Vineyard Mechanization at French Camp Vineyards

• Greg O’Quest
• Vineyard Manager
• French Camp Vineyards
FCV Background

- Purchased by Miller Family in 1968
- First 200 acres planted to own rooted vines in 1973
- Planted another 1100 acres in the 90’s
- Currently 1500 acres planted to 27 varieties
- Trellis Systems-
  - 970 Acres on 2 Ft. Lyre
  - 180 Acres on VSP
  - 350 Acres on High Wire Sprawl
- Provide fruit to over 35 wineries
- Take fruit in for our own internal programs
- Currently SIP and CAWG Certified
Why Mechanization at French Camp

- Due to FCV’s remote location it has always been difficult to find labor.

- To prepare for the eventual shortage of labor.

- Always looking for different ways to reduce production costs, especially labor.

- Mechanization allows certain cultural practices to be performed in a larger window than conventional farming.

- If shoot thinning and fruit thinning are not done at specific times, costs will increase.
Timeline of Mechanization at FCV

• 2002 began experiments with selected varieties
  • Chardonnay, Merlot, Syrah, Zinfandel
  • With no significant difference in fruit quality found at FCV.
• 2003 purchased two V-Mech trailers and farmed 500 acres.
• 2004 purchased a 3rd trailer and jumped to 800 acres.
• 2007 purchased a 4th trailer and increased acreage ranch wide.
### Hand Vs. Machine Farming Results

<table>
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<th>Variety</th>
<th>Treatment</th>
<th>Tons/Ac</th>
<th>Brix</th>
<th>pH</th>
<th>TA gm/L</th>
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Mechanical Pruning

- V-Mech Pruner head with sickle bars

- Two horizontal sickle bars and a vertical sickle bar are run on each side of the trailer.

- The bottom sickle bar runs above the cordon leaving to 2 to 3 buds/spur
Mechanical Pruning

• Minimal hand clean up is required behind the mechanical pruner.

• Pruning any missed canes back to two buds.

• Important to maintain the spur length and clean out dead wood to reduce M.O.G.

• This can be done on a yearly basis or every couple years.
Mechanical Pruning

- Leave behind about 10 buds/ft. after hand clean up.

- Important to count buds behind the hand clean up crews.

- Knowing how many buds are left gives you the ability to adjust your buds/ft. if needed.
Mechanical Pruning

- Leaving behind this amount allows FCV to efficiently maintain consistent yields from year to year.

- Having excess buds works as an insurance policy during frost season
Mechanical Shoot Thinning

- V-Mech Shoot thinner attachment
- Removes shoots and clusters
- Ideal window for shoot thinning is when shoots are 6 to 10 in. long
Mechanical Shoot Thinning

- Determine the amount of shoot thinning required
- Pre-bloom cluster counts and harvest cluster weights
Mechanical Shoot Thinning

- After shoot thinning, leave 30-40% more than the desired crop yield.

- Leave extra crop load at this time to act as an insurance policy.

- Bad weather during bloom could result in poor fruit set.
Mechanical Fruit Thinning

- V-Mech fruit thinner attachment
- Removes combination of clusters and berries at lag phase
- Uses fiberglass rods that are positioned underneath the cordon
Mechanical Fruit Thinning

- Post bloom yield estimates will determine the amount of fruit thinning needed.

- Depending on the yield estimates, a portion of the 30-40% left at shoot thinning may need to be removed.
Mechanical Fruit Thinning

• While fruit thinning, some fruit will be damaged.

• A damage factor will need to be added to the desired fruit load at harvest.

• The damage factor will change depending on variety and time of thinning.
Other Important factors

- Total savings of up to $500/ac. depending on the operation can be achieved.
  - More cost savings for shoot thinning and fruit thinning than pruning.

- A mature and uniform vineyard is best
  - Usually 5 years of age and older is suggested
  - A uniform site will require less data collection to be taken

- Historical data collection needed
  - Harvest cluster weights for shoot thinning
  - Harvest berry wt. for fruit thinning
Other Important factors (Cont.)

- A trellis system that can stand up to mechanization
  - T-posts are recommended for each vine.
- Have found that a bi-lateral high wire sprawl trellis system is ideal for mechanization
  - Allows the whole vine to be worked in one pass.
  - Has no cross-arms and no catch wire

- Appearance of the vines when shoot thinning and fruit thinning operations are completed
info@fcvyd.com