Replanting grapevines using minimal fumigants

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In 2006 my MBAO talk was:

Replanting *stone fruits* with minimal or no fumigation
Apply Roundup to old trees and wait one year to replant on a different rootstock to mitigate the rejection component of the replant problem---- there was not a nematode problem at this site.
1 yr fallow > MB
Spring MS > fallow 1 yr
Today I will discuss a vine replant site where there are rejection and nematode components to the replant problem.
Rootstock Field Experiment-San Benito Co.

Replant of Chardonnay with or without fumigation plus new rootstocks
(Larry Bettiga 1997-2002)
A methyl bromide application
The Telone man of 1997
Our drenching equipment for metam sodium
110 lb/ac metam sodium in 3” water
…for attainment of surface control of nematodes
Fig. 2. *Xiphinema index* population associated with RS-2 grape rootstock 18 and 24 months after various treatments

* = indicates a significant difference from the check at $P = 0.05$ according to Duncan's multiple range test.
Nematode control value of nine rootstocks

1. Annual soil samples from each rootstock
2. Pruning data and yield data in the third and fourth years
Fig 5. Nematode population associated with 9 grape rootstocks 60 months after various treatments. * = indicates a significant difference from RS-2 at P = 0.05 according to Duncan's multiple range test.
Chardonnay pruning weights (kg/vine) from nine rootstocks in 2001 + 2002
Chardonnay yield (kg/vine) of nine rootstocks in 2001 + 2002

- 8913-02
- RS-3
- 8913-21
- 10-23B
- 039-16
- 10-17A
- Boerner
- RS-2
- 6-19B
What is the future of this vineyard?

• 5% of California vineyards have Grapevine Fan Leaf Virus, similar to this test site.
• Two of the 9 rootstocks provided tolerance to GFLV, 039-16 and RS-3. Meanwhile Boerner provided some tolerance and 10-17A exhibited some tolerance as it aged.
• RS-3 and 10-17A provide broad nematode resistance.
• 10-17A and O39-16 provided tolerance to the rejection component of the replant problem.
Grapevine Fan Leaf Virus can kill some rootstocks.
...or provide various leaf patterns at 3 or 4 years after planting
A new rootstock with X. index resistance but no GFLV tolerance
Symptom expression may include zig zag design along branches
Boerner Rootstock in non fumigated soil after 4 years
The Replant Problem of tree or vine crops can be managed by:

“Starve existing soil ecosystem, replant different parentage”

We need more rootstock choices than we currently have!
Table 1. Rootstock responses to selected soil-borne problems

<table>
<thead>
<tr>
<th>Pest-Disease Problem</th>
<th>Harmony</th>
<th>Freedom</th>
<th>O39-16</th>
<th>RS-3</th>
<th>RS-9</th>
<th>10-17A</th>
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<tbody>
<tr>
<td>Meloidogyne spp</td>
<td>R</td>
<td>R</td>
<td>S</td>
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<td>aggressive Meloidogyne spp</td>
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<td>Xiphinema index</td>
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<td>Rejection component, RP</td>
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<td>S</td>
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<td>S</td>
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<td>T?</td>
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