

Methodology for Grape Sensory Analysis

Vineyard and winery routine
analysis









Why a DIWC Methodology for Grape Sensory Analysis ?

- Wine Sensory Analysis has always been one of our main tools to plan and pilot winemaking to reach market goals
- Grape Sensory Analysis was built later to assess the grape profile conformity to winemaking and market goals
- This methodology is clearly orientated towards winemaking, using some of our wine vocabulary, privileging important characters to predict wine profile
- It is continuously updated combining wine and grape sensory database

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The importance of a Methodology for Grape Sensory Analysis

- The ripening of the grapes is a complex phenomenon, and chemical analysis are not sufficient to characterize it
- The sensory analysis is a valuable method of analysis, provided that it is normalized

The importance of a Methodology for Grape Sensory Analysis (2) ?

- The grape is very heterogeneous, its composition evolves much during ripening and varies with grape origin
- It is a seasonal production

THEREFORE:

- It is important to use a rigorous method
- It is important to get a proper training

This is a Descriptive Quantified Sensory Analysis

- Descriptive: we shall use a fixed list of descriptors, in a fixed order, with fixed gestures
- Quantified: each descriptor will be evaluated on a fixed scale
- Sensory: there will be 3 steps for each measure: Perception, Sensation, Translation. You need an intense and continuous concentration
- Analysis: try to respect analysis obligations: repeatability, precision. You need a long training to be an expert



Important: analyze before making a synthesis and give a judgement

• Note the intensity:

- as much as possible by reflex, to avoid interference with the final « translation ». After « Perception (chemistry) » and « Sensation (neural) », « Translation » is the third and last step of sensory mechanism

• Do not judge during the analysis

- Note the intensity of the descriptor, whether you like it or not
- Example : « high level » for the acidity: this means that the grape pulp is acidic. It does not mean that the grape acidity is pleasing the taster



Analyse the descriptors following the imposed and fixed order

- Follow the check list in a compulsory mode to be sure not to forget any descriptor
 - Get always a complete profile
 - Do not stick to the dominant descriptor
- Example: dominant fruity aroma in the pulp (descriptor # 9 of 25). Go on analyzing other descriptors. How is the grape potential behind this parameter? This is conditioning much of the technical options to apply during winemaking



Notation of sensations on a structured scale

- Three levels for each of the 25 parameters.
- For an everyday tasting in the vineyard or tasting the grapes coming into the winery, measure the 25 descriptors remembering if the level of each descriptor is « Low », « Medium » or « High »



1. Aspect of the bunches

In the vineyard
At the winery with handpicked
grapes





Legend



In the following slides, this indicates that LalVigne MATURE has an impact on the sensory descriptor





Aspect of the bunches

- Look at the size, shape (compact, loose, « wings », « fish tail ») and color
- Assess the heterogeneity of sizes, shapes and color (between exposed or shaded side, etc)





If bunches are heterogeneous, berries will be heterogeneous in their ripening and concentration

Therefore, when sampling:

- Pick and taste together berries from each different aspect. For example: exposed berries together, small berries together, tail berries together, etc.
- Try to get a rough statistics of the frequency of each aspect group. For example how many sun burned berries, how many low colored berries, how many Botrytis affected berries, etc.



Therefore, when planning the winemaking:

- Keep in mind the statistics you drew before
- Even low level of non conforming berries will highly impact your wine style. For example 10% of insufficiently ripe skin will force you to make a shorter maceration to avoid greenness and reach your market goals



2. Aspect of the berries

Sensory Analysis: Step # 1

Look at the berries

- Estimate quickly the average color and try to estimate the percentage of lower colored berries. For example: average « high (=black) » with 20% « medium (dark red) » and 10% « low (red) ». In this example, at the winery, the 10% « low (red) » will force you to change your winemaking

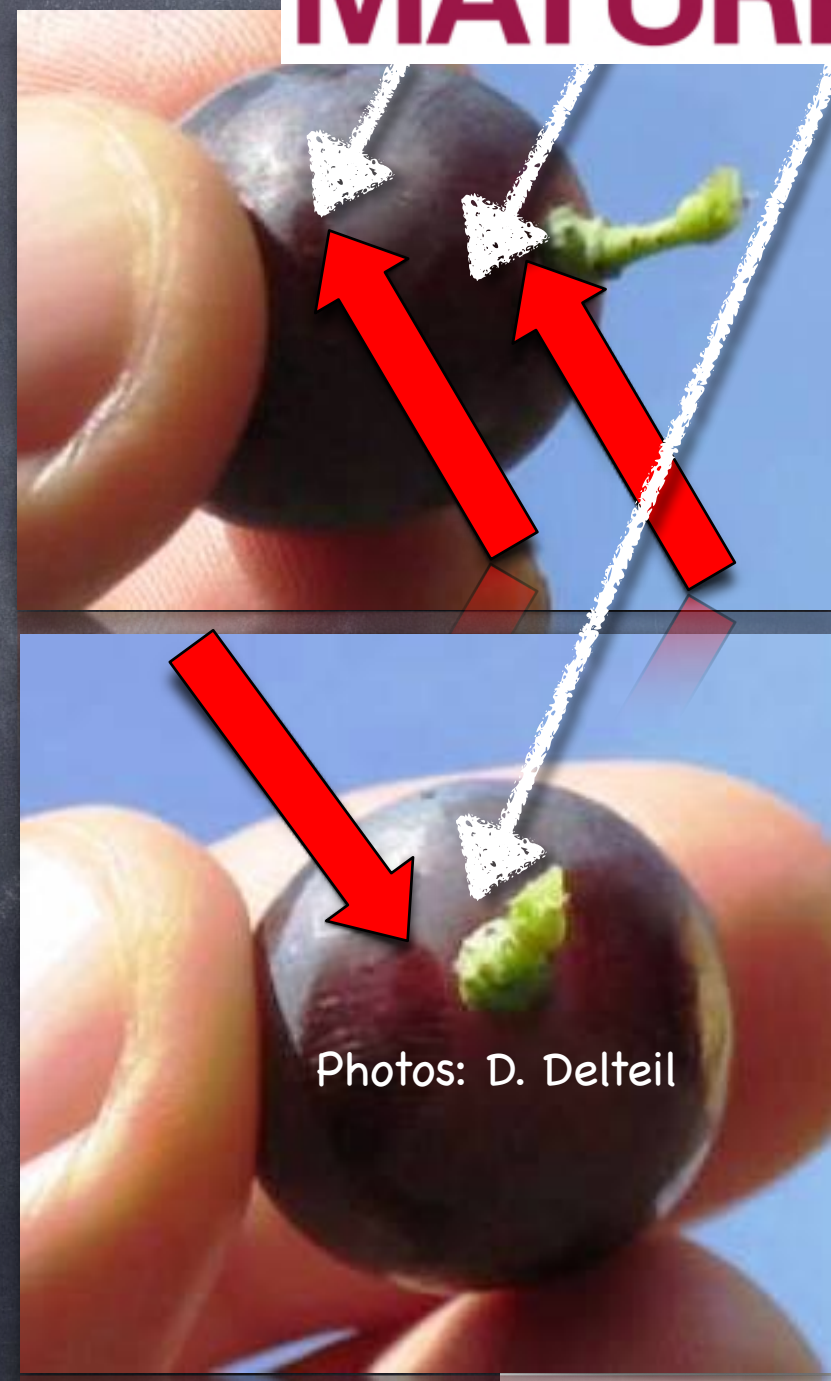


Sensory Analysis: Step # 1

Look at the berries

- The dimensions: large, medium, small according to the variety and viticulture area
- The color of the skin, specifically where the pedicel is connecting to the berry, the last zone of the skin to be fully colored
- The color of the pedicel
- The transparency of the berry

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Descriptor #1

Color of the berry

Low

Medium. Dark red

High. Dark homogeneous blue



Note: the first version of this methodology was published in 2001 in the "Revue Française d'Oenologie », focusing on grape ripening control. It has been since updated with international DIWC experience focusing on winemaking to answer market goals



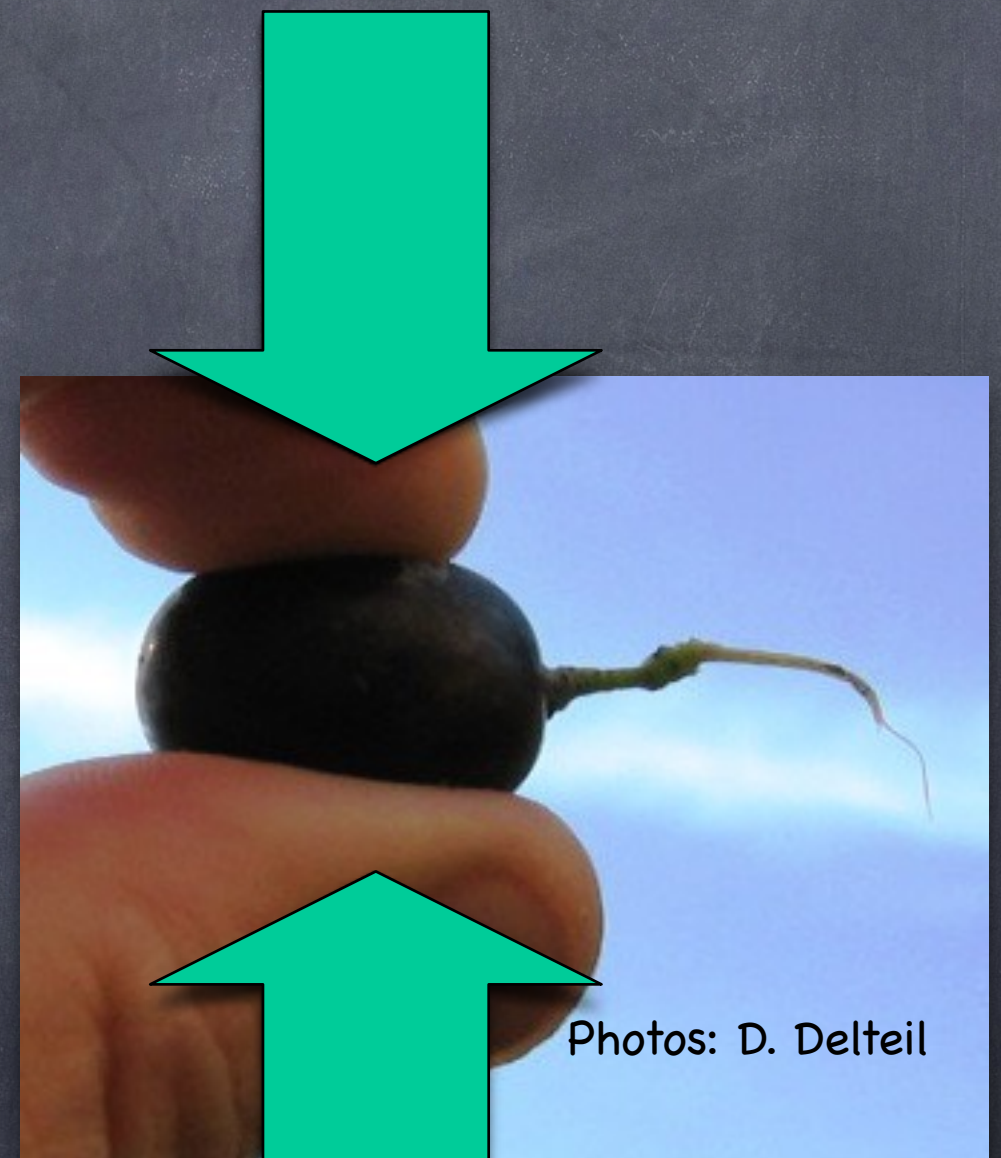
For the next steps

- Apply the procedure on 3 similar looking berries (size and color). Evaluate the average
- When berry aspects are heterogeneous, you want to repeat it on each aspect group: for example 3 low-color berries, 3 mid-color berries, 3 high-color berries



Sensory Analysis: Step # 2

- Press each berry between 2 fingers
- Always apply the same strength
- Evaluate the elasticity of berry



Photos: D. Delteil

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Descriptor #2

Mechanical fragility of the berry

Low

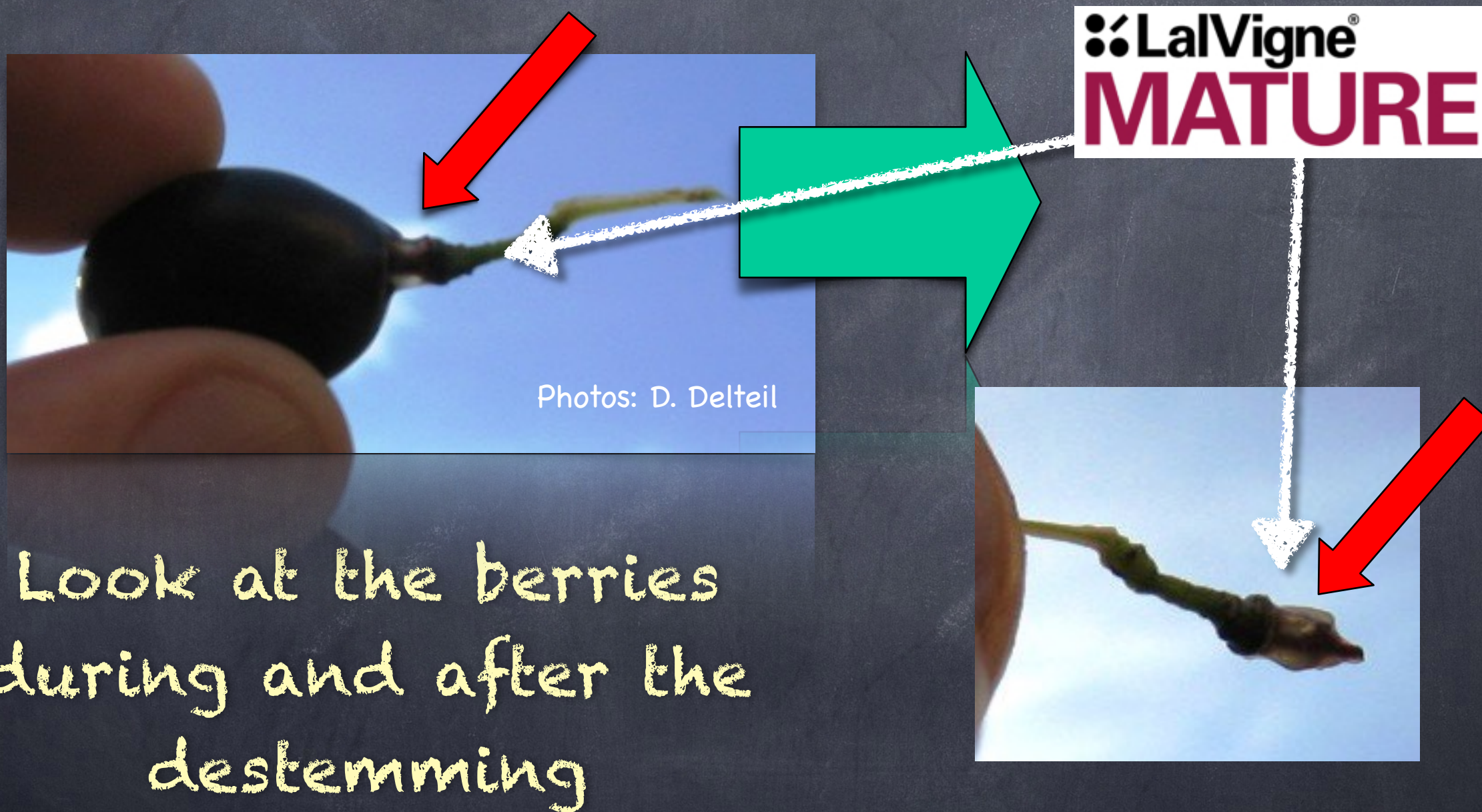
Medium. Elastic berries

High. Plastic berries



Sensory Analysis: Step # 3

Assess the ease to remove the pedicel from the berry



Descriptor #3

Aptitude for destemming

Low.

Medium. Adherent pedicel, that is difficult to remove, extracting a large part of the pulp

High. Colored brush with almost no attached pulp

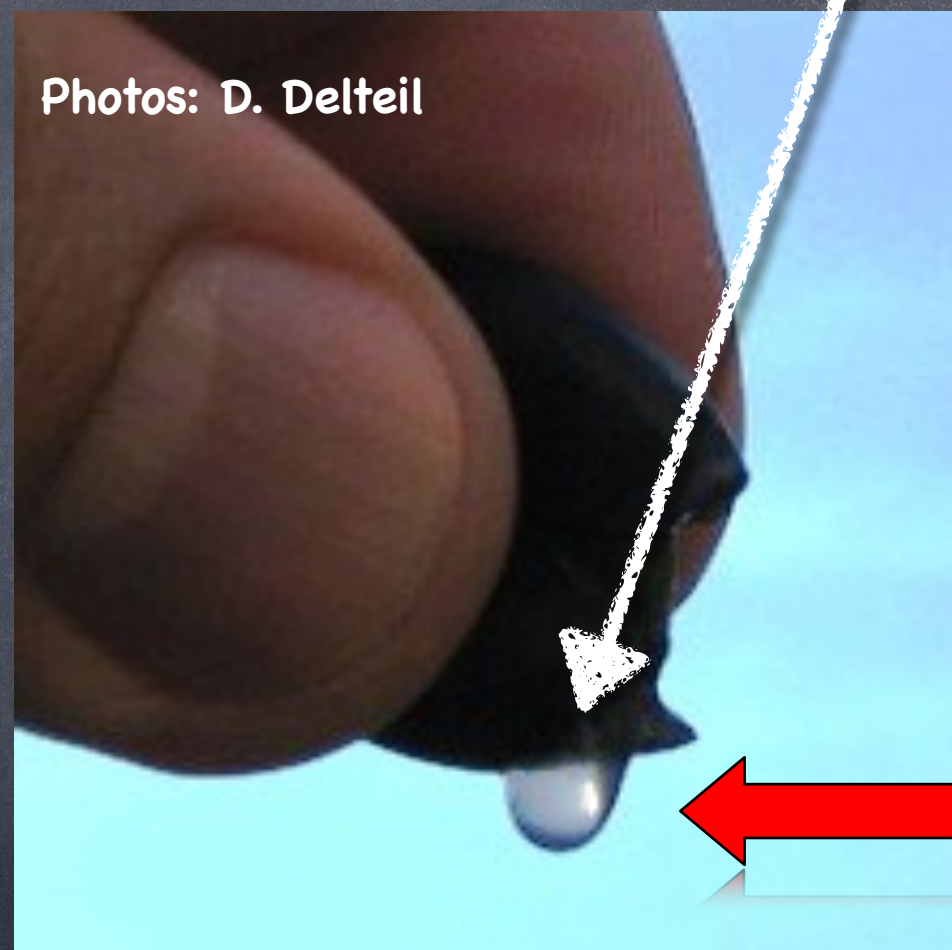


Sensory Analysis: Step # 4

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Look at the color of
a juice drop that
comes out after a
light pressing

Photos: D. Delteil



Descriptor # 4

Color of the drop of juice (in red grapes)

Low. Yellow-green juice with hints of pink on the outside of the drop

Medium. Light pink juice with hints of red

High. Dark pink juice with abundant hints of red



White grapes: note the color as an anomaly if the juice is brown or has brownish hues

3. Tasting of the pulp

Sensory Analysis: Step # 5

Taste the pulp

- Introduce the 3 berries in the mouth
- Separate the pulps, skins, seeds: with the tongue WITHOUT touching the skins with the teeth.
- During this, evaluate the ease of separation of the pulp and skin, the fluidity of the pulp
- Taste the pulp during this separation:
 - sweetness,
 - acidity,
 - herbaceous flavors
 - fruity flavors
- Keep the 3 skins separated between your teeth and your cheek
- Spit the seeds in your hand or onto a paper
- Look at seeds : color, attached pulp or not



Photos: D. Delteil



Descriptor # 5

Aptitude for the separation of the pulp and the skin



Low

Medium.

High. Pulp that melts and becomes quickly liquid. No pulp left inside the skins

Descriptor # 6 Sweetness of the pulp

Evaluate the sweet sensation on the main
sweetness zone of the tongue

Low

Medium

High


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Descriptor # 7 Acidity of the pulp

Evaluate the acidic sensation on the main acidity zone of the tongue

Low

Medium

High


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Descriptor # 8

Herbaceous flavors of the pulp

Null

Low or Medium

High. Intense herbaceous, like biting into a fresh green bell pepper



Descriptor # 9

Fruity* flavors of the pulp



Null or Low

Medium. Fresh fruit

High. Jammy

*Fruity term is used only when you can name a fruit. Here, it is not just a general sweet perception

4. Tasting of the skin

Sensory Analysis: Step # 6

Taste the skin

- Transfer the 3 skins to premolar and molars
- Always chew between the same teeth, if possible on the last premolar and first molar, because it is in front of the main area of the acidity on the tongue
- Always do the same number of bites (10) with the same muscular effort
- Leave skins in place between the teeth after chewing, because skin bits will bother you during the assessment of dryness and astringency
- Assess:
 - The ease of chewing,
 - The amount of pulp stuck in the skin
 - The acidity and flavors of the jet of juice that comes out, at different times of chewing
 - The concentration of the juice of the skins, if possible.
 - Astringency and dryness of the mix of saliva / juice of the skin



Descriptor # 10

Aptitude of the skin to trituration (crushing)




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Low

Medium

High

Descriptor # 11

Acidity of the skin at the beginning of chewing

During the chewing of the skins, on the main area of the acidity (on the anterior sides of the tongue), assess the intensity of the acidic sensation caused by the jet of juice coming out of the skins during the bites number 4 and 5.

Low

Medium

High



Note.: the very first bites liberate the juice of the pulp that may be stuck inside the skin: do not assess acidity at that moment

Descriptor # 12

Herbaceous flavors of the skin at the beginning of chewing

During the chewing of the skins, assess the herbaceous flavors of the jet of juice that comes out of the skins during the bites number 4 and 5.

Null

Low or Medium

High



Note.: the very first bites liberate the juice of the pulp that may be stuck inside the skin: do not assess herbaceous flavors at that moment

Descriptor # 13

Fruity flavors of the skin at the beginning of chewing

During the chewing of the skins, assess the fruity flavors of the jet of juice that comes out of the skins during the bites number 4 and 5.

Low

Medium. Fresh fruit

High. Jammy



Note.: the very first bites liberate the juice of the pulp that may be stuck inside the skin: do not assess acidity at that moment

Descriptor # 14

Acidity of the skin at the end of chewing

During the chewing of the skins, on the main area of the acidity (in the anterior sides of the tongue), assess the intensity of the acidic sensation caused by the jet of juice coming out of the skins during the bites number 8, 9 and 10:

Low

Medium

High



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Descriptor # 15

Herbaceous flavors of the skin at the end of chewing

During the chewing of the skins, assess the herbaceous flavors of the jet of juice that comes out of the skins during the bites number 8, 9 and 10:

Null

Low or Medium

High



Descriptor # 16

Fruity flavors of the skin at the end of chewing

During the chewing of the skins, assess the fruity flavors of the jet of juice that comes out of the skins during the bites number 8, 9 and 10:

Low

Medium. Fresh fruit

High. Jammy



Note # 1 for reds:

There is a general correlation between the sensations caused by the juice that comes out during the first 4-5 bites and the tannic profile of the wine with a short maceration of 4-7 days.

If there is not a high sensation of acidity and there are no herbaceous flavors at the start of mastication, it will be quite easy to make a round red wine applying a short maceration.

On the contrary, if there is a high acidic sensation at the beginning of mastication, with herbal flavors, it will be difficult to make a round fruity red wine, even with short maceration.



Note # 1 for whites:

There is a general correlation between the sensations caused by the juice that comes out during the first 4-5 bites and the harshness of the juice with a low pressure pressing.

If there is not a high sensation of acidity and there are no herbaceous flavors at the start of mastication, it will be quite easy to make a non aggressive white wine with pressings separated below 0.5-0.7 bar. Some hours of maceration before pressing is possible.

On the contrary, if there is a high acidic sensation at the beginning of mastication, with herbaceous flavors, it will be difficult to make a balanced non aggressive white, even with pressings separated below 0.5 bar. Any maceration before pressing is not recommended



Note # 2 for reds:

There is a general correlation between the sensations caused by the juice that comes out during the last 8-10 bites and the tannic profile of the wine with a long maceration of over 10 days.

If there is not a high sensation of acidity and there are no herbaceous flavors at the end of mastication, it will be quite easy to make a balanced red with long maceration. On the contrary, if there is a high acidic sensation at the end of mastication, with herbal flavors, it is recommended not to macerate more than 5-7 days and to avoid highly extractive cap management (high temperatures, short and frequent pumping-overs, etc.)



Descriptor # 17

Tannic intensity of the skin

After chewing, with the tongue, pass the juice extracted from the skins on the palate*. Pass 2 times the tongue on the palate starting from the back of the mouth until touching the incisors. Each passage lasts 1 second with a 1 second interval between two passages of the tongue.

Assess the friction that the tongue encounters during the second passage

Do not swallow or spit

Low

Medium

High

*Same as the « tannic intensity of wine » in our Wine Sensory Analysis. (From: Delteil, 2000).

Descriptor # 18

Astringency of the skin

With the tongue, wet the gums over the upper incisors with the mixture of saliva, juice extracted from the skins*. Spit the mix of saliva, juice from the skin and skin fragments, if possible on a white background (paper or plate or plastic cup), or on the ground in the vineyard. Look at the color and composition of the mix of saliva-juice-skin fragments (see descriptor # 20)

Within 2 seconds after spitting, pass the upper lip on the upper incisors 2 times: the « rabbit mouth movement ». Each passage lasts 1 second with a 1 second interval between two passages of the lip.

Evaluate the astringency at the second passage of the lip

Low

Medium

High

*Same as the « astringency of wine » in our Wine Sensory Analysis. (From: Delteil, 2000).

Descriptor # 19

Dryness of the skin

Two seconds after measuring the astringency of the skin, pass 2 times the tongue on the palate, from the back to the front until it touches the incisors. Each passage lasts 1 second with a 1 second interval between two passages of the tongue.

Evaluate the friction and resistance that the tongue encounters during the second passage, evaluate the difficulty to salivate again and the tactile aggressiveness, and the tannin grain and roughness

Low

Medium

High

*Same as the « dryness of wine » in our Wine Sensory Analysis. (From: Delteil, 2000).

Descriptor # 20

Aspect of the spit mixture of saliva and skin fragments

Look at the mixture saliva + skin fragments + skin juice that has been spit to assess astringency (descriptor # 18)

Assess the appearance of the mixture

Low: light red-blue liquid with medium size fragments

Medium: dark red-blue liquid, with small fragments of skin

High: very dark blue liquid, dark blue paste, homogenous, almost no visible fragments



Aspect of the spit mixture

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Photos: D. Delteil

Color of the
liquid

This picture
corresponds to
the low level of
the scale



Fragments of
skin

5. Tasting of the seeds

Descriptor # 21

Color of the seeds

Low. White or yellow green

Medium. Brownish green

High. Dark brown

If green is observed (low or medium), do not taste the seeds. End of sensory analysis.

Descriptor # 22

Resistance of the seeds

Introduce 2 or 3 seeds between the incisors and apply an increasing pressure. Then chew to reduce the seeds into fragments. Asses the fragility of the seeds

Low

Medium

High

Descriptor # 23

Ripe flavors of the seeds

Low. Green, herbaceous

Medium. Toasted

High. Roasted (smell of coffee)

Descriptor # 24

Tannic intensity of the seed

Pass the tip of the tongue on the fragments of the seeds then, pass these fragments on the palate and gums.

Pass 2 times the tongue on the palate starting from the back until touching the incisors. Each passage lasts 1 second with a 1 second interval between two passages of the tongue.

Evaluate the friction and resistance that the tongue encounters during the second passage

Low

Medium

High

Descriptor # 25

Astringency of the seeds

Pass 2 times the upper lip over the gums and the incisors.

Each passage lasts 1 second with a 1 second interval between two passages of the lip. Evaluate the friction and resistance that the lip encounters during the second passage

Low

Medium

High

End of sensory analysis.

Now you have a methodology! What to do next?

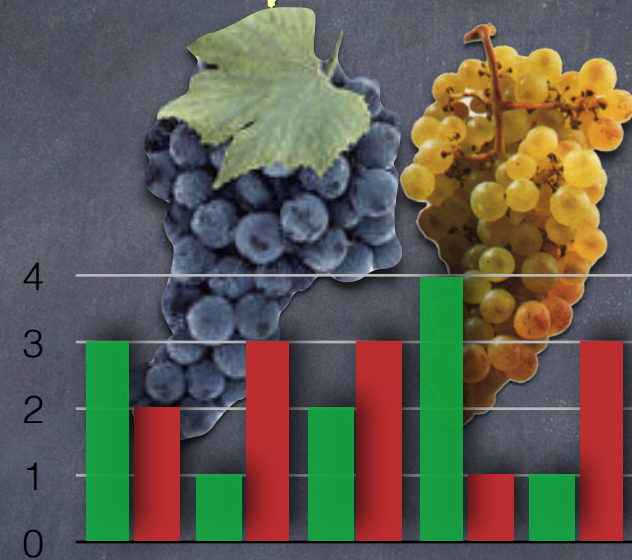
- Train frequently
- Build your own database on different varieties, at different moments during ripening, on different viticulture trials, etc.
- Make correlation between berry profiles and wine profiles, vintage after vintage
- Take your picking date decision and adapt your winemaking procedures with both sensory analysis and classical analysis.



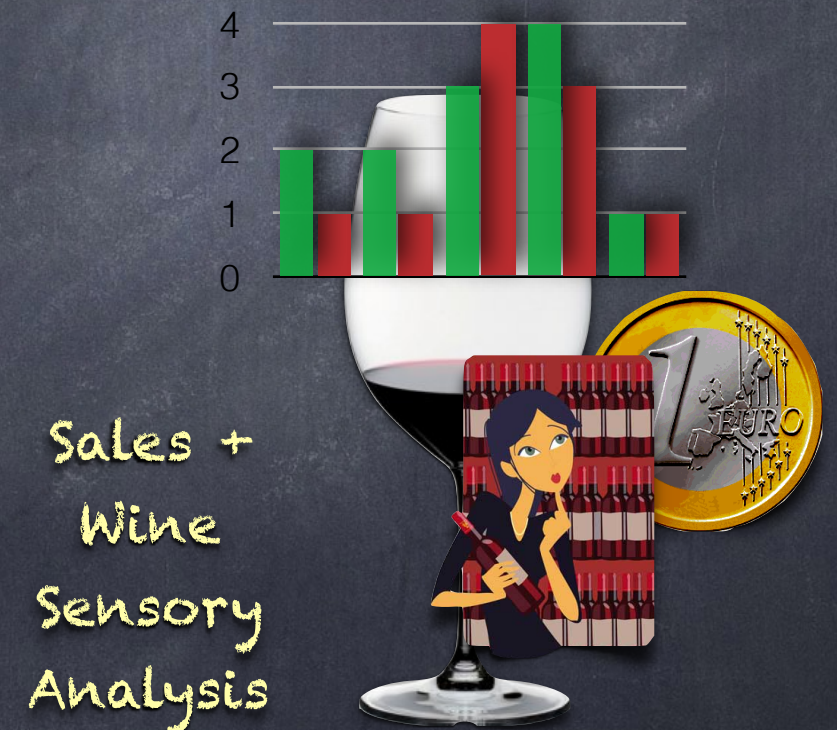
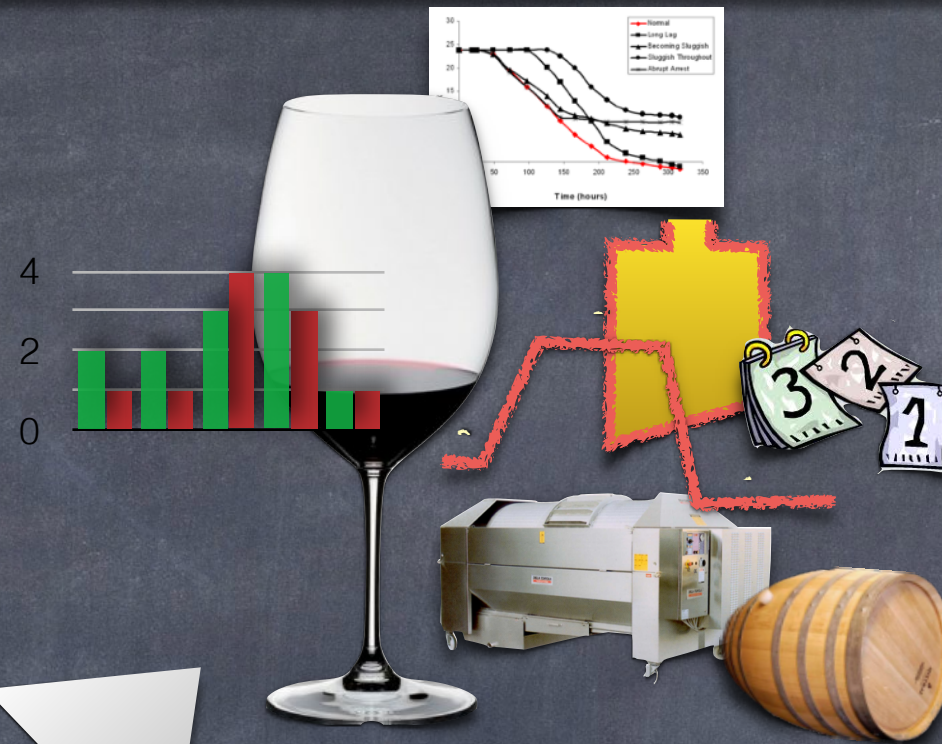
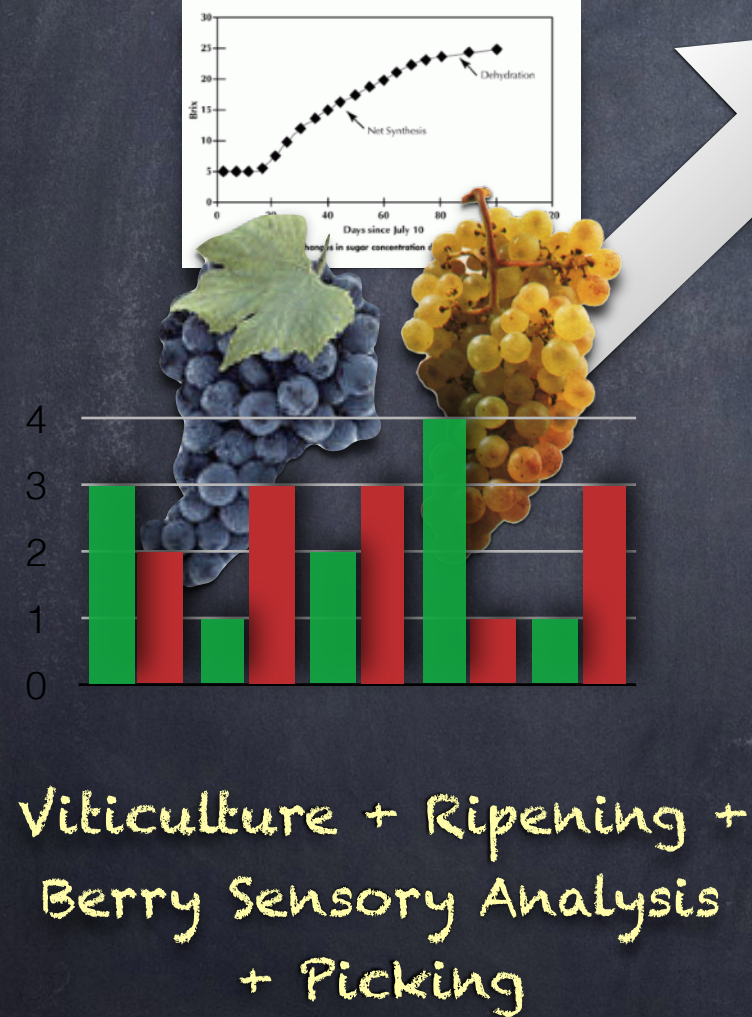
A reminder:
Relative Position of Berry
Sensory Analysis in our vision
of wine strategy

Berry Sensory Analysis has no real meaning without Wine Sensory Analysis

Viticulture + Ripening + Picking



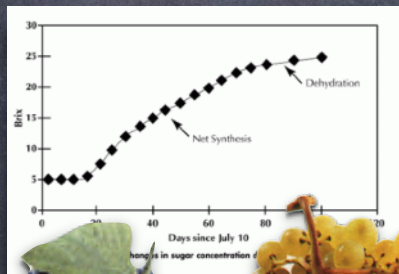
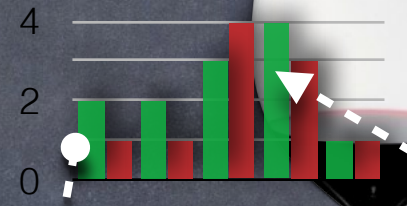
Interaction between Berry Sensory Analysis and Wine Sensory Analysis : Chronology



Viticulture + Ripening +
Berry Sensory Analysis
+ Picking

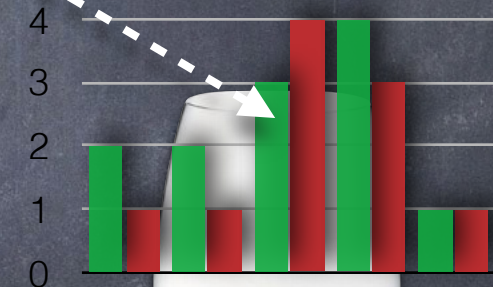
Winemaking + Wine
Sensory Analysis

Sales +
Wine
Sensory Analysis



Viticulture + Ripening + Berry Sensory Analysis + Picking

Adapt winemaking procedure



Will
market
goals be
reached?



Thank you
for your
attention

