

TAILGATE TALK: High Cordon Trellising Trial

LODI WINEGRAPE COMMISSION • September 20th, 2017

Paul Verdegaal (UCCE), Joe Valente (Kautz Farms), & Keith Striegler (Gallo)

Reasons for Pruning

1. Establish and maintain form of the vine
2. Distribute the bearing wood
3. Regulate crop load

Cost vs Benefit

PROS: Higher yields, less labor, less canker disease

CONS: Capital investment, maintenance, higher inputs, greater sour rot risk(?)

Influencing Factors:

- Regulations
- Labor
- Inflation (Fiscal & Monetary Policy)
- Taxes
- Market demand
- Grape variety

High Cordon, Machine Pruned (HCMP)

Field Trials

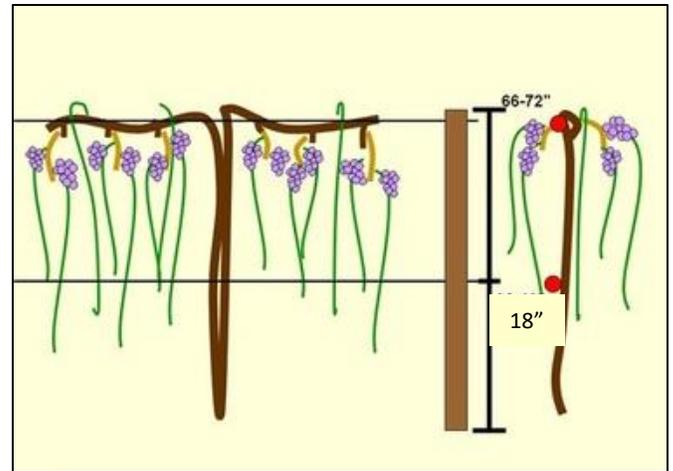
Kautz Farms *YOU ARE HERE TODAY*

Established: 2011
Variety: Cabernet Sauvignon 337
Rootstock: O39-16
Soil: Acampo sandy loam
Irrigation: Drip
Spacing: 6 x 10 ft

Gallo Liberty Vineyard

Established: 2009
Varieties: Cabernet Sauvignon, Merlot, Chardonnay, Pinot grigio, Pinot noir (Syrah & Sauvignon blanc)
Rootstock: 1103 Paulsen
Soil: Tokay fine sandy loam
Irrigation: Drip
Spacing: 7 x 11 ft

Example of High Cordon Trellising:



Source: <https://go.dmac.edu/programs/viticulture>

Parameters of High Cordon, Machine Pruned Trellising Systems

- 133 Studded T posts every vine
- 10 GA wire
- Spacing 7-8 ft x 10-11 ft
- Cordon height 60 in (minimum) to 72 in
- Vines trained years 1-3 with shoot thinning (cluster thinning may be needed)
- Hand pruned year 4
- Machine pruned year 5 (8-10 inch “box”); Hand touch-up: 3-5 cents per vine
- 50 to 100 HP tractor for hedger/pruner

The Future?

- Larger scale of operations
- Mechanization
- Different variety mix or “new” varieties (e.g. Andy Walker hybrids)
- Small/boutique wineries for direct marketing and/or tourism
 - Traditional varieties, Traditional production; Premium prices
- NOT climate change/global warming/extreme weather

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Kautz Farms Replicated Trellis Trial Juice Data:

1. High Cordon optimized for machine pruning ("HCMP" Row 8)

stats	9-18-2017:	24.3°	6.9 g/L	pH=3.66	
	9-16-2016:	23.4°	6.7 g/L	pH=3.51	
Harvest 2016:		24.9°	6.7 g/L	pH=3.43	15.5 tons/acre
Harvest 2015:		23.6°	5.7 g/L	pH=3.77	15.2 tons/acre
Harvest 2014:		26.7°	6.7 g/L	pH=3.67	14.1 tons/acre

2. Horizontally divided canopy, quad cordon, spur pruned ("HDC Quad" Rows 5 & 17)

stats	9-18-2017:	24.0°	6.0 g/L	pH=3.52	
	9-16-2016:	21.8°	6.5 g/L	pH=3.45	
Harvest 2016:		25.3°	6.4 g/L	pH=3.46	15.3 tons/acre
Harvest 2015:		25.5°	4.9 g/L	pH=3.85	14.8 tons/acre
Harvest 2014:		24.8°	6.4 g/L	pH=3.57	15.0 tons/acre

3. Horizontally divided canopy, cane pruned ("Cane Pruned" Row 11)

stats	9-18-2017:	23.4°	6.3 g/L	pH=3.42	
	9-16-2016:	21.4°	6.3 g/L	pH=3.39	
Harvest 2016:		24.5°	6.6 g/L	pH=3.36	13.7 tons/acre
Harvest 2015:		22.8°	5.5 g/L	pH=3.67	13.7 tons/acre
Harvest 2014:		25.3°	6.6 g/L	pH=3.53	13.0 tons/acre

4. Bilateral Cordon, T-top trellis, spur pruned ("Standard" Rows 2 & 14)

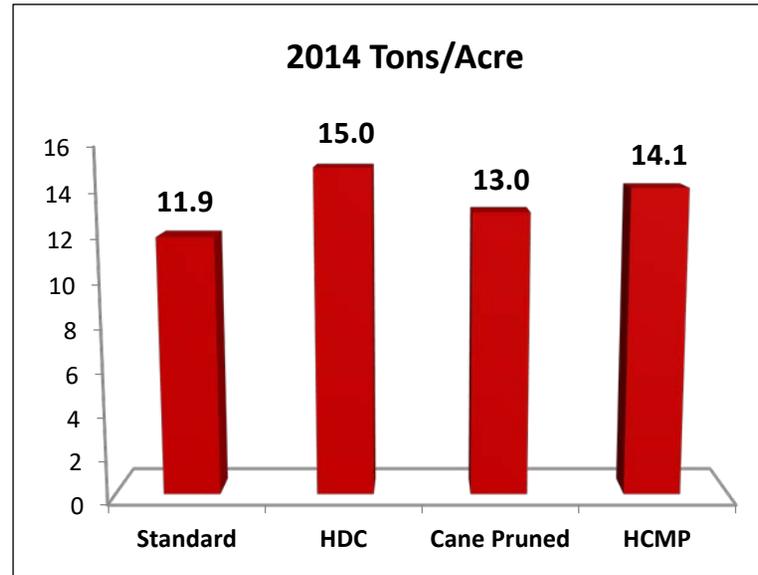
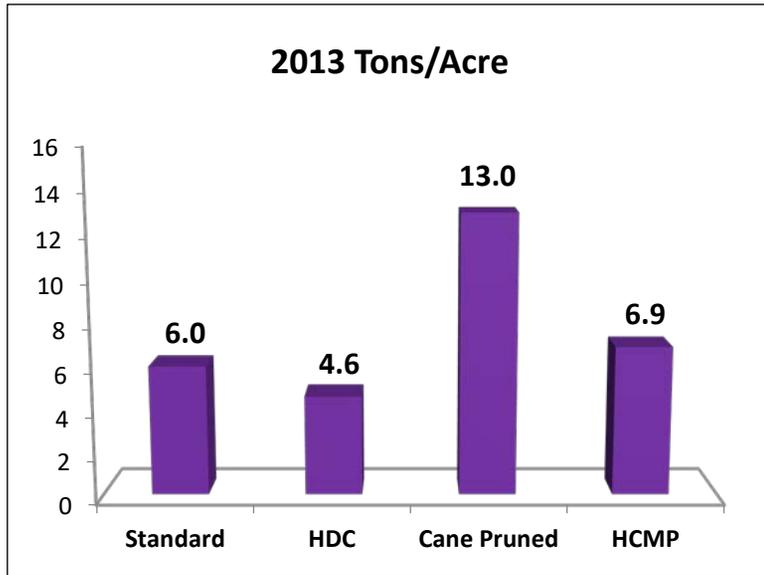
stats	9-18-2017:	23.4°	5.7 g/L	pH=3.53	
	9-16-2016:	22.3°	6.4 g/L	pH=3.44	
Harvest 2016:		25.1°	6.5 g/L	pH=3.46	10.2 tons/acre
Harvest 2015:		25.5°	5.1 g/L	pH=3.78	12.0 tons/acre
Harvest 2014:		24.6°	6.5 g/L	pH=3.57	11.9 tons/acre

Notes:

TAILGATE TALK: High Cordon Trellising Trial (established in 2011)

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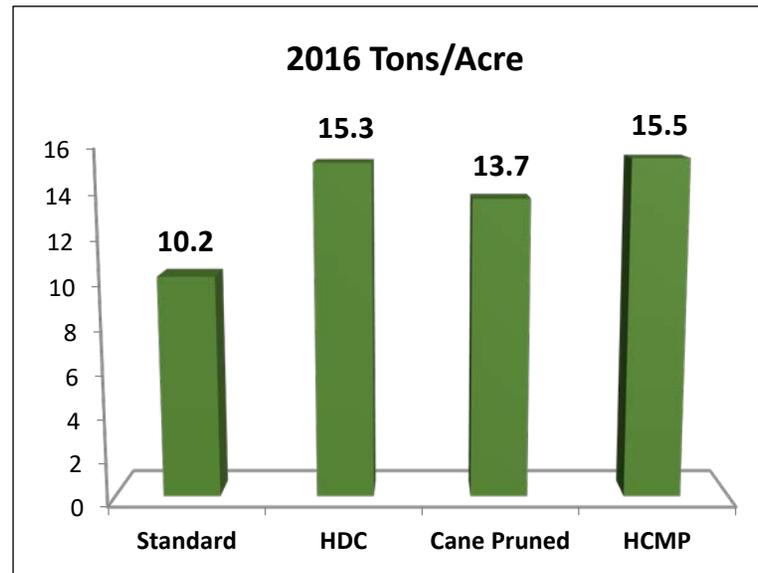
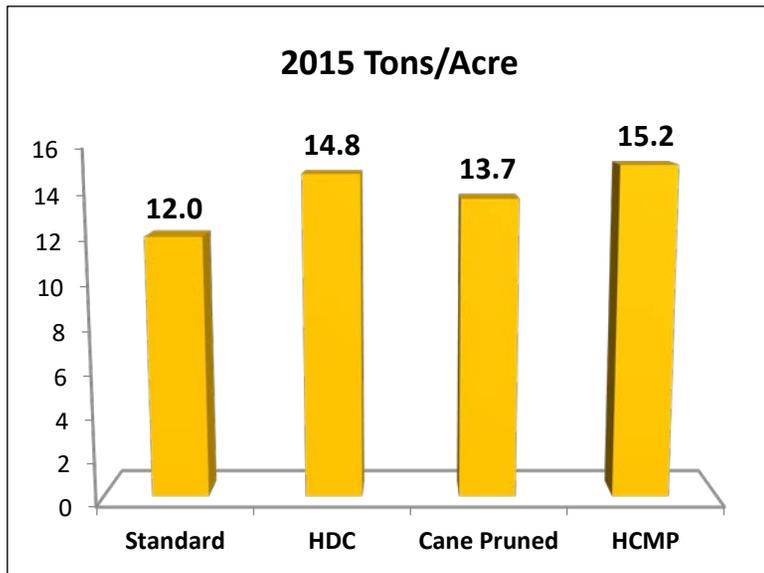
LEGEND

Standard = Bilateral Cordon, Spur Pruned

HDC = Horizontally Divided Canopy, Quad cordon, Spur Pruned

Cane Pruned = Horizontally Divided Canopy, Cane Pruned

HCMP = High Cordon, Machine Pruned

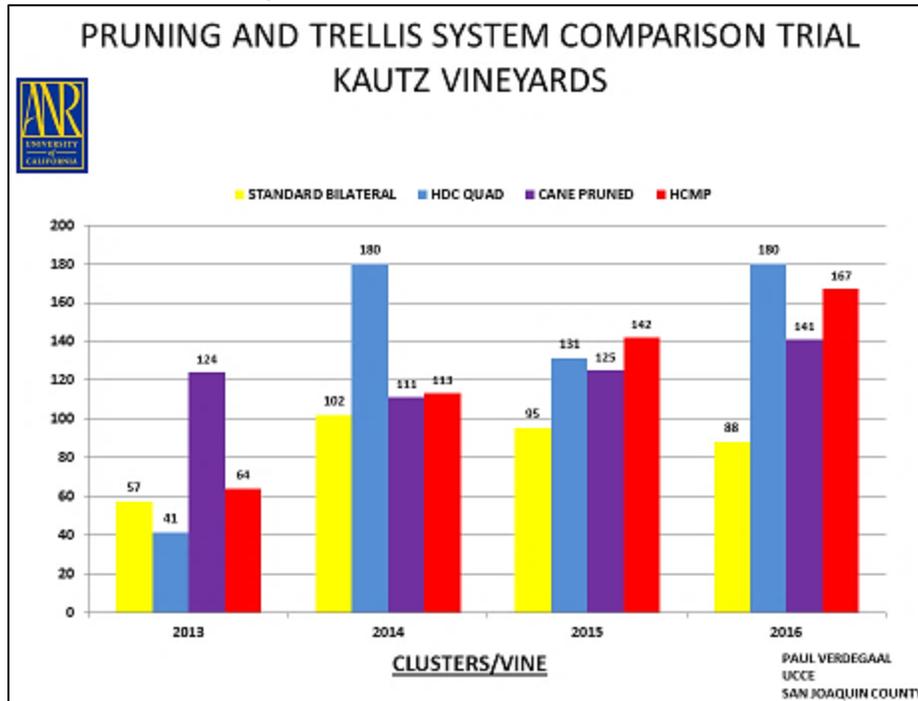


Totals. Comparing the 2016 yield in tons per acre to the previous three harvests, it appears that although the HDC & HCMP treatments have caught up to the Cane Pruned system in yield, the Cane Pruned vines are still slightly ahead in cumulative yield for the first three harvests with a total of 39.7 tons vs 36.3 tons for the HCMP and 34.4 tons for the HDC, while the Standard bilateral is lowest at 29.9 tons for three years.

Fruit Composition.

Fruit composition differences are relatively small between systems and all are well within desirable ranges of harvest ripeness. Cluster numbers show the biggest differences; directly related to yields. Cluster weights are significantly different, but to a lesser extent. Another harvest or two may be more indicative of long term expectations, after a second year of recovery from the recent drought. Ultimately wine lots would be instructive. Fruit quality in this trial and others, along with field experience odes indicate HCMP vines can produce as good if not better fruit at somewhat higher yields; for much less labor. But not all varieties are equally adapted to HCMP and require extra attention or labor.

Number of clusters per vine, 2013-2016.



2013

Standard = 57 clusters/vine
HDC Quad = 41 clusters/vine
Cane Pruned = 124 clusters/vine
HCMP = 64 clusters/vine

2014

Standard = 102 clusters/vine
HDC Quad = 180 clusters/vine
Cane Pruned = 111 clusters/vine
HCMP = 113 clusters/vine

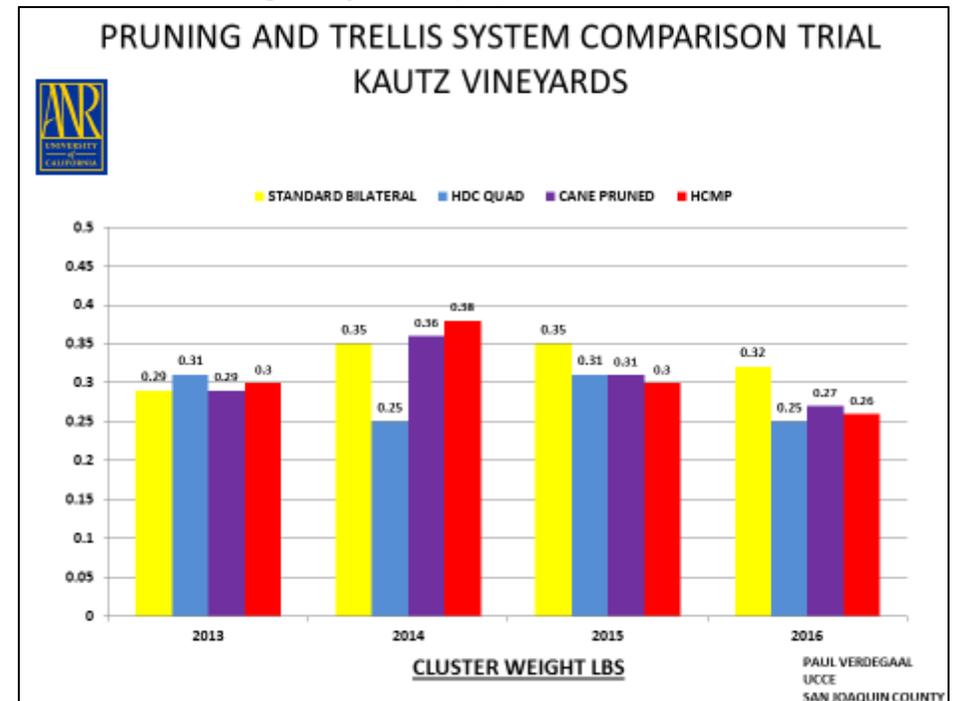
2015

Standard = 95 clusters/vine
HDC Quad = 131 clusters/vine
Cane Pruned = 125 clusters/vine
HCMP = 142 clusters/vine

2016

Standard = 88 clusters/vine
HDC Quad = 180 clusters/vine
Cane Pruned = 141 clusters/vine
HCMP = 167 clusters/vine

Cluster weight in pounds (lbs), 2013-2016.



2013

Standard = 0.29 lbs/cluster
HDC Quad = 0.31 lbs/cluster
Cane Pruned = 0.29 lbs/cluster
HCMP = 0.30 lbs/cluster

2014

Standard = 0.35 lbs/cluster
HDC Quad = 0.25 lbs/cluster
Cane Pruned = 0.36 lbs/cluster
HCMP = 0.38 lbs/cluster

2015

Standard = 0.35 lbs/cluster
HDC Quad = 0.31 lbs/cluster
Cane Pruned = 0.31 lbs/cluster
HCMP = 0.30 lbs/cluster

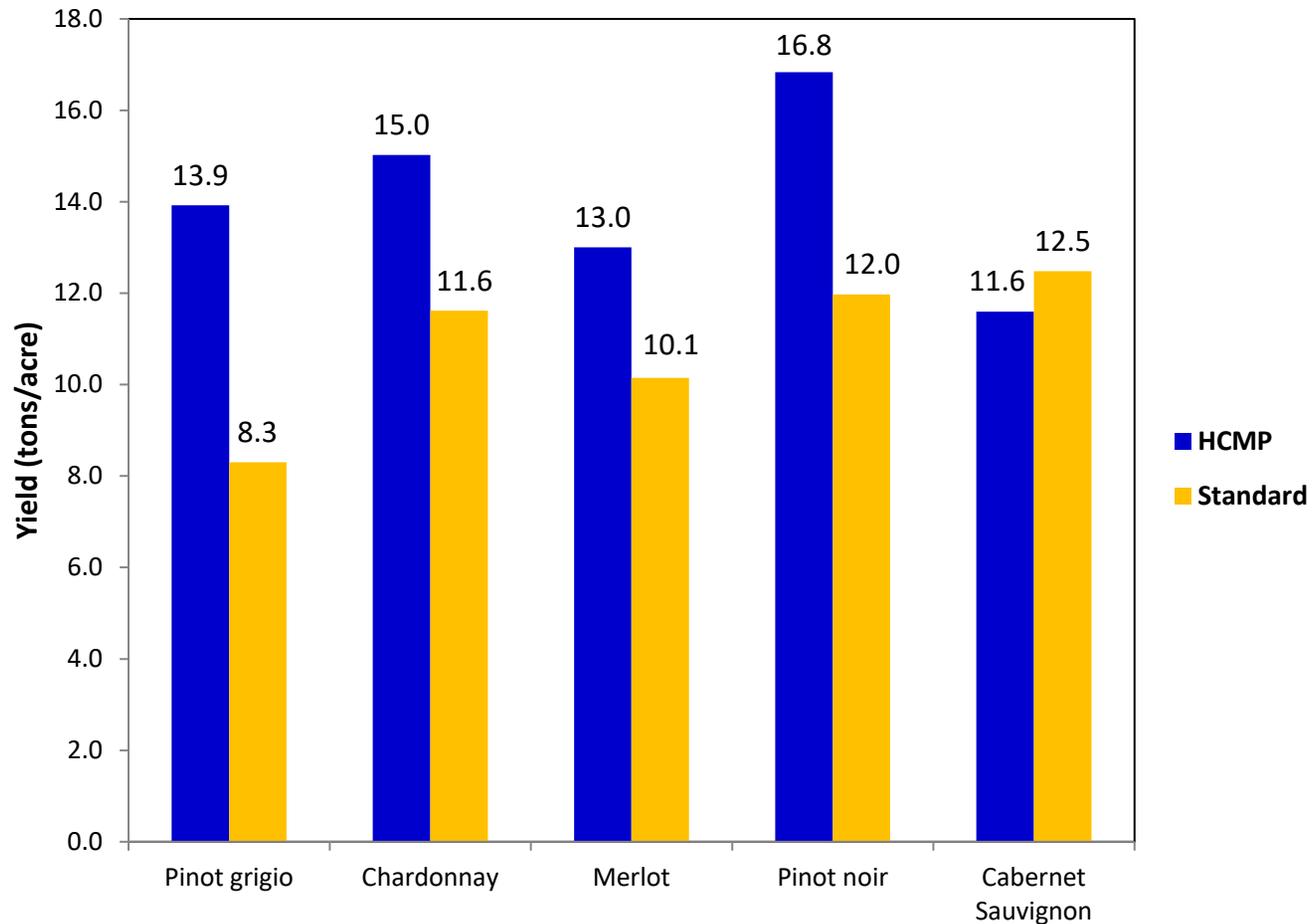
2016

Standard = 0.32 lbs/cluster
HDC Quad = 0.25 lbs/cluster
Cane Pruned = 0.27 lbs/cluster
HCMP = 0.26 lbs/cluster

Gallo Liberty Vineyard Trellising Trial (established in 2009)

1103 Paulsen rootstock • Tokay fine sandy loam • 7 x 11 ft • Drip irrigation (2 at 0.5 gph emitters/vine) • Paul Verdegaal, UC Farm Advisor

Liberty Trellis Comparison 2016: YIELD



Gallo Liberty Vineyard HCMP Harvest Differential Days

Pinot grigio	+10 to 14 days
Chardonnay	0
Pinot noir	-2 to 3 days
Merlot	+14 to 16 days
Cab Sauv	+7 to 10 days

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