Malbec Set Enhancement

Lodi 2006

University of California

Cooperative Extension

Sustainable Viticulture

Definition-

"A sustainable agriculture is one that, over the long term, enhances environmental quality and the resource base on which agriculture depends; provides for basic human food and fiber needs; is economically viable; and enhances the quality of life for farmers and society as a whole."

Practices and materials that are
Environmentally Acceptable
Economically Viable
Socially Desirable

Sustainable Viticulture

Alternate Definition-

Income is more than Outgo over the long haul.
(Yields that are acceptable and consistent)

Bloom and Set


Malbec

Factors Affecting Set

- Weather
- Variety
- Rootstock
- Soil
- Trellis System
- Nutrients
- Crop Load
- Water Availability
- Disease

Variety/Rootstock

- Vegetative Vigor
- Productivity
  - Cluster Number
  - Flower Set
  - Berry Development
- Growth Period
- Physiological Balance
  - Carbohydrate, Nitrogen, Micro-nutrients, and Plant hormones

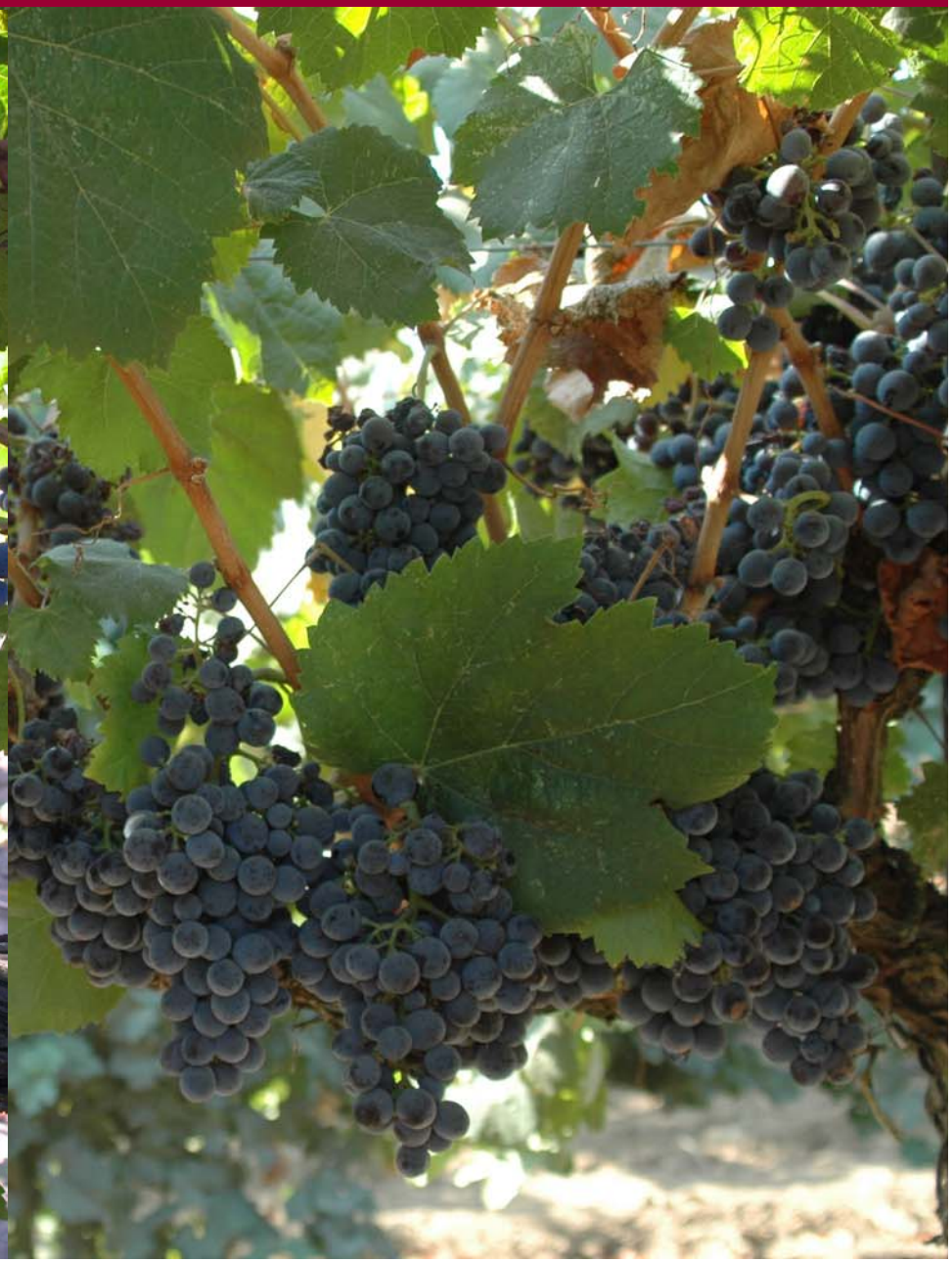
Zinfandel


Tempranillo


Primitivo 2005


Primitivo 2006

Malbec 2003 2006




Malbec FPS 09


Malbec 09/Freedom

Weather

- Temperature (average)
  - 65 ˚ to 70˚ F

- Light Intensity
- Relative Humidity (anthers & pollen)
- Rain (pollen)

Schioppetino 2006

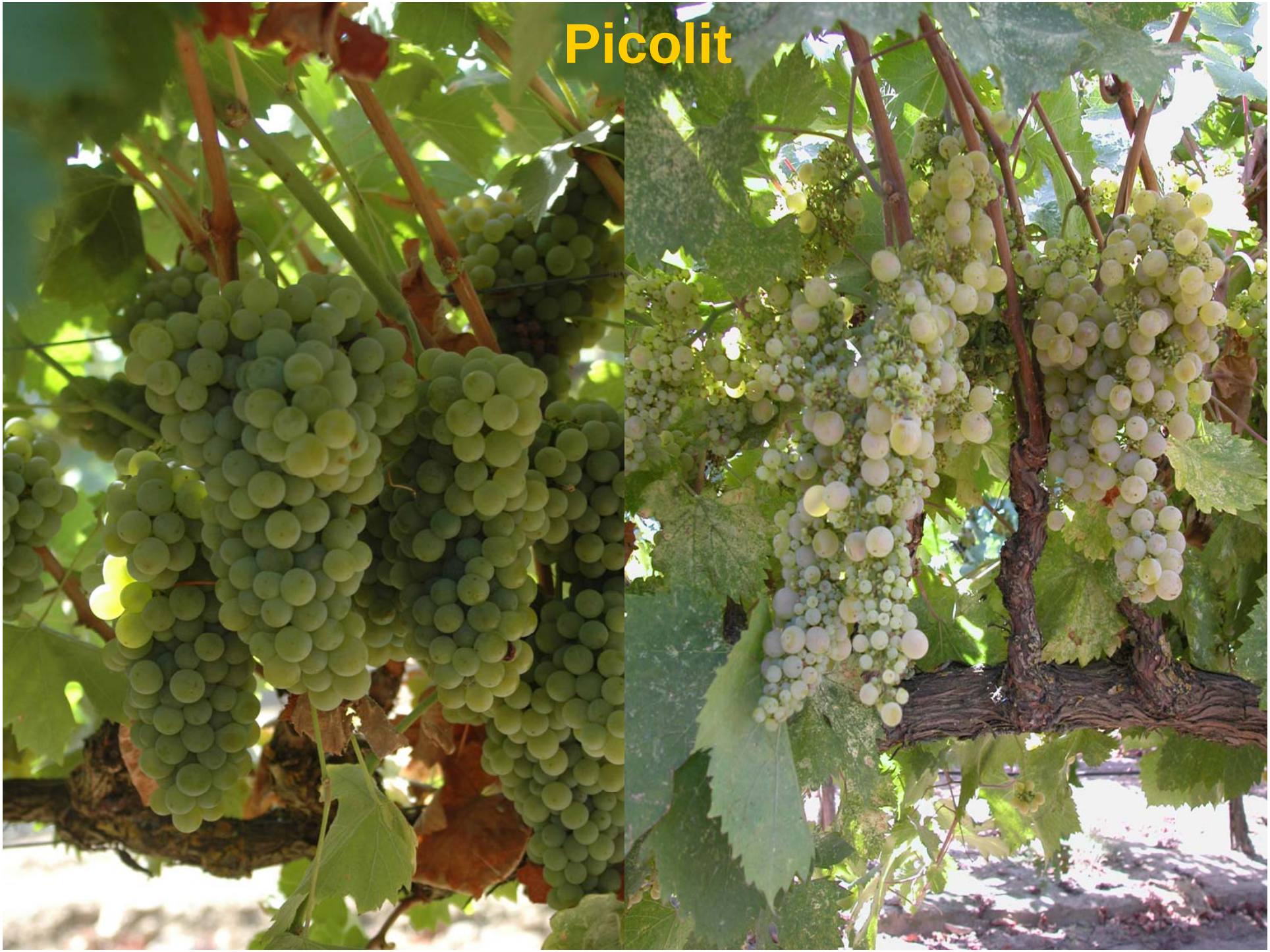

Schioppetino
2005 & 2003

Montepulciano 2006

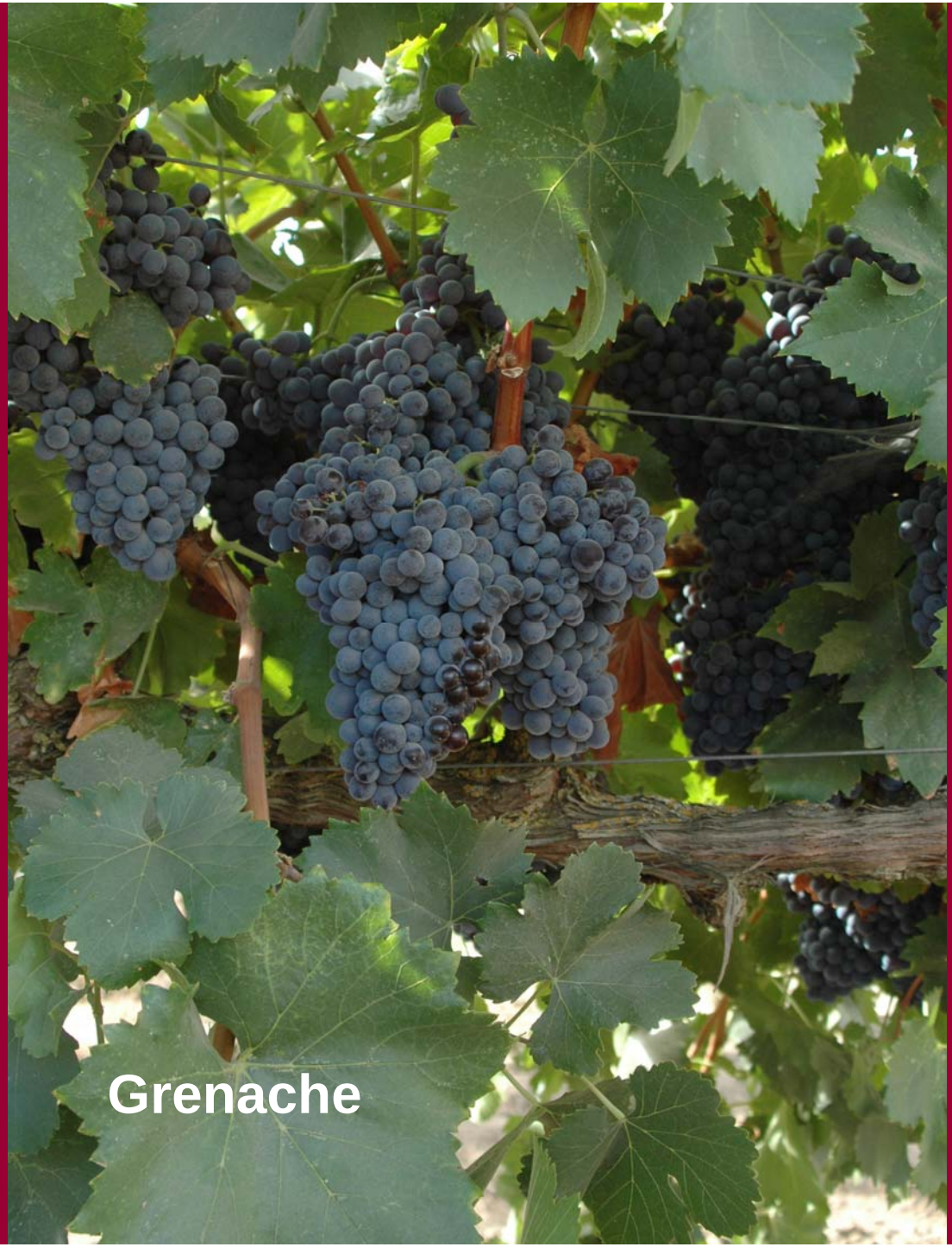
Montepulciano 2006

Picolit 2006 2003

Picolit



Grenache 2003


Grenache

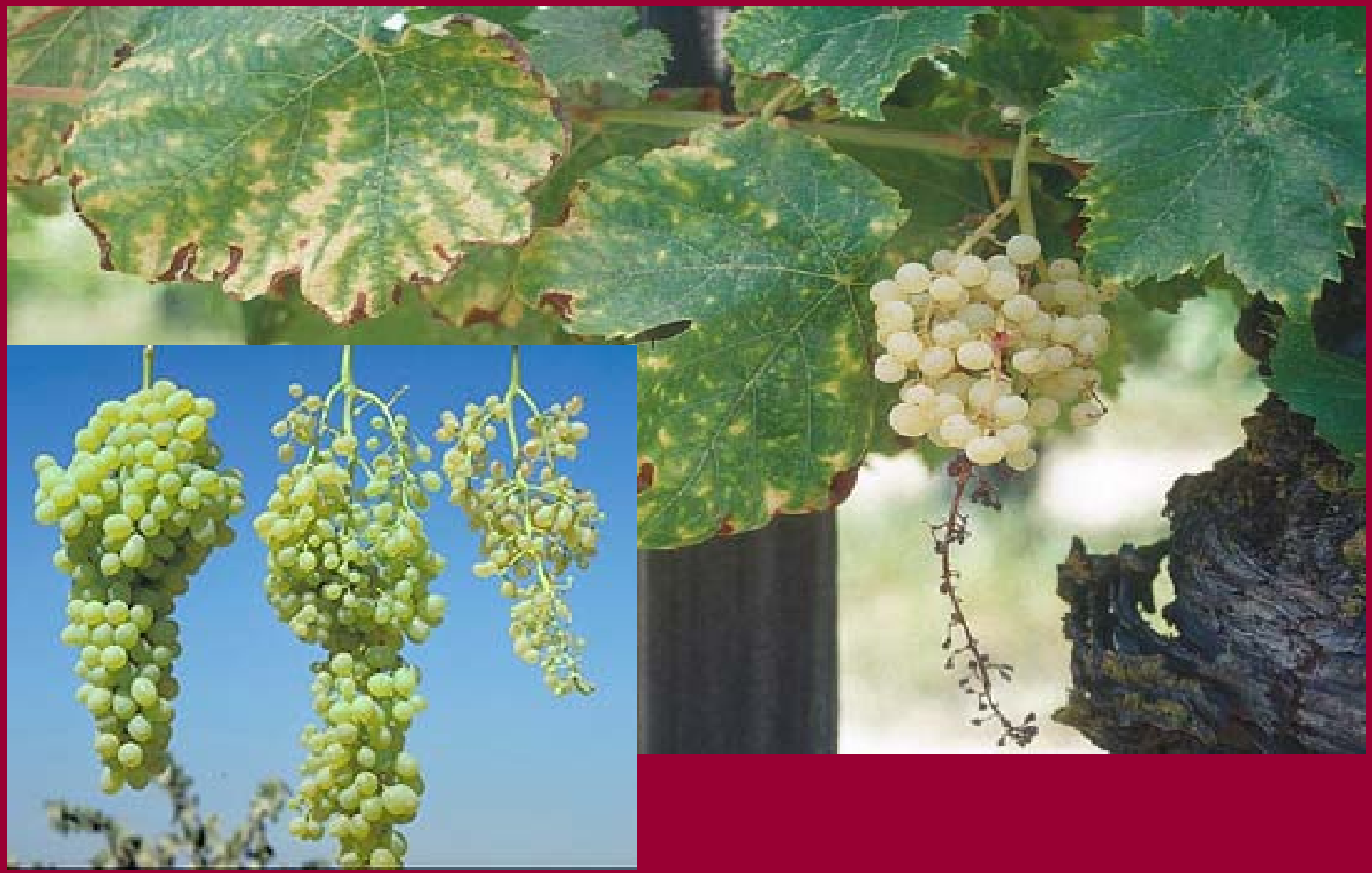
Soil – Water Availability - Nutrients

- Soil (indirect)
  - Depth
  - Texture
- Water available (Liberty Malbec)
- Nutrients
  - Macro
  - Micro

Present versus Applied

Excess versus deficiency

Micro-Nutrients




Boron Deficiency

Merlot and Symphony


Merlot 2005


Merlot 2006

Trellis System – Crop Load

- Bud Load
- Crop Load
- Openness of Fruit Zone
- Shoot Orientation
- Competition (spacing)

Malbec	Cabernet Sauvignon	Zinfandel
Grenache	Sauvignon blanc	Chardonnay
Merlot	Syrah	
Symphony		

Merlot and Malbec

Primitivo

Plavac mali

Disease

- Grape Fan Leaf Virus
- Grapevine Yellow Vein Virus

Factors Affecting Set

- **Variety**

- **Weather**
- **Soil**
- **Disease**

- **Rootstock**
- **Trellis System**

- **Crop Load**
- **Water Availability**
- **Nutrients**

Vineyard Site

- **Sub-appellation: Jahant**
- **Soil: San Joaquin loam**
- **Planted: 1998**
- **Clone: Malbec Opus One**
- **Rootstock: SO 4**
- **Trellis: Vertical Shoot Position**
- **Spacing: 9 x 8 feet** (2.75m x 2.44m)
- **Irrigation: Above ground drip**

Treatments

- **Shoot Tipping** — **Removal of 3 to 4 Inches**
  Early Bloom (May 18)
  Late Bloom (May 26)
- **Prestige** — **2** & **4 grams A.I. /acre**
  May 18
- **Acadian** — **3 pints / acre 5X**
  May 18 (1% bloom)
  May 26 (Full bloom)
  June 8 (pea size)
  July 7 (veraison)
  July 27 (full color)

Before Shoot Tipping


Shoot Tipped


Shoot Tipping 18 May 2006

Harvest 2006 October 7

Malbec Set Enhancement

Harvest Yield 2006

	Pounds Per vine	Clusters Number	Cluster Wt. lbs	Berry Wt. grams	TPA
Shoot Tipping Early Bloom	32.6	90	0.36	1.63	9.9
Shoot Tipping Late Bloom	33.6	91	0.37	1.59	10.2
Prestige 2 g/Acre	36.5	89	0.41	1.58	11.1
Prestige 4 g/Acre	32.5	93	0.35	1.61	9.8
Acadian	31.0	85	0.36	1.61	9.4
Control	32.1	93	0.35	1.64	9.7
	NSD	NSD	NSD	NSD	NSD

P = 0.05% confidence level
Early Bloom = Approximately 1 - 5% 19 May
Late Bloom = Approximately > 75% 23 May

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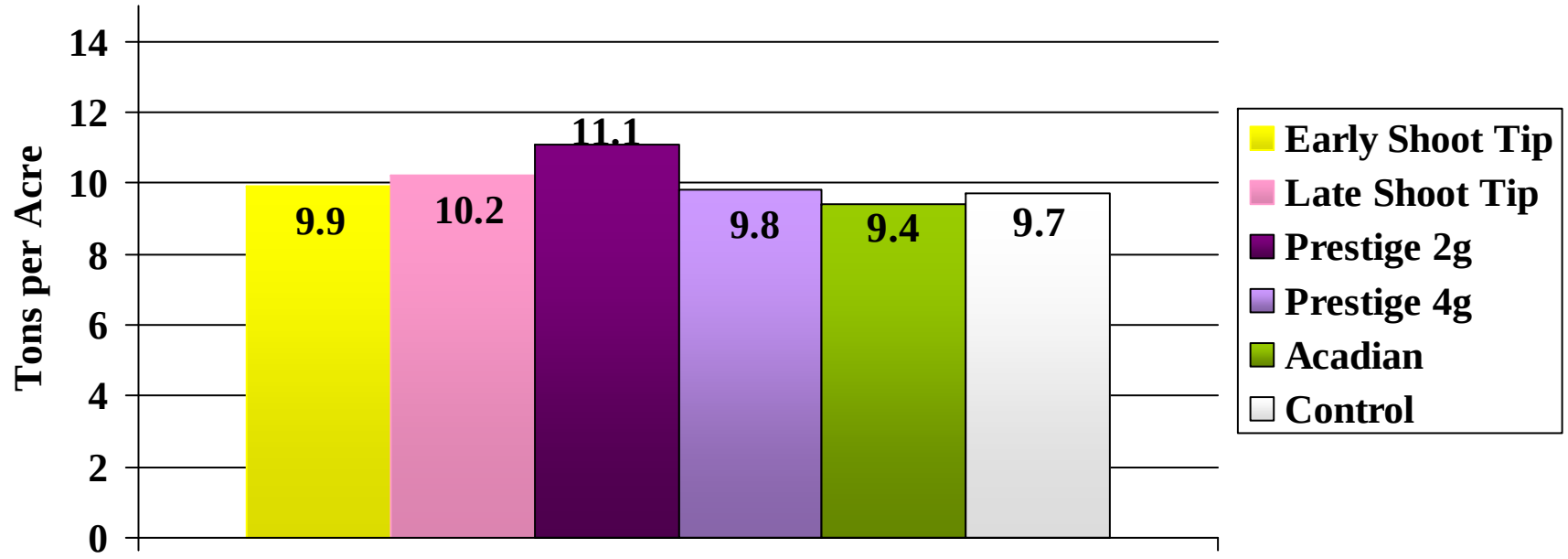
Lodi-Jahant
2006

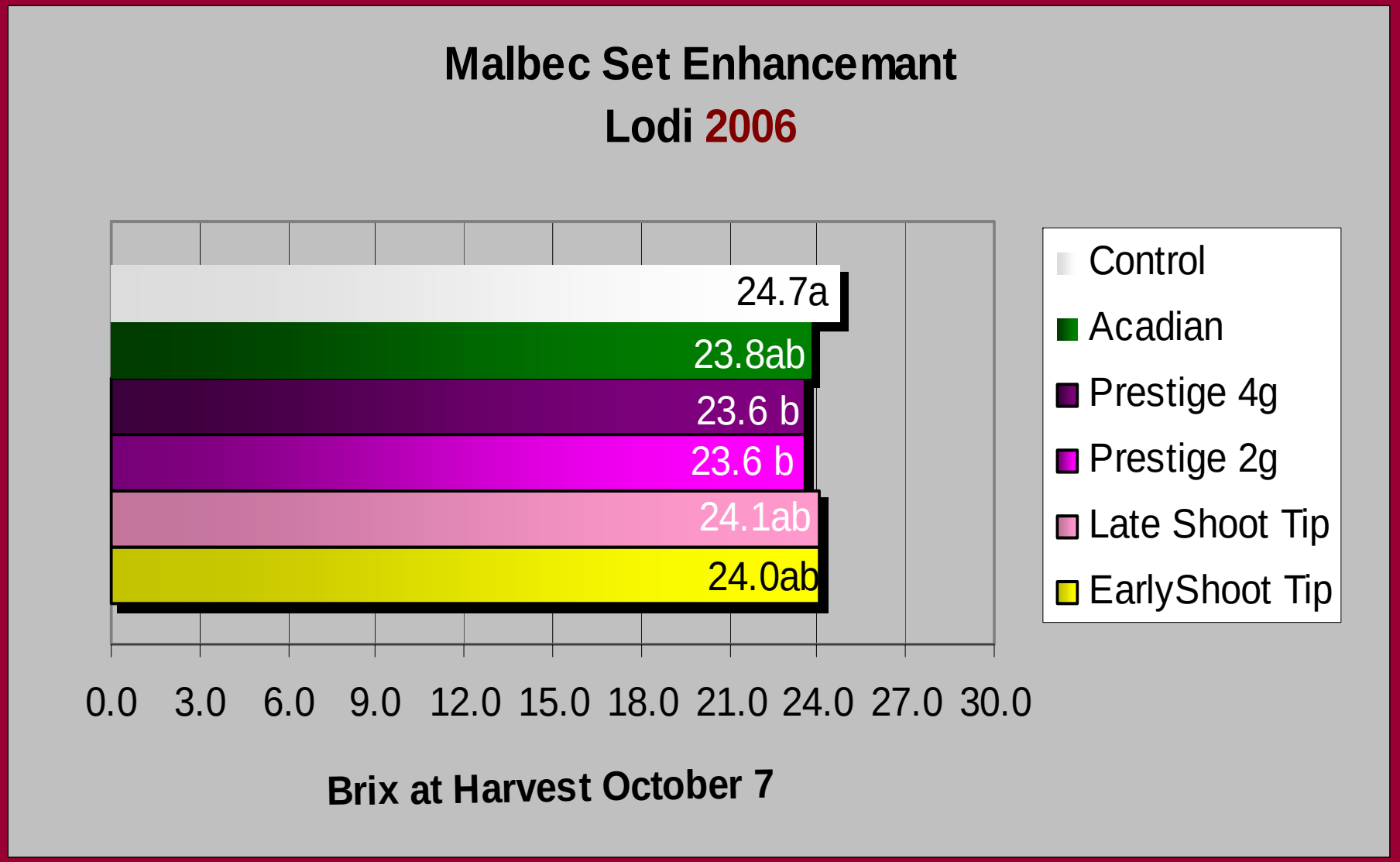


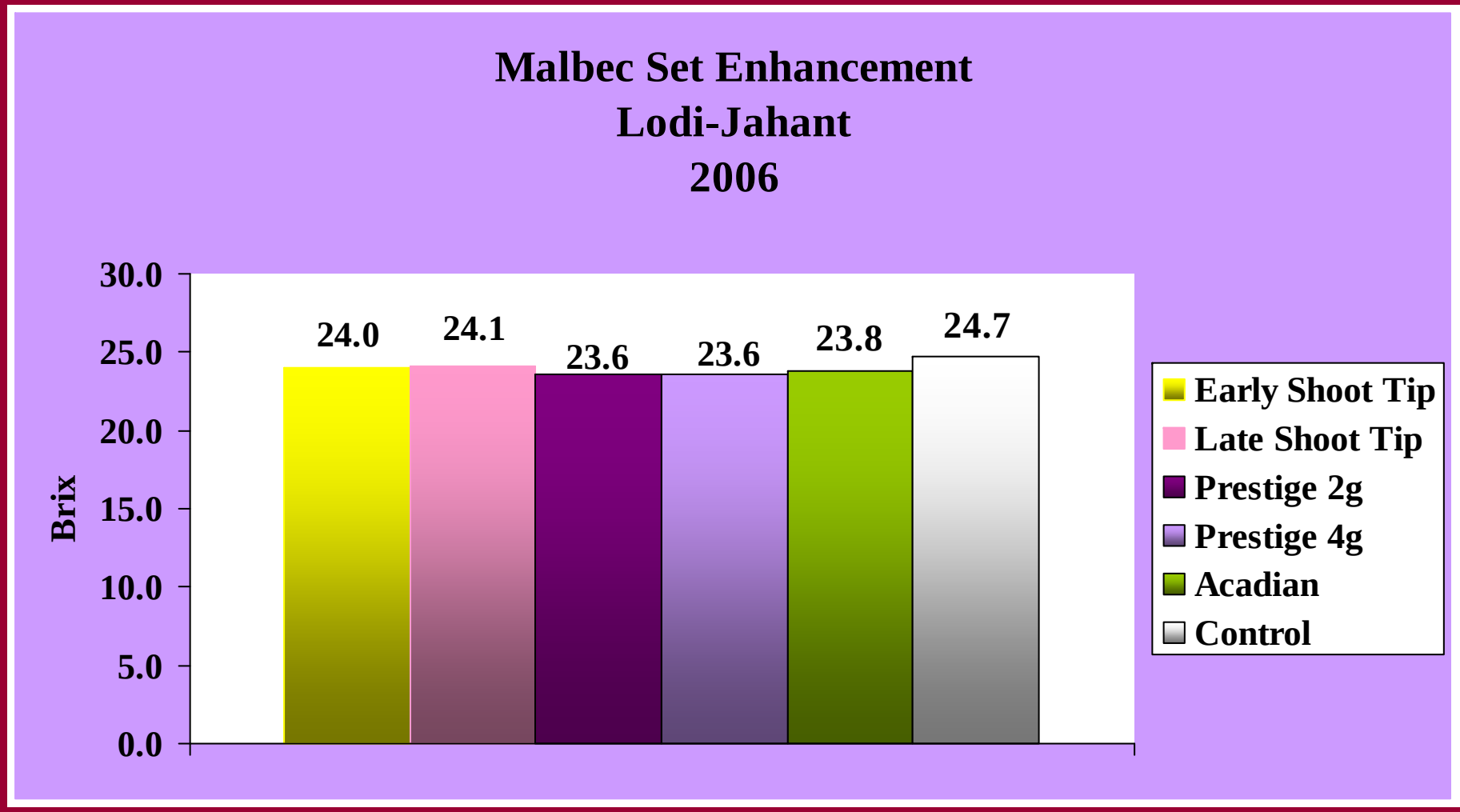
Juice Analysis

7 October 2006

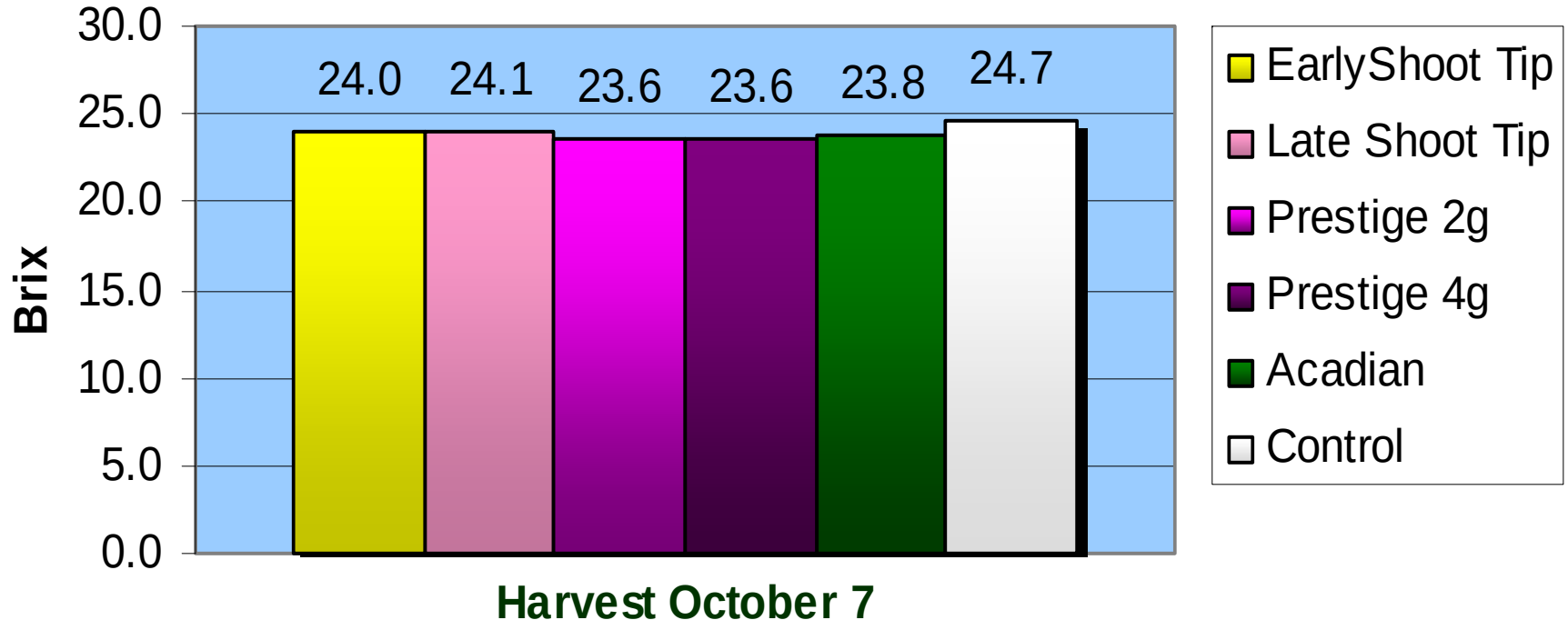
	Brix	T.A. g/L	pH
Shoot Tipping Early	24.0 ab	3.8	4.02
Shoot Tipping Late	24.1 ab	3.8	3.92
Prestige 2 g	23.6 b	3.7	3.82
Prestige 4 g	23.6 b	3.7	3.80
Acadian	23.8 b	3.8	3.72
Control	24.7 a	3.8	3.63
		NSD	NSD

P = 5%


Malbec Set Enhancemant
Lodi 2006
24.7a
23.8ab
23.6 b
23.6 b
24.1ab
24.0ab
Control
Acadian
Prestige 4g
Prestige 2g
Late Shoot Tip
EarlyShoot Tip
0.0
3.0
6.0
9.0
12.0
15.0
18.0
21.0
24.0
27.0
30.0
Brix at Harvest October 7


Malbec Set Enhancement
Lodi-Jahant
2006
Brix
30.0
25.0
20.0
15.0
10.0
5.0
0.0
24.0
24.1
23.6
23.6
23.8
24.7
Early Shoot Tip
Late Shoot Tip
Prestige 2g
Prestige 4g
Acadian
Control

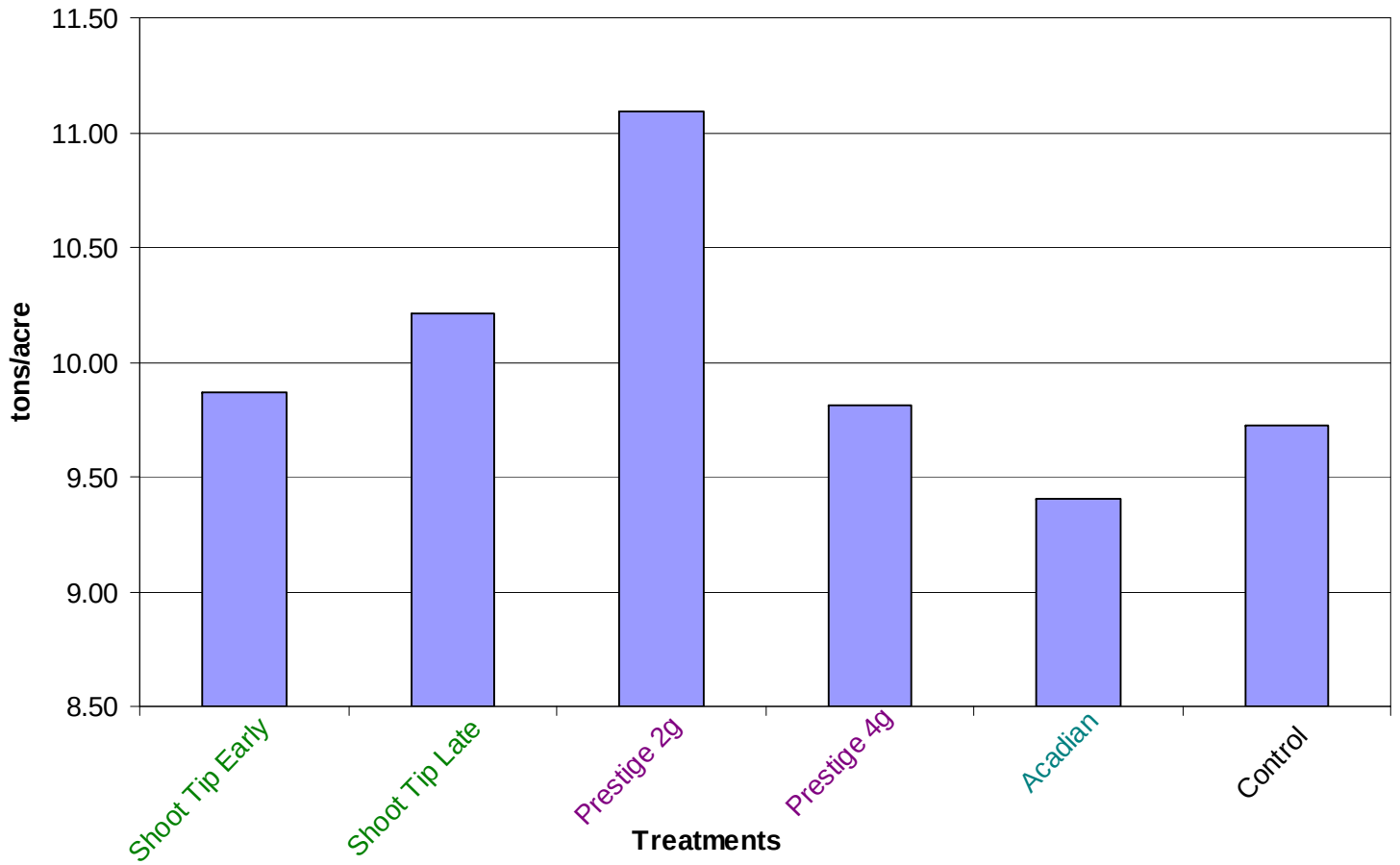
Malbec Set Enhancemant
Lodi 2006



Malbec Set Enhancement

2006

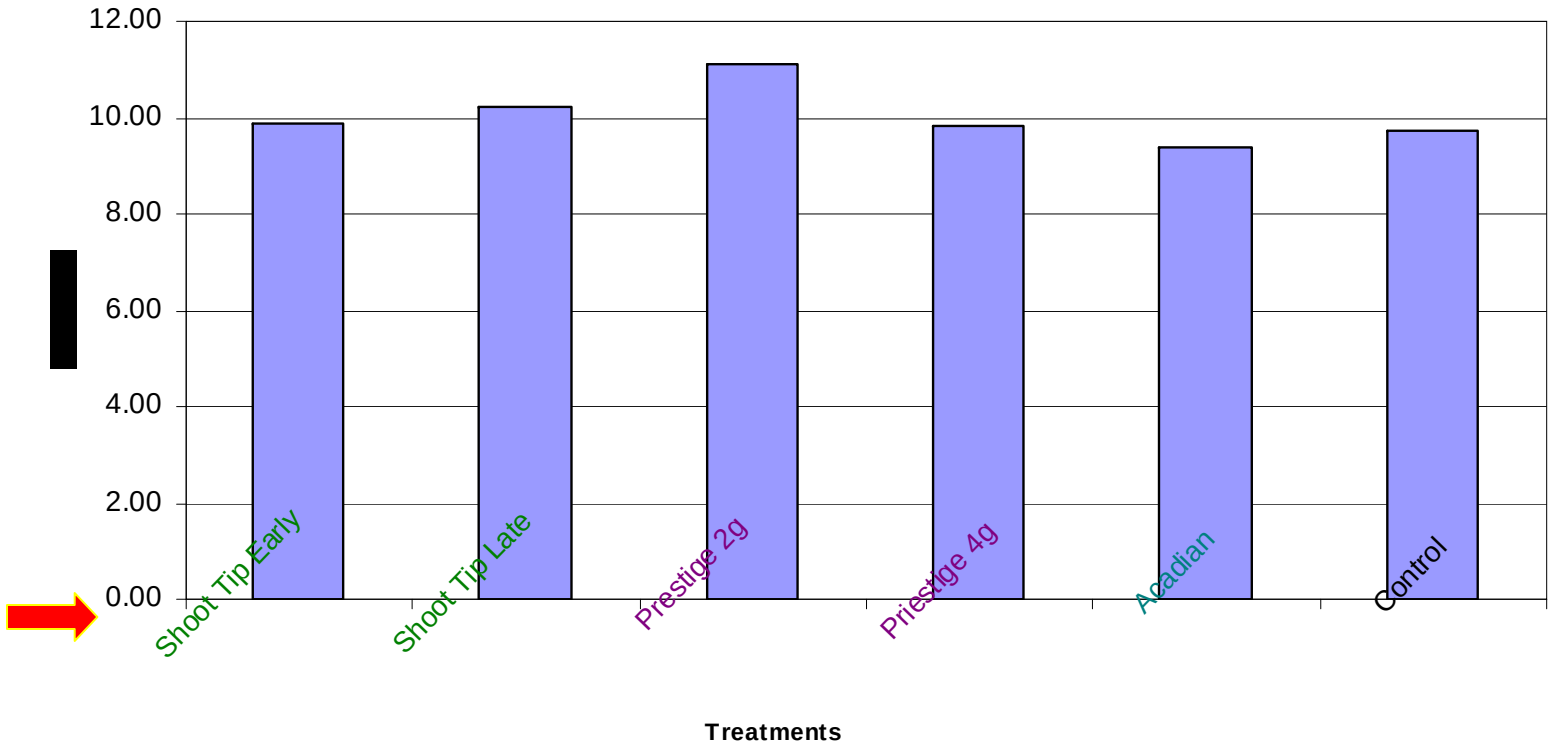
Yield per Acre



Malbec Set Enhancment

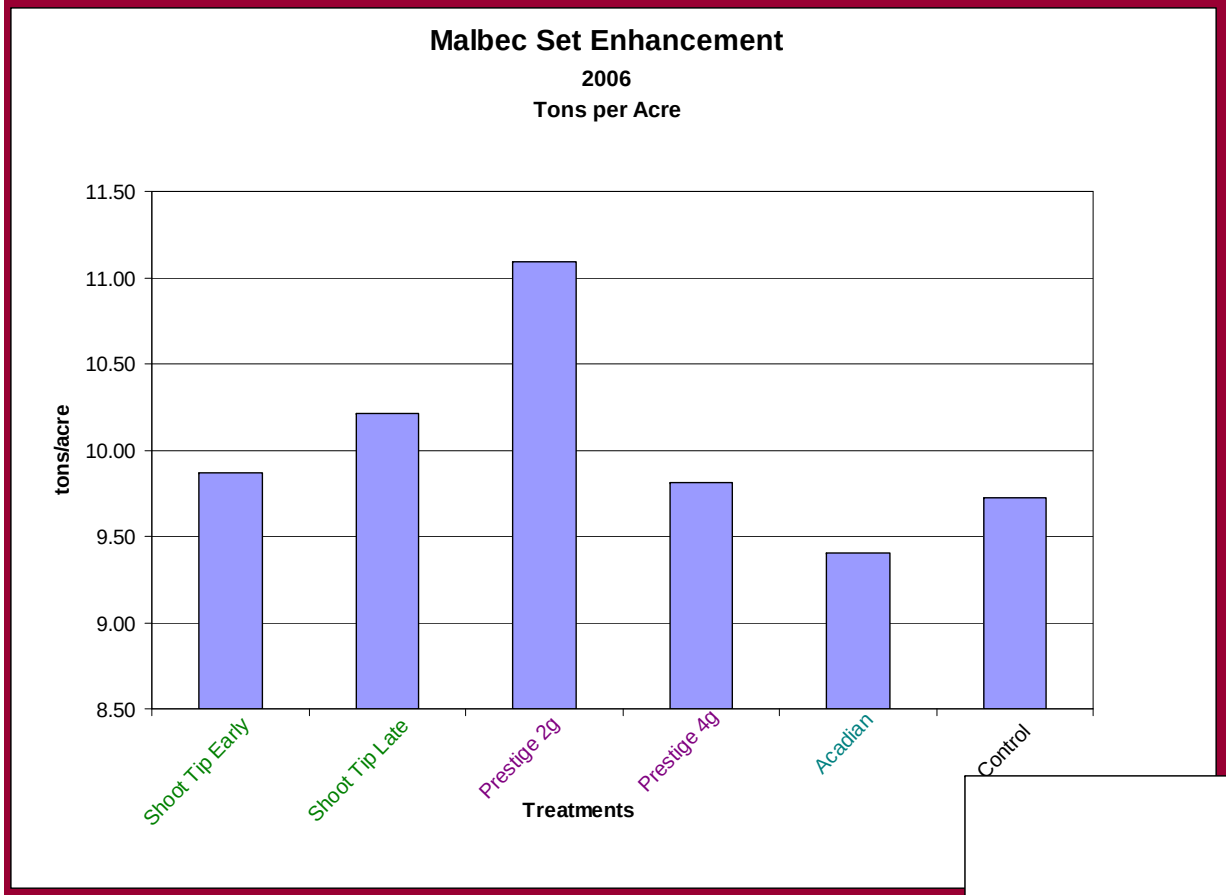
2006

Yield per Acre

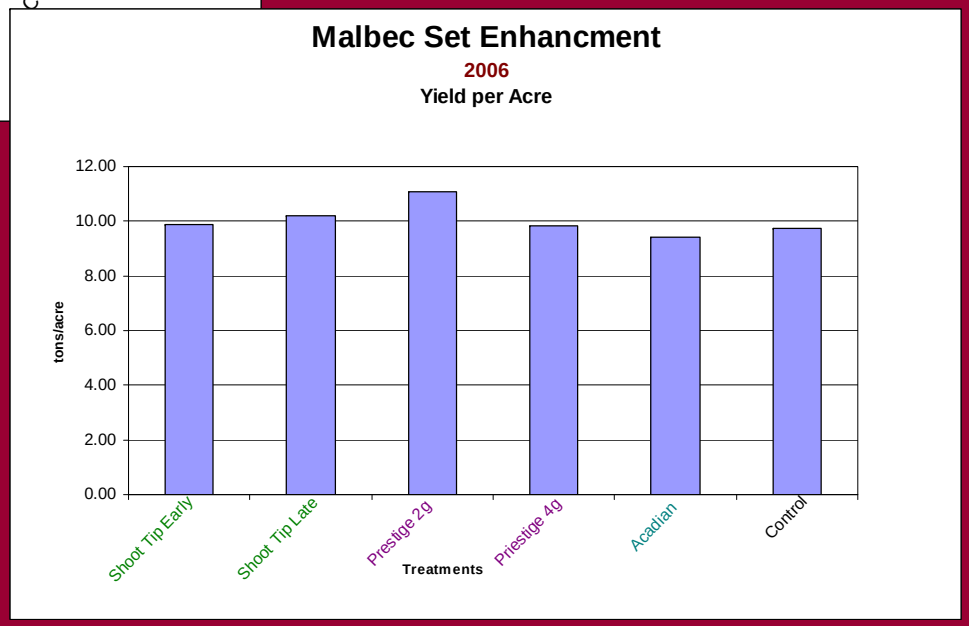


Graph Presentation

By different scales



Minimum = 8.5



Minimum = 0.0

Cost Comparison

Treatment	Applications	Cost per Acre
Shoot tipping	1X at $7.50/hr	$84.00*
Prestige	1X at 2 g/acre	$45.00**
Acadian	5X at 3 pt/acre	$156.25**

*** Includes 40% of wages for taxes and contractor**

**** Includes spray application cost of $20 /application**

Comparison of Yield Increase Needed

	Pounds per Acre Increase needed to pay cost		
	$45	**$84**	**$156.25**
$600 per ton	150	280	521

	Pounds per Vine Increase needed to pay cost		
$600 per ton	0.25	0.46	0.86

Summary

- Variety
- Soil
- Vineyard Design
  - Rootstock
  - Trellis & Spacing
- Inputs
  - Water
  - Nutrients
- Vine Balance
  - Crop Load
- Disease

Thanks To

Aaron Lange and Kelly Brakel of LangeTwins Vineyards
John Knapp, KIM-C1, LLC
Valent U.S.A
Acadian AgriTech
Scott Whitely, San Joaquin County Research Technician
Debra Boelk, UC Staff Research Associate
Randall Wittie, UC Technician

Lodi District Grape Growers Association

“ There seem to be but three ways for a nation to acquire wealth…The third is by agriculture, the only honest way, wherein man receives a real increase of the seed thrown into the ground, in a kind of continual miracle, wrought by the hand of God in his favor, as reward for his innocent life and his virtuous industry.”

Benjamin Franklin

Remember Those Serving Our Nation