Soil and climate zoning determining grapevine resource yield-gaps in Languedoc-Roussillon vineyards

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INTRODUCTION

In cooperation with scientists from USA (University of California Davis, Cornell University), South Africa (Stellenbosch University) and Chile (Universidad de Chile, INIA La Platina), the Key Initiative (KIM) **Montpellier Vine & Wine Sciences**, supported by the University of Montpellier, and its partners INRAE and Institut Agro Montpellier, organized a 3-days scientific seminar on the campus Institut Agro-INRAE of Montpellier in October 2022.

This event, which follows the remote seminar organized in June 2021, brought together involved world-class scientific speakers from local and international institutions with the aim of sharing knowledge to design cooperative research programs tackling some of the current challenges of the wine industry.

One hundred and twenty scientists and staffs from fourteen countries participated in conferences and workshops, organized around four key topics:

- Adaptation and mitigation of climate change issues;
- Reduction of chemical inputs;
- Building wine quality;
- Biodiversity, microbiomes and ecosystems.

Several initiatives were formalized to combine international expertise and construct international research partnerships.

CONFERENCES

Climate Change: adaptation and mitigation

Soil and climate zoning determining grapevine resource yield-gaps in Languedoc-Roussillon vineyards

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Abstract
Grapevine yield has been historically overlooked, assuming a strong trade-off between grape yield and wine quality. At present, menaced by climate change, many vineyards in Southern France are far from the quality label threshold, becoming grapevine yield-gaps a major subject of concern. Although yield-gaps are well studied in arable crops, we know very little about grapevine yield-gaps. In the present study, we analysed the environmental component of grapevine yield-gaps linked to climate and soil resources in the Languedoc Roussillon. We used SAFRAN data and IGP Pays d'Oc wine yields from 2010 to 2018. We selected climate and soil indicators proving to have a significant effect on average wine yield-gaps at the municipality scale. The most significant factors of grapevine yield were the Soil Available Water Capacity; followed by the Huglin Index and the Climatic Dryness Index. The Days of Frost; the Soil pH; and the Very Hot Days were also significant. Then, we clustered geographical zones presenting similar indicators, facilitating the identification of resources yield-gaps. We discussed the number of zones with the experts of IGP Pays d'Oc label, obtaining 7 zones with similar limitations for grapevine yield. Finally, we analysed the main resources causing yield-gaps and the grapevine varieties planted on each zone. Mapping grapevine resource yield-gaps are the first stage for understanding grapevine yield-gaps at the regional scale.

Keywords : grapevine yield-gaps, climate and soil indicators, vineyard regional mapping, yield declining.