LIEN
DE LA VIGNE

VINELINK INTERNATIONAL
www.liendelavigne.org

ASSEMBLEE GENERALE 2017
2017 General Assembly

NOUVEAUX OUTILS POUR LE SUIVI DE LA QUALITE DES RAISINS :

Capteurs, analyse des données, outils d'aide à la décision

New tools for monitoring grapes quality : sensors, data analysis, decision

SPECTROSCOPIE PAR REFLECTANCE

REFLECTANCE SPECTROSCOPY

Laura Rustioni

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VINELINK INTERNATIONAL

THE TECHNIQUE COULD BE ADAPTED TO DIFFERENT EQUIPMENT.

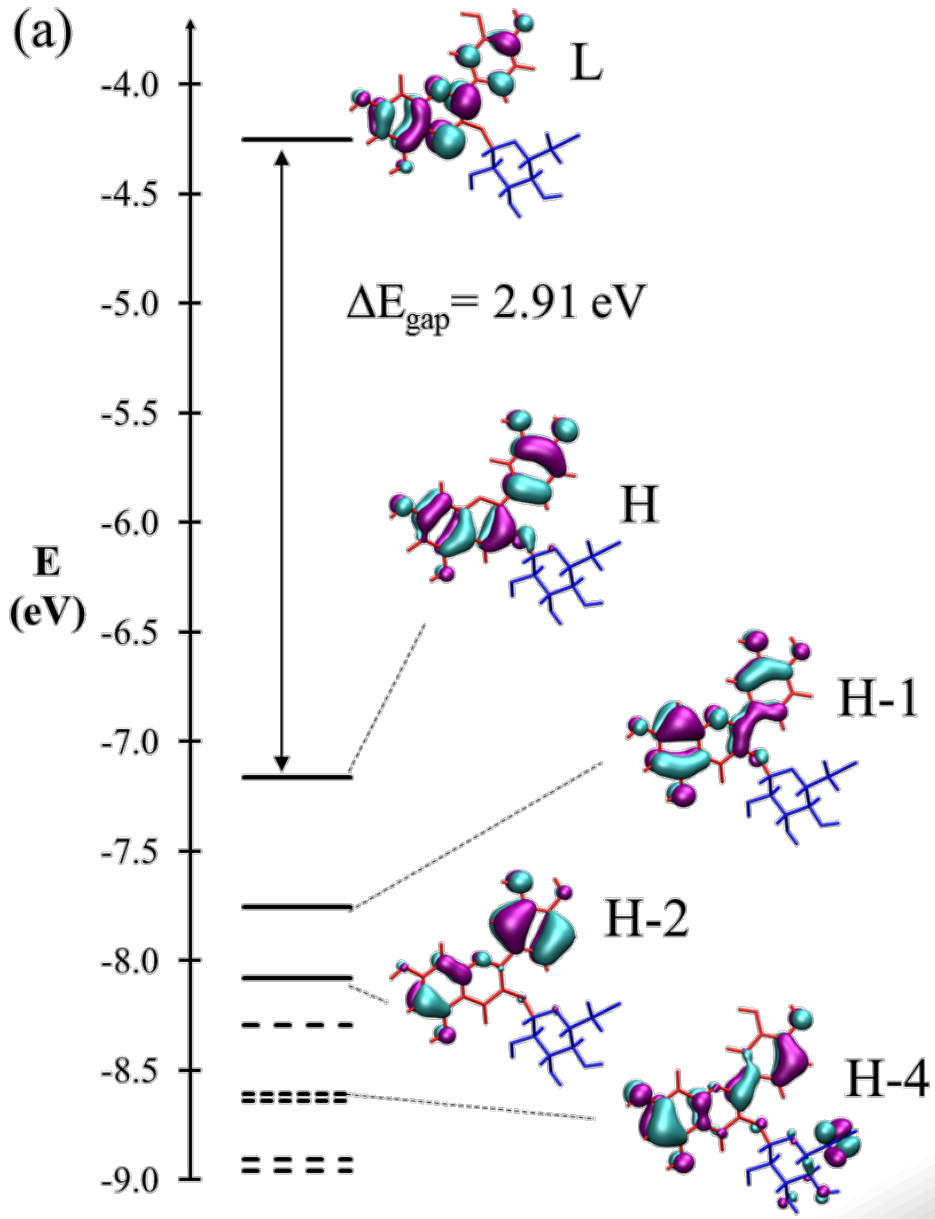
…RAPID & LOW COST…

JAZ SYSTEM (OCEAN OPTICS, B.V.) SPECTROMETER

PRINCIPLE:

Electrons of pigmented molecules can be exited by specific quantities of visible radiative energy, resulting in specific absorption bands.

Thus, the optical properties (such as reflectance) of a material is related to its chemical composition.

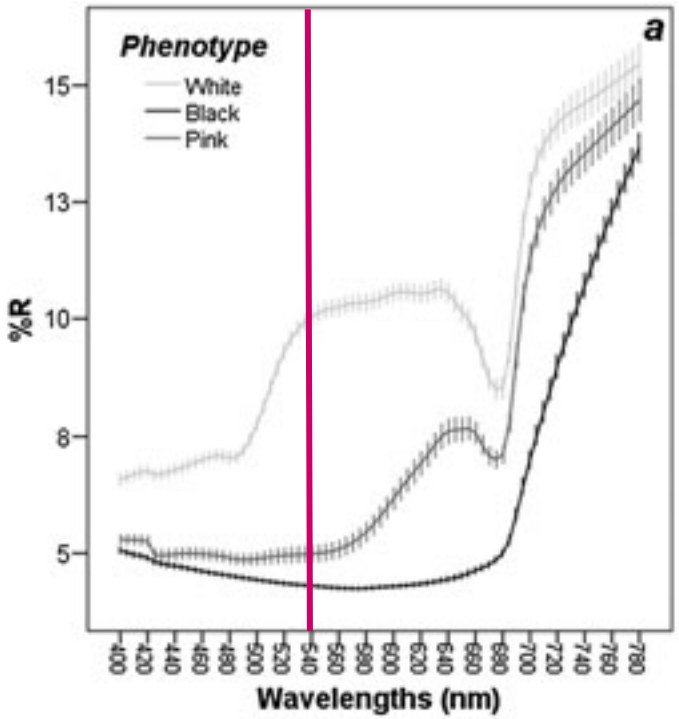


Rustioni L., Di Meo F., Guillaume M., Failla O., Trouillas P., 2013. Tuning color variation in grape anthocyanins at the molecular scale. Food Chem. 141. 4349-4357.

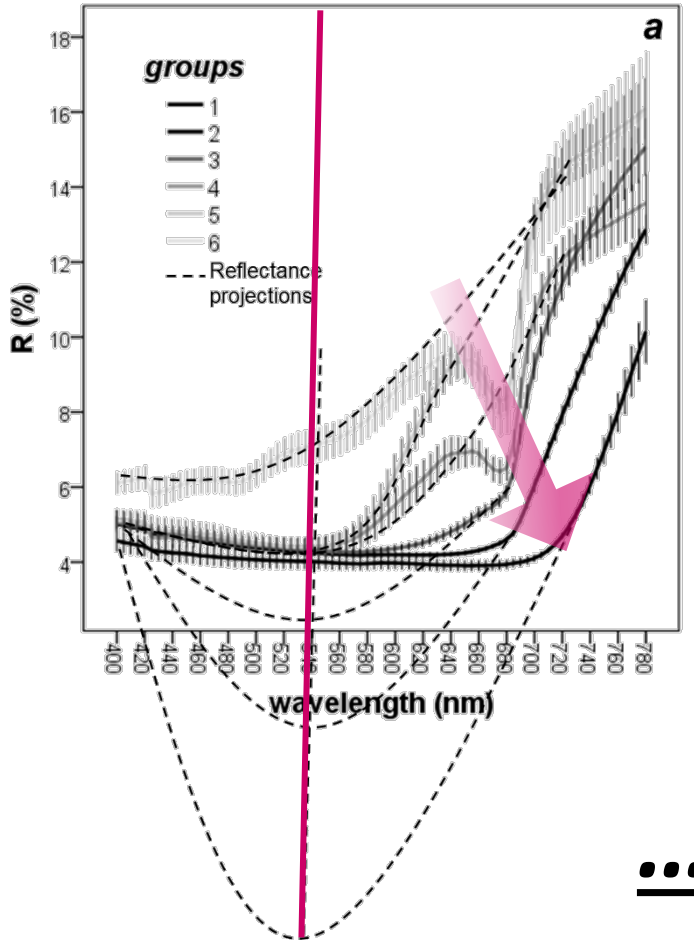
RED PIGMENTS

ANTHOCYANINS

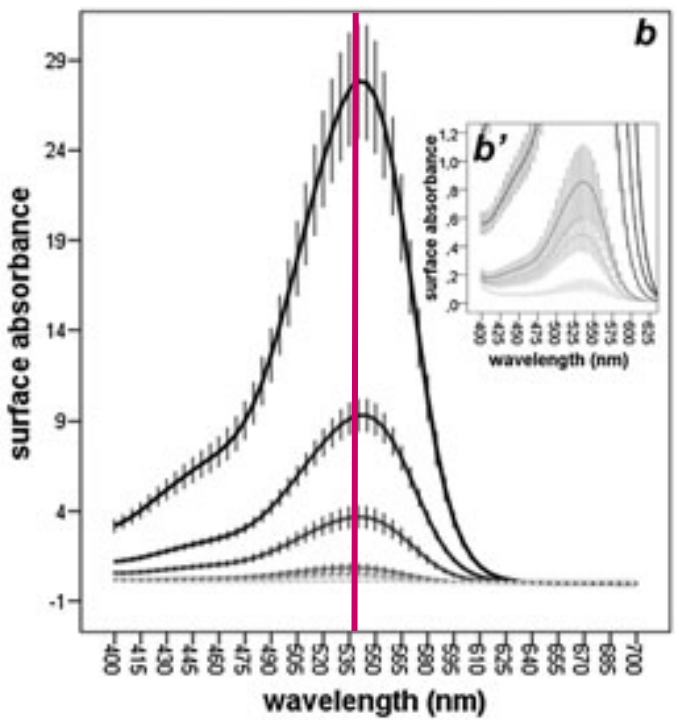
REFLECTANCE



REFLECTANCE



ABSORBANCE

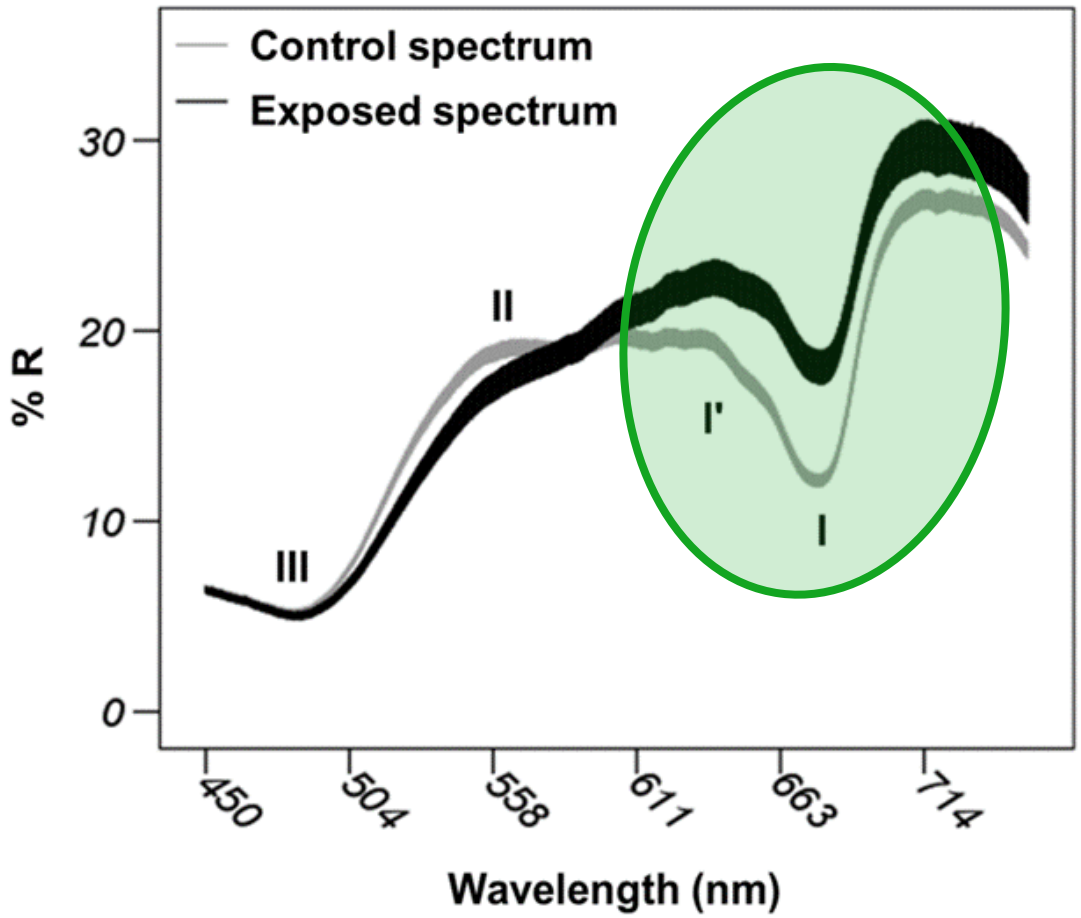


…TABLE GRAPES…

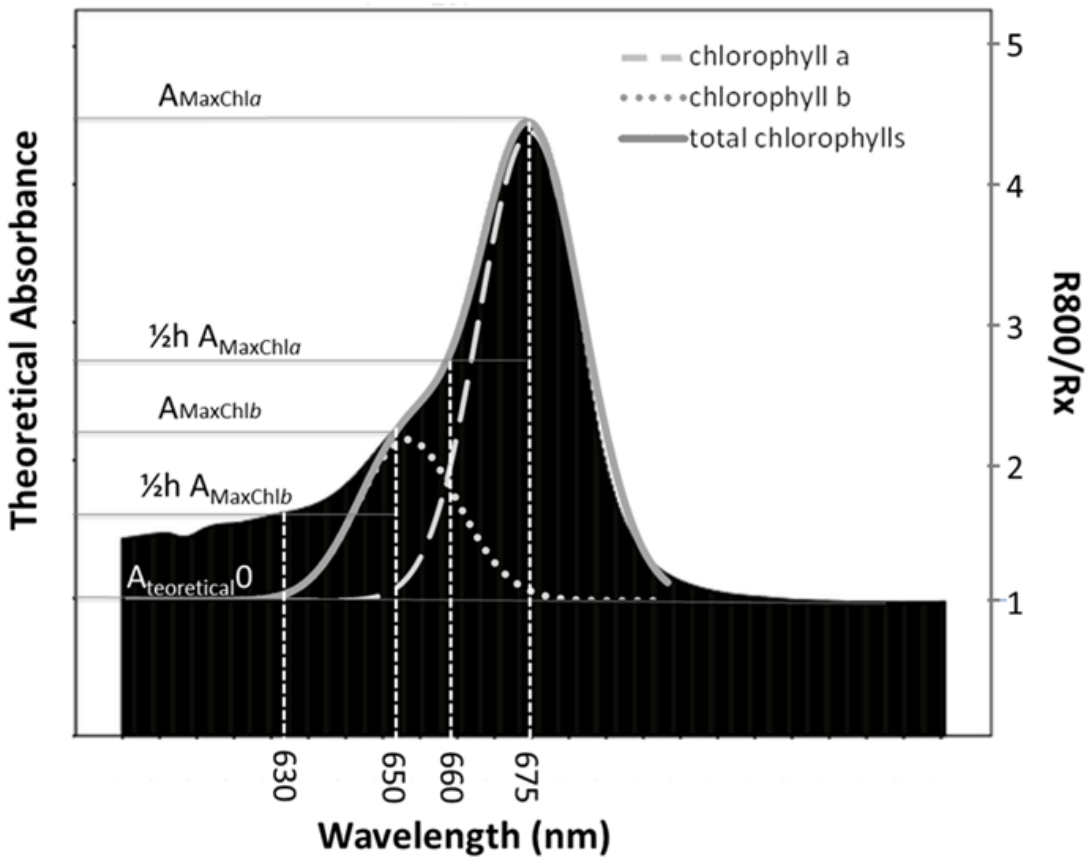
Rustioni L., Basilico R., Fiori S., Leoni A., Maghradze D., Failla O., 2013. Grape colour phenotyping: development of a method based on the reflectance spectrum. Phytochemical Analysis. 24, 453-459.

GREEN PIGMENTS

CHLOROPHYLLS



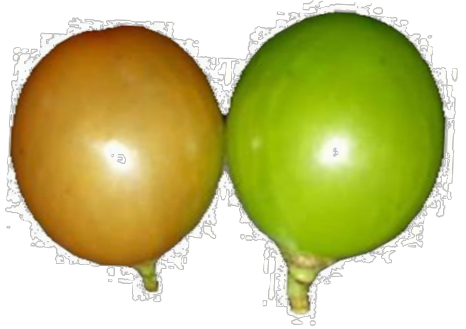
Multiplicative inverse normalized at 800 nm

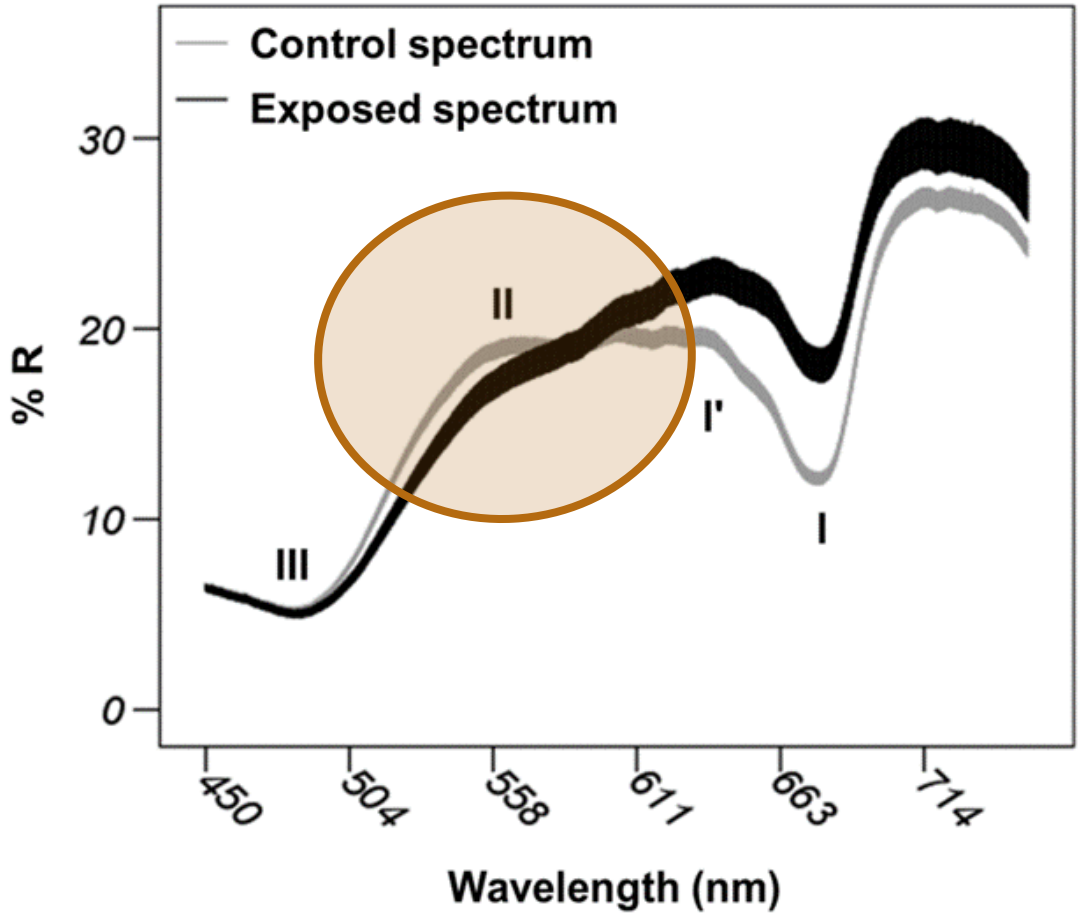


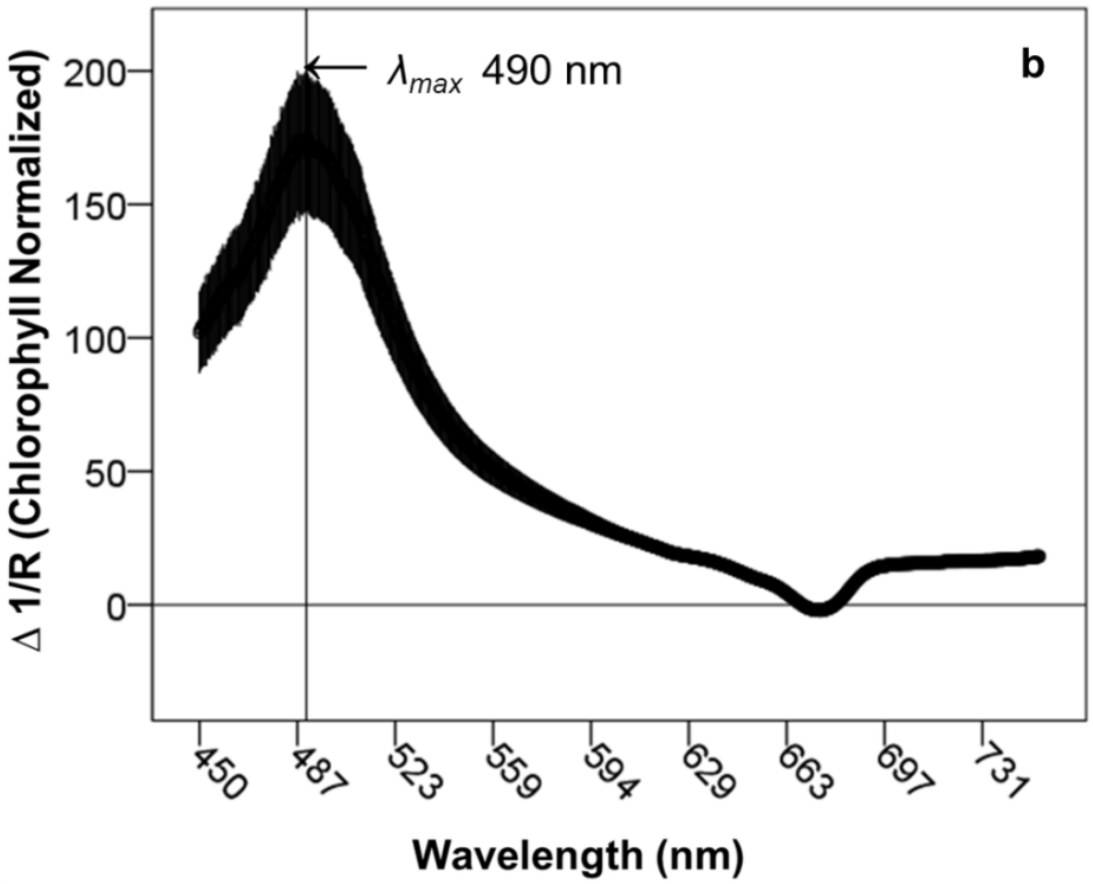
Rocchi L., Rustioni L., Failla O., 2016. Chlorophyll and carotenoid quantifications in white grape (Vitis vinifera L.) skins by reflectance spectroscopy. Vitis 55, 11–16.

BROWN PIGMENTS

OXIDIXED PHENOLICS



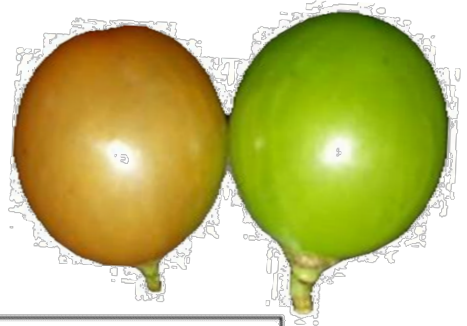


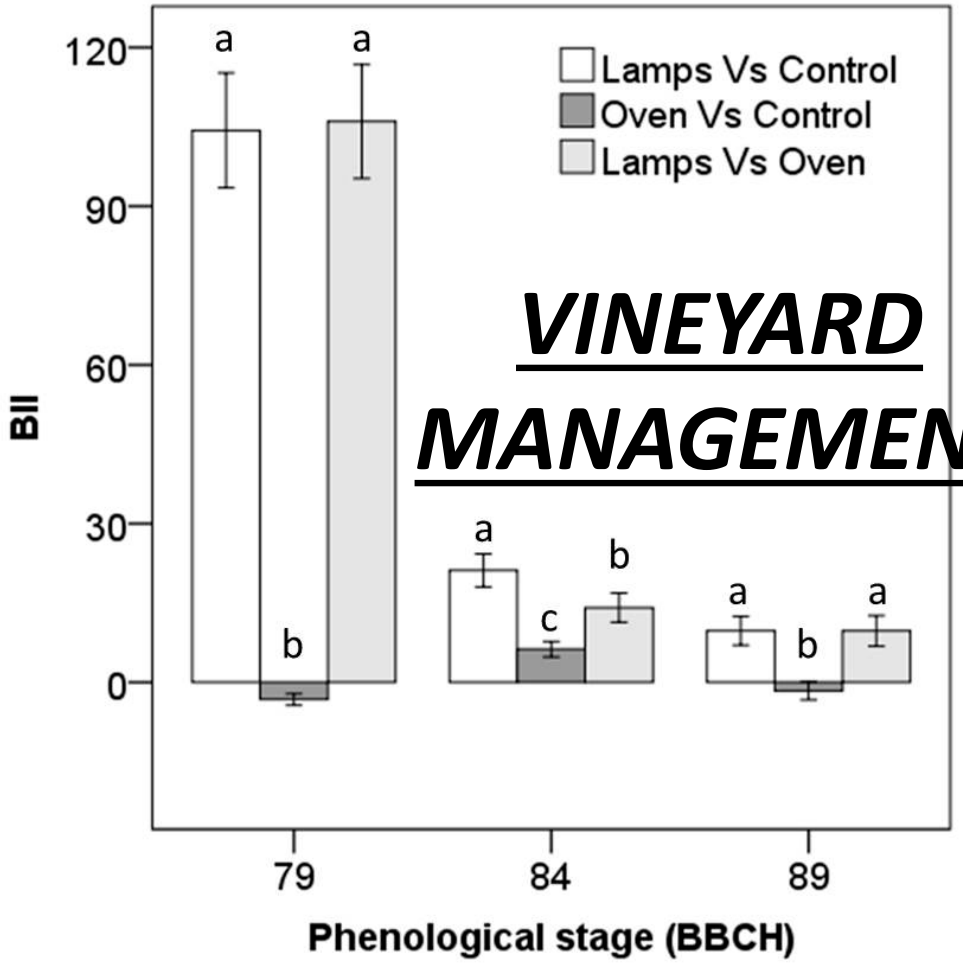


Rustioni L., Rocchi L., Guffanti E., Cola G., Failla O., 2014. Characterization of grape (Vitis vinifera L.) berry sunburn symptoms by reflectance. J. Agric. Food Chem. 62, 3043−3046.

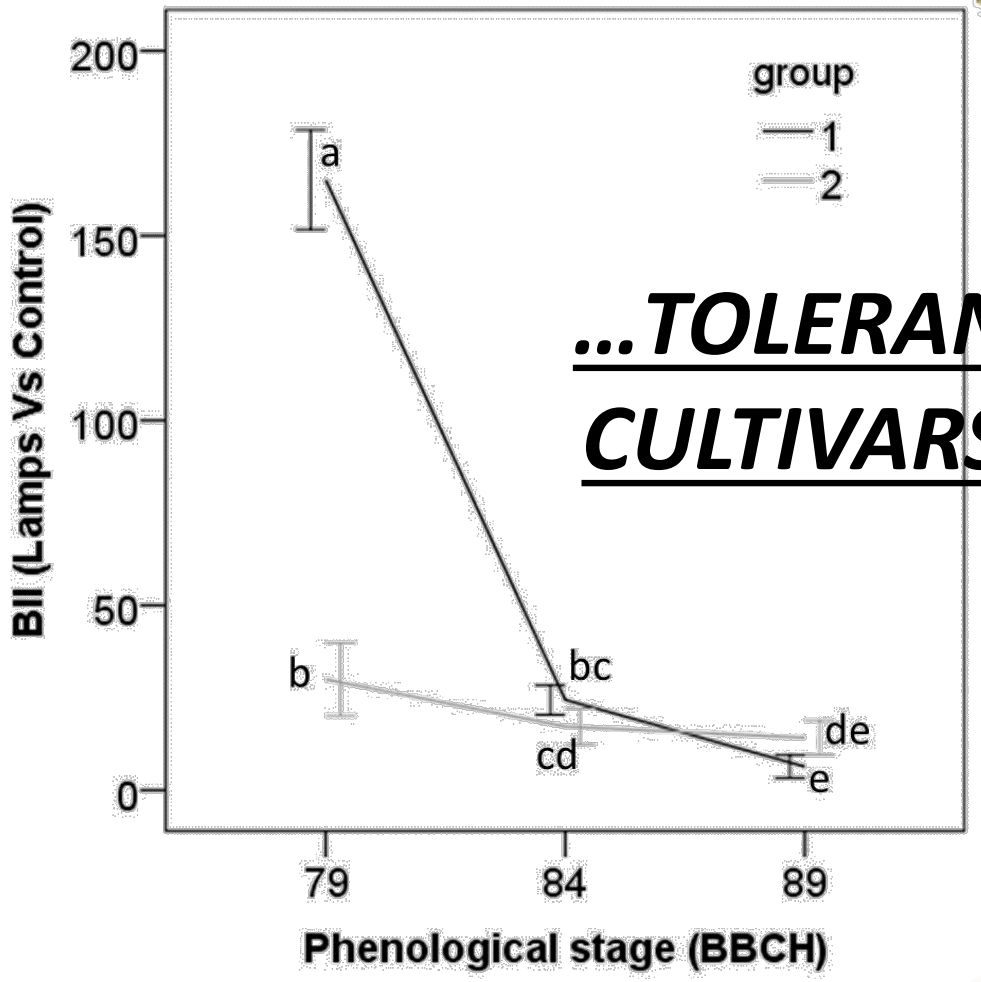
BROWN PIGMENTS

OXIDIXED PHENOLICS





VINEYARD MANAGEMENT

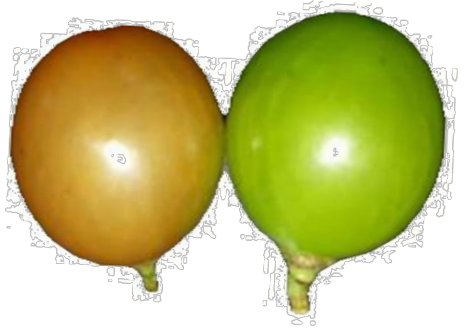


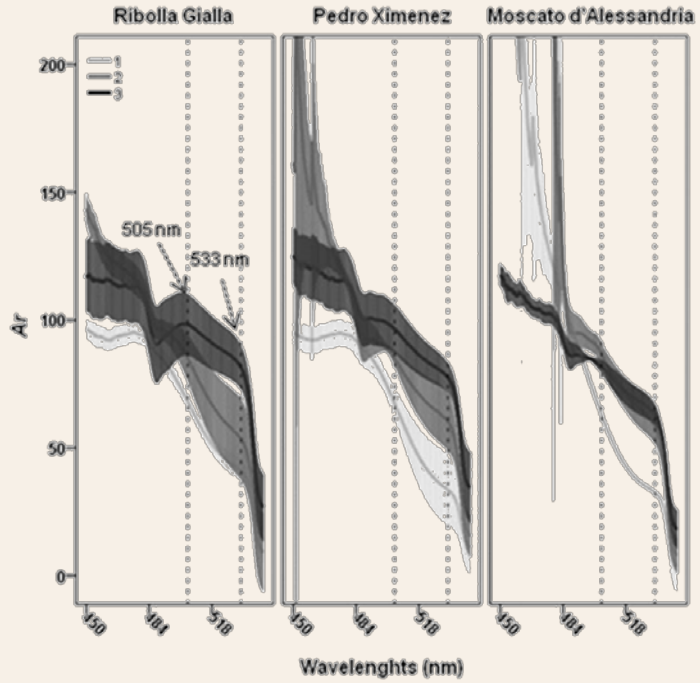
…TOLERANT CULTIVARS?

Rustioni L., Milani C., Parisi S., Failla O., 2015. Chlorophyll role in berry sunburn symptoms studied in differentgrape (Vitis vinifera L.) cultivars. Scientia Hort. 185, 145–150.

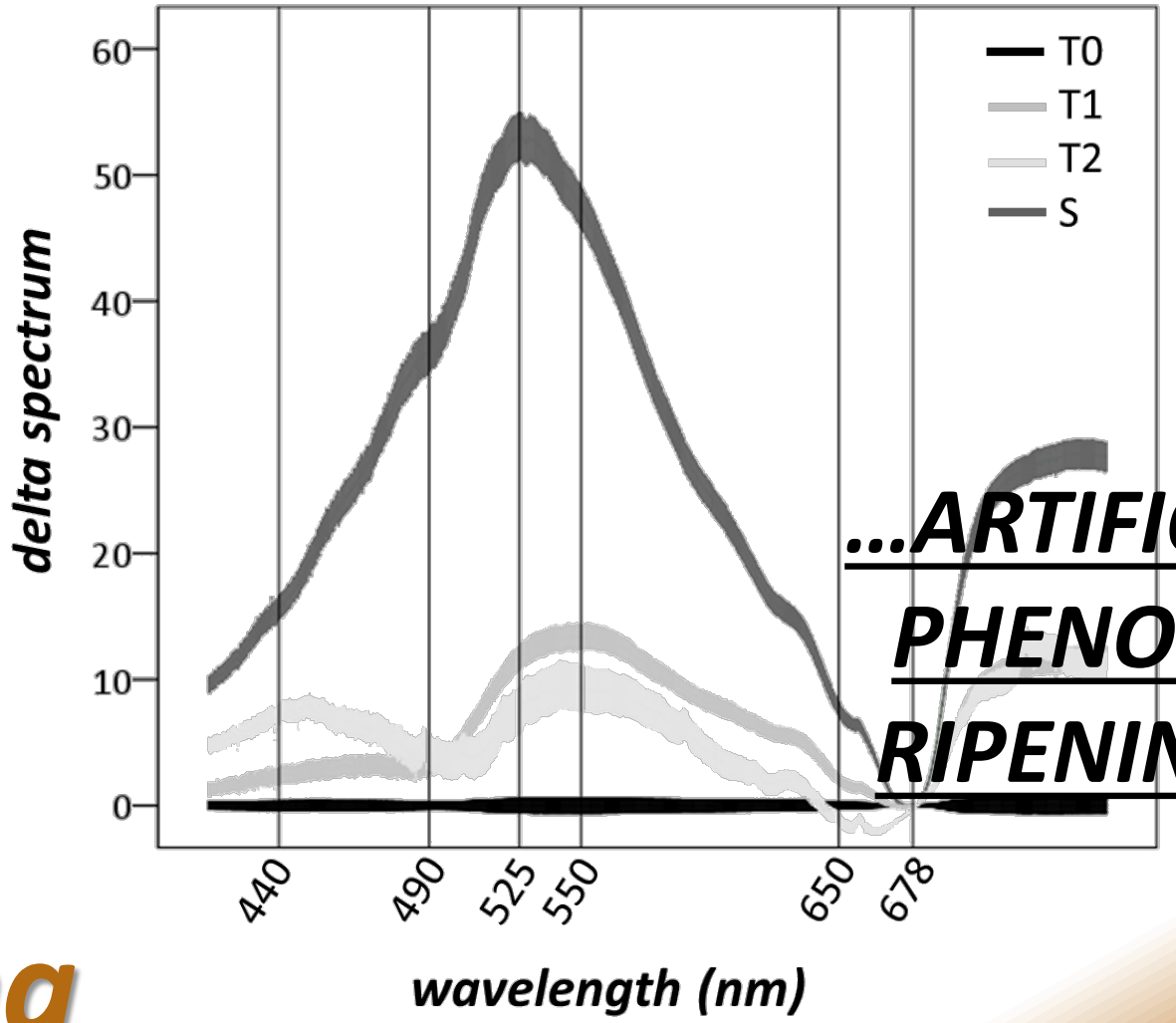
BROWN PIGMENTS

OXIDIXED PHENOLICS





Rustioni L., Rocchi L., Failla O., 2015.
Effect of anthocyanin absence on white berry grape (Vitis vinifera L.). Vitis 54, 239–242



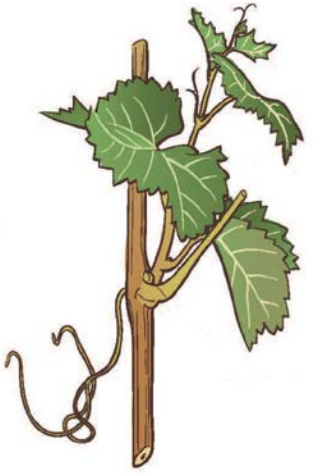
...ARTIFICIAL PHENOLIC RIPENING?

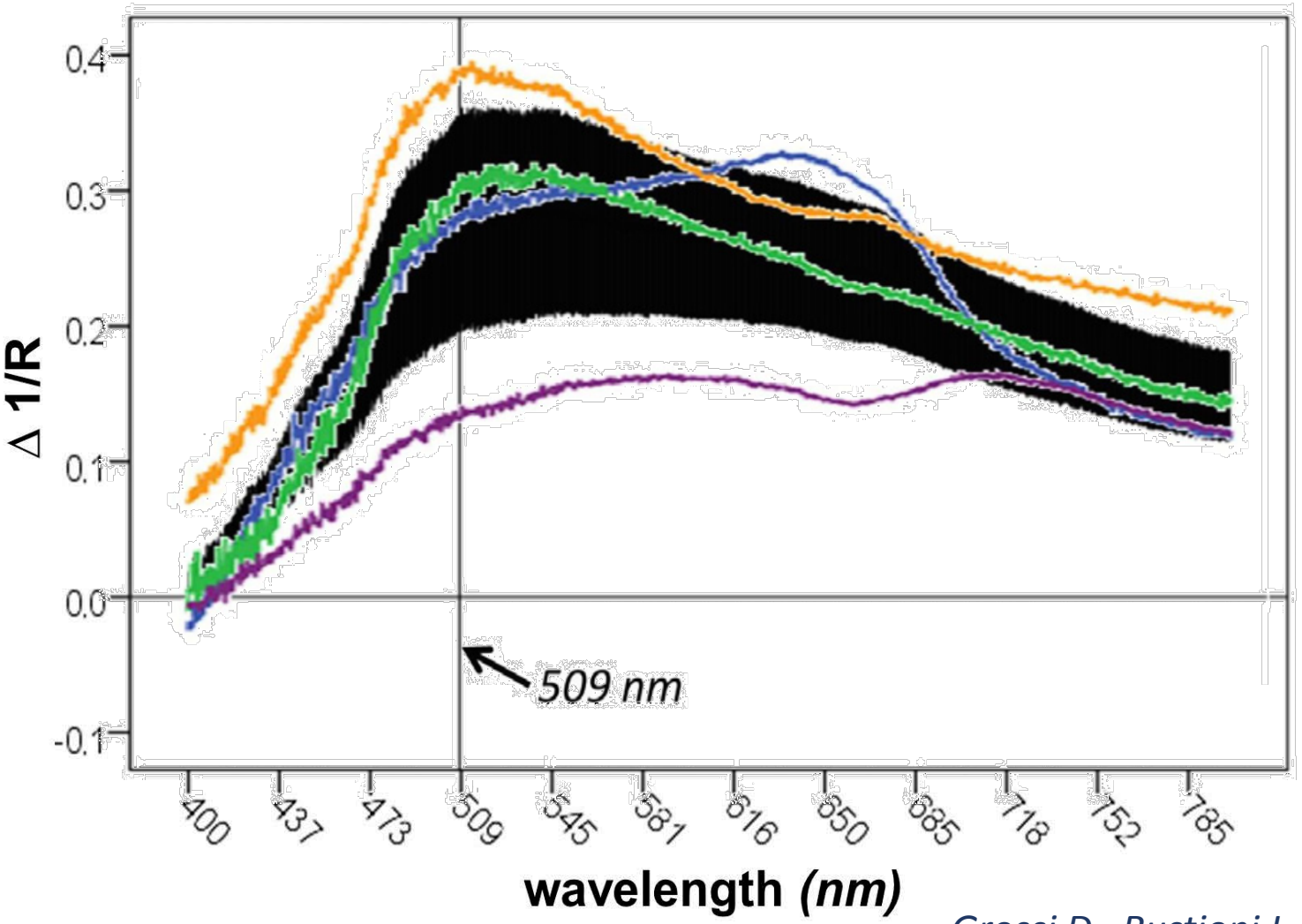
sunburn VS ripening

unpublished

UNIDENTIFIED COMPOUNDS

WOODY TISSUES



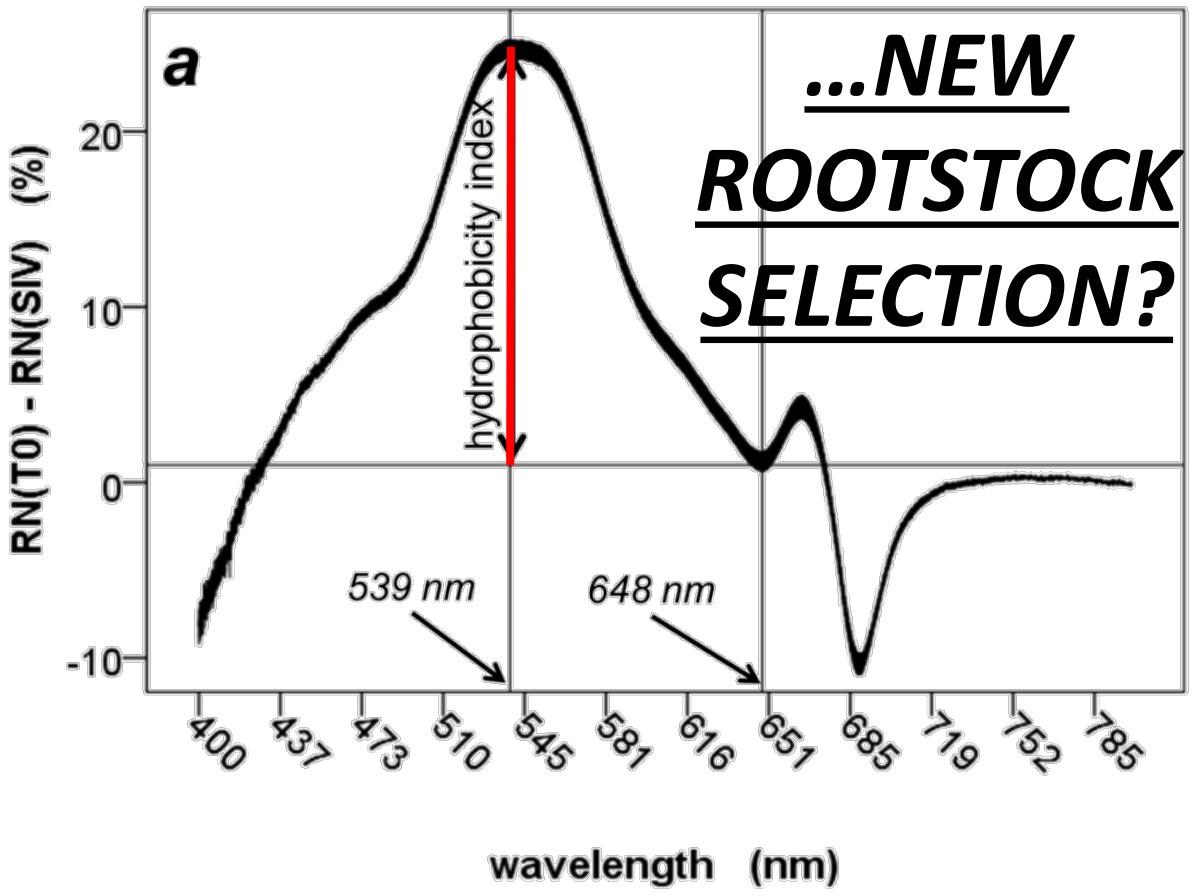


Drought modifies the tissue reflectance

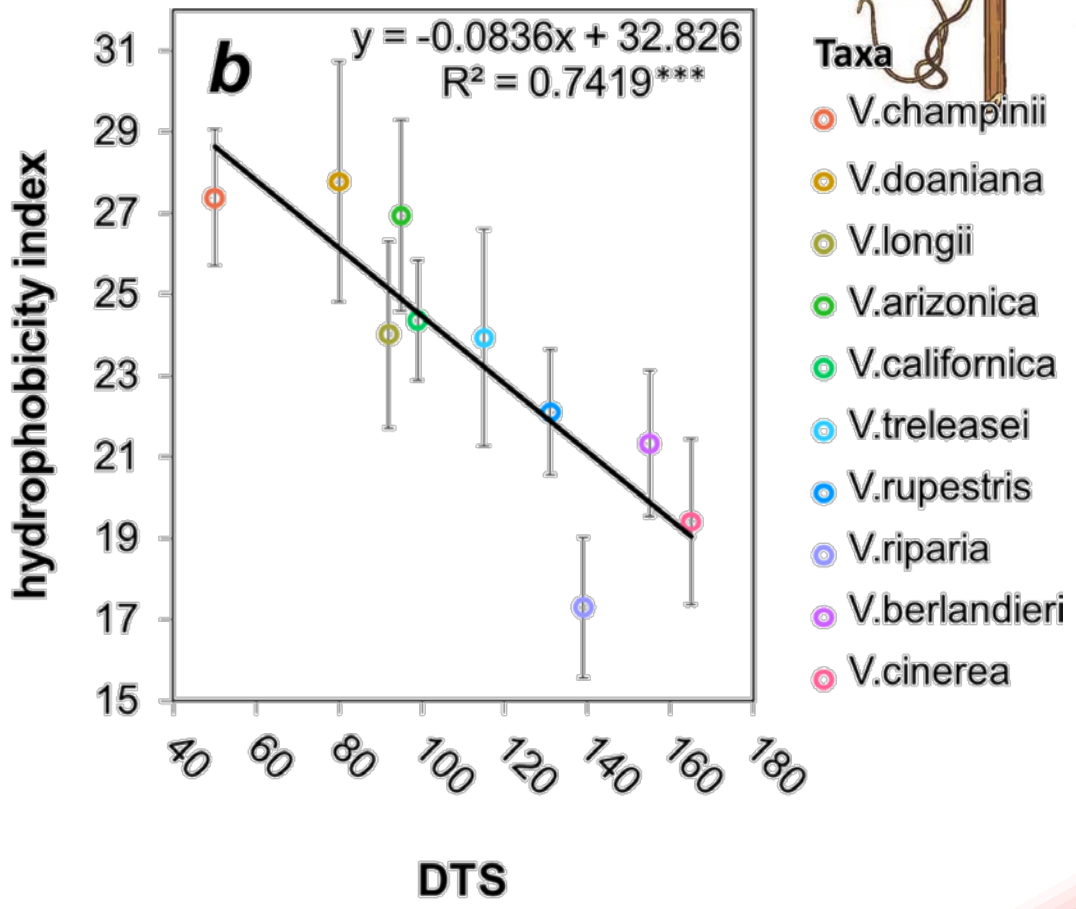
Grossi D., Rustioni L., Simone Di Lorenzo G., Failla O., Brancadoro L., 2016. Water deficit effects on grapevine woody tissue pigmentations" Journal Hort. Sci. 43(4), 188–194.

NON-PIGMENTED COMPOUNDS

HYDROPHOBICITY INDEX



...NEW ROOTSTOCK SELECTION?

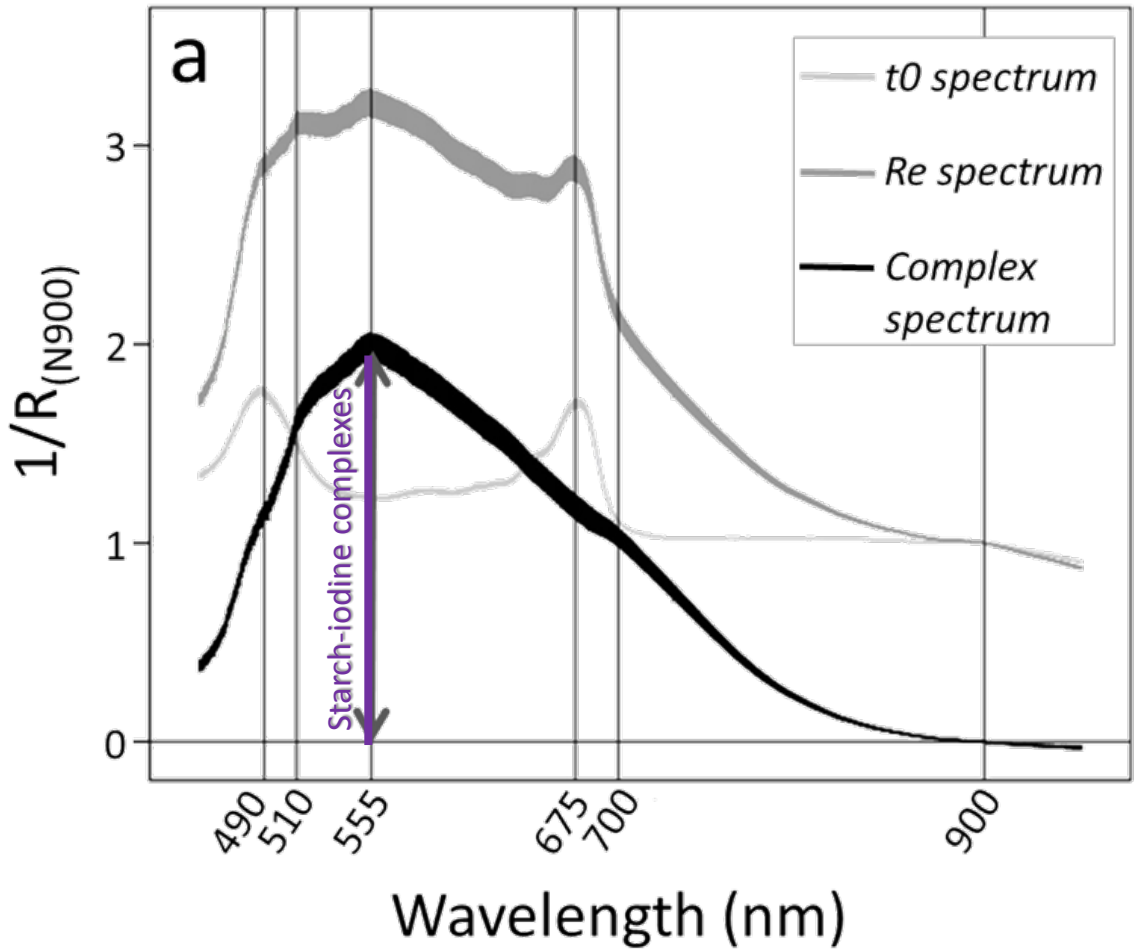


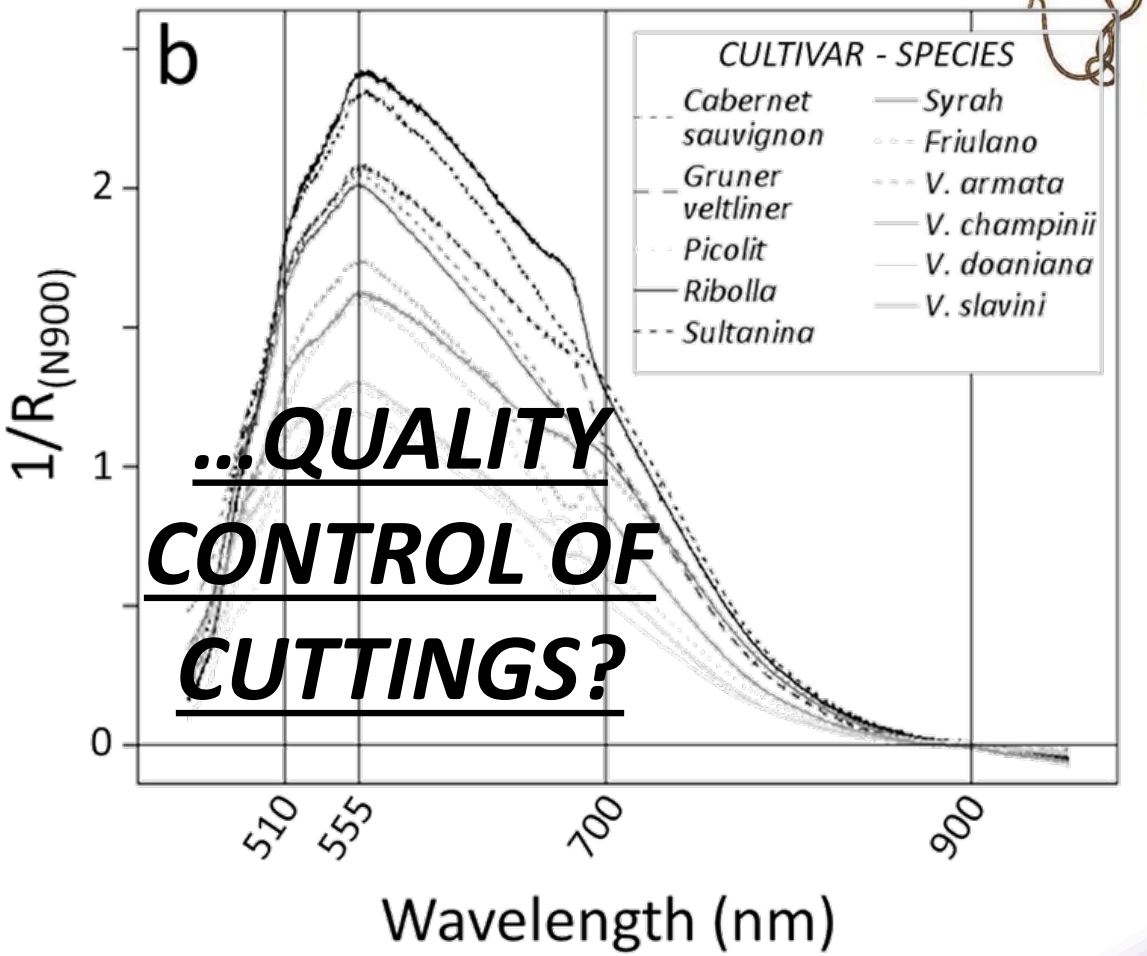
Rustioni L., Ciacciulli A., Grossi D., Brancadoro L., Failla O., 2016. Stem Xylem Characterization for Vitis Drought ToleranceJ. Agric. Food Chem. 64, 5317−5323 .

NON-PIGMENTED COMPOUNDS

STARCH RESERVES

Multiplicative inverse normalized at 900 nm



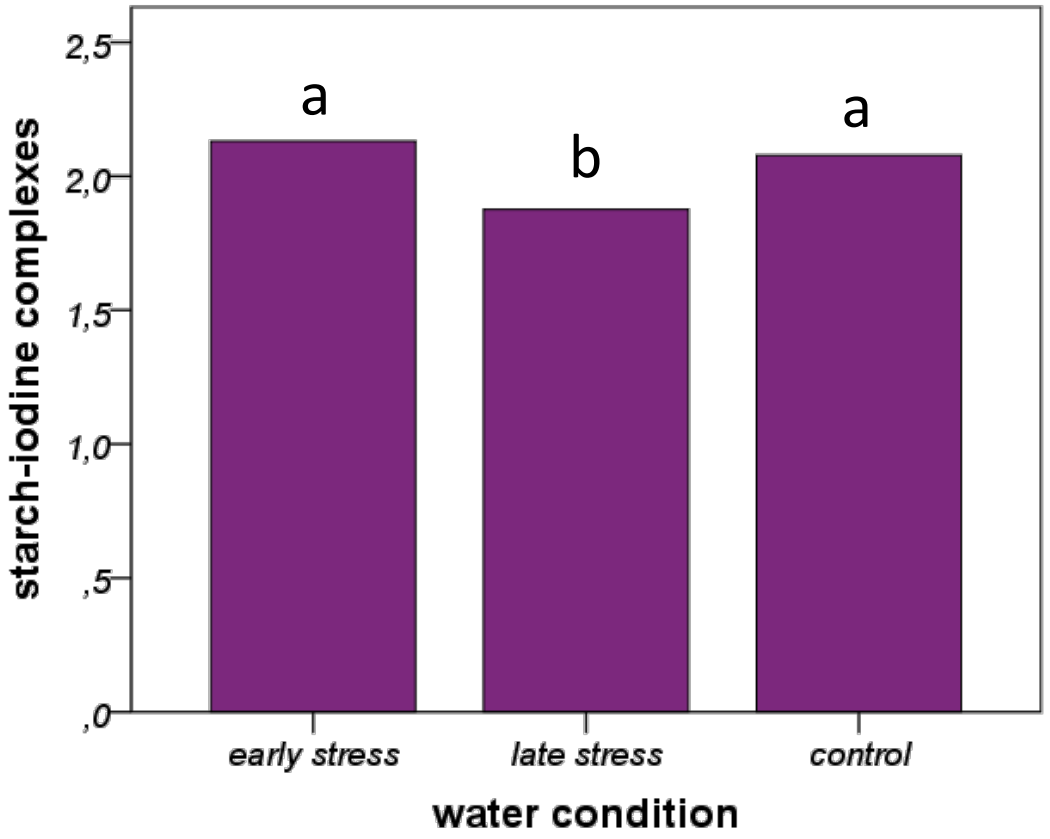


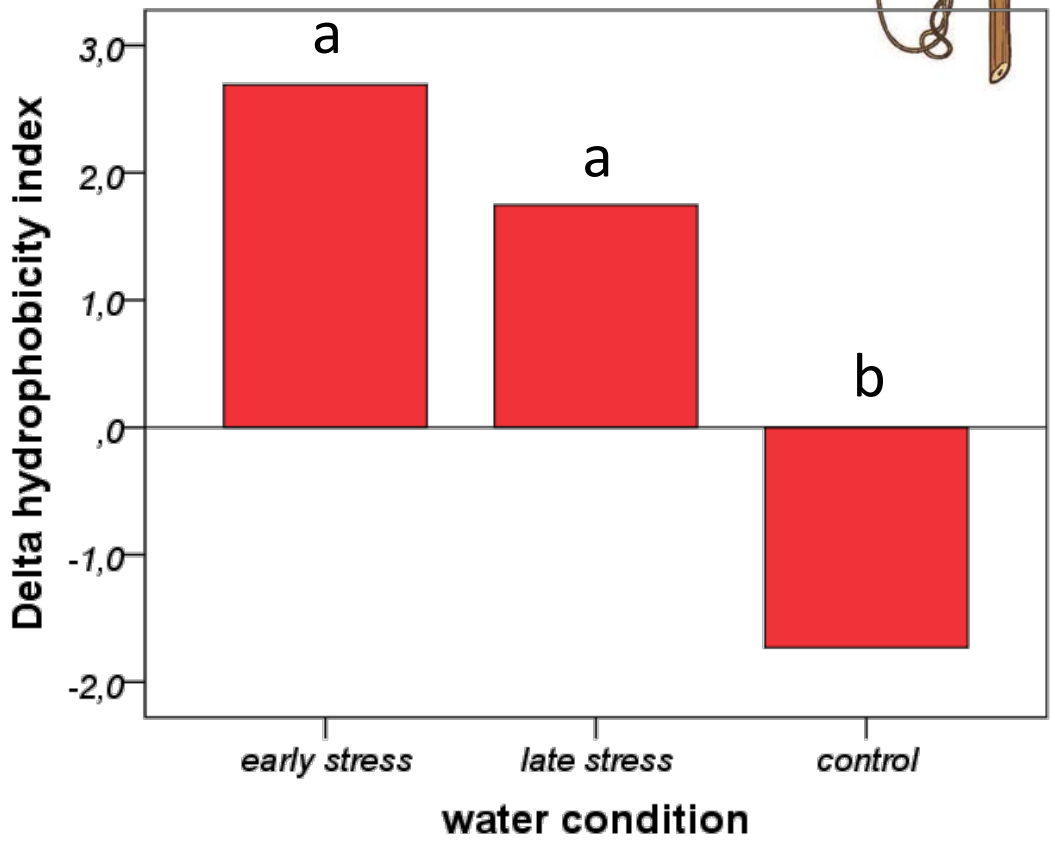
…QUALITY CONTROL OF CUTTINGS?

Rustioni L., Ciacciulli A., Zulini L., Zuliani E., Sivilotti P., Herrera J.C., submitted. Starch quantification in woody tissues by reflectance spectroscopy and on-solid iodine complexation.

NON-PIGMENTED COMPOUNDS

DROUGHT EFFECT





unpublished

LEAF COLORS

MINERAL DEFICIENCIES

…FERTILIZING MANAGEMENT…

…next step…

grazie