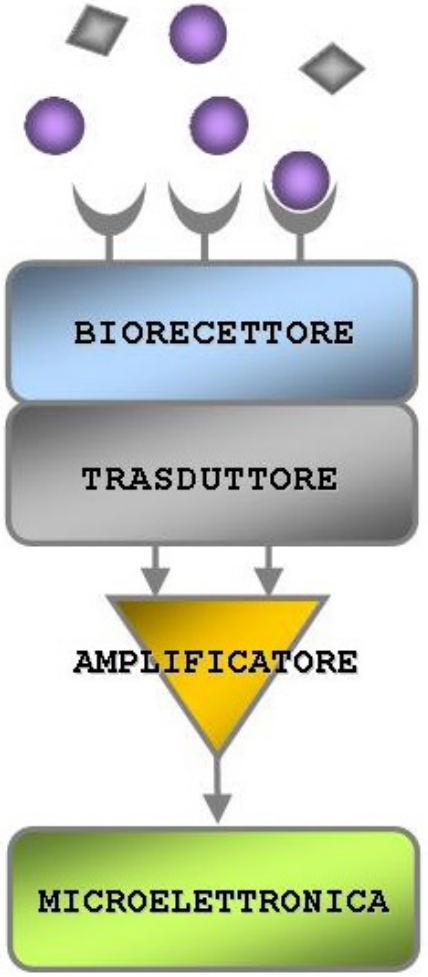


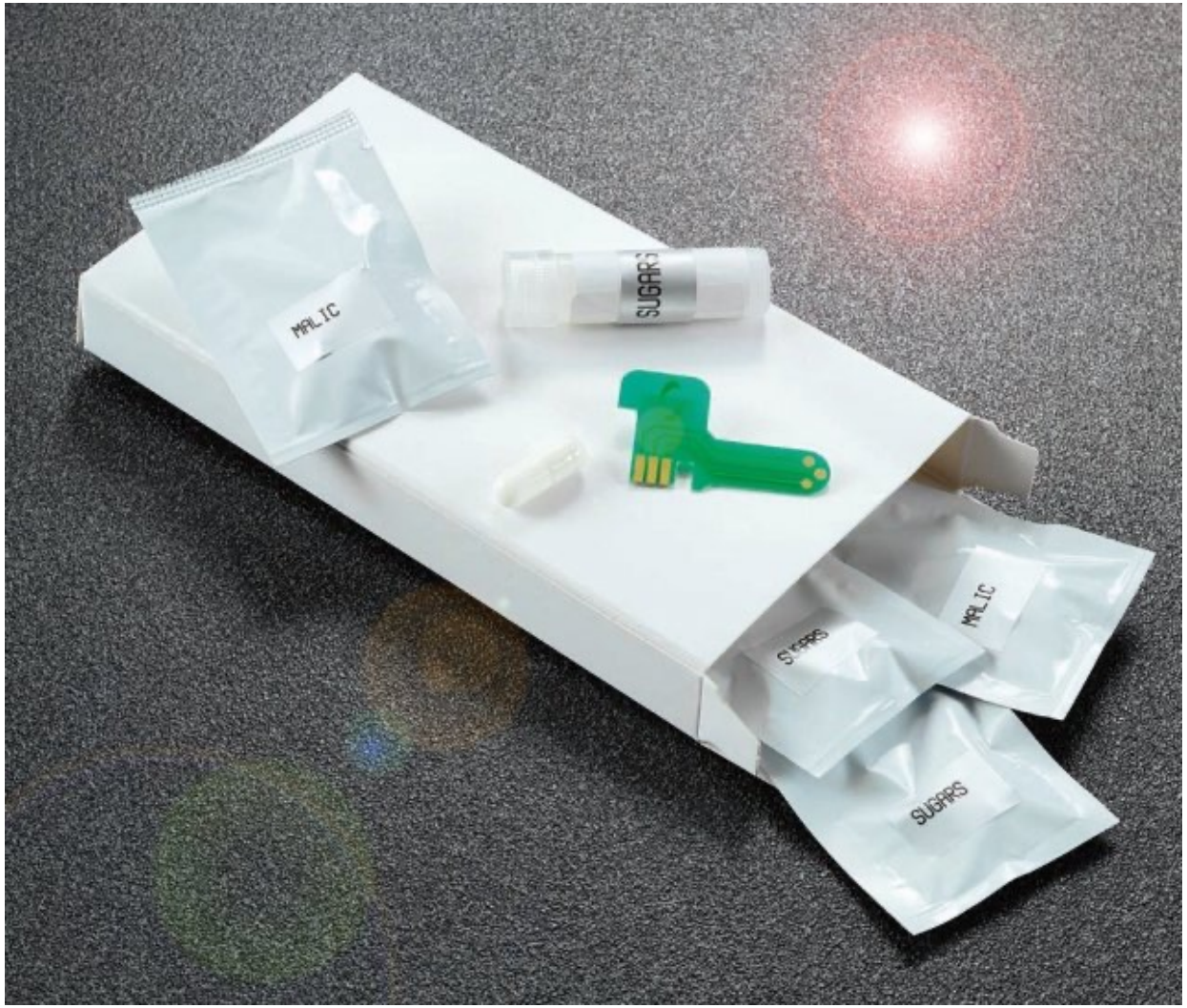
Figure 113. Location of juice components within a grape berry (Zoecklein, 2001).



# Senzytec2 biosensor from Tectronik, Italy.



# Biosensors for Ethanol (alcohol) and Malic acid (æblesyre)



# Senzytec2 biosensorens måleområder

Ethanol (0.1-0.6 g/L) er måleområdet
(5-30 %w/v ved 500 x fortynding, 5 % accuratesse)
(1-6 %w/v ved 100 x fortynding)
(0.5-3.0 %w/v ved 50 x fortynding
(0.1-0.6 %vol ved 10 x fortynding)
(6-36 %vol ved 500 x fortynding), vinmåling
(2.5-15%vol ved 250 x fortynding, vinmåling
(1-6 %vol at 100 x fortynding), cidermåling
(0.6-3.6 %vol at 50 x fortynding)
(0.1-0.6 %vol at 10 x fortynding)
(0.01-0.06%vol ufortyndet)

Glucose (midlertidigt udgået)

Glucose+Fructose (midlertidig udgået)

L-Lactic acid (midlertidigt udgået)

D-Lactic acid (midlertidigt udgået)

L-Malic acid (0.2-1.2 g/L) er måleområdet
(2-12 g/L) ved 10 x fortynding) grapejuice måling
(0.2-1.2 g/L ufortyndet

Granhøjgaard i Birkerød

Modningsstudier i 2018

| Dato | | 12/09/2018 | 23/09/2018 |
|---|---|---|---|
| 1 Solaris | | | Høstet |
| | Brix | 23,0 | 24,6 |
| | Oe | 96,5 | 103,8 |
| | Alc% | 13,1 | 14,1 |
| | TA | 11,1 | 9,6 |
| | Ratio Brix%/TA% | 20,7 | 25,6 |
| | Kerner | start brune | brune |
| 2 Phoenix | | | høstet |
| | Brix | 17,4 | 18,0 |
| | Oe | 71,5 | 74,1 |
| | Alc% | 9,6 | 9,9 |
| | TA | 9,0 | 7,5 |
| | Ratio Brix%/TA% | 19,3 | 24,0 |
| | Kerner | brune | brune |
| 3 Orion | | | høstet |
| | Brix | 20,6 | 21,0 |
| | Oe | 85,6 | 87,4 |
| | Alc% | 11,5 | 11,8 |
| | TA | 9,3 | 8,3 |
| | Ratio Brix%/TA% | 22,2 | 25,3 |
| | Kerner | grønne | brune |
| 4 Zarlas Perle | | | høstet |
| | Brix | 17,2 | 18,1 |
| | Oe | 70,6 | 74,6 |
| | Alc% | 9,4 | 10,0 |
| | TA | 8,8 | 8,6 |
| | Ratio Brix%/TA% | 19,5 | 21,1 |
| | Kerner | brune | brune |
| 5 Souvignier Gris | | | høstet |
| | Brix | 18,5 | 22,4 |
| | Oe | 76,3 | 93,7 |
| | Alc% | 10,2 | 12,7 |
| | TA | 11,9 | 12,4 |
| | Ratio Brix%/TA% | 15,6 | 18,1 |
| | Kerner | brune | brune |
| 6 Riesel | | | høstet |
| | Brix | 18,2 | 18,7 |
| | Oe | 75,0 | 77,2 |
| | Alc% | 10,0 | 10,4 |
| | TA | 12,1 | 11,8 |
| | Ratio Brix%/TA% | 15,0 | 15,9 |
| | Kerner | brune | brune |
| 7 Muscaris | | | høstet |
| | Brix | 19,3 | 23,0 |
| | Oe | 79,9 | 96,5 |
| | Alc% | 10,7 | 13,1 |

Pometet i Høje Tåstrup

Modningsstudier i 2018

| | | 05/09/2018 | 12/09/2018 | 19/09/2018 | 26/09/2018 | 03/10/2018 |
|---|---|---|---|---|---|---|
| 12 Villaris egen rod | | | høstet | | | |
| | Brix | 18,5 | 18,3 | | | |
| | Oe | | 71,4 | | | |
| | Alc% | | 9,6 | | | |
| | TA | 8,5 | 9,5 | | | |
| | Ratio Brix%/TA% | | 19,2 | | | |
| | Kerner | | | | | |
| 13 Villaris på SO4 | | | høstet | | | |
| | Brix | 19,3 | 17,9 | | | |
| | Oe | | 73,7 | | | |
| | Alc% | | 9,9 | | | |
| | TA | 9,4 | 11,0 | | | |
| | Ratio Brix%/TA% | | 16,3 | | | |
| | Kerner | | | | | |
| 14 Malvesia (Holmen) | | | | | | høstet |
| | Brix | 15,6 | 14,4 | 17,6 | 18,8 | |
| | Oe | | 58,6 | 72,4 | 77,7 | |
| | Alc% | | 7,8 | 9,7 | 10,4 | |
| | TA | 8,0 | 13,9 | 10,5 | 10,1 | |
| | Ratio Brix%/TA% | | 10,4 | 16,8 | 18,6 | |
| | Kerner | | | grønne | grønne | |
| 15 Baco Noir | | | | | | fuglene taget druerne |
| | Brix | 20,0 | 19,5 | 22,1 | 22,4 | 22,9 |
| | Oe | | 80,8 | 92,4 | 98,7 | 96,0 |
| | Alc% | | 10,8 | 12,5 | 12,7 | 13,0 |
| | TA | 17,8 | 19,5 | 14,8 | 15,8 | 14,6 |
| | Ratio Brix%/TA% | | 10,0 | 14,9 | 14,2 | 15,7 |
| | Kerner | | | brune | brune | brune |
| 16 Pinot Noir | | | | | | |
| | Brix | | | | | 21,0 |
| | Oe | | | | | 87,4 |
| | Alc% | | | | | 11,8 |
| | TA | | | | | 7,8 |
| | Ratio Brix%/TA% | | | | | 26,9 |
| | Kerner | | | | | |
| 17 Bronner | | | | | | |
| | Brix | | | | | 23,1 |
| | Oe | | | | | 97,4 |
| | Alc% | | | | | 13,2 |
| | TA | | | | | 12,6 |
| | Ratio Brix%/TA% | | | | | 18,3 |
| | Kerner | | | | | |
| 18 Monarch | | | | | | |
| | Brix | | | | 20,5 | |
| | Oe | | | | 85,2 | |
| | Alc% | | | | 11,5 | |