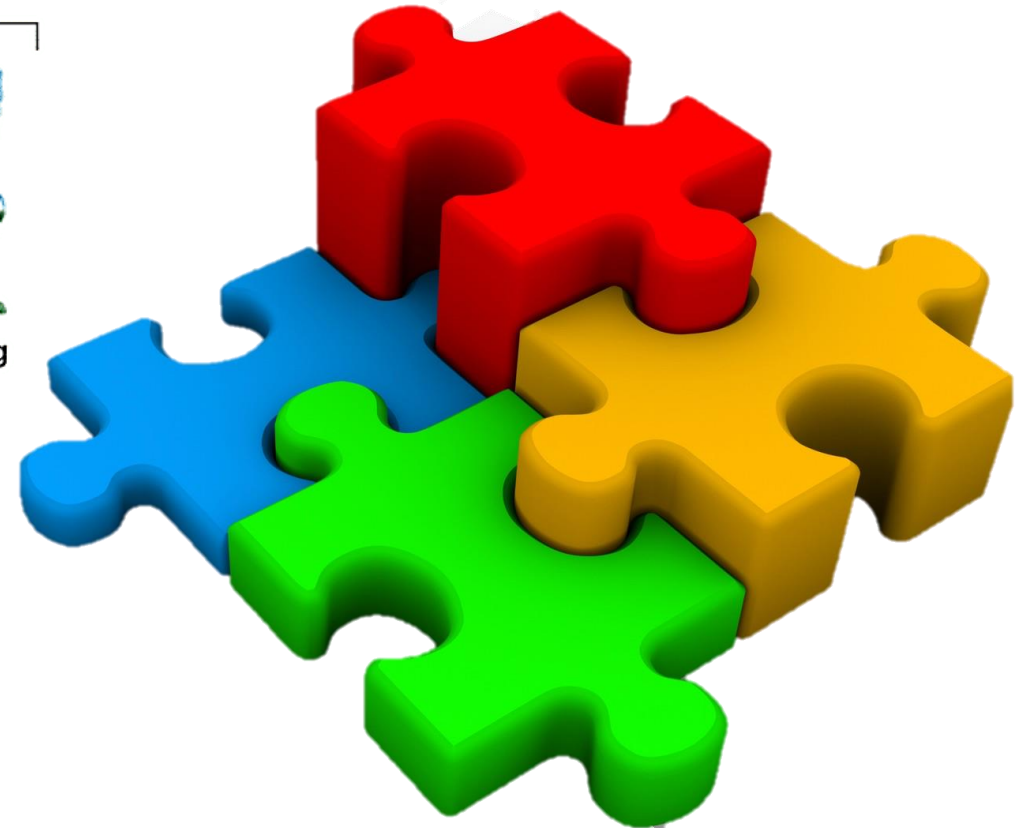
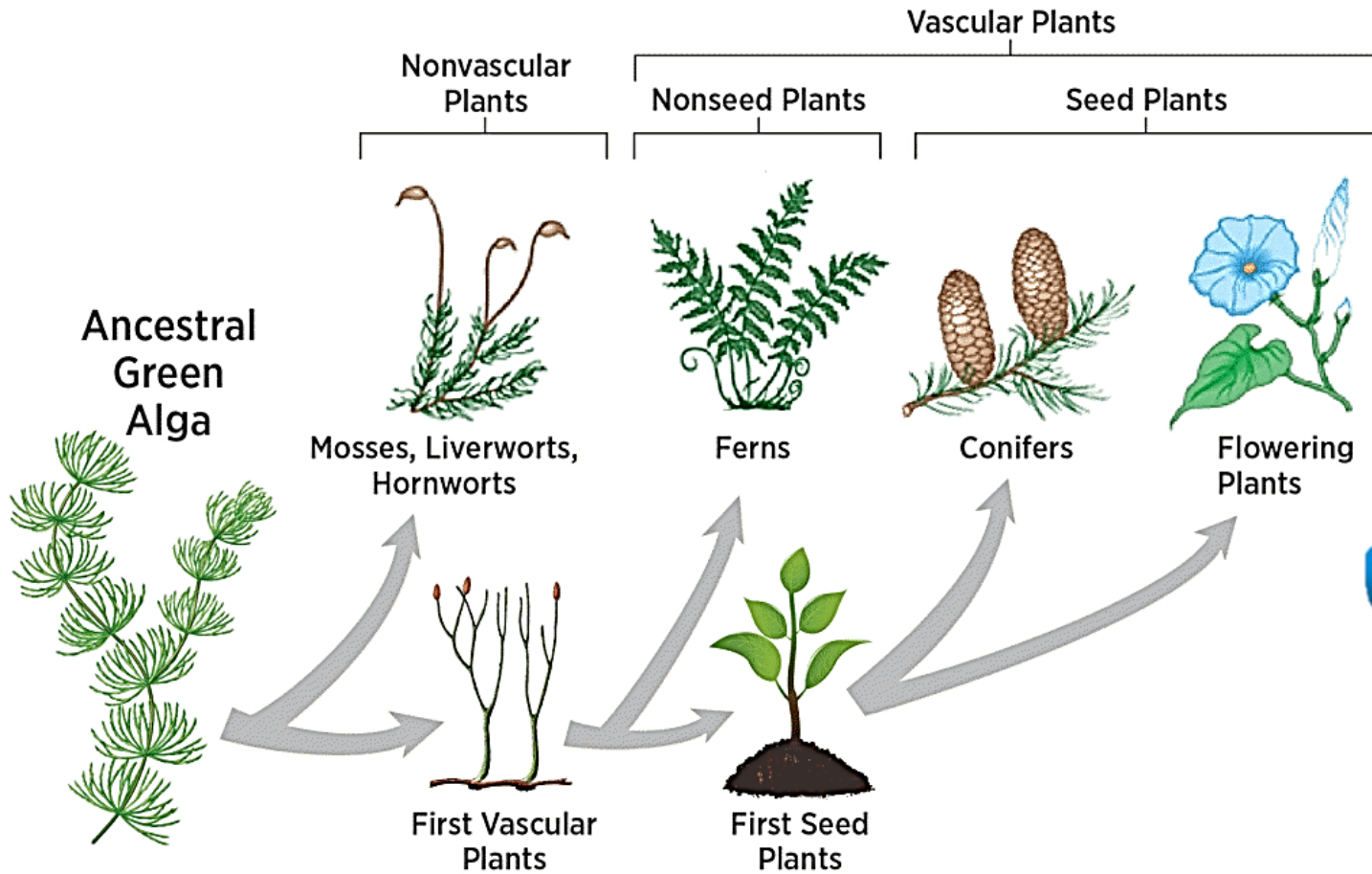




***ABIOTIC STRESS TOLERANCE &
GRAPEVINE BIODIVERSITY:
phenotyping activities for climate
change adaptation***

**Corrado Domanda, Daniel Grigorie Dinu,
Laura Rustioni**






Abiotic stress adaptation



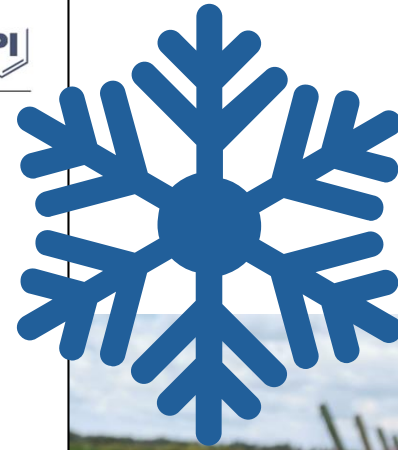
*In millions of years of fighting for survival
even a detail can make the difference!*

Article

Climate Change Impacts on Plant Phenology: Grapevine (*Vitis vinifera*) Bud Break in Wintertime in Southern Italy

Daniel Grigorie Dinu ^{1,†}, Valentina Ricciardi ^{2,†} , Cosimo Demarco ¹, Gianroberto Zingarofalo ¹, Gabriella De Lorenzis ² , Riccardo Buccolieri ¹ , Gabriele Cola ²  and Laura Rustioni ^{1,*} 

- ¹ Dipartimento di Scienze e Tecnologie Biologiche ed Ambientali, Università del Salento, S.P. 6 Lecce-Monteroni, 73100 Lecce, Italy; daniel.dinu@unisalento.it (D.G.D.); cosimo.demarco@studenti.unisalento.it (C.D.); gianroberto.zingarofalo@studenti.unisalento.it (G.Z.); Riccardo.Buccolieri@unisalento.it (R.B.)
 - ² Department of Agricultural and Environmental Sciences, Università degli Studi di Milano, Via Celoria, 20133 Milano, Italy; valentina.ricciardi@unimi.it (V.R.); gabriella.delorenzis@unimi.it (G.D.L.); gabriele.cola@unimi.it (G.C.)
- * Correspondence: laura.rustioni@unisalento.it
† Both authors made equal contribution.

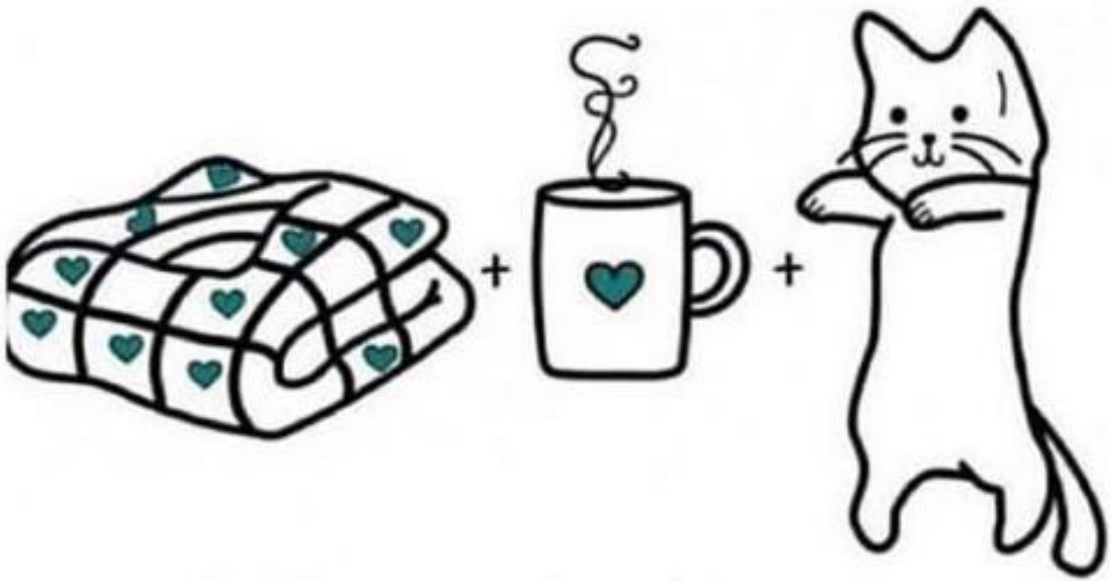


SPRING FROST



- Winter warming
- Earlier bud break
- Increased risks of spring frost damages

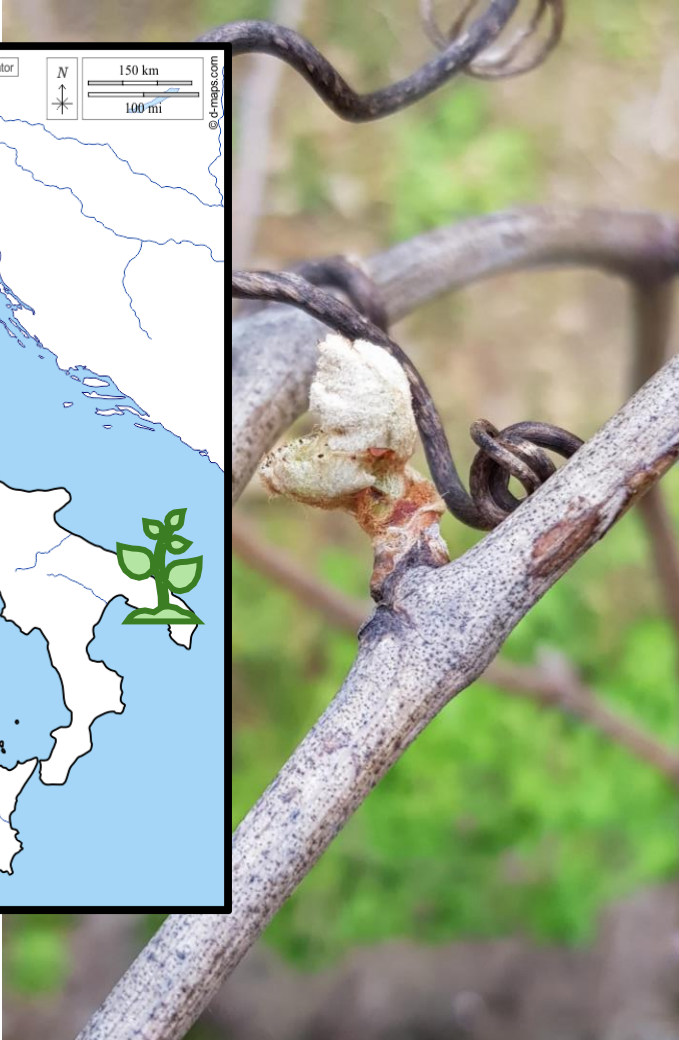
How to face wintertime?



Also plants have their strategies!

January 11th, 2020

Pescoluse (LECCE, South Italy)



“Prevention is better than treatment” CULTIVAR SELECTION



000: Dormancy: winter buds pointed to rounded, light or dark brown and bud scales more or less closed according to cultivar

001: Beginning of bud swelling: buds begin to expand inside the bud scales



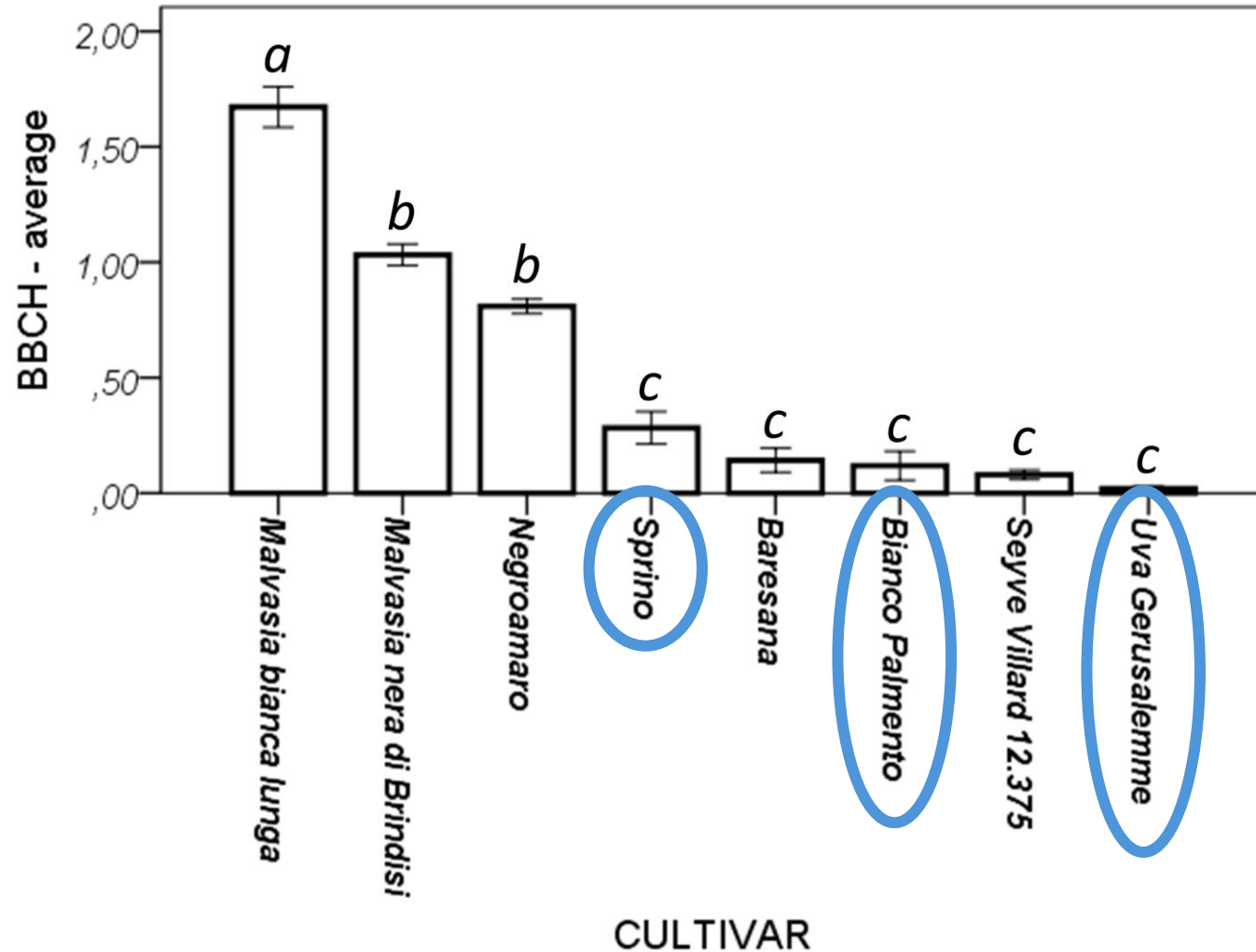
003: End of bud swelling: buds swollen, but not green

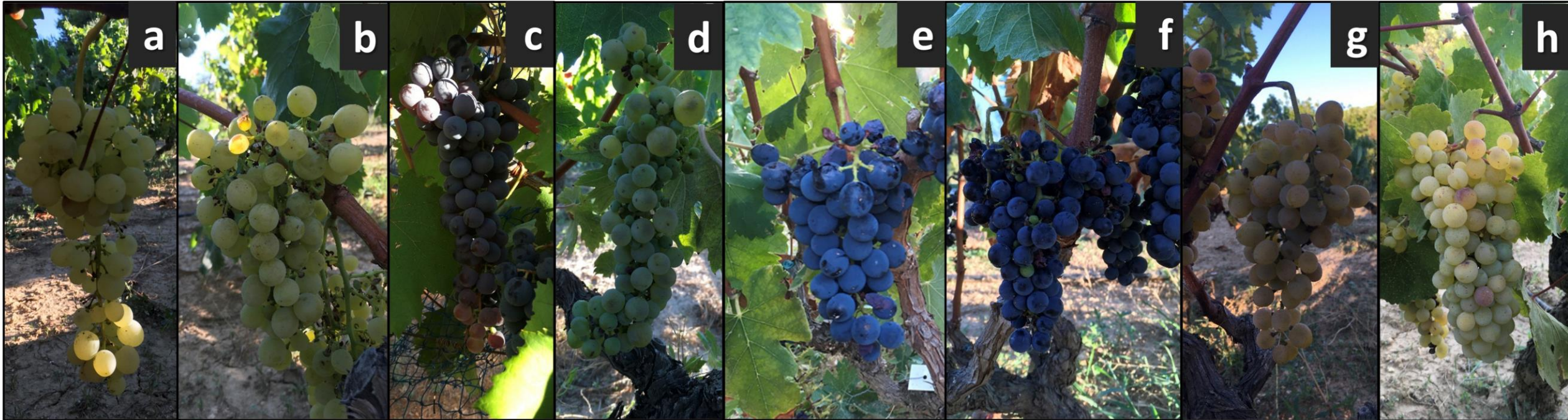
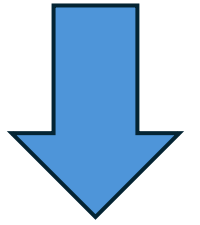
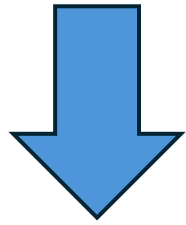
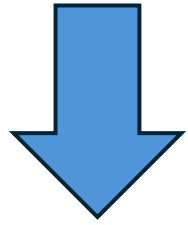
005: “Wool stage”: brown wool clearly visible



007: Beginning of bud burst: green shoot tips just visible

009: Bud burst: green shoot tips clearly visible





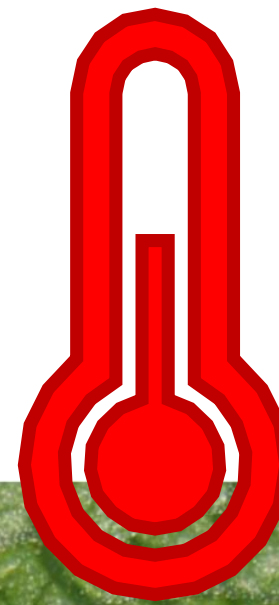
(a) Baresana, (b) Bianco Palmento, (c) Uva Gerusalemme, (d) Malvasia bianca lunga, (e) Malvasia near di Brindisi, (f) Negroamaro, (g) Seyve Villard 12.375, (h) Sprino



Trichomes affect grapevine leaf optical properties and thermoregulation

Corrado Domanda · Vitale Nuzzo ·
Giuseppe Montanaro · Osvaldo Failla ·
Laura Rustioni

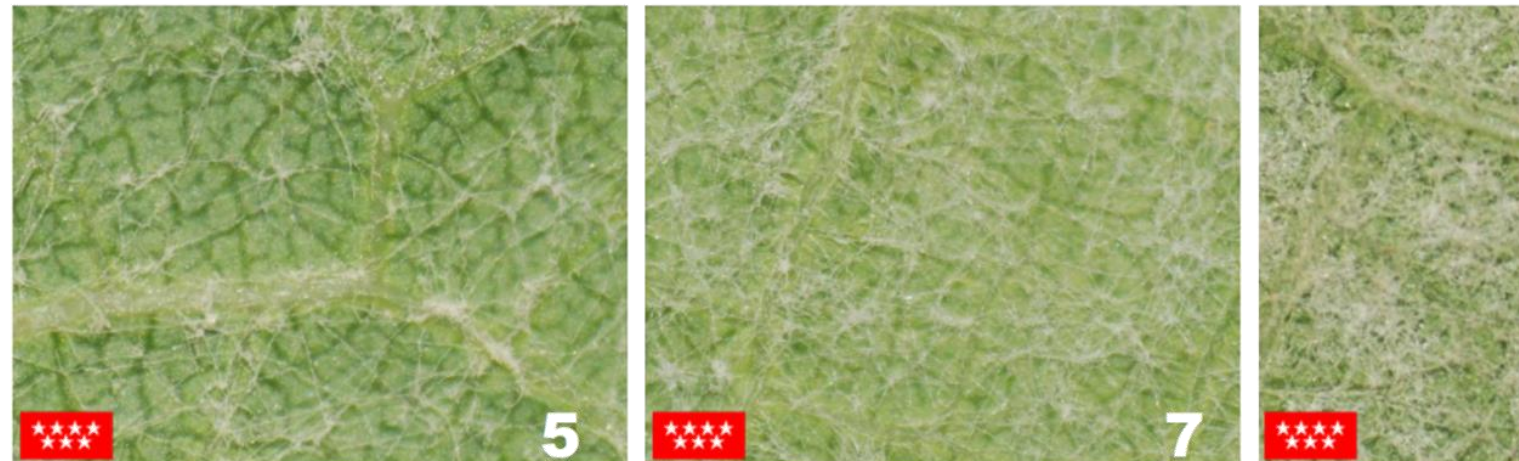
OIV 084
99 grapevine
accessions studied



➤ **Increased**
evapotranspiration

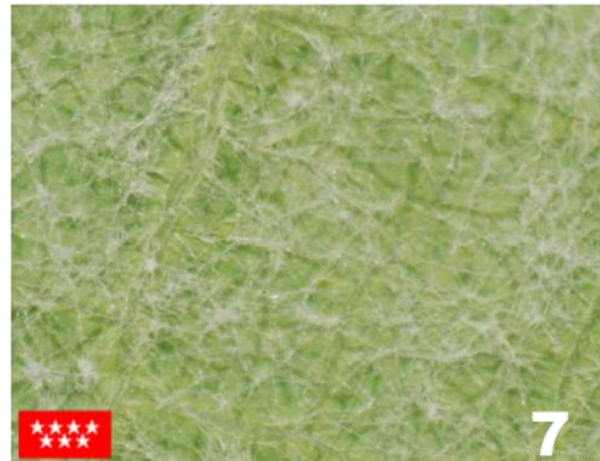
➤ **Drought stress**

➤ **Thermal stress**





Leaf trichomes of the abaxial epidermis could affect leaf thermoregulation and the water loss



OIV 084

Leaf trichomes modify the boundary layer effect



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RADIATIVE STRESS

Chlorophyll role in berry sunburn symptoms studied in different grape (*Vitis vinifera* L.) cultivars



Laura Rustioni*, Clara Milani, Simone Parisi, Osvaldo Failla

Università degli Studi di Milano, CIRIVE—Centro Interdipartimentale di ricerca per l'innovazione in Viticoltura ed Enologia, via G. Celoria 2, I-20133 Milano, Italy

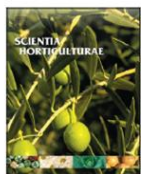
Scientia Horticulturae 328 (2024) 112856



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Scientia Horticulturae

journal homepage: www.elsevier.com/locate/scihorti



Epicuticular waxes: A natural packaging to deal with sunburn browning in white grapes



Corrado Domanda^a, Vito Michele Paradiso^a, Daniele Migliaro^b, Gianluca Pappaccogli^a, Osvaldo Failla^c, Laura Rustioni^{a,*}

^a Department of Biological and Environmental Sciences and Technologies, University of Salento, Via Provinciale Monteroni, 73100, Lecce, Italy

^b CREA – Research Center for Viticulture and Enology, viale XXVIII Aprile 26, 31015, Conegliano (TV), Italy

^c Department of Agricultural and Environmental Science, University of Milan, 20133, Milan, Italy

Optical Properties of Berry Epicuticular Waxes in Four Georgian Grape Cultivars (*Vitis vinifera* L.)

L. Rustioni^{1*}, D. Maghradze², O. Failla¹

(1) Università degli Studi di Milano, CIRIVE – Centro Interdipartimentale di Ricerca per l'Innovazione in Viticoltura ed Enologia, via Celoria 2, I-20133 Milano, Italy

(2) Institute of Horticulture, Viticulture and Oenology, 6 Marshal Gelovani Ave., 0159 Tbilisi, Georgia





Photooxidative sunburn
depends on chemical
composition
(photosynthetic pigments and phenolics)



EPICUTICULAR WAXES = RADIATION BARRER

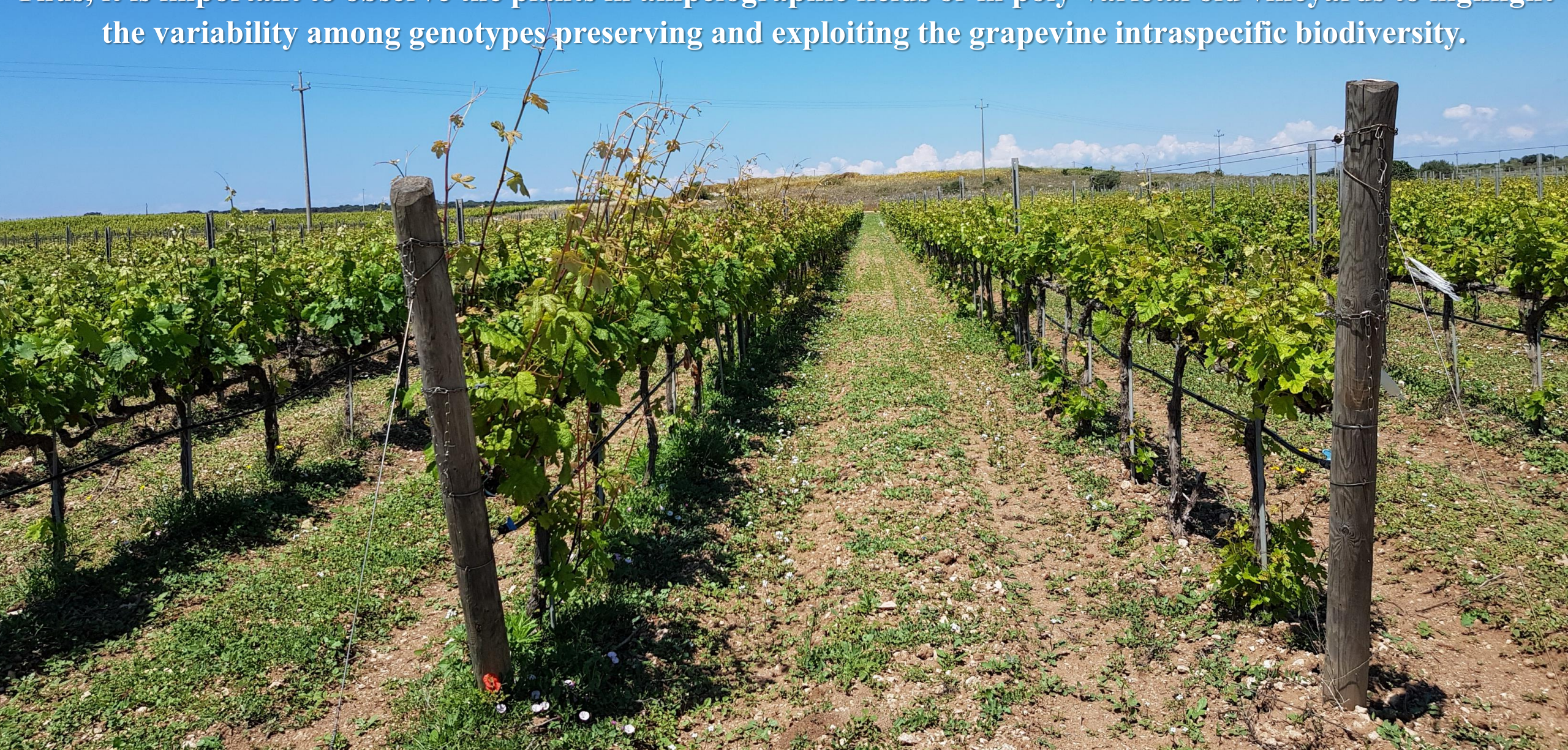


Intact fruit wax (day 4th)

1 day after wax removal

4 days after wax removal

To understand the ability of different genotypes to adapt to climate changed conditions, nothing can be taken for granted. Sometimes, small and apparently meaningless details could participate to the stress tolerance. Thus, it is important to observe the plants in ampelographic fields or in poly-varietal old vineyards to highlight the variability among genotypes preserving and exploiting the grapevine intraspecific biodiversity.





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THE ORGANIZERS OF THE CONFERENCE

“plant genetic resources-opportunities and challenges”
a special thanks to **Levan Ujmajuridze**

THANK YOU ALL

FOR YOUR ATTENTION



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