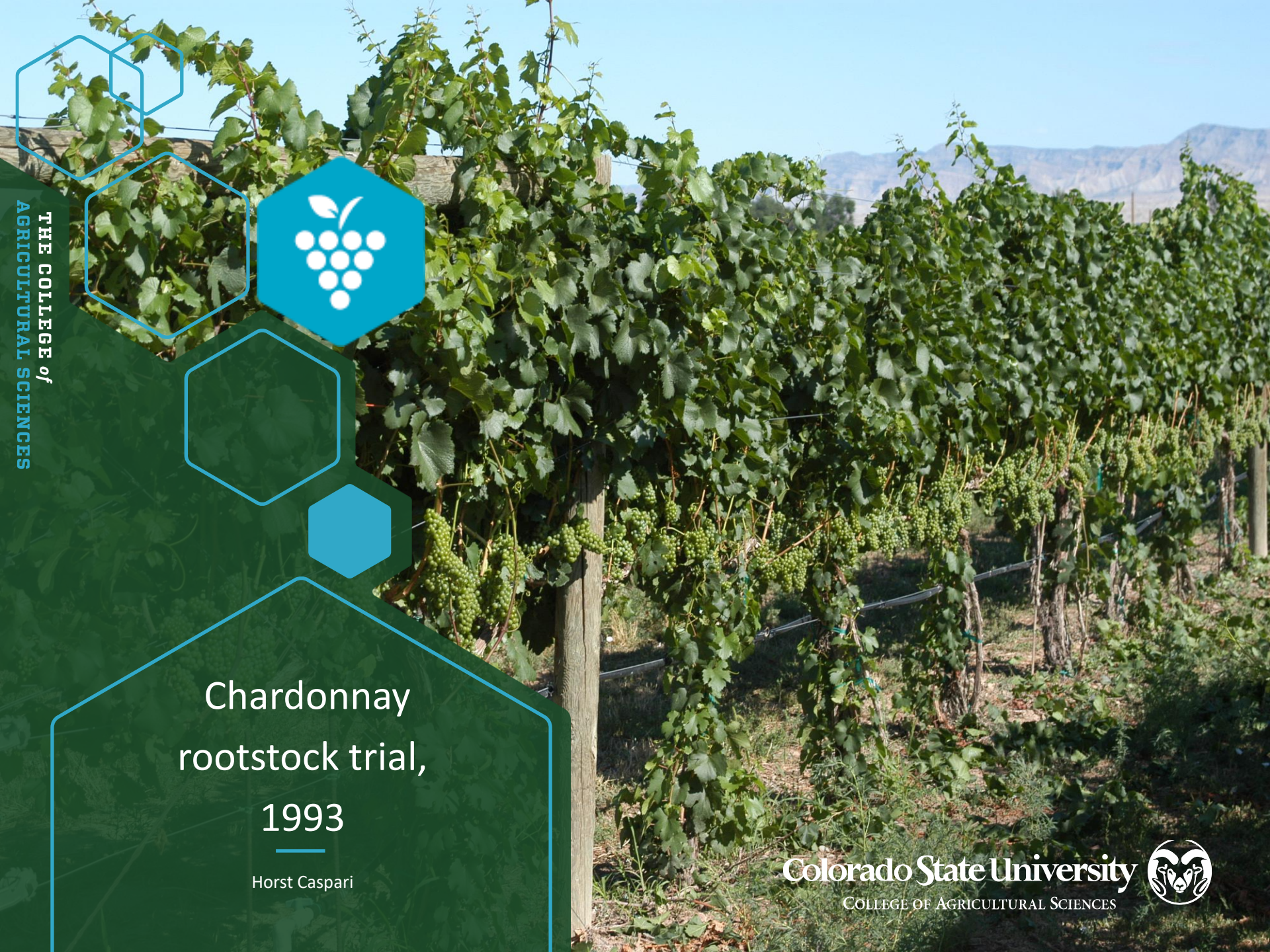

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Chardonnay rootstock trial, 1993

Horst Caspari

Colorado State University
College of Agricultural Sciences

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

1993 Chardonnay rootstock trial

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

Background

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

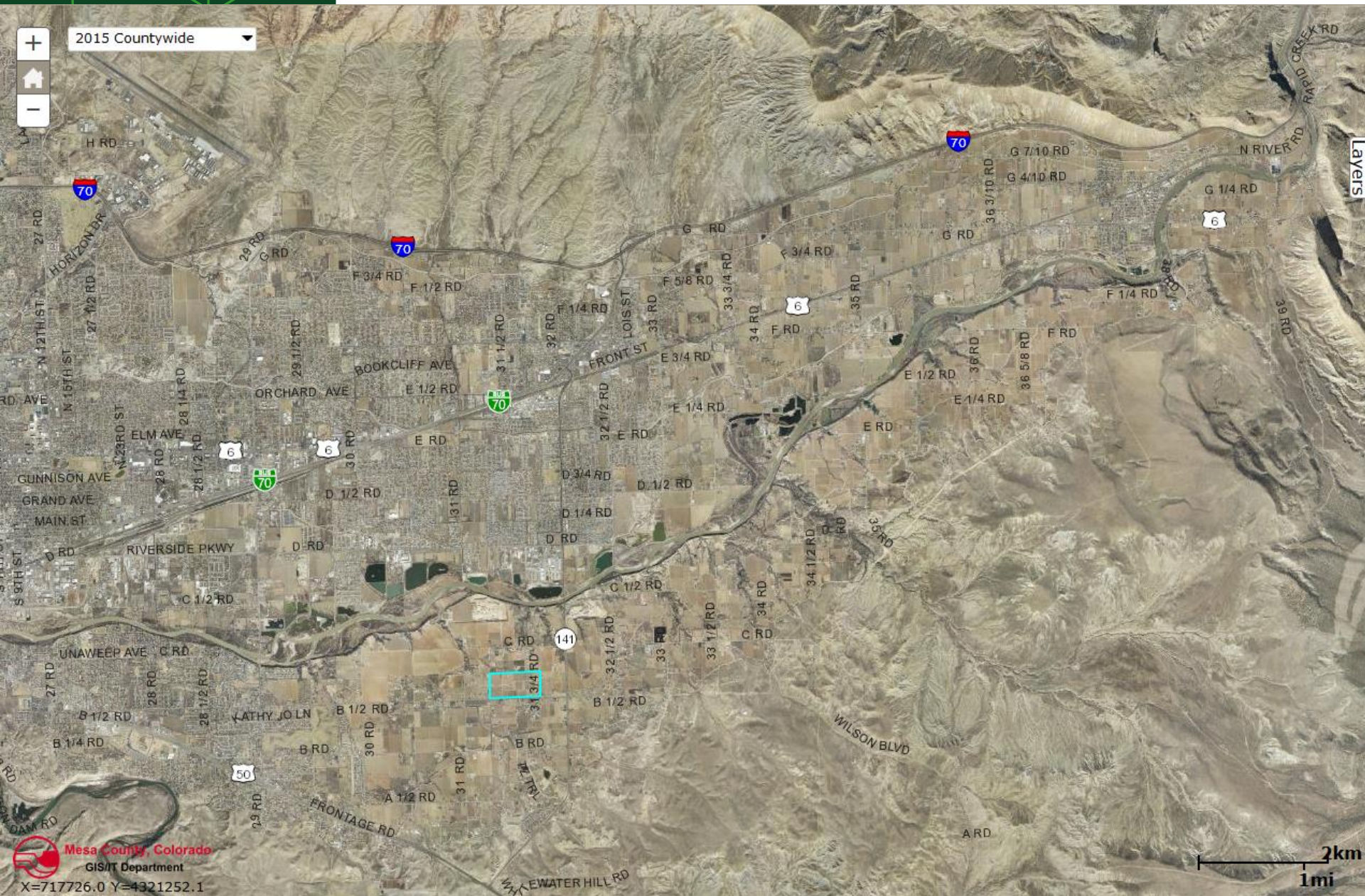
1993 Chardonnay rootstock trial

- 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

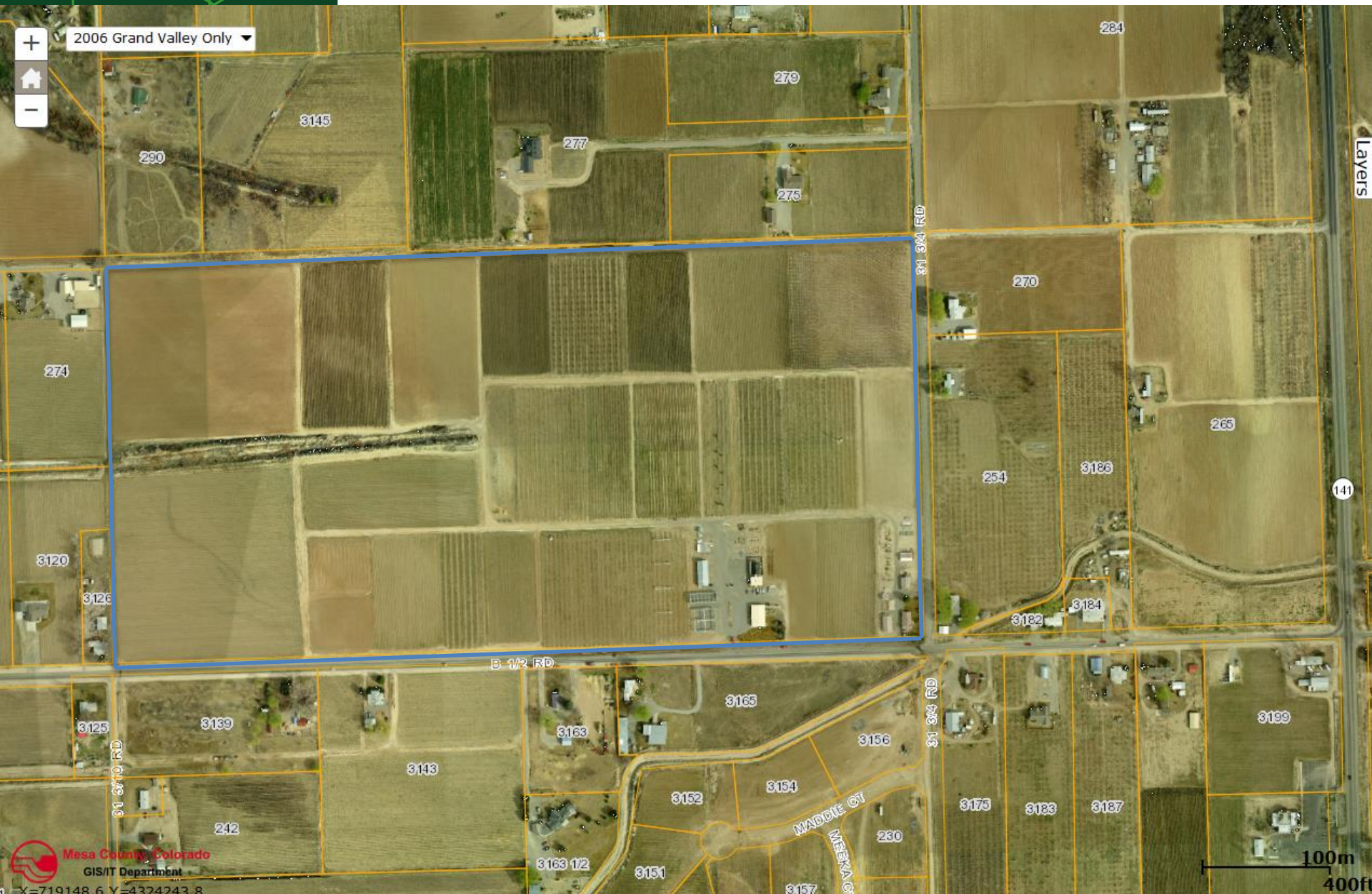
1993 Chardonnay rootstock trial

- 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

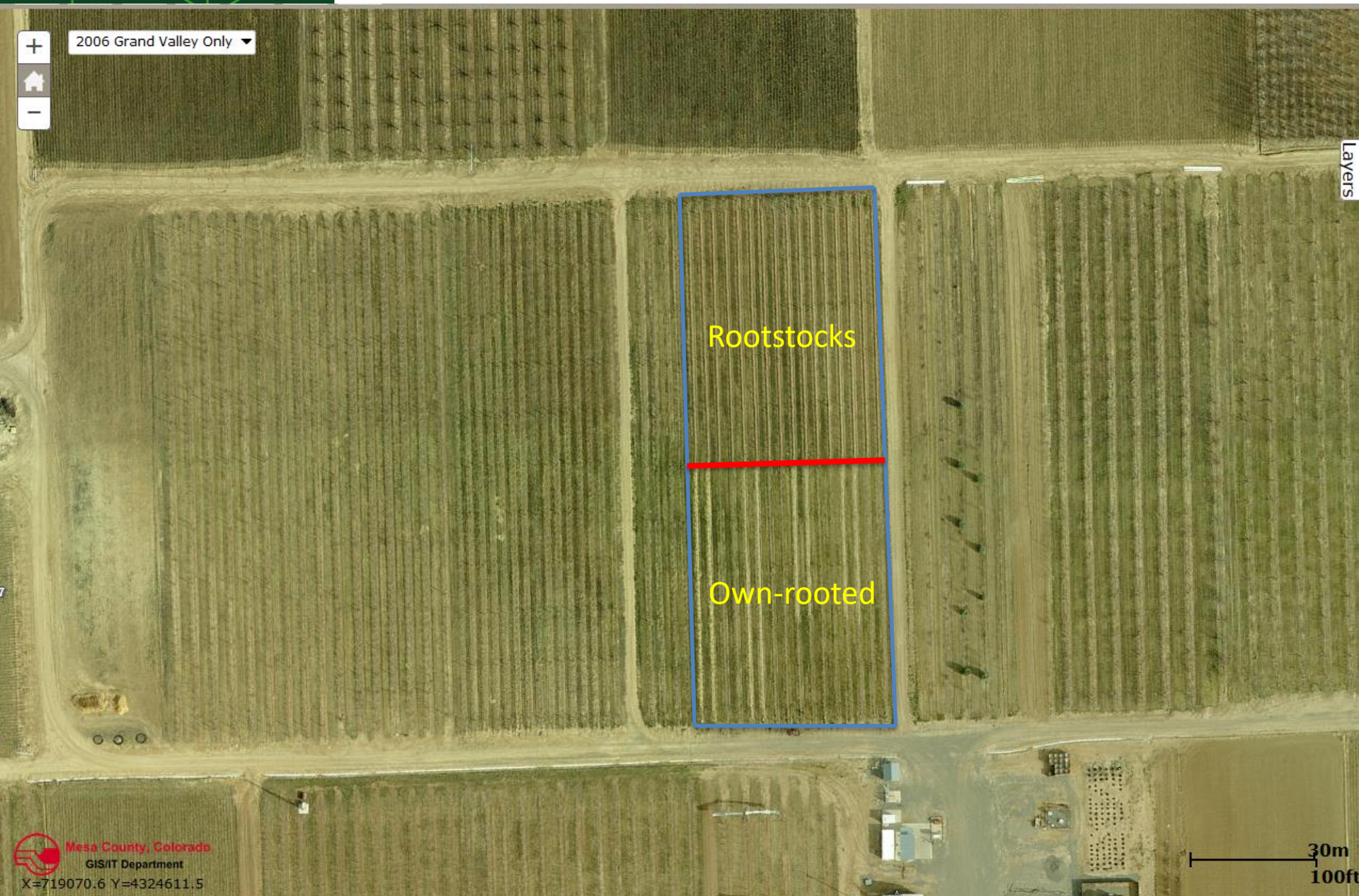
Western Colorado Research Center
Orchard Mesa



Western Colorado Research Center
Orchard Mesa



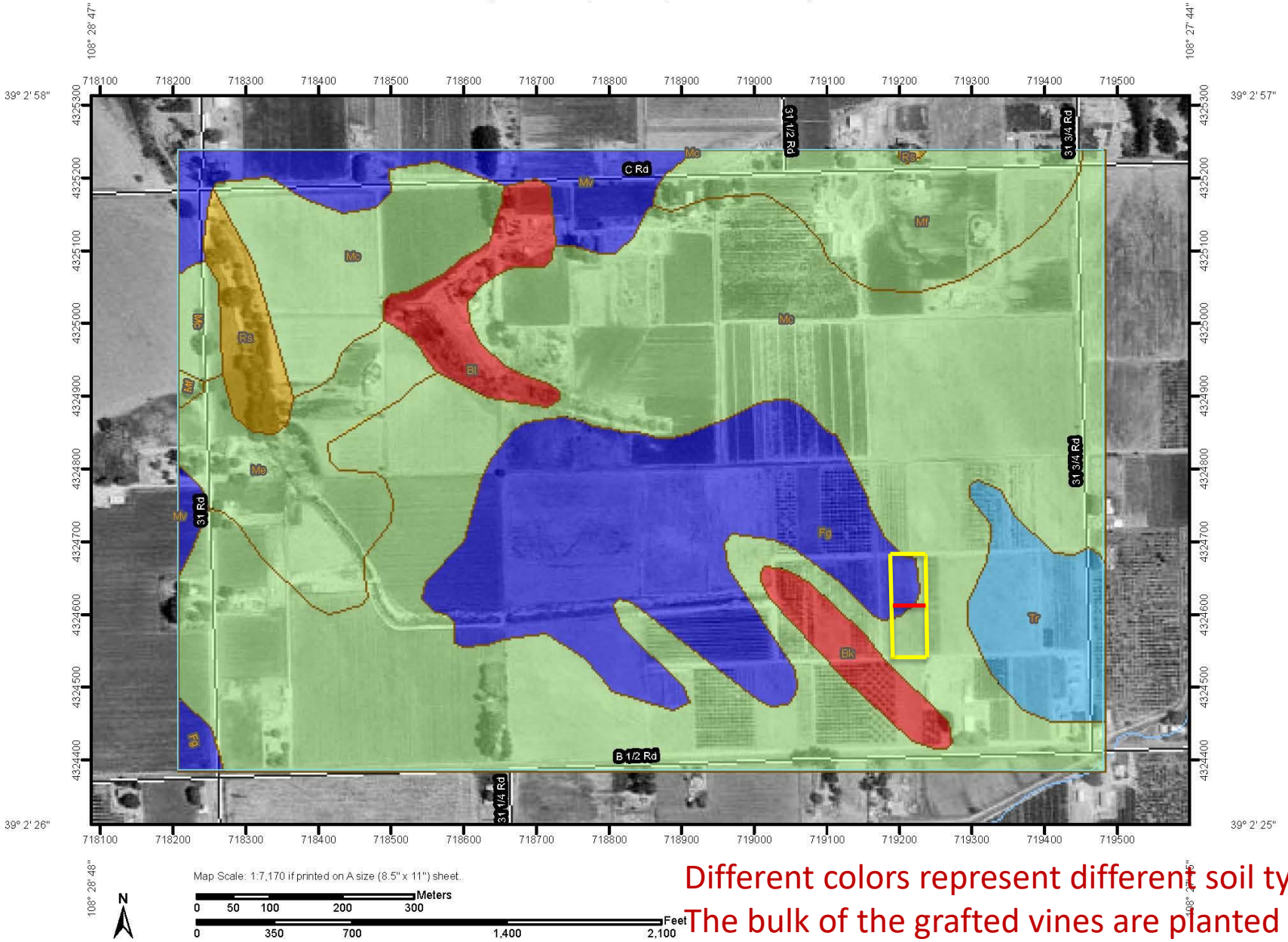
Chardonnay rootstock trial area



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 can not be directly compared to data from grafted vines
  - Soil differences
  - Temperature gradient

Available Water Supply, 0 to 100 cm—Mesa County Area, Colorado
(Available water, 0 - 100 cm, area near WCRC-OM)



Different colors represent different soil types!
The bulk of the grafted vines are planted into a different soil type than own-rooted vines

1993 Chardonnay rootstock trial

- 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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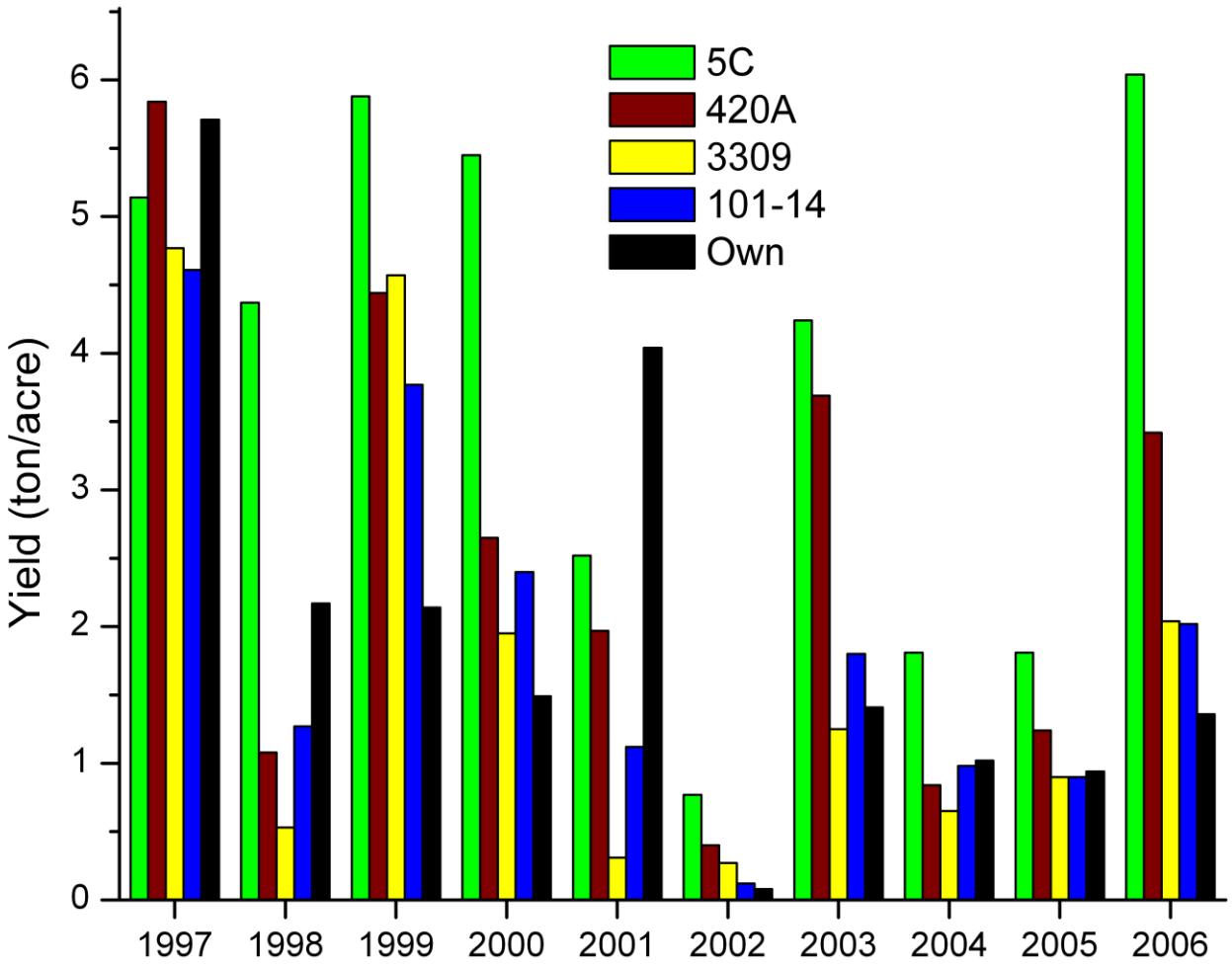
1993 Chardonnay rootstock trial



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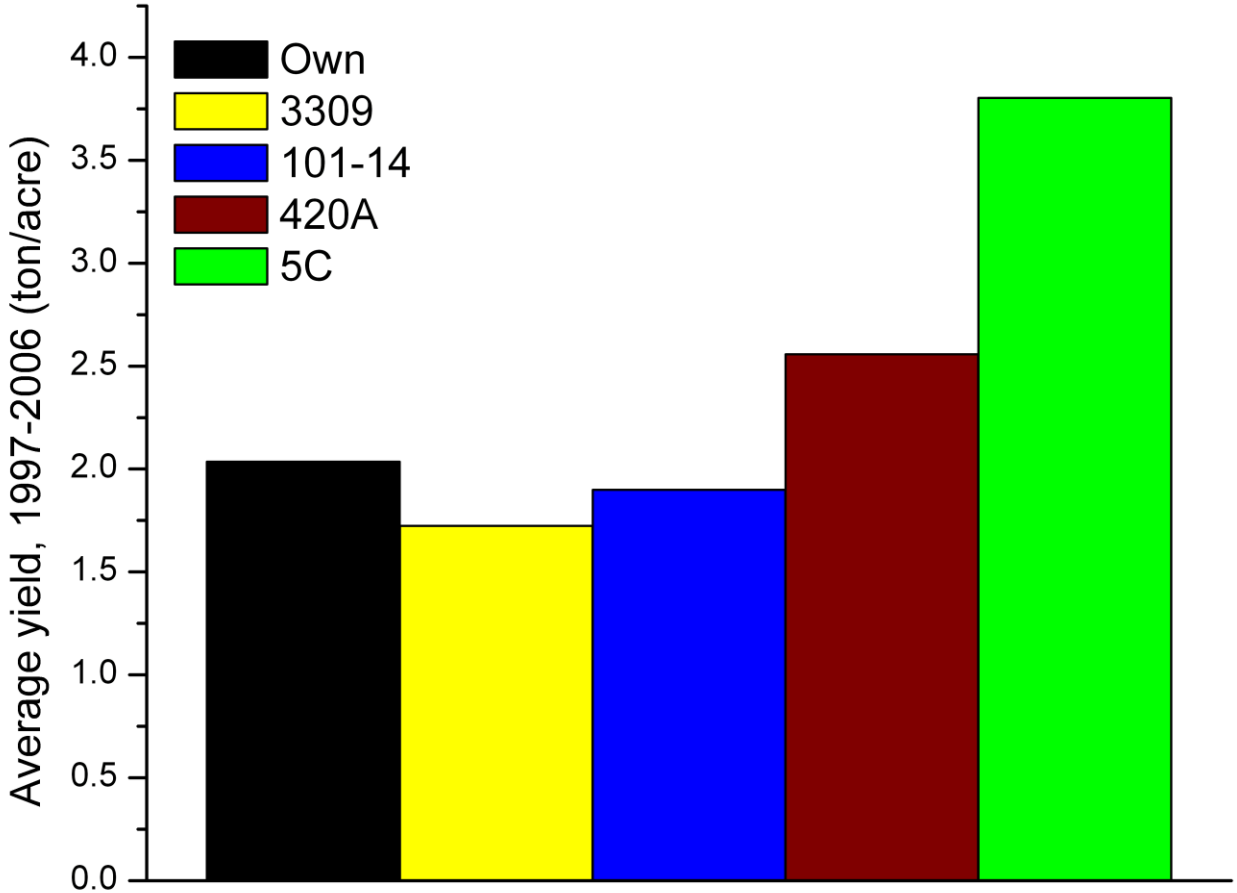
1993 Chardonnay rootstock trial, 10-year average yield



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

1993 Chardonnay rootstock trial

- 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

1993 Chardonnay rootstock trial

- 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:

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Questions?

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