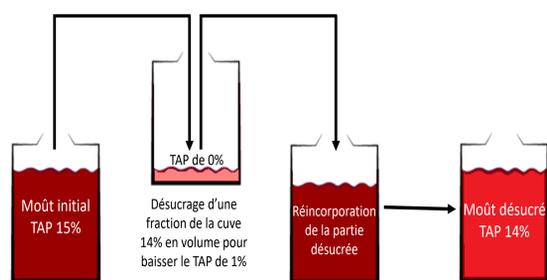


# Biologically desugaring of grape must to reduce The alcohol content of wines

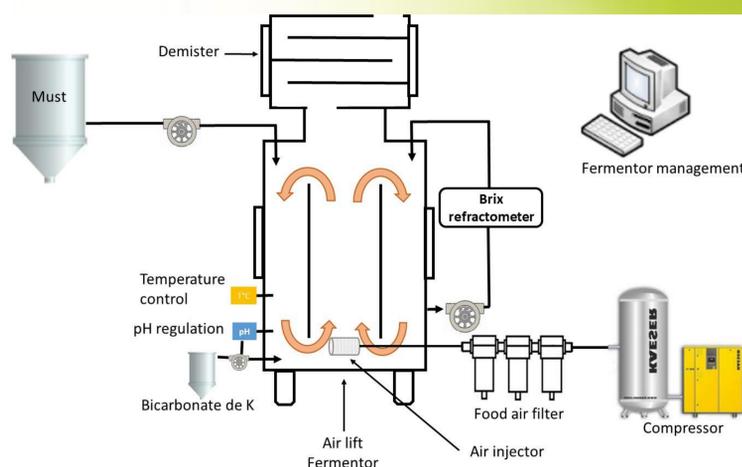
Over the last twenty years, vineyard quality policies have resulted in more concentrated wines with more expressive aromas. Combined with a changing climate, this leads to the production of wines are richer in alcohol, which is less and less accepted by consumers. Moreover, these wines are often perceived with a lack of acidity.

From a technical point of view, the high sugar content of the must leads to difficult fermentation starts and slow fermentation ends. The de-alcoholisation of wines is not the only solution. Practices to reduce the sugar content of the must while maintaining the quality of the grapes have been studied.

## METHODOLOGY

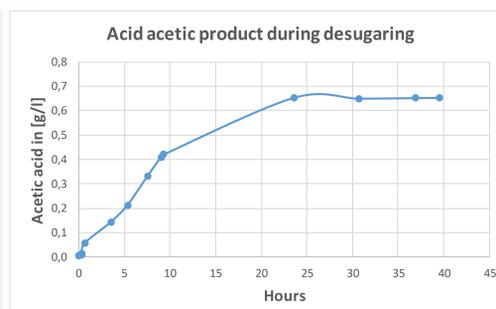
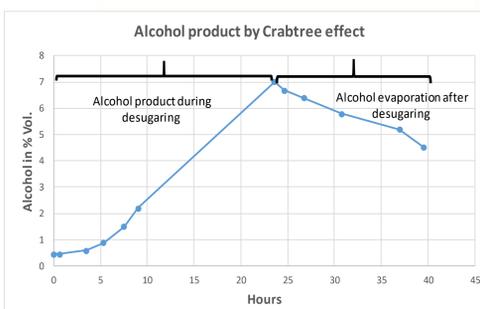
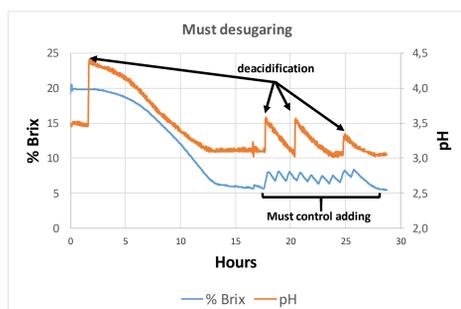


The desugaring principle studied consists in adding in the must, a small volume of this same must, which has previously been completely desugared by biological way.

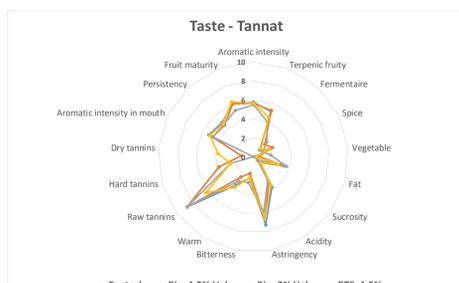


Biological desugaring is carried out in an "air lift" fermenter with defined temperature, pH, aeration, agitation and nitrogen nutrition conditions. The yeasts are subjected to aerobic culture in order to promote cell multiplication to the detriment of alcoholic fermentation. The objective is to completely desugarise the must in less than 48 hours in a fully automated fermenter.

## RESULTS ET DISCUSSION



Chardonnay	Biological desugaring		Desugaring by membrane technique	
	Control	-1,5% Vol.	-3% Vol.	RTS-1,5%
Alcoholic degree [% Vol.]	13,9	12,3	11,2	12,5
Gap / objective		-0,1	+0,3	40
Glucose/Fructose [g/l]	0,47	0,42	0,23	0,33
pH	3,65	3,37	3,25	3,60
Free SO <sub>2</sub> [mg/l]	20	15	15	16
Total SO <sub>2</sub> [mg/l]	81	84	90	73
Tartric acid [g/l]	1,28	1,62	1,98	1,32
Malic acid [g/l]	2,19	2,28	1,87	2,25
Lactic acid [g/l]	0,0	0,0	0,0	0,0
Acetic acid [g/l]	0,21	0,08	0,46	0,11
PTI	9	10	10	8
Abs 420nm	0,11	0,17	0,21	0,11



The biological desucrage leads to a strong acidification of the must that can go below pH 3 and block the activity of the yeasts.

This technology makes it possible to rebalance the acidity of the wines by the strong acidity brought by the desiccated must.

This technique leads to a small production of ethanol by Crabtree effect, but also a production of acetic acid. No organoleptic deviation was found when using this technique



## CONCLUSION

This biological desugaring technique makes it possible to obtain the desired degree of alcohol reduction (taking into account the alcohol produced by the Crabtree effect).

Good management of the fermenter control will greatly limit this crabtree effect and avoid the blocked of yeast metabolism due to a low pH.

Desugaring limited to -1.5 to -2% Vol. does not show any negative effect on the organoleptic characteristics of wines.

This technology is only viable if it is fully automated.