



I, 2, 3 JUILLET 2019
ANGERS - FRANCE
CENTRE DE CONGRÈS

Session 6 : Taste, tastes of the chenin

Panel expert, méthode textuelle et marqueurs chimiques pour caractériser les composantes aromatiques du chenin du Val de Loire

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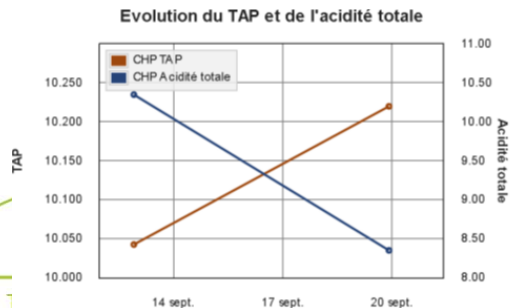
Axe 1



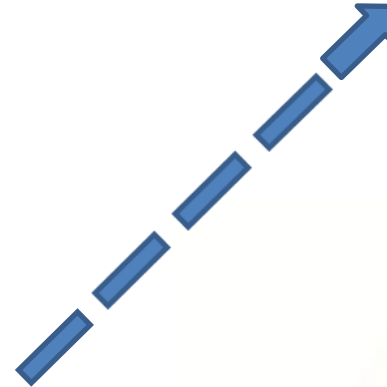
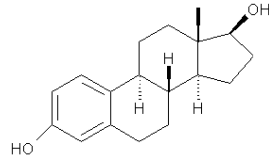
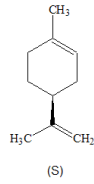
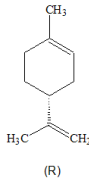
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Maturité technologique

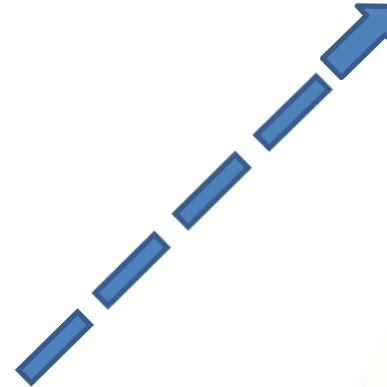
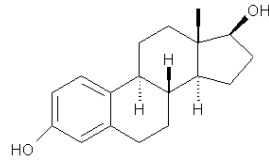
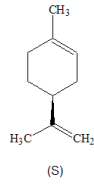
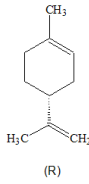
Maturité aromatique



Axe 2



Axe 2

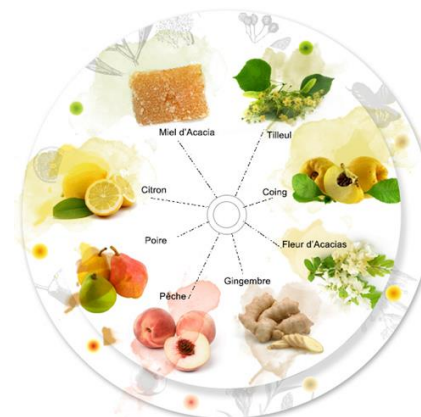


Mise en évidence des profils sensoriels du chenin sur 60 vins commerciaux (jury expert ESA)



Smell attribute		Aroma attribute	Description of the attribute
Yellow fruits		Yellow fruits	Peach, abricot, ...
White fruits		White fruits	Pear, banana, apple, quince
Citrus	Citrus	Grapefruit, lemon, ...	
Exotic fruits		Exotic fruits	Mango, pineapple
Roasted	Roasted	Roasted	
Woody	Woody	Woody	
Spicy	Spicy	Cinnamon, vanilla, clove	
Caramel	Caramel	Caramel	
Honey	Honey	Honey	
Butter	Butter	Butter	
White flowers		White flowers	Acacia, linden, lilac, jasmine
Broom	Broom	Broom	
Cut grass	Cut grass	Fresh vegetal, herbs, grass	
Hay	Hay	Dry vegetal, tabacoo	
Flint	Flint	Flint	
Earty	Earty	Earthy, musty	
Cork	Cork	Cork	
Cabbage	Cabbage	Cabbage	
Animal	Animal	Musk, leather, ...	
Alcohol	Alcohol	Alcohol	
Nut	Nut	Nut	

great aromatic complexity

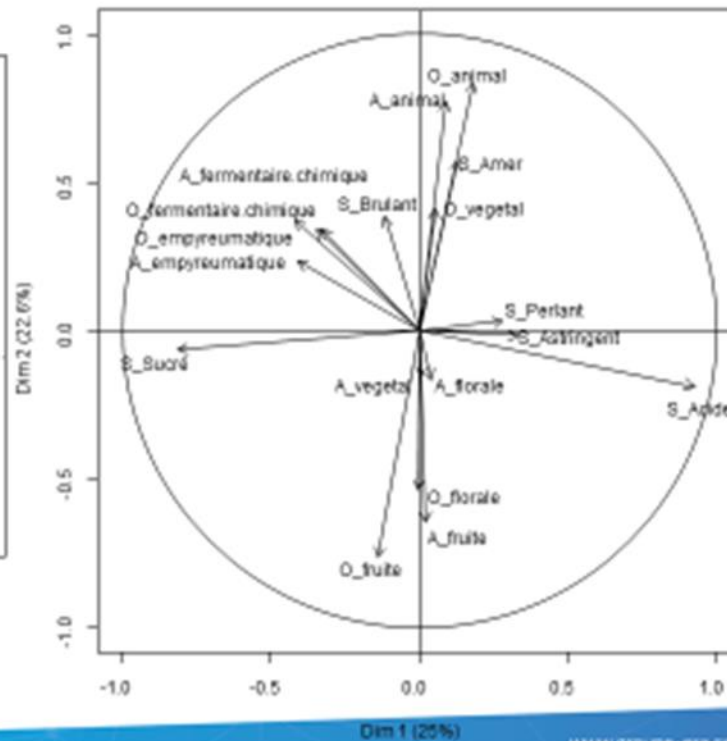
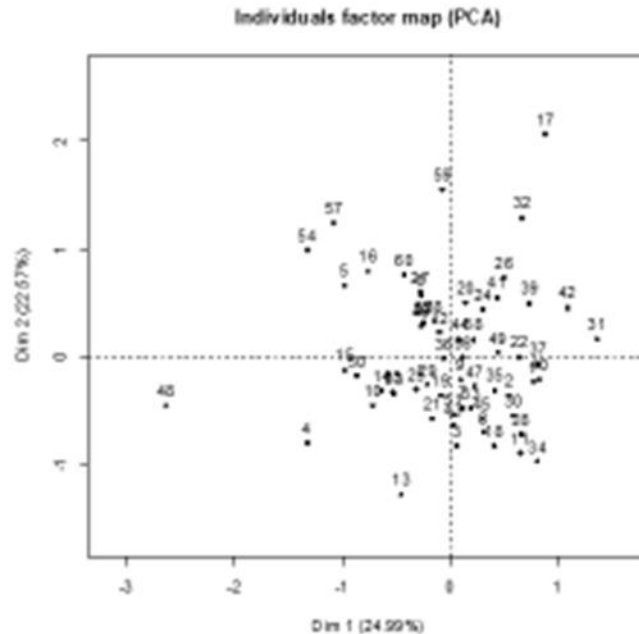


Mise en évidence des profils sensoriels du chenin sur 60 vins commerciaux (jury expert ESA)



Caractérisation sensorielle des vins Caractérisation générale des vins

	Dim.1	Dim.2	Dim.3	Dim.4	Dim.5
Variance	0.470	0.425	0.293	0.235	0.123
% of var	24.988	22.567	15.583	12.514	6.563
Cumulative of % var	24.988	47.555	63.138	75.652	82.215



Mise en évidence des marqueurs aromatiques des différents profils sensoriels du chenin

Echantillons	Terpenol					ster/Acetar/Ace					ethyl hexanoate (pomme verte)			ethyl butyrate (ananas)			2-hydroxypropanoate d'éthyle		3-hydroxybutanoate d'éthyle		2-méthylbutanoate d'éthyle		2-méthylpropanoate d'éthyle		2-hydroxyisocaproate d'éthyle		1,1,6-triméthyl-1,2-dihydronaphthalène		α-ionone		β-damascénone (coing)		β-ionone		3-mercaptopropan-1-ol (pamplemousse)		
	linalool	nerol	geraniol	citronellol	a-terpéneol	2-phenylethanol (rose, floral)	hexyl acetate	isoamyl acetate	2-phenylethyl acetate	ethyl decanoate	ethyl hexanoate (pomme verte)	ethyl octanoate (ananas)	ethyl butyrate (ananas)	2-hydroxypropanoate d'éthyle	3-hydroxybutanoate d'éthyle	2-méthylbutanoate d'éthyle	2-méthylpropanoate d'éthyle	2-hydroxyisocaproate d'éthyle	TDN	AION	BDAM	BION	3MH														
seuil perception (µg/L)	15	400	20	100	400	10000	700	2700	250	500	200	1100	20	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	
COR D1	2,9	1,4	0,6	0,6	2,3	53720	15	511	114	147	350	417	190	9312	140	38	327	136	0,6	nd	3,2	0,04														276	
COR D2	3,4	1,4	2,2	1,1	2,0	46976	29	1171	292	284	480	529	261	7008	212	18	172	84	0,5	nd	3,3	0,01															377
BMO D1	3,0	0,9	0,8	0,7	2,3	62063	21	757	158	225	467	529	168	7229	161	31	280	106	0,4	nd	2,2	0,07															250
BMO D2	4,0	1,4	1,9	0,4	2,5	50590	38	3022	513	347	711	855	337	7207	294	15	173	79	0,3	nd	2,3	0,02															97
LAN D1	3,1	1,9	1,0	0,2	2,4	47857	18	1081	210	239	486	624	288	9588	261	24	216	114	0,5	0,015	2,5	0,03															332
LAN D2	4,0	1,7	1,4	0,8	2,5	51491	21	1281	293	248	434	613	245	9585	288	26	182	122	0,5	nd	4,1	0,02															262
MB D1	3,7	2,2	0,9	0,4	3,1	47891	18	839	165	61	307	333	199	13676	259	28	200	128	0,7	nd	3,4	0,03															260
MB D2	3,8	2,3	1,0	-0,1	3,2	45834	26	2508	567	339	535	745	365	15046	466	26	181	129	0,8	nd	3,7	0,02															369
FAY D1	5,2	1,9	0,9	1,2	2,2	38951	24	1730	316	291	525	659	312	8831	266	17	144	99	0,7	nd	3,1	0,02															472
FAY D2	6,1	2,2	1,5	1,6	2,6	42467	31	1538	299	260	501	598	271	8189	272	20	143	111	0,8	nd	4,5	0,03															492
CAD	4,3	1,4	2,3	1,3	2,5	42222	23	1417	227	194	581	577	291	8121	224	21	171	101	0,4	nd	2,5	0,04															363
D2M	4,4	2,3	0,9	0,2	3,6	40921	36	2993	375	315	692	832	316	9874	323	30	229	120	0,5	nd	2,0	0,03															135
PAS	3,5	1,7	0,9	0,9	2,4	34959	11	730	127	129	348	350	235	13407	236	40	304	145	0,6	nd	2,8	0,04															400
PUY	3,1	1,5	1,1	0,9	2,5	45411	18	957	168	250	552	584	228	8817	211	27	234	119	0,5	nd	2,1	0,03															384
RAB D1	4,0	1,7	2,1	1,2	2,0	41433	20	1944	193	90	667	614	326	9962	320	33	239	75	0,3	0,016	3,3	0,04															175
ROC	3,5	1,9	0,6	0,2	3,1	42901	21	860	154	87	375	373	202	11380	234	29	190	120	0,6	nd	2,6	0,04															111

Mise en évidence des marqueurs aromatiques des différents profils sensoriels du chenin

INTERACTION OF 3MH, ETHYL HEXANOATE, AND LINALOOL IN DEAROMATIZED CHENIN BLANC BY DESCRIPTIVE ANALYSIS

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Background

The presence of thiols in South African Chenin Blanc wines was recently reported, which established the need to understand the sensory contribution of thiols to the aroma of these wines. To study the perception of thiols and their interactions with other volatiles, an interaction study was performed. Different concentrations of a thiol (3-mercaptohexan-1-ol), an ester (ethyl hexanoate) and a terpene (linalool) were spiked into a dearomatized Chenin Blanc matrix and interactions were assessed by descriptive analysis (DA).

Experimental Design

3MH (passion fruit/lemon) | **ethyl hexanoate** (orange blossom/bergamot) | **linalool** (orange blossom/bergamot)

- 1 Train and test combinations
- 2 Train and test singles
- 3 Compare results

Results

Singles

Figure 1. Singles spider plot

Figure 2. PCA of significant descriptors (n=18)

- 3MH was described as guava, tomato leaf and cooked veg, and negatively correlated with floral.
- Ethyl hexanoate had a subtle contribution, and had medium intensities of floral and guava.
- Linalool was described as floral, peach, tea, orange, bergamot/lemon, and orange blossom, and negatively correlated with lemon, grapefruit, and cooked veg.

Combinations

Figure 3. Combinations spider plot

Figure 4. PCA of significant descriptors (n=18)

- 3MH was described as guava, lemon, grapefruit, orange, passion fruit, tomato leaf/smoked veg attributes seen in the singles were suppressed.
- Ethyl hexanoate had banana, and artificial sweet (additive) aromas, and was negatively correlated with peach.
- Linalool was described as floral, orange blossom, and bergamot/lemon, and negatively correlated with guava, grapefruit, lemon (at low 3MH).

Conclusions

- Linalool and 3MH have an antagonistic relationship
- 3MH was better associated with guava and grapefruit, not the passion fruit, which could be due to the levels chosen or the matrix used for spiking
- Ethyl hexanoate enhanced banana and sweet aromas only when in combination with other compounds
- Linalool and 3MH were more aromatically powerful than ethyl hexanoate

Acknowledgements: Prof. Martin Kidd and all participating panelists. Winetech

THIOL LEVELS IN YOUNG SOUTH AFRICAN CHENIN BLANC WINE AND THEIR IMPACT ON SENSORY PERCEPTION

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 *Email: abulca@sun.ac.za

Background

The attributes that thiols impart to the sensory aspects of wine are considered positive, and the winemakers want to preserve them for as long as possible. Since thiols are sensitive to degradation, it is important to see from which level these compounds start in young wines, and if the attributes associated to these levels play a role and make a difference in the young wine character. This means that (1) very young wines contain a higher amount of these compounds, that decreases with time; (2) the aroma attributes associated with these compounds will be at their highest in very young wines. Young South African Chenin Blanc wines (not older than one month from bottling), commercially available, were selected based on the winemakers' recommendations and tasting notes for attributes associated with thiols, such as 'guava', 'passion fruit', 'gooseberry', and 'grapefruit'. The wines were analysed for thiols (GC-MS at Viniab, Stellenbosch) and evaluated sensorially by a panel of 15 experts using CAT.

What do consumers see?

Analysis of information given on back labels and tasting notes showed general attributes associated with Chenin Blanc fresh and fruity wines.

What does thiol analysis show?

3MH varied between 189-1649 ng/L (ave 664 ng/L) and 3MH between 26-936 ng/L (ave 288 ng/L). The values are especially high for 3MHA, which is more prone to degradation than 3MH.

Sample ID	3MH (ng/L)	3MHA (ng/L)	ratio
A	480	307	1.6
B	399	125	3.2
C	225	58	3.9
D	776	493	1.6
E	367	135	2.7
F	808	171	4.7
G	1389	576	2.4
H	580	241	2.4
I	3256	472	2.7
J	852	294	1.9
K	590	329	1.8
L	1649	936	1.8
M	189	26	7.3
N	765	247	3.1
O	767	209	3.7

What do experts say?

Some of the more prominent attributes are associated with thiols (guava, grapefruit, passion fruit, tomato leaf) but they are present regardless of the level of measured thiols.

The overall attributes for the wines is very similar to the attributes for the wines with highest and lowest thiol levels. Even in very low concentrations, thiol can strongly influence wine aroma.

Differences based on thiol levels were not found to always reflect in the frequency of descriptors used by the assessors.

Sample L (highest thiol levels, 1649 ng/L 3MH, 936 ng/L 3MHA)

Sample M (lowest thiol levels, 189 ng/L 3MH, 26 ng/L 3MHA)

General descriptors for the sample set

Acknowledgements: IGWS, Winetech

Marqueurs aromatique du chenin, profil sensoriel des vins

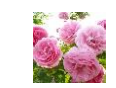
formation d'un jury expert aux marqueurs aromatiques

Smell attribute	Aroma attribute	Description of the attribute
Yellow fruits	Yellow fruits	Peach, abricot, ...
White fruits	White fruits	Pear, banana, apple, quince
Citrus	Citrus	Grapefruit, lemon, ...
Exotic fruits	Exotic fruits	Mango, pineapple
Roasted	Roasted	Roasted
Woody	Woody	Woody
Spicy	Spicy	Cinnamon, vanilla, clove
Caramel	Caramel	Caramel
Honey	Honey	Honey
Butter	Butter	Butter
White flowers	White flowers	Acacia, linden, lilac, jasmine
Broom	Broom	Broom
Cut grass	Cut grass	Fresh vegetal, herbs, grass
Hay	Hay	Dry vegetal, tobacco
Flint	Flint	Flint
Earty	Earty	Earthy, musty
Cork	Cork	Cork
Cabbage	Cabbage	Cabbage
Animal	Animal	Musk, leather, ...
Alcohol	Alcohol	Alcohol
Nut	Nut	Nut

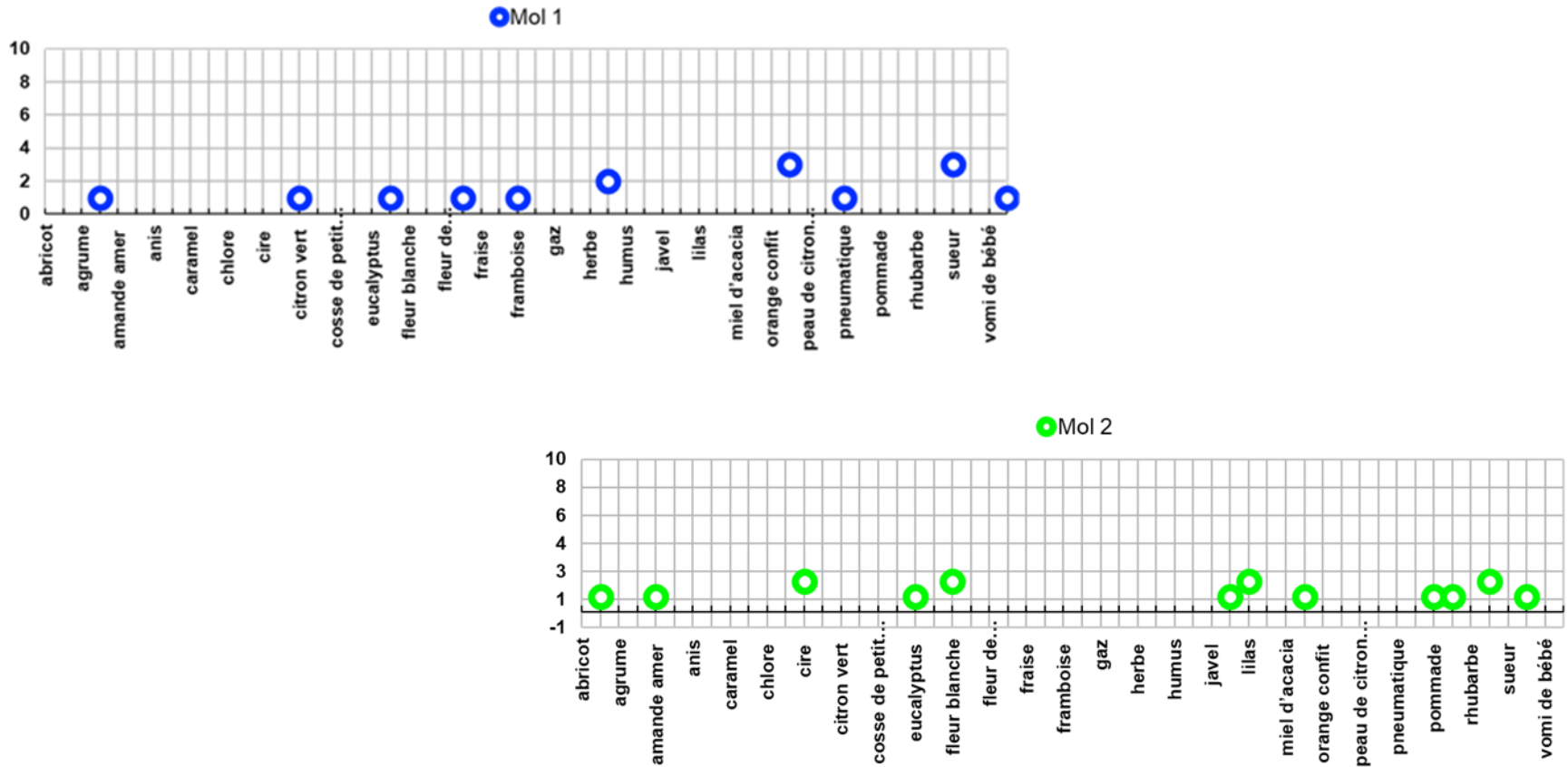


Attribut	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50																																															
acid perception (g/L)	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0	7.1	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	10.0

Composante	Molécule
Agrume	3-mercaptohexan-1-ol
Florale	2-phényléthanol
Fruité 1	Hexanoate d'éthyle
Fruité 2	Butanoate d'éthyle
Fruité 3	B-damascénone
Végétal	Cis-3-hexen-1-ol



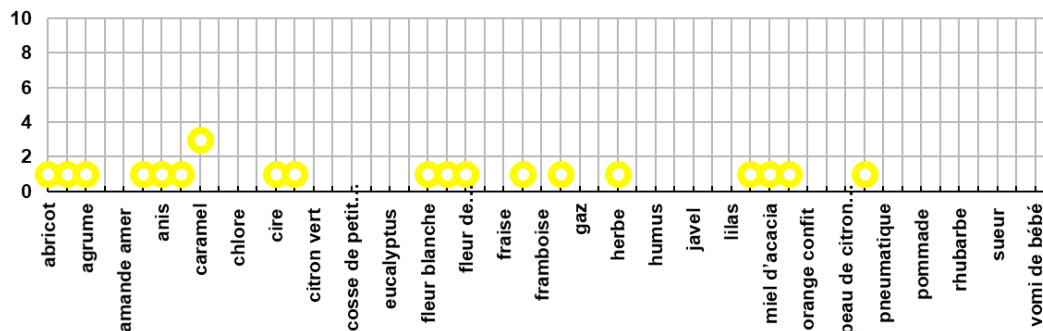
Marqueurs aromatique du chenin, profil sensoriel des vins formation d'un jury expert aux marqueurs aromatiques



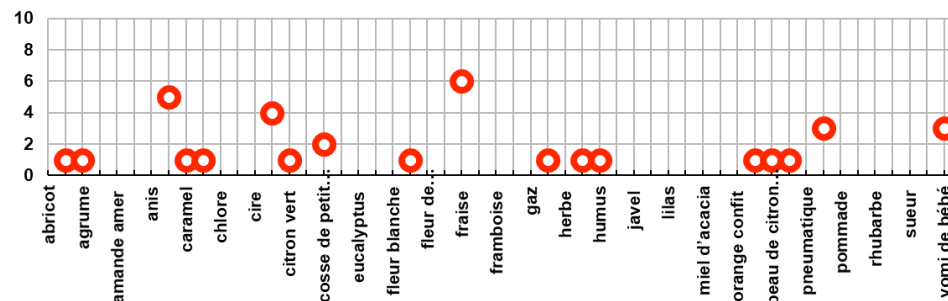
Marqueurs aromatique du chenin, profil sensoriel des vins

formation d'un jury expert aux marqueurs aromatiques

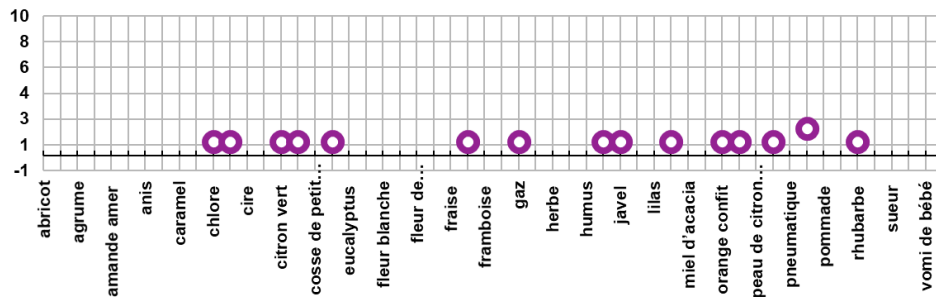
● Mol 3



● Mol 4



● Mol 5

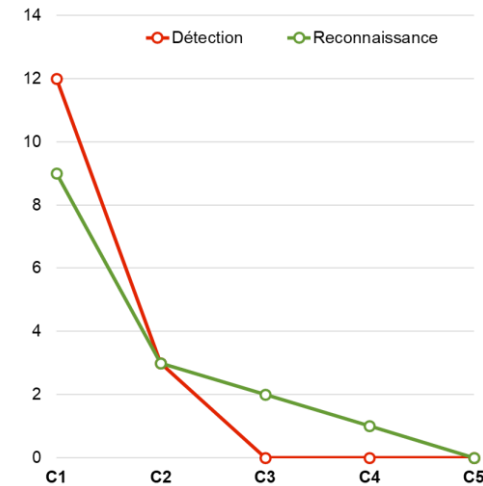


Marqueurs aromatique du chenin, profil sensoriel des vins formation d'un jury expert aux marqueurs aromatiques

Tests de perception

Tests de reconnaissance

Tests de calage sur les descripteurs aromatiques



Consensus

Marqueurs aromatique du chenin, profil sensoriel des vins formation d'un jury expert aux marqueurs aromatiques

Composante	Descripteurs consensuels	Molécule
Agrume	pamplemousse, sueur	3-mercaptohexan-1-ol
Florale	lilas, rose	2-phényléthanol
Fruité 1	banane, poire	Hexanoate d'éthyle
Fruité 2	fraise	Butanoate d'éthyle
Fruité 3	Coing, poivre	B-damascénone
Végétal	Herbacé, Légumes verts	Cis-3-hexen-1-ol

Caractérisation des vins de chenin par le jury formé

ECHANTILLON N° ...														
Sensoriel														
	Odeur	pas du tout	un peu	moyen	assez	beaucoup								
	VÉGÉTAL	O	O	O	O	O								
	Odeur	pas du tout	un peu	moyen	assez	beaucoup								
	AGRUME	O	O	O	O	O								
	FLORAL	O	O	O	O	O								
	FRUITÉ AP	O	O	O	O	O								
	FRUITÉ F	O	O	O	O	O								
	FRUITÉ CP	O	O	O	O	O								
	ACIDE	0	I	-	-I	-I	-I	-I	-I	-I	-I	-I	-I	10

2 – Marqueurs aromatique du chenin, profil sensoriel des vins

2-4 : caractérisation des vins issus des parcelles des 2 réseaux (consensus)

1	2	Pas du tout	Un peu	moyen	assez	beaucoup	Colonne 1
Sensoriel							0
	Végétal	1	4	6	4		15
	Agrume	1	1	8	5		15
	Floral	4	6	3	2		15
	Fruité AP	8	2	3	2		15
	Fruité FV	8	4		3		15
	Fruité CP	7	4	2	2		15
	Acide	5,07					5,066

1	2	Pas du tout	Un peu	moyen	assez	beaucoup	Colonne 1
Sensoriel							0
	Végétal	5	4	3	3		15
	Agrume	4	8	3			15
	Floral	11	3	1			15
	Fruité AP	8	6	1			15
	Fruité FV	3	3	3	5	1	15
	Fruité CP	8	2	3	2		15
	Acide	5,53					5,53

1	2	Pas du tout	Un peu	moyen	assez	beaucoup	Colonne1
Sensoriel							0
	Végétal	7	4	1	3		15
	Agrume	6	7	1	1		15
	Floral	6	7		2		15
	Fruité AP	3	6	4	2		15
	Fruité FV	6	2	4	3		15
	Fruité CP	4	6	3	1	1	15
	Acide	4,33					4,33



Session 6 : Taste, tastes of the chenin

Panel expert, méthode textuelle et marqueurs chimiques pour caractériser les composantes aromatiques du chenin du Val de Loire

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