industry have occurred, from generic table wines, to varietal wines, to appellations and most recently vineyard-designated or *terroir* wines (Lapsley 1996). This means wine grapes are marketed as a product of specific place more than any other agricultural product. This approach has led to tremendous success and acreage growth, particularly throughout the 1990s and reaching a peak statewide of 570,000 acres in 2001, but more recently declining to 527,000 acres in 2006 (USDA NASS 2006a) (fig. 3A).

However, geographic branding has exposed wine-grape growers to greater environmental criticism linked to the place of production (Friedland 2002; Warner 2007b). Conflicts have arisen due to rapid vineyard development, an ever more-restricted land base in the premium coastal valleys, and the growth of ex-urban wealthy populations in rural areas. Long-term solutions will come from dialogue at the community level and improvements to current practices that address equally the community's economic, environmental and social goals.

Economics of sustainability. An important element of sustainability is economics, and for individual growers the price they receive may determine whether they continue to farm. Over the life of these initiatives, prices received by growers increased, especially in the late 1990s, for all the crush districts that we studied (USDA NASS 2006b) (fig. 3B).

However, prices flattened out or declined early in 2000 for most districts. Much of this price decline is likely due to earlier increases in acreage and hence local grape oversupply, as well as global competition, particularly from other New World wines, and reduced leisure and business travel following 9/11. The average crush price growers receive has continued to climb in Napa, while its acreage has remained static due to a planting out of the valley. Napa (crush district 4) currently has an average crush price that is over 10-fold higher than crush district 14 (Kern and Tulare counties).

Lodi (crush district 11) and the two Central Coast crush districts (7 and 8), which cover the CCVT membership area, at first experienced major growth

Interest in organic winegrowing is increasing

by Glenn McGourty

The term "organic" is used both to describe a market niche and a legally defined way of farming. As codified by the U.S. Department of Agriculture's National Organic Program (USDA NOP), organic farming is:

> "An ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony" (NOSB 1998).

Major objectives of farming organically are to improve soil quality by building soil organic matter; use only naturally occurring fertilizers and crop protectants (no synthetic materials allowed); recycle crop residues and animal waste by composting and/or incorporating them into the soil; emphasize integrated pest management (IPM) to control pests, diseases and weeds; and create a safe and productive environment for crops and people working on the farm.

Certification. In order to legally use the term "organic" on a product label, the grower must become "certified" by a third-party agency (such as California Certified Organic Farmers, Oregon Tilth or Demeter Stellar), which assures that USDA NOP regulations are followed. A 3-year transition period is required, in which an Organic System Plan (OSP) is implemented. Typically, this includes: not using conventional crop protectants and fertilizers; implementing a soil fertility program with cover crops and compost; and developing a pest management program with spray materials approved for organic growing. (The transition period can be shortened with proof that no restricted conventional materials were applied before the certification process started.)

When organic certification is completed, growers must register their production area and processing facility (for winemaking) with the state of California. The cost of certification and registration varies depending on the area farmed and crop value, but usually ranges from one-half to one percent of the crop value.

Crop protection. Organic winegrowers do spray crop protectants such as wettable sulfur, potassium bicarbonate and minerals, but these materials tend to be environmentally benign and not particularly toxic to workers. The materials must be approved by the third-party certifiers and the USDA NOP for use in organic farming. For wine grapes, an important goal is to create "balance," in which vines are adequately cropped so as not to be excessively vigorous — but not over-cropped — so that the resulting wine is of the highest quality. This involves moderate applications of fertilizer and water, as well as careful canopy management to insure that diffused light penetrates and the fruit zone is aerated, while at the same time minimizing conditions that encourage pests and diseases.

Organic wine. Wine created from organic grapes must be made in a facility certified for organic production, in which strict guidelines are followed that prohibit toxic chemicals and synthetic additives. There are two NOP–defined categories of wine made from organic grapes. First, "organic wine" contains no added sulfites (which are used to preserve and stabilize wine from unintended microbial degradation). However, organic wine is notoriously inconsistent and unpredictable in quality, and is mostly consumed by people who are sensitive to sulfites (a relatively small market niche). Second, "wine made from organically grown grapes" allows the use of sulfites at lower levels than conventionally processed wine. The majority of organic wine-grapes in California are used to make the latter.

State and global acreage. Interest in organic winegrowing has grown steadily over the past decade. In 2006, almost 8,000 vineyard acres were certified organic (CDFA 2006). Total global acreage of organic grapes is estimated at just over 228,000 acres in 31 countries (including California acreage), with Italy alone producing 77,000 acres (Willer and Yussefi 2006). Most California acres are in coastal wine-

growing districts: Mendocino County has the most with about 3,000 certified acres, and Napa County is next with 1,600 acres. Significant acreage is also certified in Lake, Sonoma, Santa Barbara and San Luis Obispo counties. Oregon and Washington growers are also certifying significant grape acreage in organic production.

Why grow organic grapes?

Growers farm vineyards organically for many different reasons. Most have a strong conservation ethic and want to minimize potential harm to the environment, workers, neighbors and their family, since many growers reside near their vineyards. They also embrace farming with nature, and want to encourage biological diversity on their property. They recognize that their farms can provide other ecological services, such as habitat for beneficial insects and birds of prey; the recycling and sequestering of organic matter; and protection for the overall health of their watersheds. Others are interested in achieving a very high-quality product, and potentially increasing their income. Finally, organic winegrowing is often used to position products in the marketplace. Many consumers and market outlets (such as high-end wine shops and restaurants) actively seek organically grown products, viewing them as hand-crafted, unique and distinctive compared to mass-produced items. Interestingly, organic practices are farm-scale neutral and are used both by large producers (such as Fetzer Vineyards with more than 1,700 acres in Mendocino County) and small producers making less than 500 cases of wine annually.

Organic winegrowers manage their vineyards as mini-ecosystems, striving to increase biodiversity in the soil, for example via the use of cover crops. Organically managed soils have higher biological activity than conventionally managed ones, possibly due to more efficient resource utilization and diverse flora and fauna (Mader et al. 2002; Reeve et al. 2006). As organic matter is added, organisms in the root zone appear to change the dynamics of disease expression on the vine roots. Organically farmed vineyards infested with phylloxera have been shown to last many years longer than conventionally farmed vineyards attacked by phylloxera, although they do need to be replanted eventually (Lotter et al. 1999). Diverse microflora in the soil suppresses pathogenic fungi that attack grapevine roots damaged by phylloxera.

Some growers feel that the quality of both fruit and wine improves after organic winegrowing practices are adopted. Grower experience has shown that under most conditions, organic winegrowing is both cost effective and productive, and does not reduce yields or quality (Klonsky et al. 1992; Weber et al. 2005). There is no specific premium for organically grown fruit, because wine-grape lots are judged on their individual merits and are more affected by region of production (appellation), variety and intended price-point (such as a finished bottle of wine).

Finally, some organic winegrowers don't bother to register and certify their vineyards, because they see no market or competitive advantage to doing so. Rather, they find that farming organically personally satisfies and meets their production objectives.

A. Thrupp/Fetzer Vineyards

Grape growers may choose to farm organically to minimize environmental damage, encourage biological diversity or position their products in the marketplace. *Above,* mixed cover crops at Bonterra Vineyards in Mendocino County.

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