It is not possible to find an explanation for all these formed groups, but it seems to be repeatable because it works with 2011 vintage.
Also, we tried another type of classification, called CART, which is based on regression trees. This one considers only variety and exposition factors, and forms 3 groups:
- Pinots noirs on one side,
- White varieties on the other side. This group is then divided in two: North exposition, and East, west and south exposition.
Even if this typology considers two factors, the explanation of the group is easier for vineyard managers.

CONCLUSIONS
This study allowed us to show in Burgundy that north expositions and plateau have, in general, a late ripening period (sugar accumulation), contrary to south exposition and pinot noir. Concerning the potassium accumulation during ripening, steep slopes and thin soil on hard limestone present low content, whereas bottom slopes in general present high content, regarding their water status. Furthermore, we achieved to establish to types of classification, which seem stable in time, working with at least 2011 vintage. Hence, vintage has the more impact on the earliness of ripening. Then the variety, the exposition and the topography are important, and make a difference during berry ripening.

REFERENCES
1. R. MORLAT, G . BARBEAU, C. ASSELIN, 2001. Etud. Rech. Syst. Agraires Dév., 2001, 32, 111-127.
2. A. CARBONNEAU, A. DELOIRE, B. JAILLARD, 2007. La vigne. Physiologie, terroir, culture. Paris : Dunod, 442 p.
3. E. VAUDOUR, 2003. Les terroirs viticoles : Définitions, caractérisation et protection. Paris : Dunod, 293 p.
4. J. DUTEAU, M. GUILLOUX, G. SEGUIN, 1981. Conn. Vigne et Vin, 15, n°1, 1-27.
5. P. HUGLIN, 1986. Biologie et écologie de la vigne. Lausanne : Payot, 371 p.
6. C. RIOU, 1994. Le déterminisme climatique de la maturation du raisin : application au zonage de la teneur en sucres dans la communauté européenne. Luxembourg : Offices Publi. Officielles des Communautés Européennes.
7. X. CHONÉ, C. VAN LEEUWEN, P. CHÉRY, P. RIBEREAU-GAYON, 2001. South Afri. Jour. Enol. Viti., vol. 22, n°1, 8-15.
8. C. VAN LEEUWEN, P. FRIANT, X. CHONÉ, O. TRÉOGAT, S. KOUNDOURAS, D. DUBOURDIEU, 2004. Am. Jour. Enol. Viti., n°55, 3, 207-217.

Relationships between berry quality and climatic variability in grapevine cultivars from Piedmont (Italy)

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ABSTRACT
A major topic in viticultural research is the analysis of the relationships between climate on one side, and grape and wine quality on the other. It is well known that climatic conditions have a high impact on growth and development of grapevine and consequently on yield and quality. In particular, wine quality is correlated with bioclimatic indexes, which are based on air temperature and cumulated rainfall during the growing season.
This study was aimed at creating and analyzing a dataset containing berry quality data collected on 13 grapevine cultivars of Piedmont, and climatic and geomorphological data of the vineyards where berry samples were taken. Berry quality and meteorological data were collected from 1999 to 2010 and bioclimatic indexes were calculated over the vegetative growing period.
In a preliminary analysis, for each cultivar an ANOVA was performed, and significant differences among years as concerns total soluble solids (TSS), titratable acidity and pH were detected.
Pearson's correlation analysis was applied separately for each cultivar, in order to perform a first evaluation of the relationships between climatic, geomorphological and berry quality data. As expected, significant relationships between berry quality and climatic data were detected. Such relationships changed from one cultivar to another. PCA was carried out to examine TSS distribution among the different areas, based on some climatic and geomorphological parameters. In particular, Huglin index, cumulated precipitation, number of thermal units, cumulated radiation, altitude, slope and aspect were chosen.
A multiple regression analysis was also performed and the regression coefficients were used to build synthesis maps, using digital layers for each cultivar, and applying basic GIS techniques.

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