Chardonnay rootstock trial, 1993

Horst Caspari
1993 Chardonnay rootstock trial

Background

- About 95% of vineyard area is planted with own-rooted vines
- More than 80% of vineyard area is planted with own-rooted *Vitis vinifera* cultivars
- In the absence of phylloxera, own-rooted vines have several advantages over grafted vines:
  - less expensive
  - no need to cover trunk base over winter
Background

• However, in the presence of phylloxera, own-rooted vines of *Vitis vinifera* will sustain serious root damage and get killed by phylloxera

• Phylloxera is present in most of the world’s grape growing regions. The only viable option to grow *Vitis vinifera* cultivars in the presence of phylloxera is to use phylloxera-tolerant rootstocks

1993 Chardonnay rootstock trial
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Background

• The first replicated rootstock trial was planted at the Western Colorado Research Center – Orchard Mesa in 1993
1993 Chardonnay rootstock trial

- Planted in 1993 at WCRC-OM
- Chardonnay grafted to four rootstocks
  - 5C Teleki
  - 420A Millardet et de Grasset
  - 101-14 Millardet et de Grasset
  - 3309 Couderc
- Randomized block design with 16 replications
1993 Chardonnay rootstock trial

- Ten vines per replication
- Total trial area of ~0.75 acre was the northern half of a 1.5 acre block of Chardonnay, with own-rooted Chardonnay planted in 1992 in the southern half of the block
- Most of the vines were removed following the 2006 harvest
Western Colorado Research Center
Orchard Mesa
1993 Chardonnay rootstock trial

- Own-rooted vines were not included in the rootstock trial
- Data from own-rooted vines are included in the following slides. However, due to the trial design data from own-rooted vines cannot be directly compared to data from grafted vines
  - Soil differences
  - Temperature gradient
Different colors represent different soil types!
The bulk of the grafted vines are planted into a different soil type than own-rooted vines.
There is a slight (<2 %) slope from the South to the North end of the block.

Most likely this slope is the reason for a small (~3 F) South-North temperature gradient (cold air draining towards the North).
1993 Chardonnay rootstock trial

- Data collection for own-rooted vines was not consistent over the years
- Some years yields for own-rooted vines was determined from 10 vines immediately adjacent to the rootstock area
- Other years yields for own-rooted vines was determined from all own-rooted vines (i.e. half a row)
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Yield (ton/acre)

- 5C
- 420A
- 3309
- 101-14
- Own

1993 Chardonnay rootstock trial, 10-year average yield

![Graph showing average yield for different rootstocks over 1997-2006 (ton/acre): Own, 3309, 101-14, 420A, 5C. The graph indicates that 5C rootstock has the highest average yield.](image)
1993 Chardonnay rootstock trial

- Highest-yielding rootstock was 5C averaging 3.8 ton/acre, followed by 420A (2.55 ton/acre), 101-14 (1.90 ton/acre), and 3309 (1.72 ton/acre)
- Own-rooted vines averaged 2.04 ton/acre
The average yield of Chardonnay in Mesa County for the period 2000 to 2006 was 2.80 ton/acre

During that period own-rooted Chardonnay vines at WCRC-OM averaged 1.48 ton/acre

Chardonnay grafted to 5C averaged 3.23 ton/acre
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- Six rows of the original planting are still in place in 2019
- Vine survival has not been negatively affected by grafting. Note that graft unions were protected by hilling up soil every fall and removal of soil every spring.
  - After 28 years, 93.9% of own-rooted vines are still alive
  - After 27 years, 97.5% of grafted vines are still alive
1993 Chardonnay rootstock trial

For more detailed information on this and other research projects please review our Annual Research Reports available on our web page:
Questions?

Dr. Horst Caspari
Department of Horticulture & Landscape Architecture
Colorado State University
Western Colorado Research Center – Orchard Mesa
Grand Junction, CO 81503
Ph: (970) 434-3264
horst.caspari@colostate.edu