

MKFMOTTO, KRYLA & FISHER
Wine Industry
Accountants and Consultants**WINE INDUSTRY****UPDATE***"Wine industry financial, business and tax ideas."***Special Phylloxera Report****The Grape Supply***Vic Motto*

How will phylloxera affect the supply of grapes? 100 years ago, many of the vineyards of Europe and California were rapidly wiped out once phylloxera got established. Today, phylloxera has an established foothold in Napa and Sonoma counties, and beginnings in other regions. Over 2,000 acres have been removed in Napa and Sonoma due to phylloxera, and replantings are occurring at an increasing rate. The yields from these new plantings are often 50% higher due to advances in vineyard technology. Will the higher yields from replantings offset the decline from phylloxera? Or, will phylloxera spread rapidly enough to adversely impact the grape supply?

Grape Supply

A new MKF study indicates that the grape supply from Napa and Sonoma will decline progressively over the next several years. Other regions will follow. The 1991 vintage is projected to be the largest combined crop from Napa and Sonoma for the remainder of this century. This will have a substantial impact on the high-end premium segment. Napa and Sonoma account for over half of the high-end Chardonnay supply and over 90% of the high-end Cabernet/Merlot.

Chart I shows the grape supply in Napa and Sonoma before and after phylloxera. The *Normal Trend* line is an extrapolation of trends from the past fifteen vintages. The projected grape supply *After Phylloxera* is based on the MKF study. This shows the total Napa/Sonoma grape supply dropping to 180,000 tons in 1997 — a decline of over 100,000 tons from the record 1991 crop. *Chart II* shows that after 1992, the crop is projected to be below normal for the next ten years.

Demographics of Phylloxera

About two-thirds of the vineyards in Napa and Sonoma are planted on the AxR #1 rootstock, which is susceptible to the root louse phylloxera. This pest feeds on the roots of vines, causing a progressive decline in vine productivity, eventually leading to vine death. Phylloxera reproduces very rapidly, with as many as five generations per year. This can result in an increase in number of phylloxera from



Vic Motto and Mike Fisher discuss phylloxera issues with Phil Freese (center) of Robert Mondavi Winery, a leader in vineyard research.

just one to over *one billion* in a single year. Because the pest is underground, there may be no readily visible signs for the first few years.

The rate of spread varies considerably from vineyard to vineyard. The spread is slower in certain soil types. Irrigation, fertilization, and certain farming practices can often slow the rate of decline. Vineyard decline is faster in less healthy vineyards. In all cases, the rate of spread is geometric. Eventually, vineyard yields decline to the point where it becomes uneconomic to continue farming. Replanting has typically been done when yields decline to 50-60% of normal. In many cases it is advisable from an economic standpoint to replant as soon as yields decline to 70% of normal.

Historically, the rate of spread of phylloxera through a region has been very rapid. Once a base level of infestation has been established, the number of acres removed has increased geometrically. 100 years ago in Napa Valley it took only seven years for phylloxera to wipe out all 20,000 acres from a base year of 500 acres removed. A similar pattern occurred in Europe on millions of acres of vineyards.

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Grape Supply *continued*

There are many differences in the vineyards and farming practices of the 20th century vs. the 19th century. However, the current limited experience with phylloxera, combined with historical data indicates that an annual 50% increase in replantings is likely in Napa and Sonoma. This means that 1,000 acres removed in one year becomes 1,500 the next and 2,250 the next, etc.

Replantings

Vineyard replantings have increased dramatically in the past few years:

Acres Replanted:	Napa	Sonoma
1990 and prior	800	200
1991	750	250
Projected 1992	1,100	350

Sonoma is two to three years behind Napa in the spread of phylloxera. At the present rate, the total combined annual replantings would peak at about 10,000 acres in 1997. By that time, 30% of the combined acreage would be out of production.

Higher Yields

New farming practices and advances in vineyard technology are creating higher vineyard yields in replanted vineyards. New vineyard replantings now often include:

- Closer spacing — often double the number of vines per acre.
- Newer trellis systems for better

canopy management.

- Better matching of rootstocks and clones to microclimates and soil conditions.

Yields have increased from an average of 3.5 tons per acre in the 1980's to over 4 tons beginning in 1989. New vineyards now often get 6 tons per acre and more. In addition to higher yields, the newer farming methods and technology often result in superior fruit quality. Improved quality and productivity are truly the silver lining, but come at a substantial cost as outlined in Mike Fisher's accompanying article.

The Best Strategy

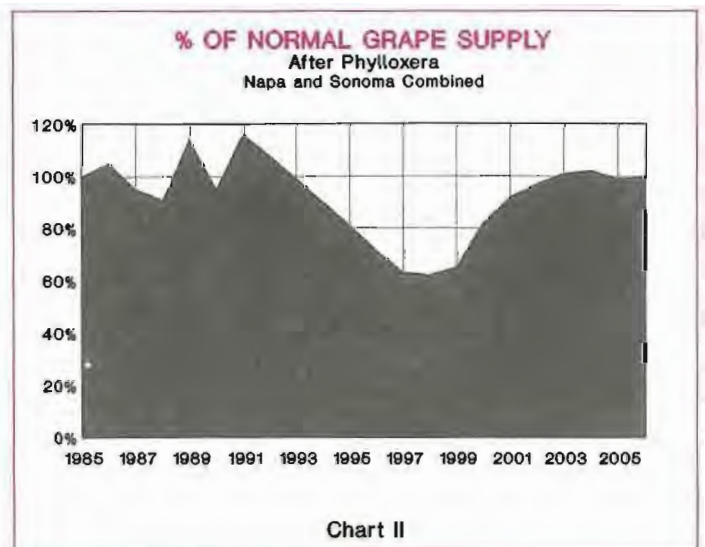
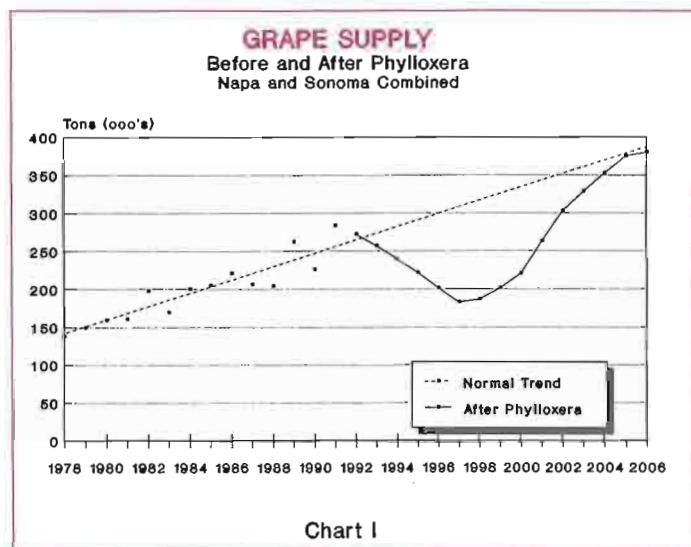
There is a real opportunity today for most vineyards to get ahead of the curve on phylloxera. Most still have time to implement replanting trials to learn the best combinations for each specific vineyard location. The proper choices are potentially quite different for each vineyard. Those who experiment early will make more well-informed decisions. Also, those who replant early will be most likely to have grapes when they are in the shortest supply. All of the economic analysis we have seen indicates that addressing the problem early yields the best financial results.

Future Issues

The wine industry widely adopted AxR rootstock in the 1960's and '70's. It produced very well for many years

under a variety of growing conditions. Unfortunately, little research has been done on alternatives. Replanting decisions are being made today based on insufficient information. New combinations of rootstocks, clones and growing conditions require new research to avoid or minimize new problems. Trial plantings are needed for specific combinations before widespread implementation is prudent. Funding for research has been very limited to-date. More funding is needed. Substantial increases in research are needed to explore new alternatives for today and to minimize potential future problems. Every vintner and grower should get behind this effort.

The next ten to fifteen years will be very challenging. The premium grape supply will decline in Napa and Sonoma and then return at record levels. The combined Napa/Sonoma crop is likely to go from the record high 284,000 tons in 1991, to a low of about 180,000 tons in 1997, and then up to a new record of around 380,000 tons by 2006. Other regions will follow on a new cycle. What will be the impact on wine quality, prices and supply during the low points? What happens after the recovery, with record levels of higher quality grapes available? With proper planning and management, this *can* be a golden opportunity for California wine. ♦



Financial Impact



Mike Fisher

What will be the collective cost during the 1990's to Napa and Sonoma growers of this major replanting? Many estimates have been mentioned, ranging from \$500 million to as high as \$2 billion. Of course, the conclusion is a function of the assumptions. The minimum incremental cost of this replanting, which we used for the following projection totals \$550 million. If the impact on wineries and newer vineyard technology is included, the cost could exceed \$1 billion.

The minimum incremental cost projection assumes the impact is determined in part by the current market value of grapes, i.e., wineries buying from growers at county averages. However, approximately 65% of the vineyards in Napa County and over 50% of the vineyards in Sonoma County are owned by wineries. Obviously, if the impact is calculated based on the selling price of wine, the dollars are greater. For example, a ton of grapes produces 700 bottles of wine, and if a wine retails for \$10 a bottle this equates to \$7,000 per ton. Even after adjusting this amount for the cost of producing the wine (of which many costs are fixed) and for distribution mix (not all wine is sold at retail by the winery), the value of the grapes is considerably higher than the \$1,000-\$1,250 per ton used in the projection.

Another factor that will increase the impact is that the minimum incremental cost projection assumes replanting costs based on 11x7 spacing with a simple single cross arm trellis system. Many vineyards are replanted with denser spacing and/or more elaborate trellis systems, and the \$9,000 per acre development costs

used could easily be increased to the range of \$12,000 to \$15,000. Development costs could be as high as \$25,000 per acre.

For example, in comparison to 11x7 spacing, 8x5 spacing requires 1,100 vines per acre versus 550. If vines, planting costs, drip emitters and stakes are \$5 per vine, which is common, this increases costs by \$2,750 per acre. Eight foot rows require an additional 1,500 feet of trellis, drip hose, etc., which at \$.50 per foot, would add another \$750 per acre. The costs add up quickly considering twice as many vines must be trained, pruned, suckered, etc.

The assumptions used for the minimum incremental cost projection are:

- Rate of spread of 50% annual increase in acres replanted
- 65% of all acreage in Napa and Sonoma is planted in AxR #1 rootstock
- 50% of the acreage planted prior to 1980 and 10% of the acreage planted after 1980 is excluded from the phylloxera replanting because it would be expected to be replanted for other reasons. This means, of the approximately 43,000 acres planted on AxR, only 26,000 are included in the computations.
- Financial cost consists of development cost and loss of crop. Because of differences in crop value between counties, this totals \$23,500 per acre for Napa and \$18,500 per acre for Sonoma. These amounts are based on —

Development costs in both counties of \$9,000 per acre from UC Cooperative Extension *1989 Sample Cost to Establish and Produce Wine Grapes in Napa Valley* and includes:

- Improvements (trellis, irrigation, etc.) and planting
- Farming for four years
- Interest on development costs
- Credit for small crop in year three and four

Loss of crop based on:

	Napa	Sonoma
— Loss per acre	\$14,500	\$9,500
— Tons per acre (1989-1991 average)	4.6	4.6
— Revenue per ton (1991 weighted average)	\$ 1,257	\$ 990
— Offset by farming and harvest costs from UC Extension study		

Replanting Strategies

Costs and replanting strategies will vary for each vineyard. The conventional approach is to remove a vineyard on a block by block basis as phylloxera spreads. Alternative methods, which are unproven today but may prove to be appropriate in certain conditions, are in-arch grafting, inter-planting and vine-by-vine replacement. The success of these methods is a function of spacing and trellis system and the vigor, variety, age and health of the existing vine. If these alternative methods prove to be successful, the financial impact and projected decrease in grape supply could be moderated.

Practical problems that many growers are facing can make the replanting process difficult. Generally these are a function of soil, growing conditions, other pest and disease problems, etc. Replanting decisions include these considerations:

- Variety

What variety produces the highest quality given your specific conditions? What will be the future demand for that variety? If the demand is projected to be soft, should a less appropriate variety be planted? Since Chardonnay has been widely planted and has historically maintained high prices, will demand continue to grow (four fold increase since 1981)? Will specialty varieties such as Sangiovese, Syrah, Viog-

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Replanting Strategies

continued

nier, etc., ever generate enough demand to justify major planting? Should you hedge and plant some of everything?

- **Rootstock**

As mentioned in Vic Motto's article, rootstock research requires many years. Very little has been done in California since the 1930's and 1940's to develop new rootstocks or to test the many rootstocks available worldwide. How will these rootstocks adapt to California growing conditions? Is there another rootstock with AxR characteristics but resistant to phylloxera? How will a new rootstock perform in your specific location?

- **Rootstock availability**

There may be enough 5C, 3309 or 110R available but what about 140 Ruggeri or others should they prove to be best for your situation? You probably will not know which is best until later, maybe too late!

- **Scion wood**

Which clone works best in your situation (wine style, vine vigor, yield, etc.) and is it compatible with your rootstock selection? Is it virus free? If not, what is the downside of using infected wood? Could there be a latent virus problem? Answers may not be clear without on-site trials.

- **Trellis system and vine spacing**

Soil is a major factor in this decision. Many growers are using vertical training systems while others use a split cartyop. What works best where is the question. What are the economics of the more elaborate trellis systems and denser spacings? Does the higher up-front costs justify the

improved quality and yield for your conditions?

Financing

What is the availability of capital to finance this major replanting? The majority of vineyards are owned by wineries, and many wineries are reasonably well financed to weather this replanting over a period of years. Many independent growers have little debt because their property was acquired many years ago and grape growing has been reasonably profitable over the last six to eight years. These growers will survive because they will have the ability to borrow additional capital for replanting.

There are other wineries and vineyards, however, who may not have the financial capacity to replant. In these situations the vineyards will be sold either voluntarily or involuntarily (bankruptcy or foreclosure). However, currently we do not see vineyards on the market at depressed prices. There may be a few foreclosures and bankruptcies but we do not see phylloxera creating a mass liquidation. This process will eliminate the marginal producers, leaving the survivors stronger.

Because of changes in the banking industry, sources of debt financing to the wine industry have become more limited. The major commercial banks are looking very closely at any new financing and require substantial equity, good management and current profitability. They will no longer lend on projections, which has been done occasionally in the past. Insurance companies have previously done major financing of vineyard acquisition and development but recently have had only limited involvement. The Farm Credit System, whose sole purpose is agricultural lending, will continue to be a credit source for vineyard development. Financing will be available, but only for healthy borrowers and those who have rea-

sonable expectations and solid plans for the future.

Equity financing is now more limited because of the U.S. recession, tax law changes, and less foreign investment due to problems in Japan (real estate and stock market) and EC consolidation in Europe. Potential investors are now viewing the wine industry on the same basis as other investments rather than on lifestyle considerations.

The bottom line is that the premium wine industry will survive this setback and most vineyards will be replanted and emerge in the 21st century with even higher quality wines. This will continue to enhance our reputation as truly a world class premium wine producer. ♦

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