



41ST WORLD CONGRESS OF VINE AND WINE

16TH GENERAL ASSEMBLY OF THE OIV
NOVEMBER 19TH – 23RD 2018
PUNTA DEL ESTE CONVENTION & EXHIBITION CENTER
PUNTA DEL ESTE · URUGUAY

Book of Abstracts
Résumés des communications
Résúmenes de comunicaciones
Riassunti delle comunicazioni
Zusammenfassungen der Beiträge

BOOK OF ABSTRACTS
RESÚMENES DE COMUNICACIONES
RÉSUMÉS DES COMMUNICATIONS
ZUSAMMENFASSUNGEN DER BEITRÄGE
RIASSUNTI DELLE COMUNICAZIONI

41st WORLD CONGRESS OF VINE AND WINE
16th GENERAL ASSEMBLY OF THE OIV
NOVEMBER 19th – 23rd 2018 – PUNTA DEL ESTE - URUGUAY
“ SHAPING THE FUTURE: PRODUCTION AND MARKET CHALLENGES ”

41° CONGRESO MUNDIAL DE LA VID Y EL VINO
16ª ASAMBLEA GENERAL DE LA OIV
19 - 23 DE NOVIEMBRE DE 2018 - PUNTA DEL ESTE - URUGUAY
“PROYECTANDO EL FUTURO: DESAFIOS DE LA PRODUCCION Y EL MERCADO”

41^{ème} CONGRES MONDIAL DE LA VIGNE ET DU VIN
16^{ème} ASSEMBLEE GENERALE DE L’OIV
19 - 23 NOVEMBRE 2018 - PUNTA DEL ESTE - URUGUAY
“ FAÇONNER L’AVENIR : DEFIS DE LA PRODUCTION ET DU MARCHÉ ”

41. WELTKONGRESS FÜR REBE UND WEIN
16. GENERALVERSAMMLUNG DER OIV
19. - 23. NOVEMBER 2018 - PUNTA DEL ESTE - URUGUAY
“ DIE ZUKUNFT GESTALTEN: HERAUSFORDERUNGEN FÜR PRODUKTION UND MÄRKTE ”

41° CONGRESSO MONDIALE DELLA VIGNA E DEL VINO
16° ASSEMBLEA GENERALE DELL’OIV
19 - 23 NOVEMBRE 2018 - PUNTA DEL ESTE - URUGUAY
“ PROGETTANDO IL FUTURO: SFIDE DELLA PRODUZIONE E IL MERCATO ”

PRINTED IN URUGUAY
LEGAL DEPOSIT: NOVEMBER 2018
ISBN: 979 109 179 9911

2018-2051: CLIMATE CHANGE POTENTIAL EFFECTS ON GRAPEVINE BIOCLIMATIC INDICES: A CASE STUDY FOR THE PORTUGUESE DEMARCATED DOURO REGION (PORTUGAL).

Daniel Blanco-Ward, Antonio Ribeiro, David Barreales, João Castro, João Verdial, Manuel Feliciano, Carolina Viceto, Alfredo Rocha, Cristina Carlos: *Department of Environment and Planning (DAO) & Centre for Environmental and Marine Studies (CESAM), Portugal, dblancoward@ua.pt*

In this work bioclimatic parameters and indices relevant to the grapevine are estimated for the years 2000 (past-recent), 2049 (medium-term future) and 2097 (long-term future), based on high resolution (1 km x 1 km) MPI-WRF RCP 8.5 climate simulations. The selected parameters and indices are mean temperature during the grapevine period (April to October), cumulative rainfall during the grapevine period, Winker index (IW), Huglin heliothermic index (IH), night cold index (IF) and dryness index (IS). In general, a significant increase in mean temperature during the grapevine period is observed, together with a significant decrease in precipitation. The present IW is associated with the production of high quality wines; the higher values predicted for the future represent intensive production of wines of intermediate quality. The IH show the passage of a growing region of the vine considered as hot-temperate to a warm category of higher helio-thermicity. At present, IF indicates very cool conditions (associated with quality wines), while in the future there is a tendency for temperate nights. Finally, IS indicates an increase in water stress considered already high in the present climate. An assessment on the statistical significance of climatic indices, their differences between the historical and the future scenarios and the potential impact on wine production is performed. Preliminary results indicate increased climatic stress on the Douro region wine production and increased vulnerability of its vine varieties. These results will provide evidence for future strategies aimed to preserve the high-quality wines in the region and their typicality in a sustainable way.

EFFECTOS POTENCIALES DEL CAMBIO CLIMÁTICO EN LOS ÍNDICES BIOCLIMÁTICOS DE LAS VIDES: UN CASO DE ESTUDIO PARA LA REGIÓN PORTUGUESA DEMARCADA DEL DUERO (PORTUGAL).

En este trabajo se estiman los parámetros bioclimáticos e índices relevantes para la vid para los años 2000 (pasado-reciente), 2049 (futuro a mediano plazo) y 2097 (futuro a largo plazo), basado en alta resolución (1 km x 1 km) Simulaciones climáticas MPI-WRF RCP 8.5. Los parámetros e índices seleccionados son temperatura media durante el período de vid (abril a octubre), precipitación acumulada durante el período de vid, índice de Winker (IW), índice heliothermic de Huglin (IH), índice de frío nocturno (IF) e índice de sequedad (IS). En general, se observa un aumento significativo de la temperatura media durante el período de vid, junto con una disminución significativa de la precipitación. El presente IW está asociado a la producción de vinos de alta calidad; los valores más altos previstos para el futuro representan una producción intensiva de vinos de calidad intermedia. El IH muestra el paso de una región en crecimiento de la vid considerada como de clima cálido a una categoría cálida de mayor helio-termicidad. En la actualidad, IF indica condiciones muy frías (asociadas con vinos de calidad), mientras que en el futuro hay una tendencia a las noches templadas. Finalmente, IS indica un aumento en el estrés hídrico que ya se considera alto en el clima actual. Se realiza una evaluación sobre la significación estadística de los índices climáticos, sus diferencias entre los escenarios históricos y futuros y el posible impacto en la producción de vino. Los resultados preliminares indican un mayor estrés climático en la producción de vino de la región del Duero y una mayor vulnerabilidad de sus variedades de vid. Estos resultados proporcionarán evidencia para las estrategias futuras destinadas a preservar los vinos de alta calidad en la región y su tipicidad de una manera sostenible.

EFFETS POTENTIELS DU CHANGEMENT CLIMATIQUE SUR LES INDICES BIOCLIMATIQUES DE LA VIGNE: CAS D'ÉTUDE POUR LA RÉGION PORTUGAISE DÉLIMITÉE DU DOURO (PORTUGAL).

Dans ce travail, les paramètres et indices bioclimatiques pertinents pour la vigne sont estimés pour les années 2000 (passé récent), 2049 (futur à moyen terme) et 2097 (futur à long terme), basées sur la haute résolution (1 km x 1 km) MPI-WRF RCP 8.5 simulations climatiques. Les paramètres et indices sélectionnés sont la température moyenne pendant la période de vigne (avril à octobre), les précipitations cumulées durant la période de vigne, indice de Winker (IW), indice héliothermique Huglin (IH), indice froid de nuit (IF) et indice de sécheresse (IS). En général, une augmentation significative de la température moyenne pendant la période de la vigne est observée, ainsi qu'une diminution significative des précipitations. L'IW actuel est associé à la production de vins de haute qualité; les valeurs plus élevées prévues pour l'avenir représentent une production intensive de vins de qualité intermédiaire. Les IH montrent le passage d'une région de la vigne considérée comme chaude-temperée à une catégorie chaude d'hélio-thermicité plus élevée. Actuellement, IF indique des conditions très fraîches (associées à des vins de qualité), tandis qu'à l'avenir il y a une tendance pour les nuits tempérées. Enfin, IS indique une augmentation du stress hydrique considéré déjà élevé dans le climat actuel. Une évaluation de la signification statistique des

indices climatiques, de leurs différences entre les scénarios historiques et futurs et de l'impact potentiel sur la production de vin est réalisée. Les résultats préliminaires indiquent un stress climatique accru sur la production de vin dans la région du Douro et une vulnérabilité accrue de ses variétés de vigne. Ces résultats fourniront des preuves de stratégies futures visant à préserver les vins de haute qualité dans la région et leur typicité de manière durable.

2018-2083: STOMATAL RESPONSES AND HYDRAULIC TRAITS PLASTICITY OBSERVED IN SYRAH AND CARMÉNÈRE VINES IN THE FIELD.

Luis Villalobos-González, Dayna Donaire, Mariana Muñoz, Nicolas Franck, Claudio Pastenes: *Universidad de Chile, Chile, luisvillalobosg1@gmail.com*

Controlled deficit irrigation is usual in viticulture for winemaking but its detrimental on photosynthesis. The decision making for irrigation by water potential thresholds or leaf temperature become complex, because of the variability on the stomatal responses to drought observed between varieties. The iso- or anisohydric classification of grapevine varieties has been related to their tolerance to water stress, the latter being more tolerant. However, the binary (an-)isohydric behaviour is rather a continuum. Therefore, the thresholds for stomatal response to water deficit (gs_{50}) or the slope (σ) between predawn (Ψ_{PD}) and midday leaf (Ψ_{leaf}) water potential have been used to quantify the iso- or anisohydric behaviour, even though controversies still exist.

The aim of the present study was to assess the consistency of the stomatal responses to water stress, their relation to drought tolerance and the identification of hydraulic traits in Syrah and Carménère (emblematic variety of Chile) vines in the field, conducted to vertical trellising system, in a W-E orientation during the 2017 season in the Cachapoal Valley and in a N-S orientation during the 2018 season, in the Maipo Valley in Chile.

Ten consecutive plants were selected on a row in both seasons for each variety. Irrigation was withheld during the first week of January for 60 days. Predawn water potential (Ψ_{PD}), stem water potential (Ψ_{stem}) and leaf water potential (Ψ_{leaf}) were measured on different leaves from the same shoot. Gas exchange was assessed in the same leaf immediately used for Ψ_{leaf} . In addition, the Ψ_{leaf} isotherms were assessed to estimate the osmotic potential at full turgor (π_0) and the turgor loss point (Ψ_{TLP}), before irrigation withholding in both seasons, and after the 60 days of drought in 2018. Also, in 2018, the stomatal conductance (gs) responses to abscisic acid (ABA), the biochemical limitations of photosynthesis through A/Ci curves (vc_{max} , J_{max}) and the shoot hydraulic vulnerability, were assessed.

In Carménère, the σ values were 1.15 ± 0.11 and 1.07 ± 0.18 for 2017 and 2018 seasons, respectively, suggesting a consistent anisohydric response. In contrast, Syrah from the Cachapoal Valley was near anisohydric (σ_{2017} : 0.92 ± 0.07) while plants from the Maipo Valley were near isohydric (σ_{2018} : 0.44 ± 0.12). Moreover, the gs_{50} observed in Syrah was significantly more negative during the 2017 season (gs_{50} : -1.31 MPa) as compared to the 2018 season (gs_{50} : -1.06 MPa) and to Carménère in both season (gs_{50} : -1.09 MPa), suggesting plasticity in the stomatal response to water deficit in Syrah, but not in Carménère. Also, the Ψ_{TLP} value observed in Syrah leaves before water deficit in 2017 was -2.0 MPa and -1.5 MPa in 2018, confirming the plasticity in the stomatal response to water deficit observed in this variety. In both seasons, Carménère showed a Ψ_{TLP} of -1.7 MPa in average. At the end of the 2018 season, the relationship between the π_0 and the minimum value of Ψ_{stem} or gs recorded during the drought period was analysed for each plant. These results showed a high π_0 value in plants of Syrah with low Ψ_{stem} values. On the contrary, in Carménère, π_0 values were lower at decreasing values of gs , suggesting an osmotic adjustment in this variety. On the other hand, gs was more sensitive to ABA in Carménère than Syrah. From A/Ci curves, low vc_{max} and J_{max} values were observed in plants exposed to a lower Ψ_{stem} , without significant differences between varieties. Also, no differences were observed in the shoot hydraulic vulnerability between varieties. Our results suggest a consistent anisohydric response to drought in Carménère, but not in Syrah. Also, no relationship between hydraulic vulnerability and the stomatal sensitivity to drought, nor to ABA, were observed in Syrah and Carménère.

Acknowledgements: FONDECYT 1140880, PAI, T7816120001, Viñedos Emiliana and Haras de Pirque.

PLASTICIDAD DE LA RESPUESTA ESTOMÁTICA Y RASGOS HIDRÁULICOS OBSERVADA EN VIDES DE SYRAH Y CARMÉNÈRE EN CAMPO.

El déficit hídrico controlado es una práctica común en la viticultura para promover calidad de interés enológico del fruto, a pesar del inherente detrimento en la fotosíntesis. La decisión de riego de acuerdo con umbrales de potencial hídrico (Ψ) o temperatura foliar es compleja, debido a la variabilidad en la respuesta estomática a la sequía observada entre variedades. Actualmente se ha clasificado el comportamiento de las variedades según su tolerancia la sequía según la respuesta binaria