

Organic viticulture, vine systemic acquired resistance to pests, and wine quality

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Sample of paper – Abstract and Introduction

Abstract: Recent developments have brought into focus, because of their quality, wines sourced from vineyards that are organically and Biodynamically managed. In this paper organic and Biodynamic vineyard management is discussed in the context of the development plant systemic acquired resistance to disease and insect attack, in which defense compounds are produced which influence both the health properties as well as the gustatory qualities of wines and foods. The physiology and ecology of systemic resistance is discussed with respect to wine quality and *terroir*.

In 1976 a watershed event occurred for California wines. A professional wine tasting was set up in Paris in which wines from California and France were to be compared by blind tasting by wine professionals. The event was expected to show that California was, at best, a distant second-place to the French in the wine world. Instead however, California wines finished at the top, stunning the wine world. The now legendary “1976 Paris tasting”¹ put California wines on the map, and the California wine industry has been growing ever since.

A similar watershed event occurred in 2004 for organic viticulture. A professional tasting was carried out by wine professionals to compare wines from non-organic “conventionally” produced grapes to wines from vineyards managed via a type of organic management known as Biodynamic. The results were reported in Fortune magazine (²). There were ten pairs of wines, all pairs consisted of one Biodynamic-sourced and one conventional vineyard-sourced wine. All pairs were of comparable region, price, and variety and were rated by the judges as to “best of pair” status. The outcome of the blind tasting stunned many in the premium wine world - the Biodynamic-sourced wines were rated superior in eight of the ten pairs, one pair tied, and only one of the conventionally-sourced wines was rated superior.

Wines made from grapes produced in organic and Biodynamically managed vineyards (as distinct from “organic wine” or “Biodynamic wine”^{*}) have come on strong in the wine world in just the last few years. Dozens of premium label vineyards, led by the French, have converted to Biodynamic and organic management. A 2005 tasting event in San Francisco of 75 wines from Biodynamic and organic vineyards was a showcase for some of these wines from around the world.

If wines from organically or Biodynamically produced grapes[†] are indeed superior to wines from conventionally managed vineyards (all other factors being equal), what might the physiological and biochemical basis for such a difference be? This article introduces some of the physiology and biochemistry relevant to wine and food quality as it relates to the crop management and ecology.

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¹ www.wineintro.com/history/regions/1976tasting.html

² Reilly, J.K. 2004. Moonshine, Part 2. Fortune. 150(4): p.34.

^{*} The term “organic wine” is not used in this article because wine labeled as “organic” must be made in accordance with the USDA organic regulation, which, among other things, prohibits added sulfites. A similar situation applies to “Biodynamic wine” and its certification. However, most premium winemakers, many of whom use organically-grown grapes, insist on adding some sulfites. Wine made this way from certified organically grown grapes can be labeled “made with organically grown grapes”. It is wines in this latter category, both Biodynamic and organic, that I am focusing on in this article. Note however, that in common parlance these wines are often called “organic wines.”

[†] Note: In this article, I may use the term “organic” to include Biodynamic, apologies to Biodynamic purists.