

VINEYARD VIEWS

by Cliff Ohmart

What is Sustainable Viticulture?

This is the inaugural of a bimonthly column exploring topics in sustainable viticulture, a broad topic that means many things to many people. Because people often misunderstand the term 'sustainable', I am devoting the first column to a definition of sustainable viticulture based on the origins of organic farming, integrated pest management, and sustainable agriculture. In future columns, I will discuss how I interpret sustainable viticulture from a field-level perspective.

Evolution of Organic Farming

When defining sustainable agriculture we need to look at the history of organic farming, since sustainable agriculture (and thus sustainable viticulture) arose out of this movement. The present paradigm of organic farming began as a melding of several different schools of thought that were supported by European and English scientists active in the 1920's, 30's and 40's. As one would expect, opinions differ as to who really started the organic movement, with at least 2 people, both British, being bestowed the title of founder: Lady Eve Balfour and Sir Albert Howard. Both practitioners emphasized the role of a healthy, fertile soil in viable agriculture. Howard developed many of his ideas prior to World War II in India where he was trying to meet the challenge of improving farmers' yields in order to feed a rapidly increasing population. He believed that the best way to increase food productivity at a moderate cost was to return the organic by-products of crop production as well as animal manures to the soil. Howard also had concerns about the changes in soil chemistry caused by the use of synthetic fertilizers and the use of chemical poisons to solve all pest problems.

In the 1980's and 90's, state and federal guidelines were developed for certification systems that growers must adhere to in order to sell their produce as 'certified' organic. This certification entails many of the requirements familiar to all of us, such as prohibiting the use of synthetic pesticides and fertilizers.

The Emergence of Sustainable Agriculture

In the 1950's and 1960's another movement, called the green revolution, evolved to meet the challenge of providing food for a rapidly expanding world population. This movement met the challenge from a direction that was diametrically opposed to that of organic farming. It emphasized genetically enhanced plant varieties and high energy off-farm inputs such as mechanization, synthetic fertilizers and pesticides. In time this movement became 'conventional' agriculture and resulted in high food production at a low cost to the public, particularly in the United States. As this movement developed some people became concerned that this type of agriculture could not be sustained in the long term. They felt that although the cost of food production was low, the dollar value

of food produced with conventional agriculture did not reflect the true cost from an ecosystem and societal perspective. The true cost takes into consideration issues like air pollution from producing and using fossil fuels, soil degradation due to intense cultivation and use of synthetic fertilizers, habitat destruction, air and ground water contamination with fertilizers and pesticides, and the steady decrease of the farmer population as family farms were out-competed by corporate farms. These concerns over the long-term sustainability of conventional agriculture resulted in the development of the sustainable agriculture movement, which owes many of its farming approaches to the organic farming movement.

With the development of organic certification programs, organic farming became codified and easily distinguished from other farming strategies. However, sustainable agriculture is not so fortunate because no codified certification system has been developed. As a result there is an active debate among academics, farmers, environmentalists and others as to what defines sustainable agriculture. Some consider it to be a philosophy, others consider it to be a guideline for determining farm practices, some view it as a management strategy, and others argue about whether it is strictly related to farm production or also encompasses sociological issues. Then there are arguments about sustainability for how long.

In 1989 the American Agronomy Society adopted the following definition for sustainable agriculture: “A sustainable agriculture is one that, over the long term, enhances environmental quality and the resource base on which agriculture depends; provides for basic human food and fiber needs; is economically viable; and enhances the quality of life for farmers and society as a whole.” The Sustainable Agriculture Research and Education Program at University of California, Davis (UC SAREP) emphasizes that sustainable agriculture integrates 3 main goals—environmental health, economic profitability, and social and economic equity. UC SAREP also points out that a systems perspective is essential to understanding sustainable agriculture. Farming does not operate in a vacuum. Each farmer’s field is part of a complex community ecosystem, which in turn can effect or be impacted by global economics and even global ecological processes (eg. El Nino). A systems perspective involves viewing multiple factors when considering field and farm-level decisions.

Where does Integrated Pest Management Fit In?

When people think of sustainable agriculture they often think of integrated pest management (IPM). It is important to note, however, that IPM was initially developed more from a problem solving, economic imperative rather than from a need to reduce off-farm inputs and to protect the environment. The formalization of IPM occurred several years before Rachael Carson’s *Silent Spring*. IPM in the US came about because there were several crops, particularly alfalfa and cotton, that had developed unmanageable pest problems due to pesticide resistance and insecticide-induced secondary pest outbreaks. Scientists working in these crops realized that the over-use of pesticides had brought them to this point and that the only way out was to integrate several control strategies and

to reduce reliance on pesticides. It turns out that IPM strategies fit right into the paradigm of sustainable agriculture and the environmental movement and thus has become an integral component of both.

Like sustainable agriculture, IPM has not been codified (though some efforts are underway), and therefore can mean many things to many people. A multitude of definitions has been proposed. I personally prefer the following definition: “IPM is a sustainable approach to managing pests by combining biological, cultural and chemical tools in a way that minimizes economic, environmental and health risks.” I like to think of IPM as a problem solving tool. It is an approach to managing pests problems, just as sustainable agriculture is an approach to farming.

Although the concepts of sustainable agriculture, organic farming and IPM have been around for a long time they are often misunderstood and can be controversial. It is important for everyone to realize that none of these is going to solve all problems all the time. Keep in mind that most crops are exotic (ie. non-native) to the farms on which they are grown, and most pests on these crops are non-native, too. This creates a potentially unstable ecological situation regardless of the type of farming being practiced. There are some crop/pest systems that are inherently unstable and crop damage is unavoidable without some outside intervention. A good example is codling moth in many orchard crops. Pests can even get out of hand in some fairly undisturbed, ‘natural’ ecosystems, as illustrated by periodic destructive epidemics of forest insects in certain forest ecosystems.

So what do I consider to be sustainable winegrape viticulture? Ideally, I like to use the ideas formulated by the developers and practitioners of the sustainable agriculture movement. It is a systems view of winegrape growing that considers soil building as the foundation, minimizes off-farm inputs, emphasizes economic profitability, and concerns itself with environmental health and social equity. Practically speaking, however, it is difficult to always adhere to sustainable viticulture in the academic sense, particularly when dealing with individual practices. For example, it would be difficult to talk about the social ramifications of the use of cover crops. Therefore I will attempt to discuss topics in sustainable viticulture much the same way as IPM has addressed pest management problems, that is as a problem-solving tool. The term integrated viticulture may be a better label than sustainable viticulture. A useful definition could be: Sustainable viticulture is a long term approach to managing winegrapes which optimizes winegrape quality and productivity by using a combination of biological, cultural and chemical tools in ways that minimize economic, environmental, and health risks.

In future columns I will view viticultural issues through a sustainable agriculture lens, but use a filter that focuses on the topic for the winegrape grower out in the vineyard. In my next column I will discuss the use of cover crops in vineyards and try to sort out fact from fiction.

Sources for this article included the following:

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Website: <http://www.sarep.ucdavis.edu>

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