

ACKNOWLEDGMENTS - This research has been supported by the Autonomous Region of Sardinia A.K.I.N.A.S. project (R.L. n. 7/2007).

CHEMAN 63 - Pyranoanthocyanins formation in Pinot noir wines as affected by different timing of leaf removal performance in the vineyard

Melita Sternad Lemut^{*a}, Paolo Sivilotti^a, Panagiotis Arapitsas^b, Urska Vrhovsek^b

^aUniversity of Nova Gorica, Wine Research Centre, Lanthieri mansion, Glavni trg 8, 5271 Vipava, Slovenia

^bFondazione Edmund Mach, Research and Innovation Centre, Food Quality and Nutrition Department, via E. Mach 1, 38010 San Michele all'Adige, Italy

*melita.sternad.lemut@ung.si

ABSTRACT - The profiles of many technologically important phenolic compounds in grapes can be significantly affected by the manipulation of grapevine canopy microclimate through leaf removal. However, due to global warming, too high berry surface temperatures after late canopy opening (at veraison as traditionally performed) can cause an inhibition of the synthesis in case of pigments responsible for the colour of red grapes and wines. When seeking for alternatives, particular care should be dedicated to the varieties known for its genetically derived poor anthocyanin potential, such as Pinot noir (*V. vinifera* L.).

Alternative earlier leaf removals (before flowering, at berry set) were performed in the field experiment in order to ascertain their influence on wine-colour related phenolics as compared with late leaf removal and untreated control. Furthermore, the grapes of all treatments were processed separately by typical Pinot noir winemaking techniques and the formation of more stable pigments - pyranoanthocyanins was monitored by means of UHPLC/TQ-MS in the must samples during fermentation, in young wines, and finally in the wines after four years of aging.

The results indicated earlier leaf removals, particularly pre-flowering leaf removal as a good solution within predicted global warming scenarios. Besides promoting several anthocyanins (mostly delphinidin and petunidin, both around 40%), total flavonols (75%) and slightly advancing hydroxycinnamates in grapes as compared to control, also the promotion of pyranoanthocyanins was noticed already during must fermentation. Even the improvements were rather small initially in the young wines, they showed an interesting progress during aging, demonstrating that not only colour intensity, but also Pinot noir wine colour stability could be improved by the implementation of more knowledge-based canopy microclimate manipulation.

REFERENCES

- [1] Sternad Lemut M., Trost K., Sivilotti P., Arapitsas P., Vrhovsek U. *Journal of Science of Food and Agriculture* 2013, **93**, 3670 - 3681.
- [2] Arapitsas P., Perenzoni D., Nicolini G., Mattivi F. *Journal of Agricultural and Food Chemistry* 2012, **60**, 10461-10471.