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**FIRE & RAIN: CLIMATE
CHANGE AND THE
WINE INDUSTRY**

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“FIRE AND RAIN – Climate Change and the Wine Industry”

Host:

Dana Nigro, Senior Editor, Wine Spectator

Speakers:

Gaia Gaja, Co-Owner, Gaja Winery (Italy)

Kathryn Hall, Hall Wines (Napa Valley, USA)

Miguel A. Torres, President, Bodegas Torres (Spain)

Professor John P. Holdren, Harvard University, Environmental Policy and Science

Climate change and the wine industry: individual efforts to combat emissions are multiplying, but broader industry wide leadership is lacking.

Climate change is a critical issue for winemakers and the greater the temperature increase, the higher the cost of adaptation will be. However, while some winemakers have put environmental issues and CO2 reduction at the centre of their production strategy, many more have yet to realize how dramatically climate change risks reducing the quality of their wines.

To reduce risks for winemakers globally, panel speaker and Harvard Professor, John Holdren, told the audience the wine industry must make its voice heard in the campaign for more aggressive green-house-gas emissions reductions worldwide. Quoting a study by Mozell and Thach (2014, Wine Economics & Policy) Holdren said grapes are particularly susceptible to minor changes in climate, especially premium wine grapes, and, that the aim for the wine industry should be a ‘low harm future’ where adaptation will be easier and less costly.

Possible reasons for the wine industry's current complacency in the face of climate change were discussed, with one suggestion being consumer's growing preference for the richer, riper wines that currently result from rising temperatures, which means sales have not yet slipped.

Other reasons include the successful steps many winemakers have taken to reduce the impact of warmer summers and preserve acidity and freshness. These include: shifting to later ripening grape types and root stocks; moving to cooler growing areas; lowering or stopping the use of pesticides and weed killers in vineyards to encourage plant and insect diversity; and boosting the level of water-retaining organic matter in the soil. In the case of one panel member, Spain's climate change crusader, Miguel Torres (Bodegas Torres) it has also meant eating more lentils and less meat.

While the effects of climate change vary widely, and depend on numerous factors, the most obvious effects of higher temperatures on the wine industry, said Holdren, include: average higher temperatures; longer, hotter heatwaves; drier, longer, more extreme and more frequent droughts; more extreme hail showers and torrential downpours and an increase in the number of pests and pathogens. The combination of these will reduce grape quality, increase vineyard costs and alter the geographic boundaries within which premium wine grapes flourish.

Quoting another study (2013, the National Academy of Sciences) Holdren said the wider effect of this will be that areas suitable for viticulture are expected to decrease by 25% to 73% in major wine producing regions in higher Representative Concentration Pathways (RCPs) by 2050, with RCPs being, at their most basic, a range of projected climate change scenarios used for climate modelling. In lower RCPs the decrease is expected to be between 19% to 62%.

For consumers, the result will be overripe fruit aromas and tastes, low acidity, higher sugar, higher alcohol and cooked flavours. And, while the impacts will vary, with increases in average temperatures benefitting some regions and damaging others, Holdren said the increases in extremes (which grow faster than average temperatures) will be damaging for all. Meanwhile, adaptation to climate change will inevitably be costly, and often involve greater water and/or pesticide usage. Where growers seek to move their vineyards to cooler climes, they will also risk displacing other land users.

Emission reduction efforts – what works?

Describing his efforts to combat climate change and its immediate effects - one of which has been the loss of 20% of the Torres harvest earlier this year due to extreme frost, and the other fire and smoke damage to the Torres harvest in Chile - Miguel Torres, pointed to meat production as a key cause of climate change. This is mainly due to the average seven pounds of grain (and all the water, pesticides and land usage that involves) required to produce one

pound of beef. As a result, Torres said he is now eating more lentils and encouraged others to do the same.

At a company level, Torres said the bodega now invests 11% of profits (or about €12 million) into climate change related initiatives. This has resulted in a range of experimental efforts to combat CO₂ production such as: CO₂ eating algae (which has been less efficient than expected but is still under consideration); using CO₂ as fertilizer for lettuces (which grow faster); the transformation of CO₂ into calcium carbonate cement or cyclic carbonate; the production of methane, which is then used to power tractors and other vehicles, and reforestation. He also described other efforts to reduce the bodega's carbon footprint and make better use of resources such as: water recycling; rainwater collection; changing rootstocks; lowering planting density; lighter bottles; more bag in box packaging; rethinking packaging and delivery logistics in co-operation with suppliers; solar panel installations to reduce electricity reliance and the vineyard's biomass boiler, which have together reduced energy costs by up to 25%; research into the recovery of ancestral Catalan grape varieties, and, buying vineyards in cooler areas, nearer to rivers. Overall, said Torres, the bodega's objective is a 30% reduction in CO₂ emissions by 2020 (compared to 2008), with reduction levels already reaching almost 16% in 2016.

In Italy, Gaia Gaja, speaker and co-owner of one of Italy's most famous Super Tuscan wineries, is focusing on initiatives to increase the diversity of the vineyard's vines, grasses and insects. The aim is to boost vine resilience, reduce the risks associated with monoculture and prevent any single pest gaining control. She is also testing new techniques to support soil moisture retention which involve, for example, the growing and flattening of a range of different grasses between the vine rows. This creates a blanket that helps to keep the soil moist, while special composts rich in organic matter are used improve the earth's water absorption and slower release. Gaja is also using funguses to combat mildew, mustard plants to dissuade nematodes, sexual confusion to lower pest populations, and, is keeping canopies shorter, not by cutting (which promotes growth), but by twisting.

In contrast with the efforts of the two European speakers, much of which has been ruggedly individual, speaker Kathryn Hall (who runs the HALL Wines in Napa, California with her husband) described a system of improvements rooted in regional efforts, groups and certification processes. In 2009 the winery was the first in California to be awarded a Gold Certificate for Leadership in Energy and Environmental Design (LEED) by the US Green Building Council and it is a member of the Napa Valley Vintners (NVV) association.

One of NVV's goals is to include all the area's wineries in the Napa Green environmental certification program by 2020. Hall added that the current lack of national leadership, most recently seen in President Donald Trump's withdrawal from the Paris Climate Change Accord, is being compensated for by local associations and regional leadership. She also said that although initial investments in green energy, using solar panels, for example, or materials that lower building temperatures, can be high, returns include energy cost reductions of 50% or more over the longer term.

Political and Social Change – politicians are followers, not leaders in climate change

Asked about the future, Torres and Gaja were less than optimistic, with Torres saying he does not see any real concern for climate changes by Spain's younger generation, who are more worried about finding a house and a job. He also said that despite efforts, he had so far failed to build a climate change consensus among Spanish, Chilean or European winemakers. Gaja was equally sceptical about the possibility of a united front from Italian winemakers. Asked if she was working to convince her neighbours to adopt some of her climate change initiatives, Gaja said it was hard to do this when she was still unsure of the outcomes. However, when she has success stories to share, others are often interested in testing them.

In closing, Holdren suggested that perhaps the biggest myth that needed exploding, before climate change efforts become more coherent and united, is that there is a choice between having a thriving economy and a better environment. Instead, the truth is rather that greener business is the lynchpin of a stronger economy.

For her part, Hall said that for political will to change, the attitudes of consumers and voters would have to change first, then politicians would follow. Torres meanwhile pointed to the price of oil, saying only when it was more expensive than greener alternatives would real change begin.

Among questions posed by the audience was whether bulk shipping and in-country bottling would reduce emissions, and, if Trump might reverse his decision to withdraw from the Paris Climate Agreement. The short answers were yes and no, with the most immediate hope for U.S. political change being the 2018 Congressional elections and the hopes that it would produce a more planet-friendly Congress.

As to what wine producers might do in terms of starting their own efforts to combat climate change, the answer from Holdren was: all of the above.

In Closing

Dana Nigro, Senior Editor at Wine Spectator, (which sponsored the conference) closed the discussion and promised to continue Wine Spectator's educational role in raising awareness of the damage climate change could have on the wine business, and, helping the industry and individuals find new and better ways of reducing CO2 emissions.