Napa Valley Cabernet Sauvignon Hang Time Study

Ed Weber

Viticulture Farm Advisor

UC Cooperative Extension

Napa County

UNIVERSITY of CALIFORNIA
Agriculture & Natural Resources

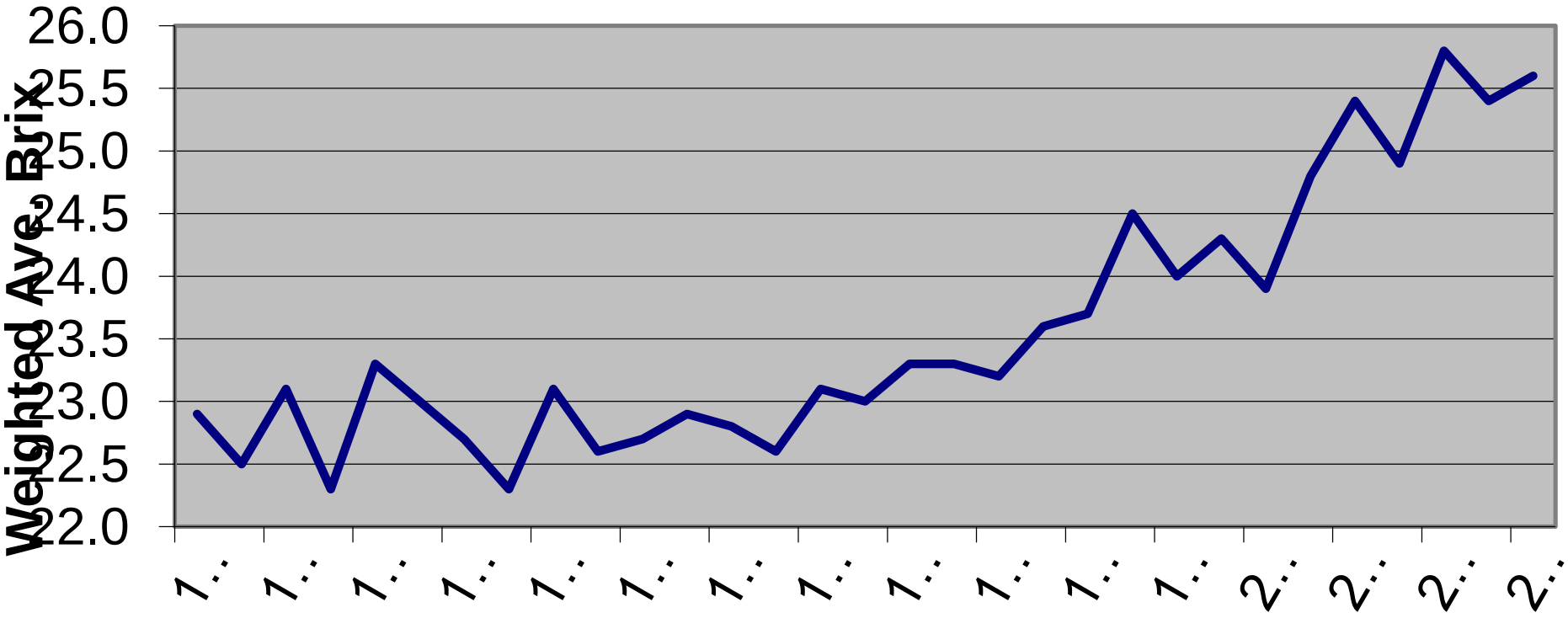
UNIVERSITY of CALIFORNIA
Agriculture & Natural Resources

Changing perspectives on when to pick Cabernet Sauvignon

- **Winemakers are waiting for green characters to go away and/or for changes in phenolic characters**

- **In much of Napa Valley, Brix levels have become irrelevant for deciding when to pick Cabernet Sauvignon**
  - → **Water additions**
  - → **Alcohol removal**

Napa County Cabernet Sauvignon



Data from Grape Crush Report

UNIVERSITY of CALIFORNIA
Agriculture & Natural Resources

Why Study Hang Time?

- **Growers experienced crop losses and lower economic returns in 2003 & 2004 with extended hang time**
- **Grapes lose weight with extended hang time, but there is little data documenting crop losses**
- **Interest and support from grower organizations statewide**

UNIVERSITY of CALIFORNIA
Agriculture & Natural Resources

What We Did

- **Established small plots in 2005 in 5 Napa Valley Cabernet Sauvignon vineyards**
- **Harvested grapes and measured yield and juice parameters over a 7-week harvest period in 2005 and 2006**
- **Made wines**

UNIVERSITY of CALIFORNIA
Agriculture & Natural Resources

Who Helped?

- **Mike Anderson & Jason Benz**
  UCD Viticulture & Enology
- **Napa Valley Grapegrowers**
- **Cooperating vineyards**
- **Labor providers:**
  - **Beckstoffer Vineyards**
  - **Duckhorn Vineyards**
  - **Silverado Farming Company**
  - **Vista Vineyard Management**
- **Bins & Pans:**
  - **Duckhorn Vineyards**
  - **Mumm Napa Valley**

UNIVERSITY of CALIFORNIA
Agriculture & Natural Resources

Who Helped?

- **Analytical work**
  - **ETS Laboratories – Gordon Burns & Steve Price**
- **Barrels & Racks**
  - **Miner Family Winery – Gary Brookman**
- **Facilities**
  - **UCD Oakville Experimental Vineyard**

Our Vineyards

Vineyard	Location	Clone	Rootstock	Spacing	Trellis	Year Planted
1	Oak/Ruth	337	039-16	7 x 8	VSP	1994
2	Oak/Ruth	4	110R	5 x 6	VSP	1994
3	Oak/Ruth	337	101-14	5 x 6	VSP	1996
4	Oak/Ruth	7	039-16	8 x 8	VSP	1996
5	Calistoga	337	110R	5 x 7	VSP	1997

Plot Design at Each Site

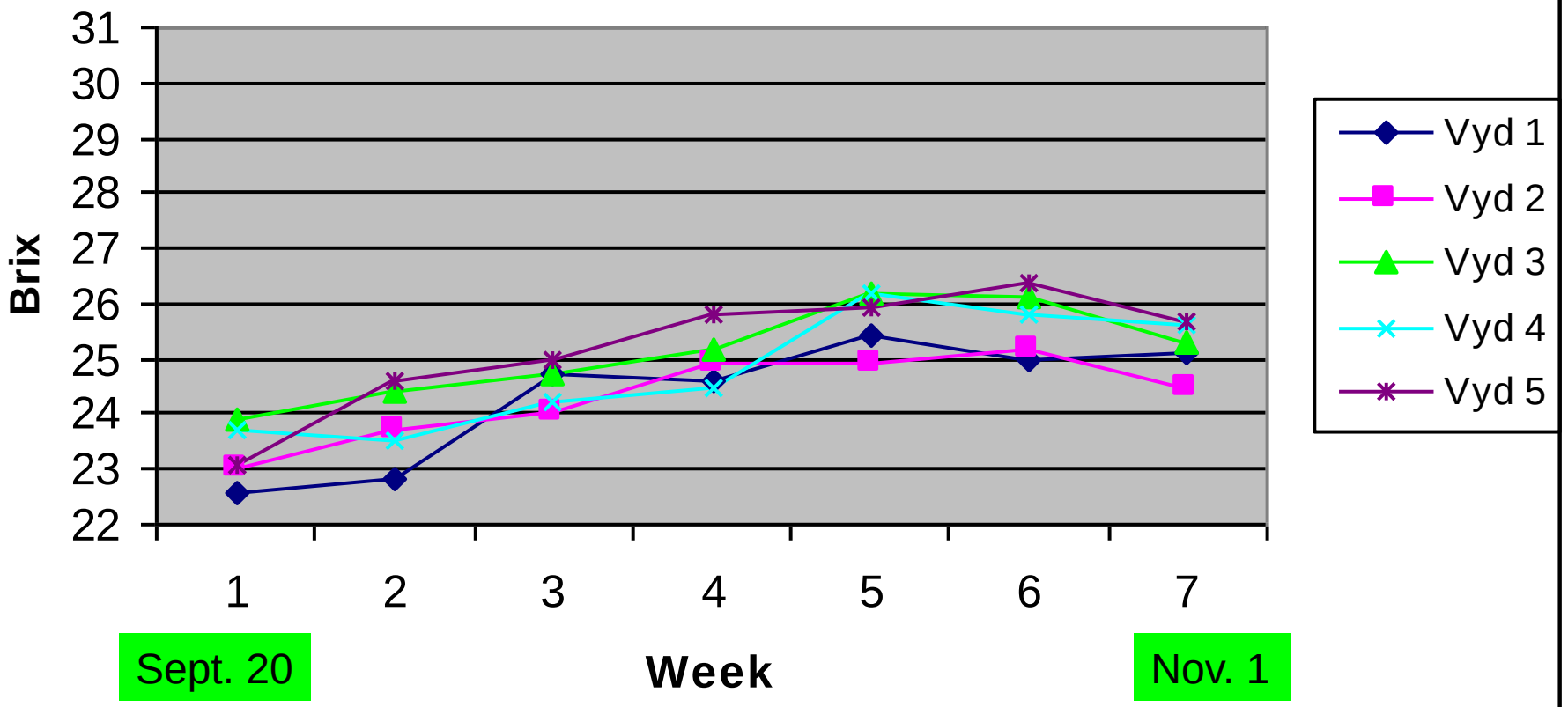
Rep	3 vines	3 vines	3 vines	3 vines	3 vines	3 vines	3 vines
1	Red	Orange	White	Yellow	Green	Blue	Pink
2	Green	Pink	White	Blue	Orange	Red	Yellow
3	Blue	White	Green	Pink	Yellow	Orange	Red
4	Pink	Yellow	Orange	Red	Green	Blue	White
5	Yellow	White	Blue	Pink	Orange	Red	Green

Harvest #1	White
Harvest #2	Blue
Harvest #3	Red
Harvest #4	Green
Harvest #5	Orange
Harvest #6	Pink
Harvest #7	Yellow

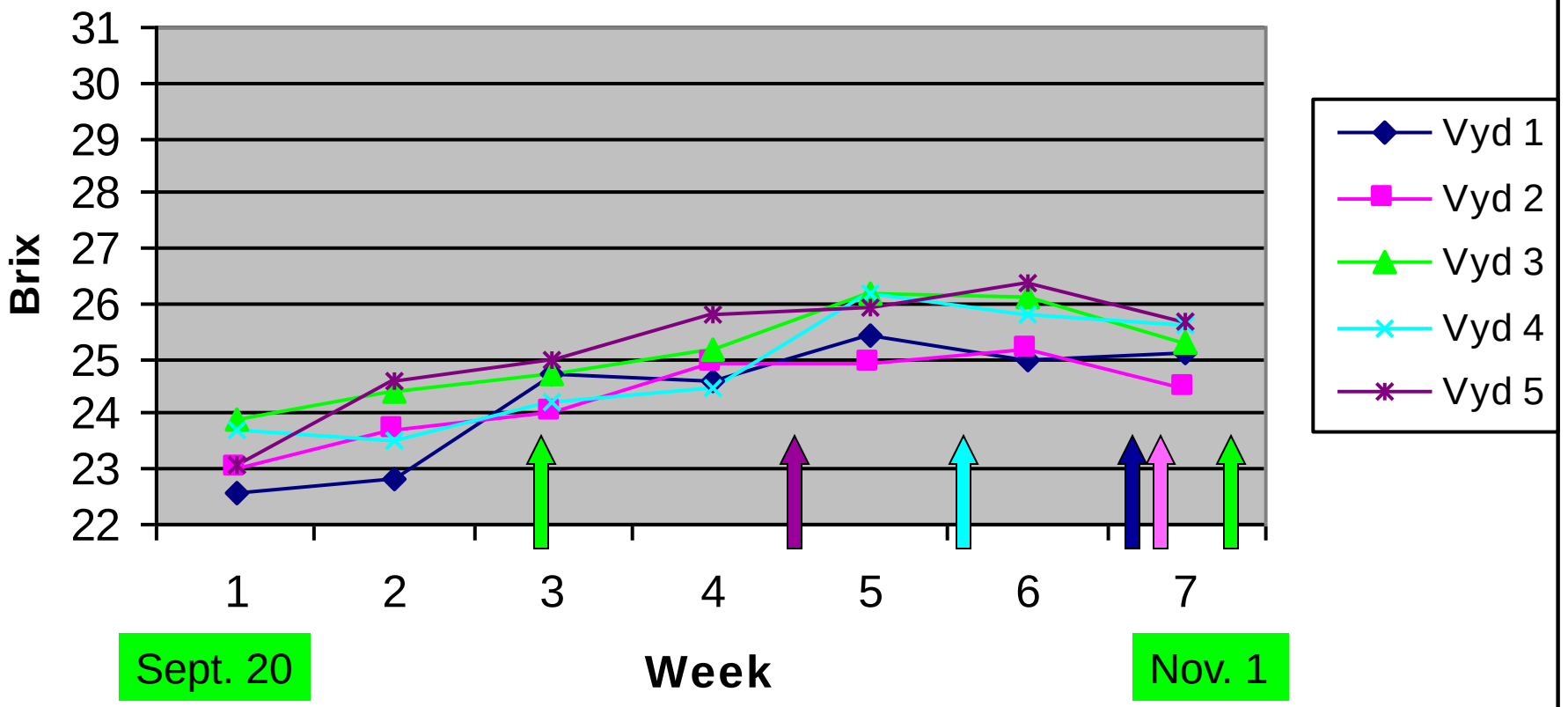

CUVEE NAPA
HUMM
NAPA VALLEY
CUVEE NAPA


37
12.20.
Hang Time 2005 – BV 2
Harvest # 6
Row 5 Vine 4
Pink
HUMM
NAPA VALLEY
CUVEE NAPA

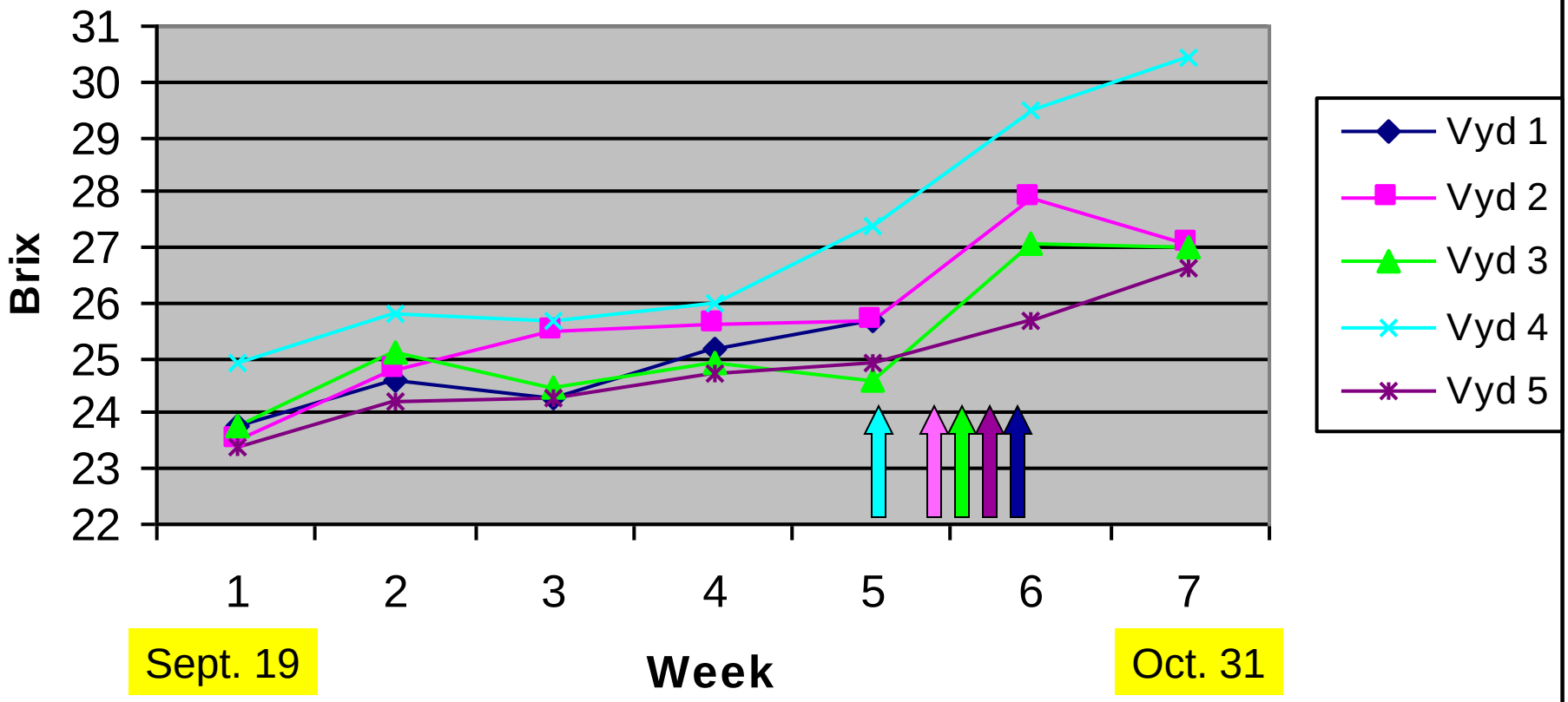
2005 Brix Levels

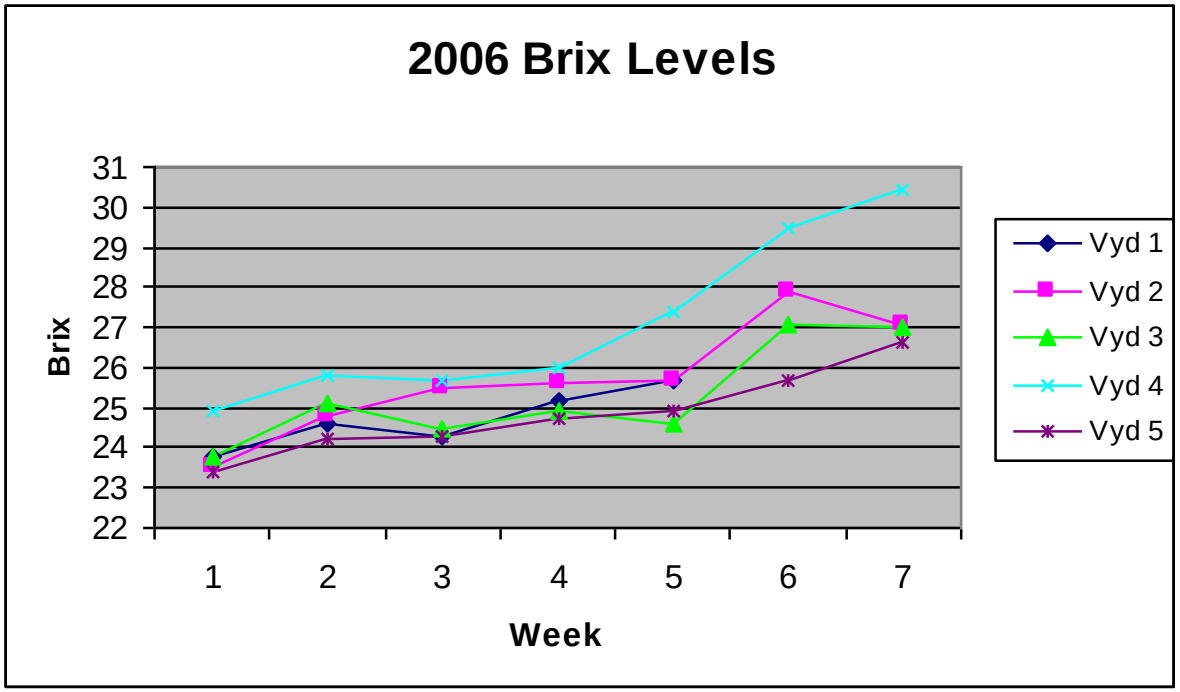


2005 Brix Levels

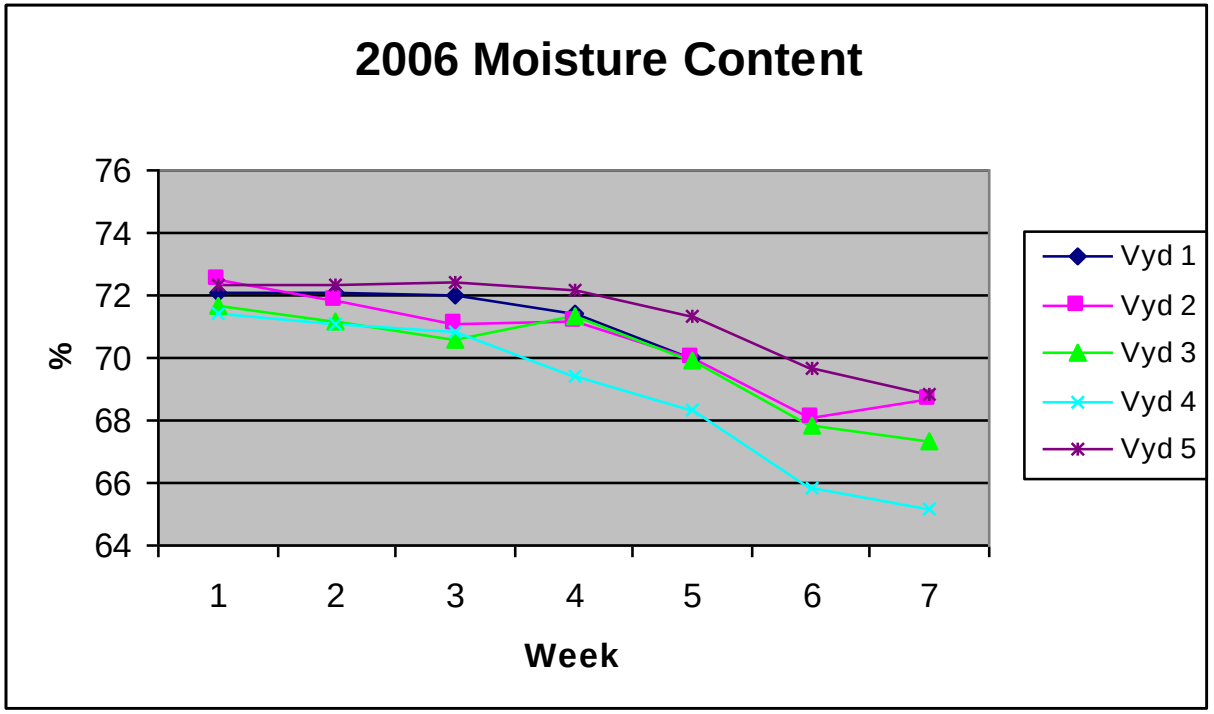


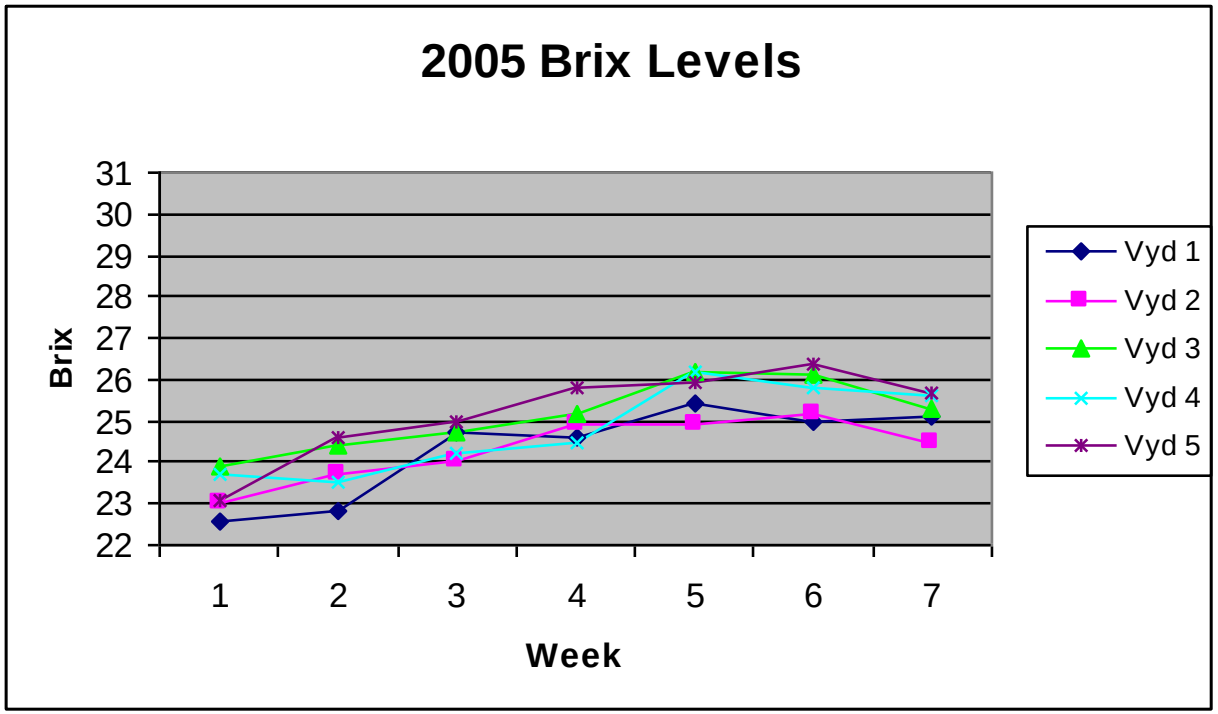
2006 Brix Levels



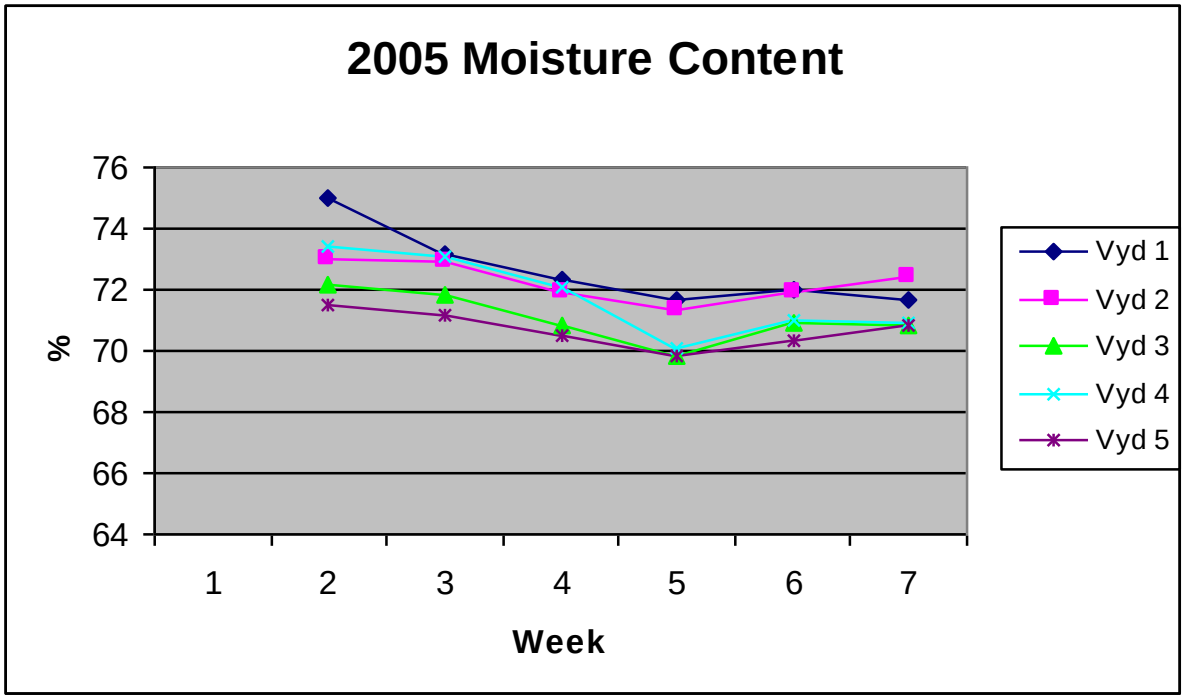


Sugar accumulation or dehydration?



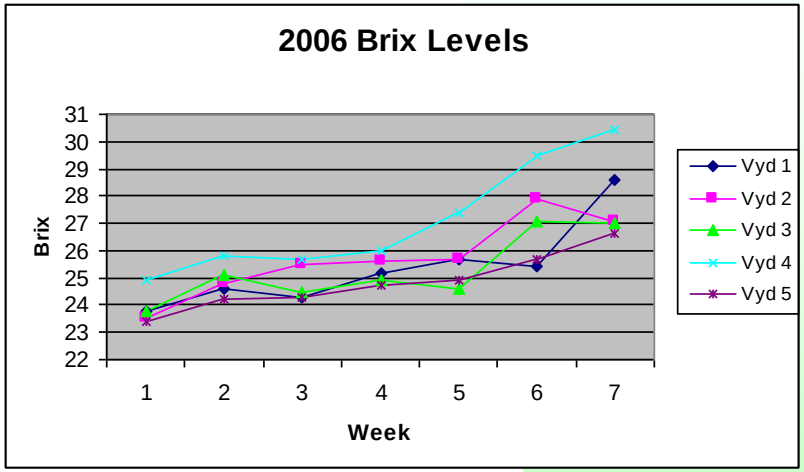

2005 Brix Levels
Brix
31
30
29
28
27
26
25
24
23
22
1
2
3
4
5
6
7
Week
Vyd 1
Vyd 2
Vyd 3
Vyd 4
Vyd 5

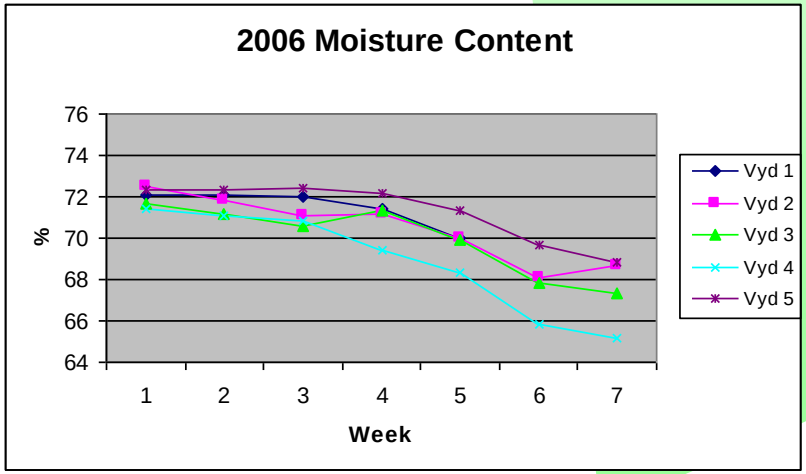
2005


2005 Moisture Content
%
76
74
72
70
68
66
64
1
2
3
4
5
6
7
Week
Vyd 1
Vyd 2
Vyd 3
Vyd 4
Vyd 5

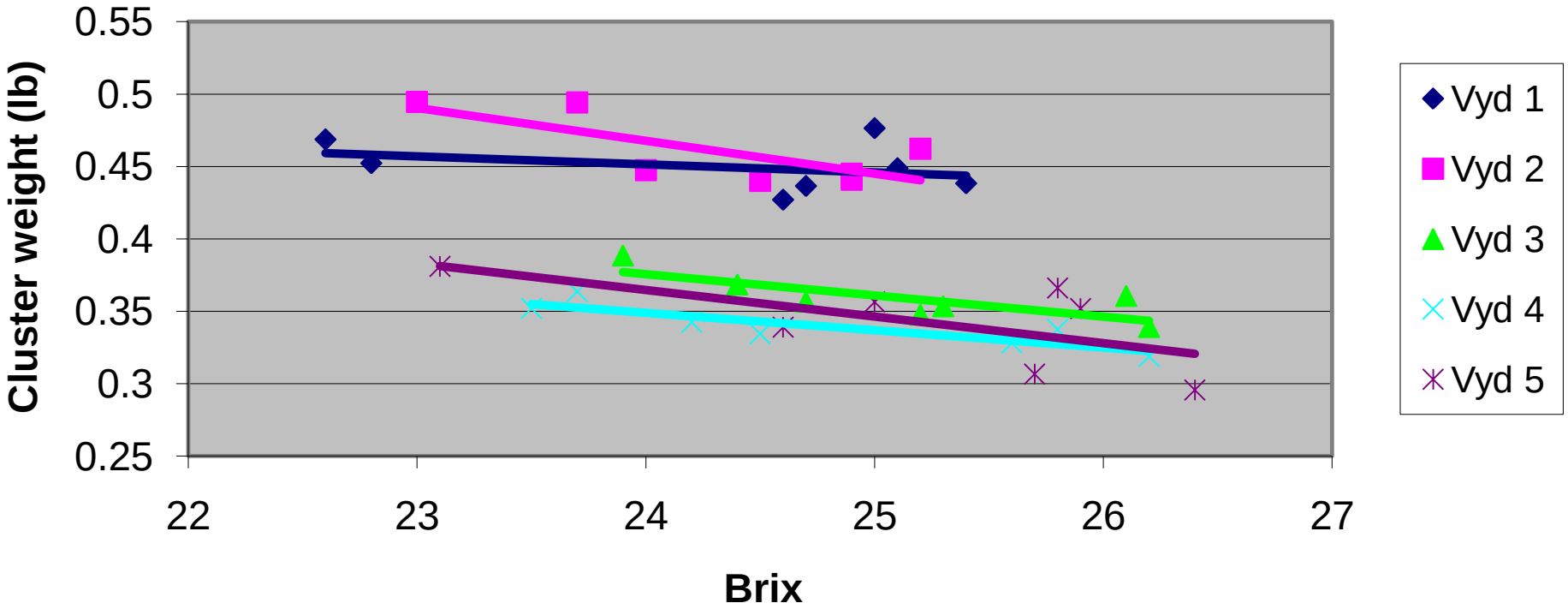
Sugar Accumulation

- Berries accumulate sugar up to 23-25 Brix
- Dehydration may occur at the same time
- Above 25-26, higher Brix levels occur due to dehydration



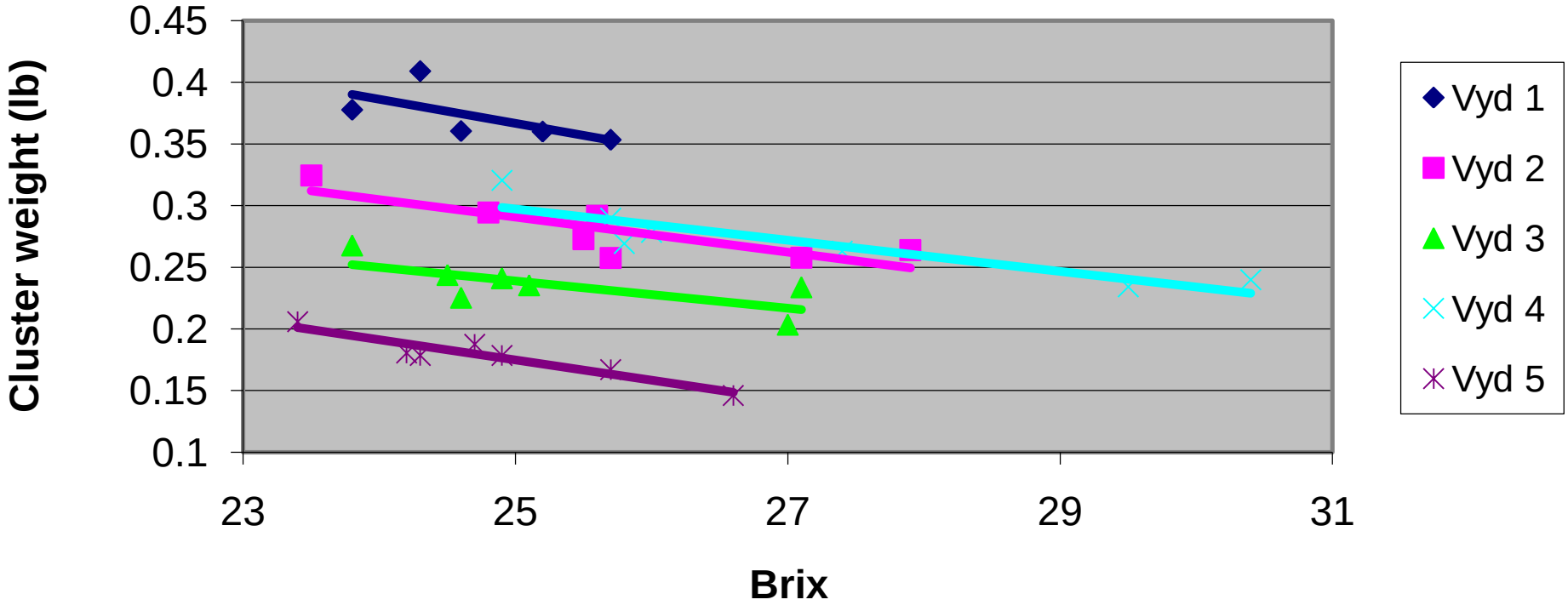


2005 Cluster Weight Reductions



Vyd	1	2	3	4	5
r^2	.12	.54	.61	.75	.43

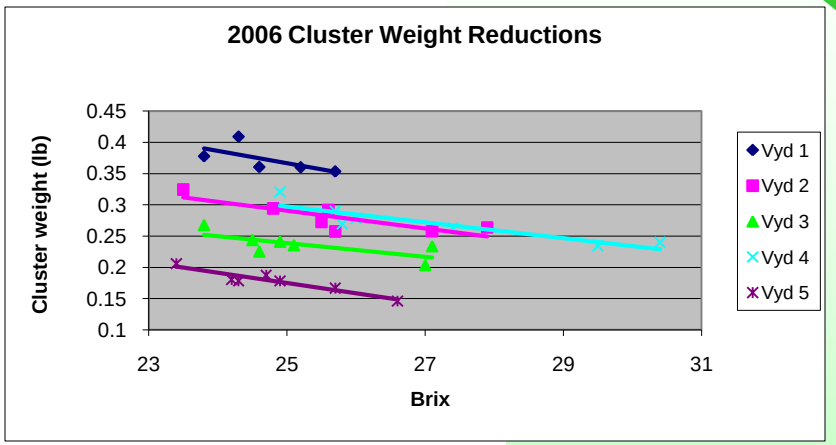
2006 Cluster Weight Reductions



Vyd	1	2	3	4	5
r^2	.85	.69	.53	.81	.89

Cluster Weight Reduction Per Degree Brix

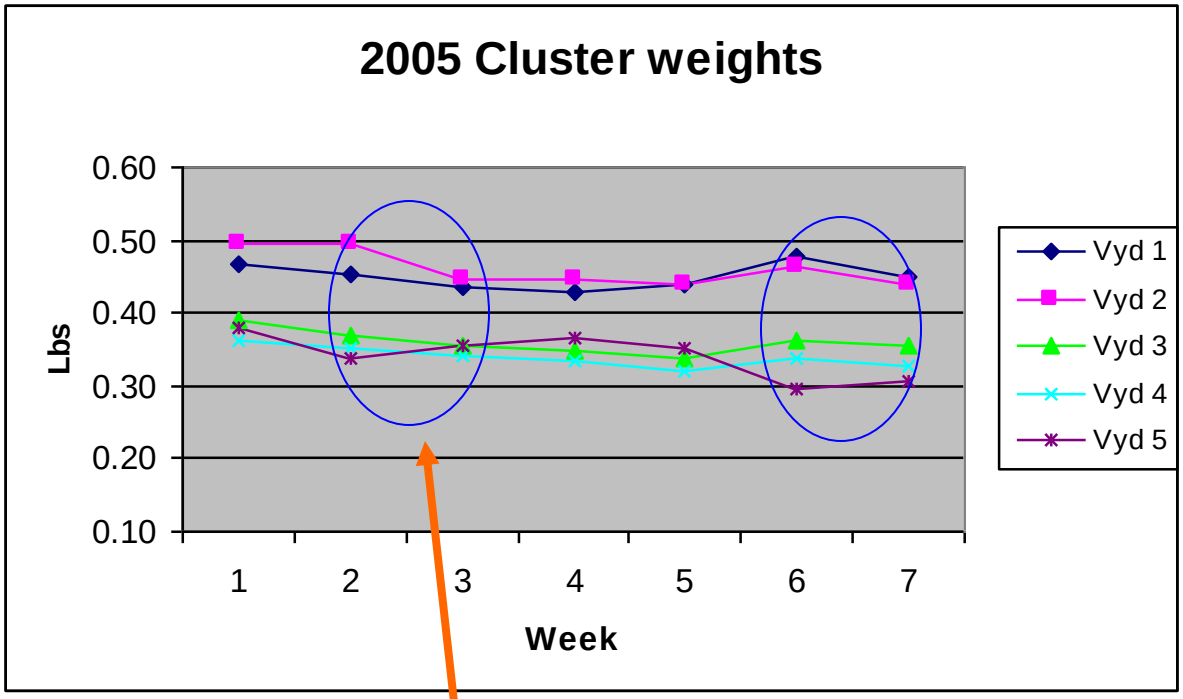
	2005	2006
Vyd 1	1%	6%
Vyd 2	5%	5%
Vyd 3	4%	5%
Vyd 4	4%	4%
Vyd 5	6%	10%



Cluster Weight Reduction Per Degree Brix

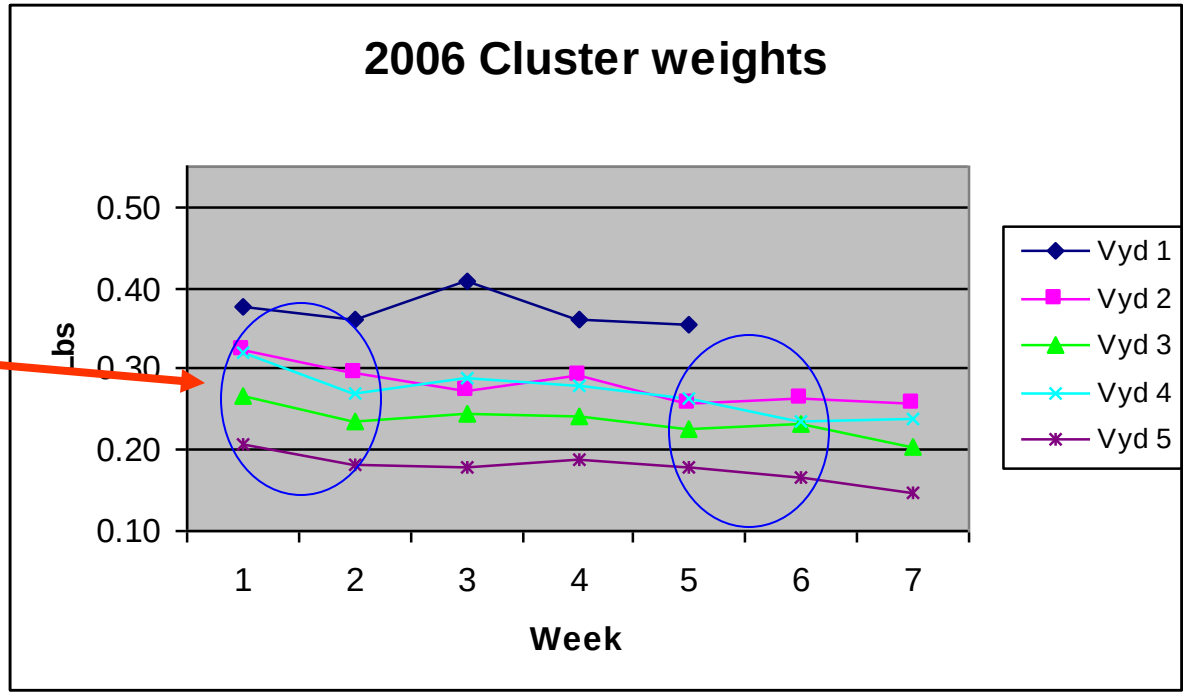
	2005	2006
Vyd 1	1%	6%
Vyd 2	5%	5%
Vyd 3	4%	5%
Vyd 4	4%	4%
Vyd 5	6%	10%

5% appears to be a reasonable estimate for cluster weight reductions per degree Brix above 26.



Ave Brix: 24.2

24.4

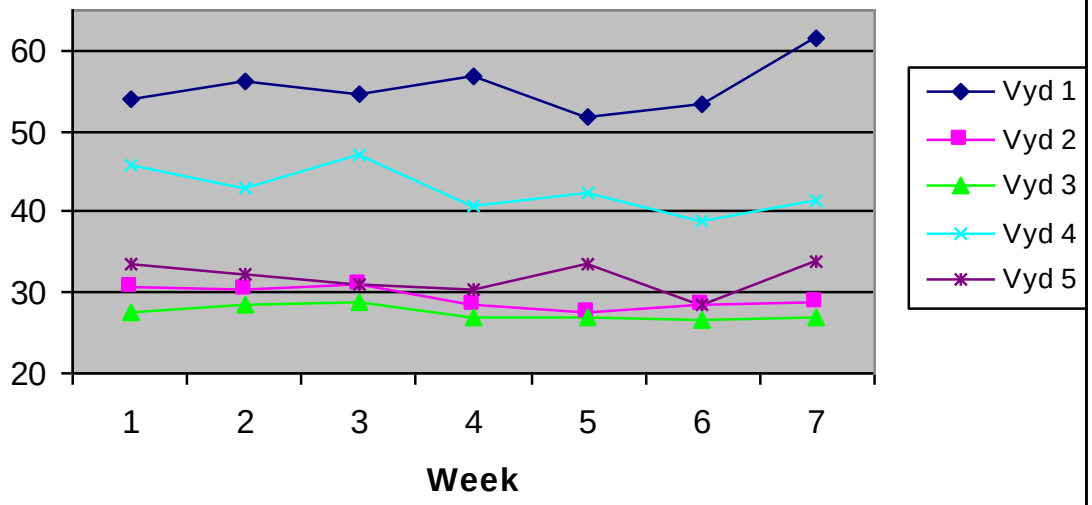


Changes in Cluster Weights

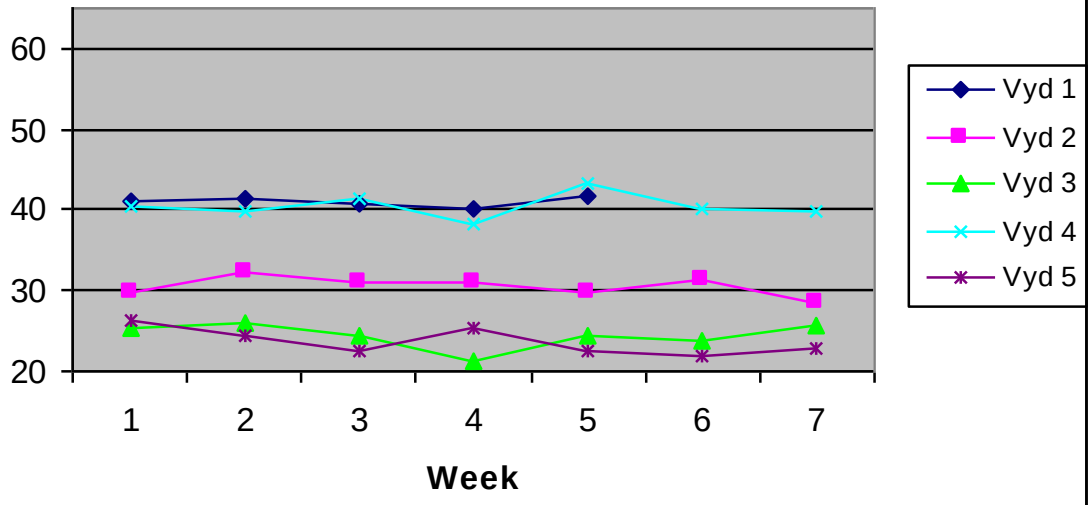
4 weeks “Hang time”

	2005	2006
Vyd 1	+ 3.7%	
Vyd 2	- 3.6%	- 16.1%
Vyd 3	- 0.5%	- 8.7%
Vyd 4	- 3.4%	- 16.4%
Vyd 5	- 14.3%	- 10.9%

2005 Clusters per vine



2006 Clusters per vine



UNIVERSITY of CALIFORNIA
Agriculture & Natural Resources

Yield Reductions

4 weeks "Hang time"

	2005		2006	
	Cluster Wt.	Yield per acre	Cluster Wt.	Yield per acre
Vyd 1	+ 3.7%	+ 7.4%		
Vyd 2	- 3.6%	- 10.0%	- 16.1%	- 17.2
Vyd 3	- 0.5%	- 6.9%	- 8.7%	- 14.3
Vyd 4	- 3.4%	- 13.9%	- 16.4%	- 13.2
Vyd 5	- 14.3%	- 15.4%	- 10.9%	- 21.3

2005 Wine Analyses

Courtesy of ETS Laboratories

Week	EtOH	pH	TA
1	13.28	3.82	0.50
2	13.47	3.81	0.50
3	14.01	3.86	0.54
4	14.66	3.94	0.52
5	15.40	3.96	0.53
6	14.86	3.96	0.48
7	15.03	4.01	0.49

Hang Time Summary

- Brix levels reached a natural plateau at 25-26 Brix in both years
- Increased Brix above 25-26 were due to dehydration
- Measuring moisture content may be a useful tool to detect dehydration effects
- Yield losses due to dehydration may be estimated at 5% per degree Brix above 26

Beyond Hang Time

- **Is Hang Time a passing fad?**

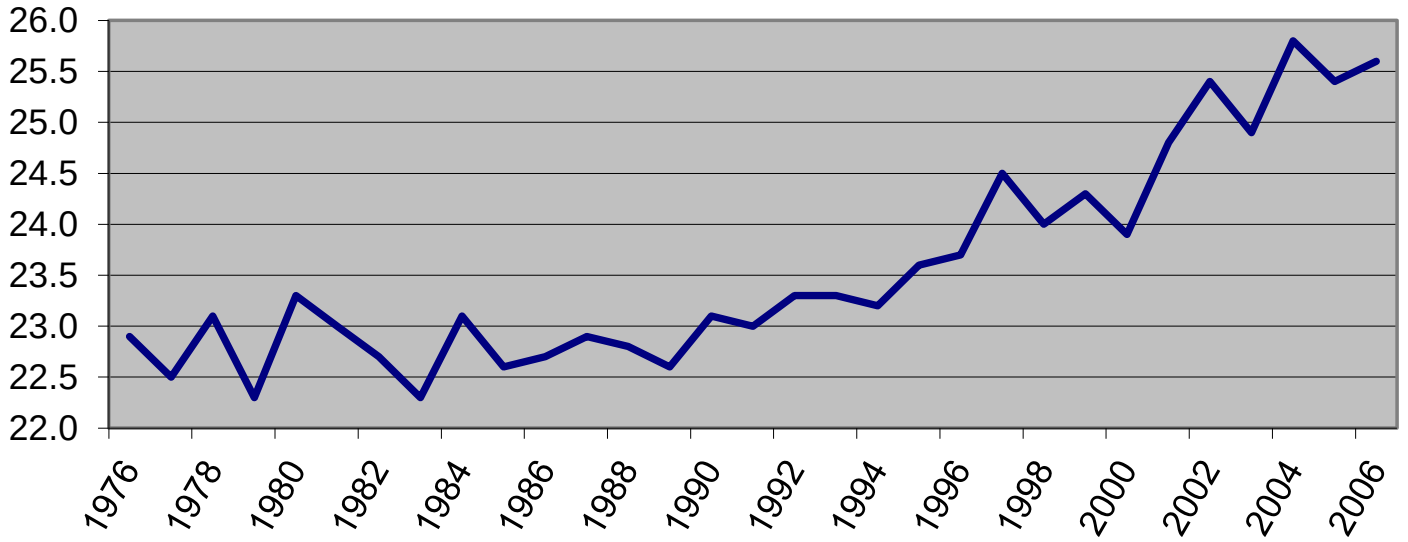
  There are many wineries harvesting grapes at 23-24 Brix and making exceptional wines.

- **Will new contract language fix the Hang Time "controversy"?**

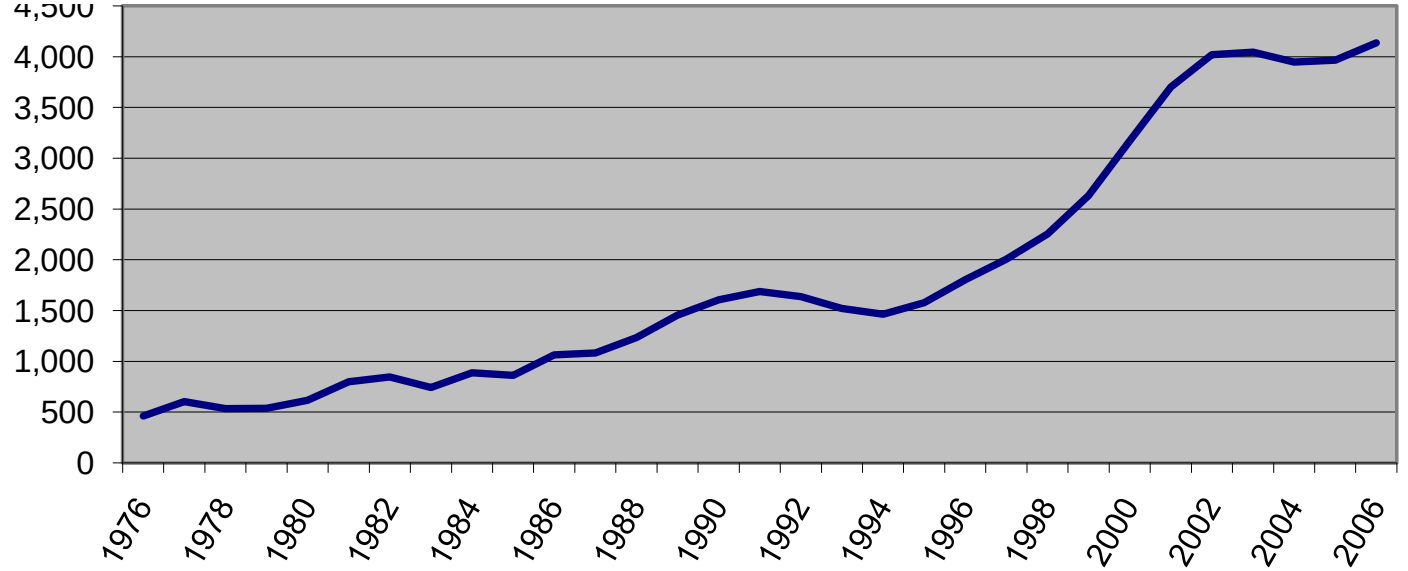
  Yields go down with extended hang times. Should growers be paid more for higher Brix fruit?

Napa County Cabernet Sauvignon

Wt'd Ave Brix



Wt'd Ave. $/ton



Data from Grape Crush Report

Beyond Hang Time

- **Ultimately, the solution to the "Hang Time Controversy" is building good relationships between wineries and growers and agreement about the importance of wine quality**
- **Sugar accumulation versus dehydration research won't settle the debate**
- **A way to measure "potential wine quality" would be a big help**

Napa Valley Cabernet Sauvignon Hang Time Study

Ed Weber

Viticulture Farm Advisor

http://cenapa.ucdavis.edu

UNIVERSITY of CALIFORNIA
Agriculture & Natural Resources