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## An innovative soil management impacts white grapes and wines sensory qualities

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## INTRODUCTION

Sustainable grape production entails the implementation of management practices that permit low pesticides inputs, maintain grapevine performance, and conserve soil quality. The **nutrition of the vine** is one of the major parameters influencing the nature and the content of the secondary metabolites produced by the vine. These metabolites have a direct impact on the organoleptic quality of the wine. The present work investigates the quality of production of two varieties of grape (Riesling and Pinot Gris), in different combinations of locations (in Alsace, France), vintages and vineyards managements.

## MATERIALS & METHODS

### 1. Six innovative cultures

No	Site-system	Vintage	System	Location	Harvest dates	
					2014	2015
1.	ChâtenAB	Riesling	organic	Châtenois	10/09	08/09
2.	IngerAB	Riesling	organic	Ingersheim	18/09	17/09
3.	RibeauAB	Riesling	organic	Ribeauvillé	06/10	21/09
4.	RibeauPI	Riesling	integrated	Ribeauvillé	06/10	21/09
5.	RouffPI	Pinot Gris	integrated	Rouffach	17/09	22/10
6.	RouffPlopt	Pinot Gris	Integrated optimum	Rouffach	17/09	22/10

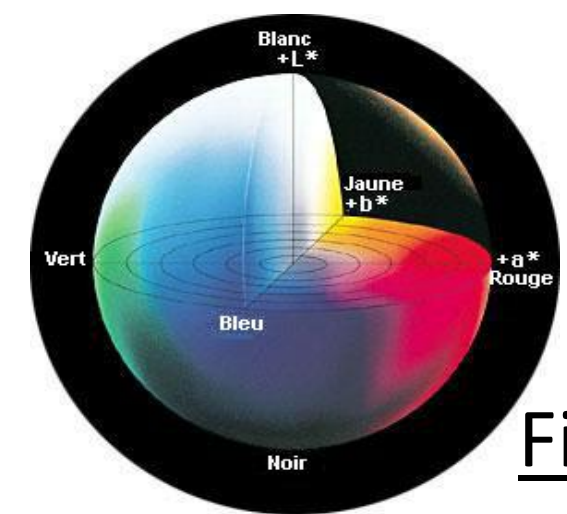
### 2. Analyzed products

White berries 2014 and 2015



White wines 2014 from microvinification

### 3. Chromametric measurements



L\* (lightness) a\* (green/red) b\* (blue/yellow) color system on 4 berries of 12 grapes of each place per site (144 repetitions)

Fig. 1: Espace de couleur CIE L\* a\* b

### 4. Sensorial analysis methods

Sensory profiles estimated by quantitative descriptive analysis

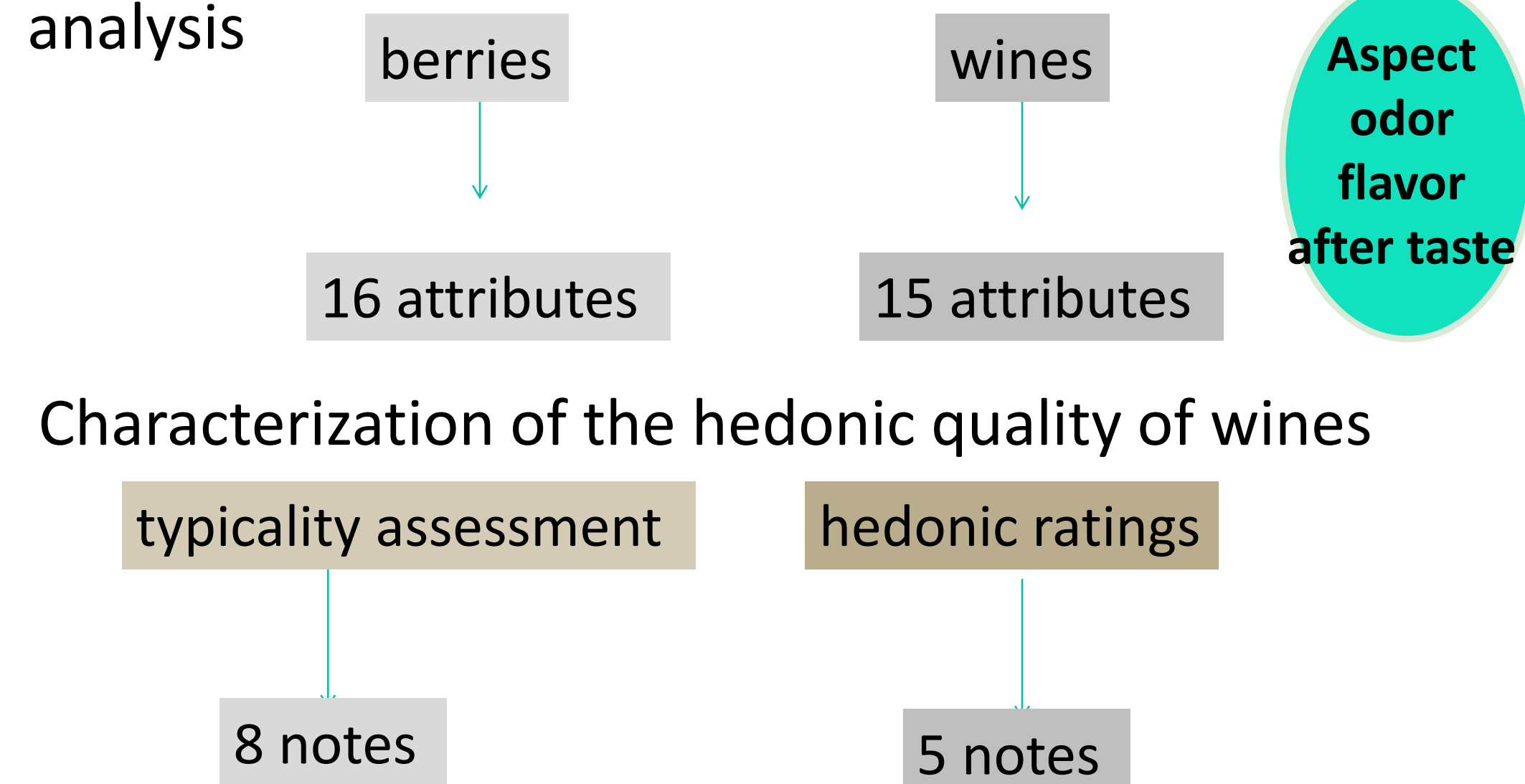


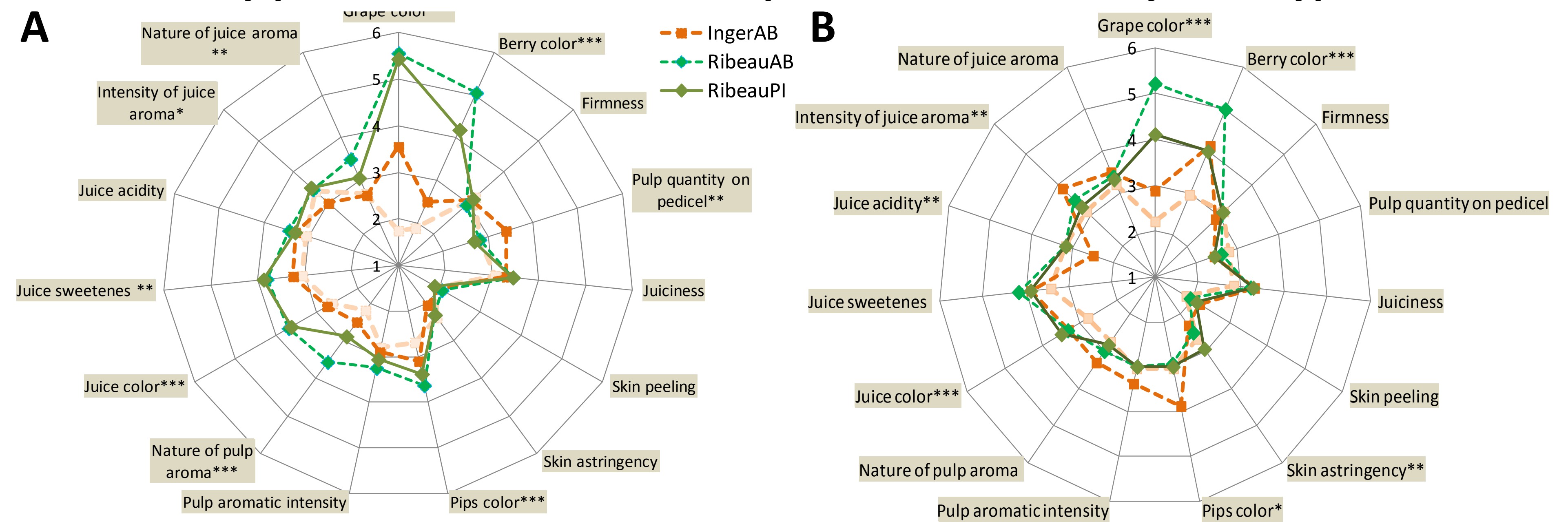
Fig. 2: Sensory laboratory room of 13 independent boxes

### 5. Sensory Panels



## RESULTS

### ❖ Sensory profiles of berries not dependant from the system type

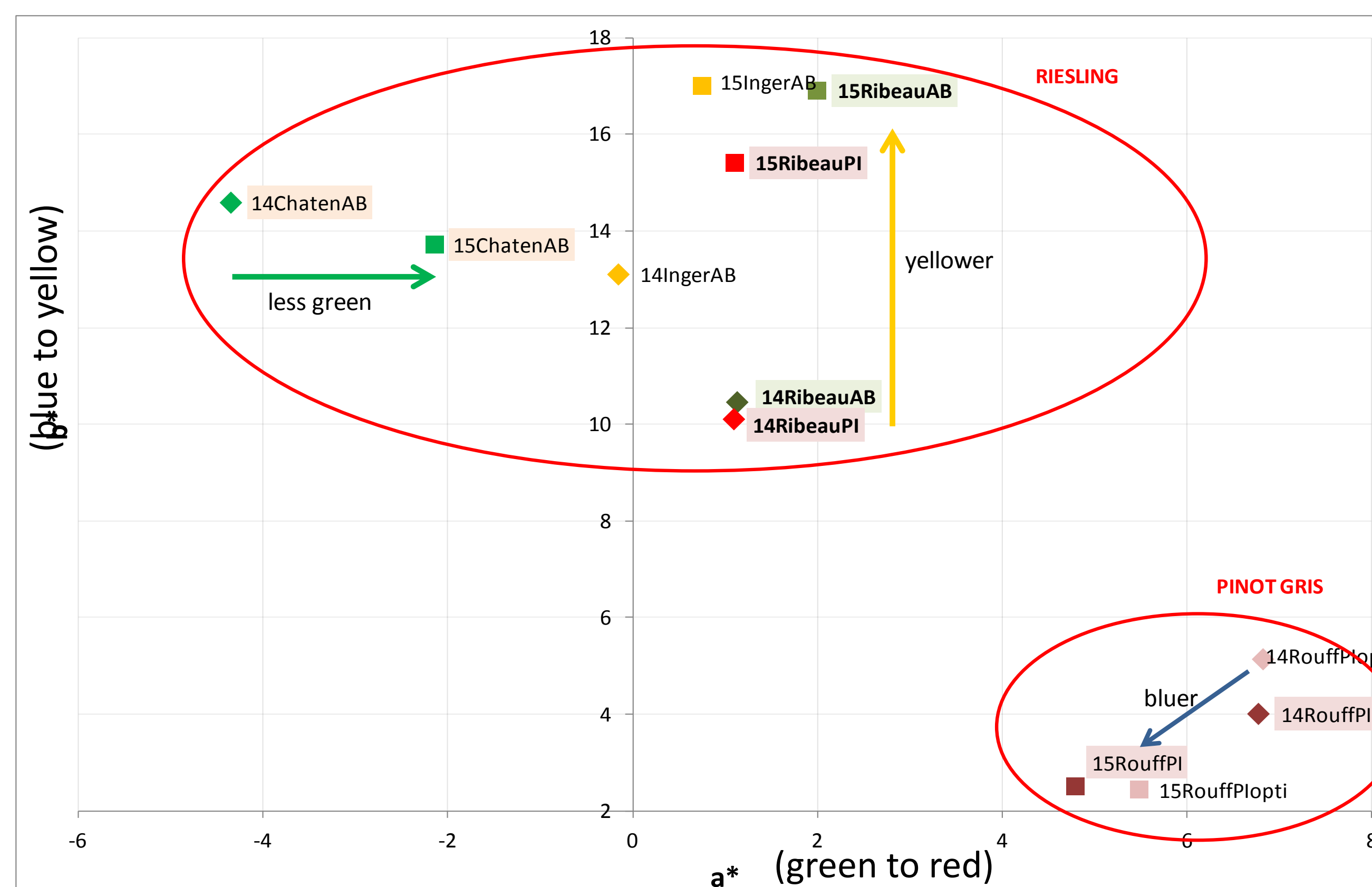


Significant differences by ANOVA at \*5%\*\*1%\*\*\*0.1%

Fig 3. Descriptive sensory profiles of the 4 Riesling IngerAB, ChâtenAB, RibeauAB and RibeauPI, berries 2014 (A) and 2015 (B)(11 tasters-2 repetitions per grape -15 attributes)

Riesling: 5/15 sensory attributes differentiated berries for both studied years (Fig.3).  
Pinot gris: No attribute differentiated berries for both studied years (data not showed).

### ❖ berries chromametric measurements correlated with expert color ratings



Berries from ChâtenAB harvested at lower ripeness, are greener than berries from both RibeauAB and RibeauPI ( $p < 0.05$ ). ChâtenAB are opposed to RibeauAB on the 3 parameters L\*, a\* and b\* (fig.4). The color is well characterized in absolute for both studied year.

Fig 4. 6 berries Riesling and Pinot Gris 2014 and 2015 representation (144 measurements per berrie) (arrows indicate color evolution from 2014 to 2015)

### ❖ Wines with variable sensory qualities

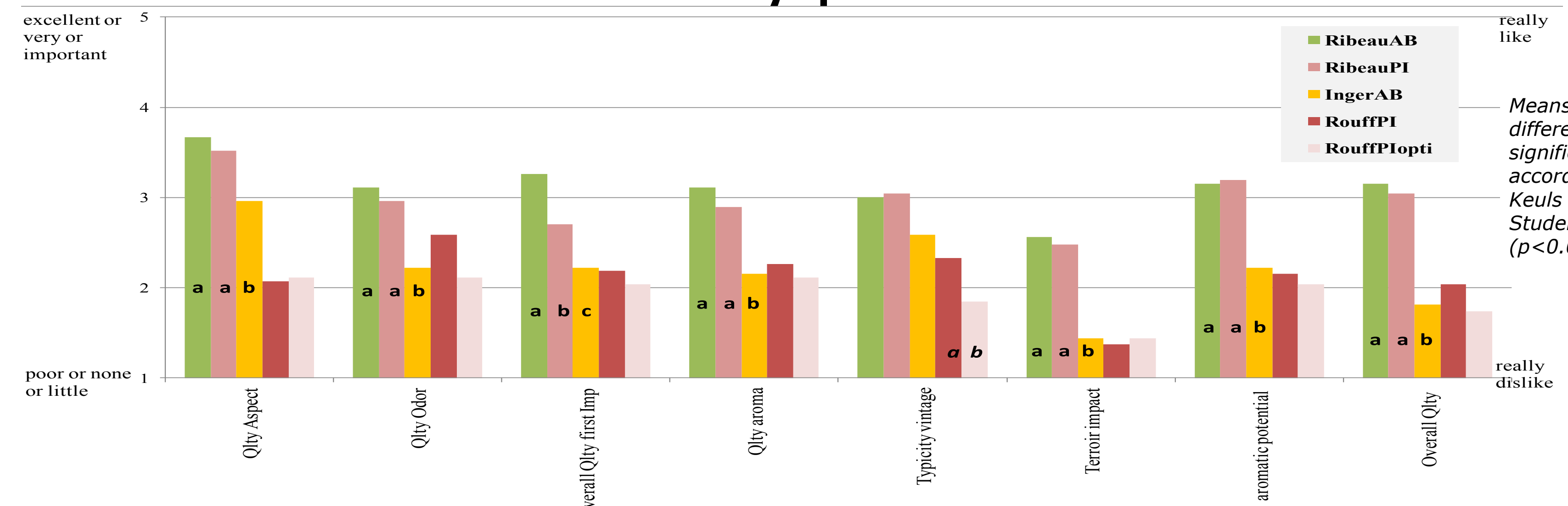


Fig 5. Hedonic sensory judgements of the 3 Riesling IngerAB, RibeauAB and RibeauPI and 2 Pinot Gris, RouffPI and RouffPIOpti wines 2014 by 9 white wine experts

The **oenologists** (Fig.5) and the **consumers** (data not showed) made no significant differences (at 5%) between the 2 Pinot Gris 2014 wines for quality sensory attributes. The 3 Riesling wines differed qualitatively on all criteria except for the typicality: the RibeauPI and RibeauAB wines were significantly more appreciated (at 5%) than the wine IngerAB with a strong aromatic potential and a stronger Terroir influence.

## CONCLUSION & PERSPECTIVES

- The **sensory visual and aromatic attributes of harvest berries** enabled to distinguish the six sites-systems and the two studied year, but not the organic systems from the integrated ones.
- The **chromametric measurements** were correlated to the expert color ratings in relation to the grape variety.
- The **sensory profile of the wine** was linked to berry quality at harvest.
- There is **no significant impact on consumer preferences** of the wines.
- It would be interesting to continue describing the sites-systems **with the production practices and others studied years.**