



## SONOMA COUNTY VITICULTURE NEWSLETTER

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### Leaf-gall Forming Phylloxera

To date, leaf-gall forming phylloxera has been found in three of the state's grapevine nurseries. Although North Coast growers have had several opportunities this year to learn about this new (to us) form of an old pest, other growers and the public are just coming on board. At this point, although little is known about how this form of the phylloxera will behave in the wine growing regions of California, it is not believed to pose a threat to growers who have planted vines on resistant rootstock.

Nougaret and Davidson described the complex life history of phylloxera in 1921 yet researchers in California have never seen all stages of the entire above and below ground cycles of this insect. In fact, there is an increasing amount of evidence that supports the theory that phylloxera's life history is even more complex than previously described and it is also dependent upon environmental conditions. To our knowledge, the presence of the foliar form of phylloxera in California's commercial grape growing regions for two successive years is a first. This may mean that the insect was introduced on nursery stock from the East Coast where the leaf feeding form of phylloxera commonly occurs.

One thing that can be stated with certainty about the presence of this form of phylloxera in California is that it may increase the phylloxera pressure on own rooted and AXR#1 vineyards. Ten years ago, when phylloxera Type B had only been identified in relatively few Sonoma County vineyards, it was more apparent than now that many new infestations were down wind from established sites. A small number of wingless phylloxera commonly migrate to the soil surface where they can be blown away or hitchhike on soil that adheres to vineyard equipment.

Foliar phylloxera may also spread with wind, whether winged or wingless; however, more importantly, it is likely that it exists unnoticed on dormant cuttings. Some of the new infestations may have arrived in California from the East Coast on nursery stock. Exactly where the insects were living on the plant materials is not known at this time.

Early feeding studies have determined that foliar phylloxera can adapt themselves to feed on roots. This presents another source of infestation for vines planted on their own roots or on AXR#1 rootstock. Dr. Andrew Walker is currently investigating the genetic differences and similarities among phylloxera populations collected in Europe, the eastern US and California. DNA banding patterns will tell us how closely related or unrelated California phylloxera is from grape phylloxera elsewhere. They will also allow researchers to learn more about the ability of phylloxera to adapt to new conditions including how they become established at low levels on resistant rootstocks.

In commercial grape growing regions in Europe and the eastern US, rootstock plants grown in nurseries are commonly infested with foliar phylloxera. The leaves of young rootstock vines used to establish new vineyards are also susceptible. Vinifera leaves are not the preferred feeding host for this insect. This means that the grape varieties grown in Europe do not become seriously infested with the leaf-feeding form of phylloxera.

Leaf-gall forming phylloxera and soil-borne phylloxera have both existed in Europe and the East Coast for over 100 years; however the genetic relatedness of the above ground to the below ground populations has thus far never been investigated. To prevent defoliation of rootstock plants, nurseries routinely apply insecticides to reduce the infestation. Unlike California, commercial vineyards in Europe do not use AXR#1 rootstock and the amount of acres that are own-rooted is negligible. However, just as in California, root feeding phylloxera do infest vineyards that are planted on rootstock that contains vinifera in their parentage.

California's phylloxera situation is different from that in Europe in two ways. First, we have thousands of acres of vines planted on their own roots, as well as many vineyards planted on AXR#1 rootstock that are highly susceptible to phylloxera. Secondly, until recently, we have never observed infestations of foliar phylloxera.

Research, now underway by Andy Walker and entomologist Dr. Jeffrey Granett, will determine the genetic "baseline" of phylloxera collected from a large number of sites within California so that, as changes occur, they can be easily noticed. It is likely that in general the genetic variability of California's phylloxera will change over time if the foliar forms become more widespread. What this means is unknown. But just as European growers have found over the decades, this will not have dramatic consequences for commercial vineyards planted on resistant rootstocks.

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### **Phylloxera and Planting Survey Results**

For the last seven years, Napa Farm Advisor Ed Weber and I have asked growers to complete a phylloxera acreage survey. This was done to track the removal of acres planted on AXR#1 rootstock that were taken out of production due to phylloxera Type B infestation. We have also sent out a planting survey for the past five years because we were curious what rootstock and scion selections you used to replant and establish new acreage. I want to thank all of you who took the time to respond to my request for your assistance all of these years. Around

200 Sonoma County growers, farming about 80% of the total planted acreage responded each year. The numbers you provided helped to make these results more meaningful for everyone.

Ed Weber estimates that at the start of the phylloxera crisis in Napa County there were 22,000 acres of vines on AXR#1 rootstock. I estimate that Sonoma County had 20,000 acres of AXR#1 in the ground at that time. I base my estimate on the proportion of AXR#1 acreage to the total acreage farmed by all survey respondents over the years. Table 1 is our estimate of the amount of acres planted with AXR#1 rootstock that have been removed in both counties due to phylloxera or any other reason, or converted, by interplanting or approach grafting with a different rootstock. The numbers are adjusted for unreported acreage that was not captured by the survey. It is the only table in this newsletter that contains adjusted figures. All other tables contain summaries of actual responses.

**Table 1. Estimate of Napa and Sonoma County Removals and Conversions of Acreage Planted to AXR#1 Rootstock**

	1987-90	1991	1992	1993	1994	1995	1996	1997	Total to date
Napa	1000	1300	2100	2400	2700	2500	2500	2000	16,500
Sonoma	1200	840	940	1240	1620	1480	1330	1350	10,000

By my estimates, Sonoma County growers have cut the AXR#1 acreage they had at the start of the crisis in half. The AXR#1 acres that remain represent 20-25% of the total acreage planted in the county. In Napa County, AXR#1 acreage is down to 15% of the total planted acreage.

In 1997, just as they have in prior years, Napa growers continued to remove more acreage planted on AXR#1 rootstock that was infested with phylloxera Type B than Sonoma growers. They also reported a larger proportion of their remaining AXR#1 acreage as infested with phylloxera.

Over the last five years, the survey respondents have planted about the same number of total acres in each county. If the recent planting trend continues, Sonoma County vineyard acreage will continue to exceed that in Napa. By some estimates, there are about 50,000 acres of vines in Sonoma compared to just under 40,000 acres in Napa. Table 2 contains the planting acreage data for all of the previous years' survey results.

**Table 2. Total Acres Reported Planted in Napa and Sonoma Counties**

	1992	1993	1994	1995	1996	1997	Total to date
Napa	1300.6	1298.6	1835.9	1889.2	2059	2266.8	10,650.1
Sonoma	989	1284.3	1626.7	1408.1	2103.1	3003.5	10,414.7

### 1997 Phylloxera Survey Results

Information Requested	Sonoma	Napa
A. What is your total vineyard acreage?	29,353.8	25,616.7
B. How many of these acres are planted with AXR#1 rootstock	8,764.1	3,831.2
1. How many acres planted on AXR#1 rootstock were removed due to phylloxera damage during 1997?	684.2	1,044.4
2. Of your existing AXR#1 vineyards, how many acres do you think are currently infested with Type B phylloxera?	3,715.1	2,564.2
3. How many of these infested acres planted on AXR#1 do you plan to remove in 1998 because of phylloxera?	762.3	891.8
4. How many additional acres, on any rootstock, were removed in 1997 for reasons other than phylloxera?	369.7	451.9

### Locations of Acres Removed Due to Phylloxera in 1997

Sonoma County		Napa County	
Carneros	58.0	Carneros	199.3
Sonoma Valley	45.6	Napa to Yountville	265.4
Knights Valley	115.0	Yountville to Rutherford	184.2
Alexander Valley:		Rutherford to St. Helena	60.0
south of Geyserville	315.4	St. Helena to Calistoga	93.9
Geyserville and north	3.0	Western hills	38.0
Dry Creek Valley	84.2	Eastern hills	129.0
Russian River Valley		Pope/Chiles/Wooden Valleys	67.6
except Chalk Hill	30.1	Other	7.0
Chalk Hill	17.3		

Other	15.5		
<b>TOTAL SONOMA COUNTY</b>	<b>684.2</b>	<b>TOTAL NAPA COUNTY</b>	<b>1,044.4</b>

**1997 Planting Survey Results**

How many acres were planted in 1997?

Sonoma

3,003.5

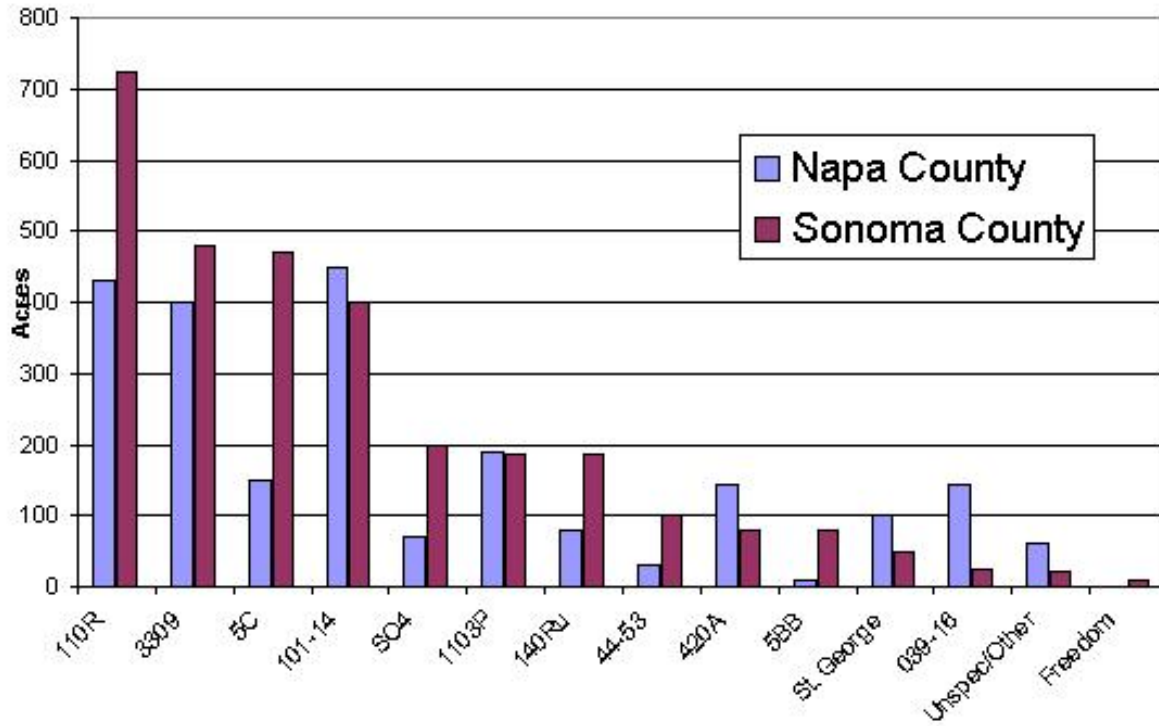
Napa

2,266.8

**Acreeage of Rootstocks Planted in 1997**

<b>Rootstocks</b>	<b>Sonoma County</b>	<b>Napa County</b>
5C	462.6	145.8
3309	479.3	395.8
110R	724.3	432.0
5BB	82.1	7.0
101-14	397.1	435.0
420A	84.0	137.8
039-16	22.0	138.6
Freedom	6.1	0.0
St. George	60.9	114.1
1103P	181.0	185.3
140Ru	176.4	88.8
SO4	193.9	76.0
44-53	117.8	31.6
Unspecified/Other	15.9	79.1
<b>Total</b>	<b>3003.5</b>	<b>2266.8</b>

**Acreage of Rootstocks Planted in 1997 in Sonoma and Napa Counties**



**Acreage of Scion Varieties Planted in 1997**

<b>Scion</b>		<b>Sonoma</b>	<b>Napa</b>
<b>Reds</b>	Cabernet Sauvignon	869.0	701.6
	Merlot	350.9	477.2
	Cab. Franc	11.7	45.8
	Zinfandel	102.7	1.4
	Pinot Noir	589.1	200.4
	Sangiovese	9.7	37.0
	Syrah	66.3	67.1
<b>Whites</b>	Chardonnay	460.7	429.1
	Sauvignon blanc	101.7	171.4
	Chenin blanc	0.0	0.0
	Semillon	12.6	5.0
	Viognier	5.0	10.0
	Pinot Gris	89.8	0.0
	Others	55.6	65.6
	Not yet budded	278.8	56.1
<b>Total</b>		<b>3,003.5</b>	<b>2,266.8</b>

Petite Sirah was the predominate red variety in the "other" category in Sonoma County in 1997, with 14.8 acres. Petite Verdot and Malbec followed, with 8.8 and 8 acres respectively. Several other red varieties were each planted in under 4 acres. Sauvignon Musque, Pinotage and Tinta

Cao comprised the white varieties in the "other" category in Sonoma, with a total of just under 9 acres.

**Acres of AXR#1 Vineyards Interplanted or Inarch/Approach Grafted in 1997**

	<b>Sonoma County</b>	<b>Napa County</b>
<b>Interplanted</b>	170.1	101.9
<b>Inarch/Approach Grafted</b>	48.0	10.0

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