High Cordon Machine Pruned Trellis Comparison to Three Standard Systems in Lodi

65th Lodi Grape Day
7 February 2017

Paul Verdegaal
UC Farm Advisor
San Joaquin County
Balanced Vines
Purposes of Pruning

A. J. Winkler 1962

Establish and maintain vine form

Distribute bearing wood by capacity

Control crop load
Concerns of Pruning $4

Reality 2017

Lower Costs - Less Labor & Laws

High Production – High Quality

Disease Prevention
Viticultural Practices

Pruning $

Irrigation

Nutrients

Crop Load / Canopy Management
Crop Load / Canopy Management

Cluster Thin
Shoot Thin
Leaf Removal
Tipping
Trimming
Harvesting $
Considerations of Mechanization for Sustainability

• Disease
• Labor
  – Availability
  – Experience
• Regulations
  – Wage Laws
  – Benefits
  – Safety Laws
• Market Competition
• Grape Prices
Trunk Canker Diseases in Vineyards

- Eutypa Dieback *Eutypa lata* (& others?)
- Bot Canker *Botryosphaerai spp.*
- Esca/ Black Measles/Vine Decline/Petri Disease/ Black Goo (many names, complex of fungi)
  - *Phaeoacromonion spp.*, *Phaeomoniella spp*, *Togninia spp.*, etc.
- Phomopsis Dieback *Phomopsis viticola*
Standard Bilateral Cordon ‘T’

HCMP

Standard Bilateral Cordon ‘T’
Cane Pruned
HCMP System Design Factors

- Studded T posts 133
- 10 GA wire
- Spacing 7-8 ft x 10-11 ft
- Cordon Height 60 inches (minimum) to 72 inches
- Years 1-3 Vines shoot thinned & Cluster thinned (possibly)
- Year 1-4 Hand pruned
- Year 5+ Machine Hedged; 8 to 10 inch “box”
  - Hand touch up 3 to 5 cents per vine
- 50 to 100 HP tractor
PRUNING AND TRELLIS SYSTEM COMPARISON TRIAL
KAUTZ VINEYARDS
2016

LSD P = .05

PAUL VERDEGAAL
UCCE
SAN JOAQUIN COUNTY
PRUNING AND TRELLIS SYSTEM COMPARISON TRIAL
KAUTZ VINEYARDS
2016

<table>
<thead>
<tr>
<th></th>
<th>STANDARD BILATERAL</th>
<th>HDC QUAD</th>
<th>CANE PRUNED</th>
<th>HCMP</th>
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LSD P=.05

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PRUNING AND TRELLIS SYSTEM COMPARISON TRIAL
KAUTZ VINEYARDS

CLUSTERS/VINE

<table>
<thead>
<tr>
<th>Year</th>
<th>STANDARD BILATERAL</th>
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PAUL VERDEGAAL
UCCE
SAN JOAQUIN COUNTY
# Kautz Vineyard Juice Analysis

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9 October

1 October

14 October
First Harvest Yields
Kautz Vineyard

10 October 2013

2013 Tons per Acre

- Standard: 6.0
- HDC: 4.6
- Cane Pruned: 13.0
- HCMP: 6.9

° Brix
- 24.0
- 24.3
- 23.1
- 24.9
- nsd
2015 Kautz Trial TPA

- Standard: 12.0
- HDC: 14.8
- Cane Pruned: 13.7
- HCMP: 15.2

1 October
# Pruning Systems Comparison

**Kautz Vineyard**

## Accumulated Yield & Estimated Returns 2013 to 2016

<table>
<thead>
<tr>
<th>Pruning System</th>
<th>TPA</th>
<th>$ Return/Acre*</th>
<th>Cost/Acre</th>
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<td>Standard Bilateral Cordon</td>
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<tr>
<td>HCMP</td>
<td>51.8</td>
<td>36,260</td>
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$700/ton
Gallo Liberty Vineyard

Cordon Height 60 inches vs 42 inches
Liberty Gallo

• **HCMP Harvest Differential Days**
  - Pinot grigio +10 to 14 days
  - Chardonnay 0
  - Pinot noir -2 to 3
  - Merlot +14 to 16
  - Cabernet Sauvignon +7 to 10
Summary

• Vine Capacity Should Be Fully Utilized
• Balance of Production versus Growth
• Maximum Yield for Total Inputs
• Quality Wines at a Reasonable Price

• Some Varieties may not be adaptable or with caution
  – Cabernet sauvignon; Sauvignon blanc; Chardonnay; Syrah; Malbec
  – Merlot; Pinot noir; Viognier
  – Pinot grigio; Zinfandel
• More Input with Higher Yields
  – Water
  – N & K
• Scale of Operation or Custom Services required
• Capital Investment or Specialization of Services
Thanks to

- Joe Valente, Kautz Vineyards
- John Kautz Farms
- Ernie and Jeff Dosio, Pacific AgriLands, Inc.
- Gallo Vineyards
- Lodi Winegrape Commission LWC
- Lodi District Grape Growers Association LDGGA
Remember Our Military

The Land of the Free because the Home of the Brave
Winkler’s Principles

Pruning decreases vine capacity

Crop depresses vine capacity in following year(s)

Vine capacity varies with shoot number

Shoot vigor is inverse to shoot number and crop load

Vine fruitfulness varies (within limits) inversely with shoot vigor

Large shoot or arm can produce more than small one

and should carry more fruit buds

Vines can nourish and ripen a certain quantity of fruit;

its capacity is limited by its history and environment
Vegetative vs Reproductive

Crop: Prunings Ratio

3 – 5 “Coastal”
5 – 7 “Balanced”
7 – 10 Cash flow

Prunings / cordon 0.3 to 1.0 kg/m
0.6 to 1.0 lb/ft

Shoots per cordon length 1 / 5cm

50 to 75 % of clusters visible*