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Practical options to manage vintage compression

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Acknowledgments

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John Whiting



Time-trends in phenology

- ❖ Phenology is temperature driven
- ❖ Warming trends should be reflected in altered phenological patterns
- ❖ Effect of temperature is cumulative
- ❖ Only small increases needed to change phenology



Warming trends



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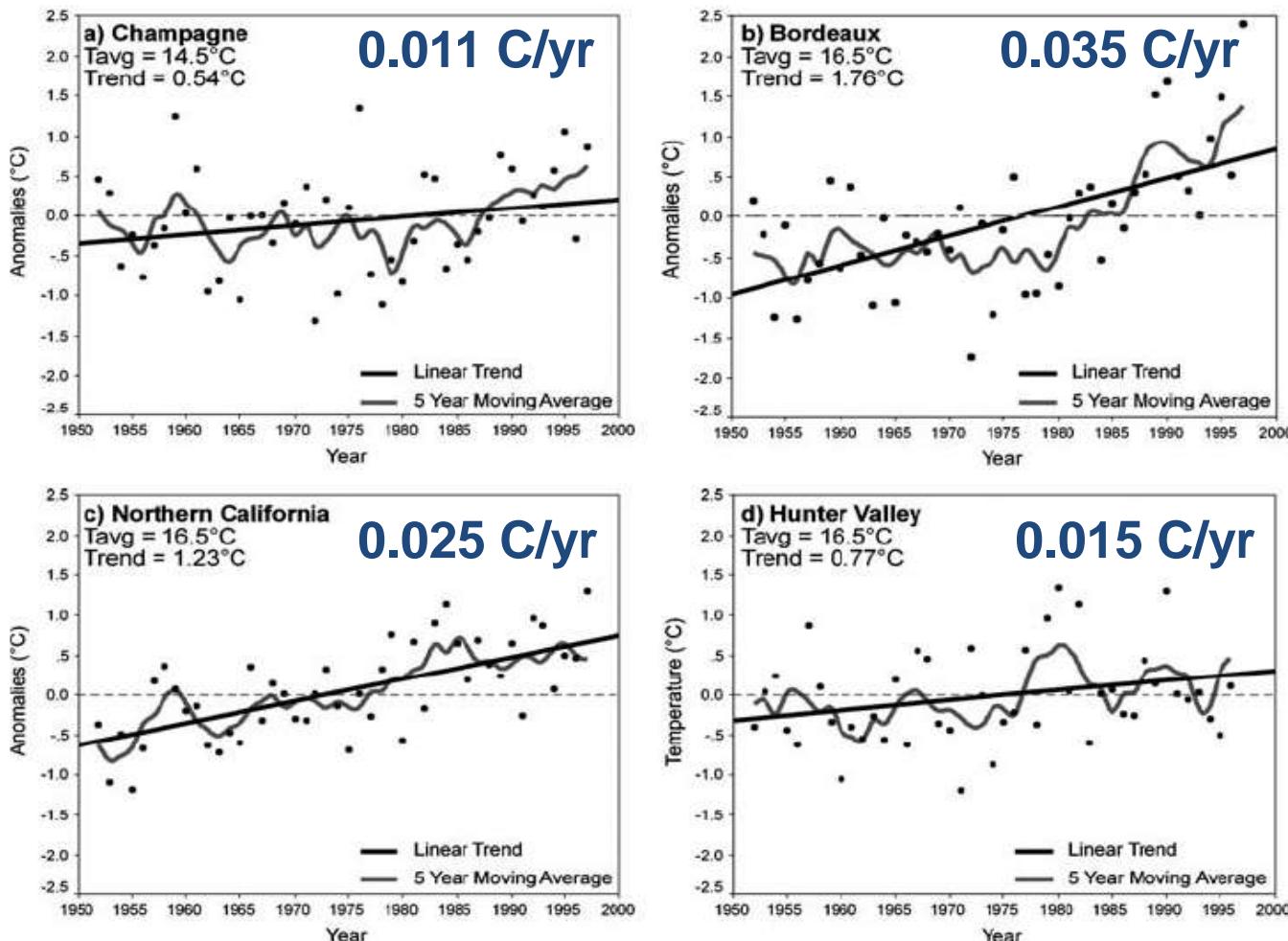
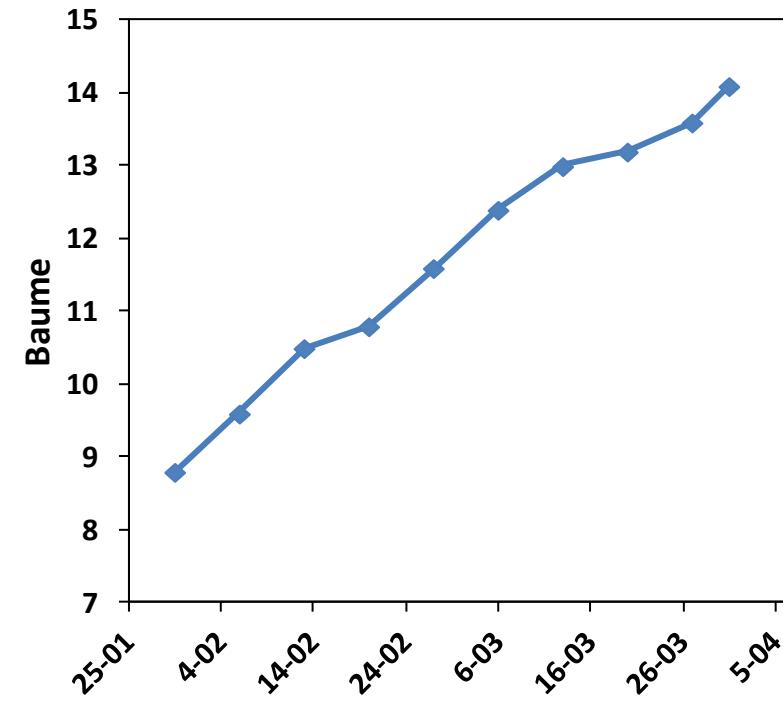
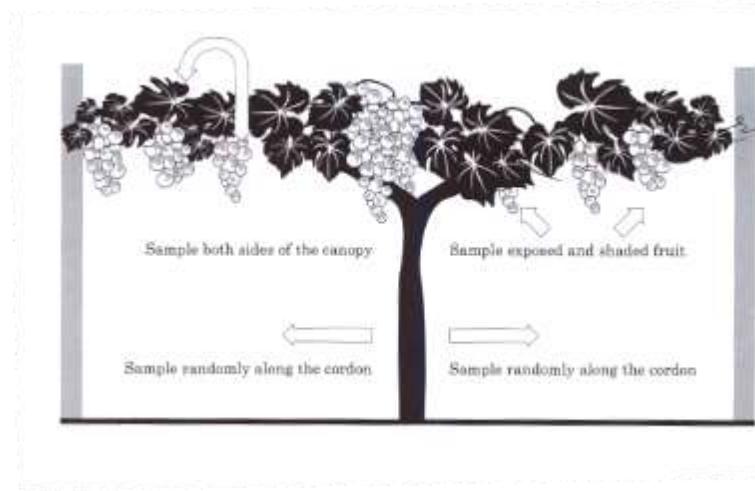


Figure 2. Observed (1950–1999) growing season average temperature anomalies for a) the Champagne region, b) Bordeaux, c) Northern California, and d) the Hunter Valley. T_{avg} is the average growing season temperature (Apr–Oct in the Northern Hemisphere and Oct–Apr in the Southern Hemisphere) and the Trend is over the 50-yr period.

Sugar accumulation



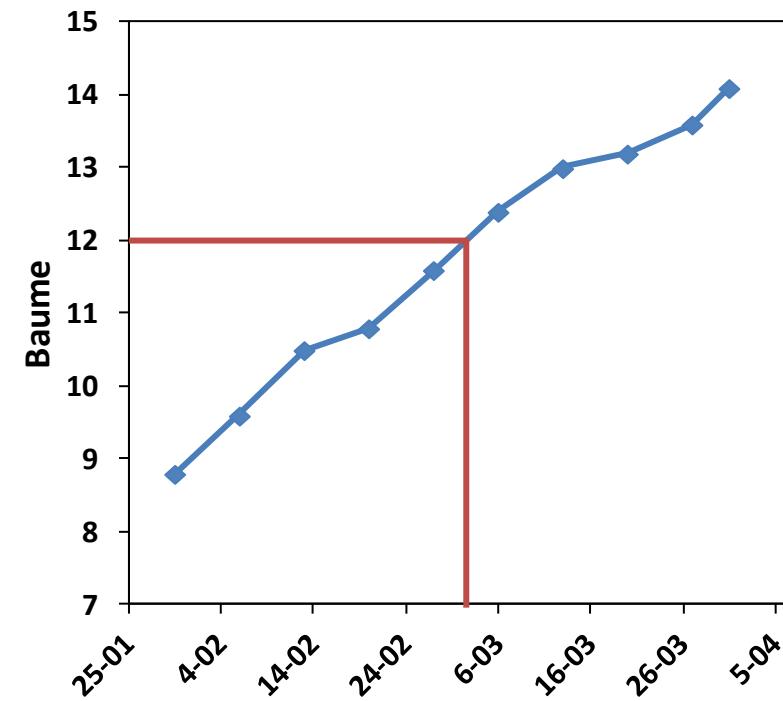
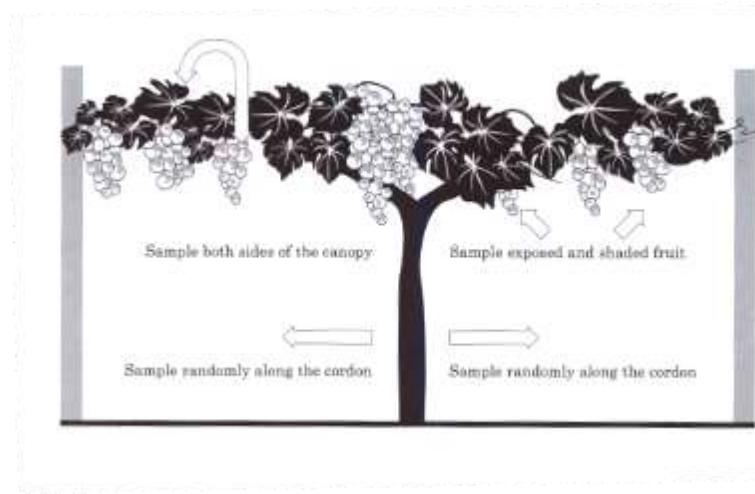
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Sugar accumulation



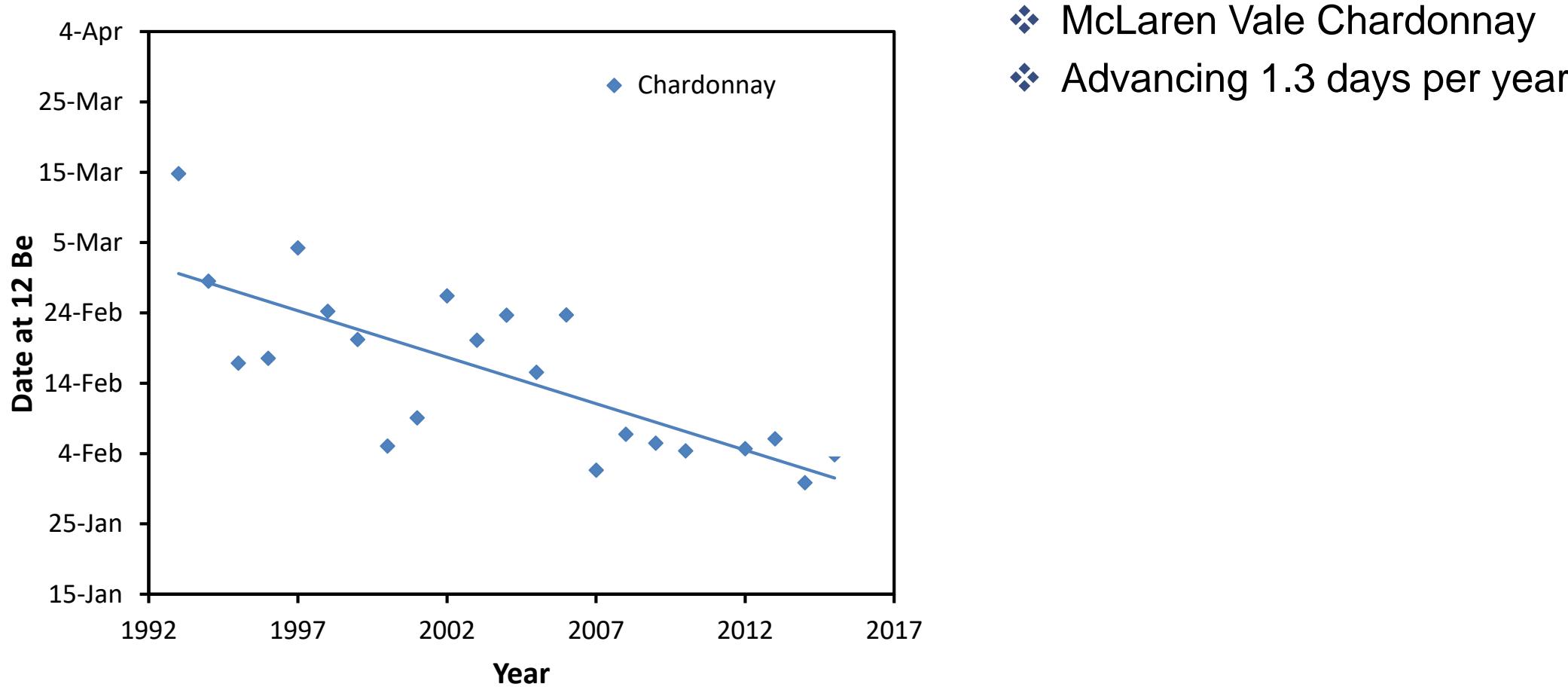
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Vintage advancement and compression



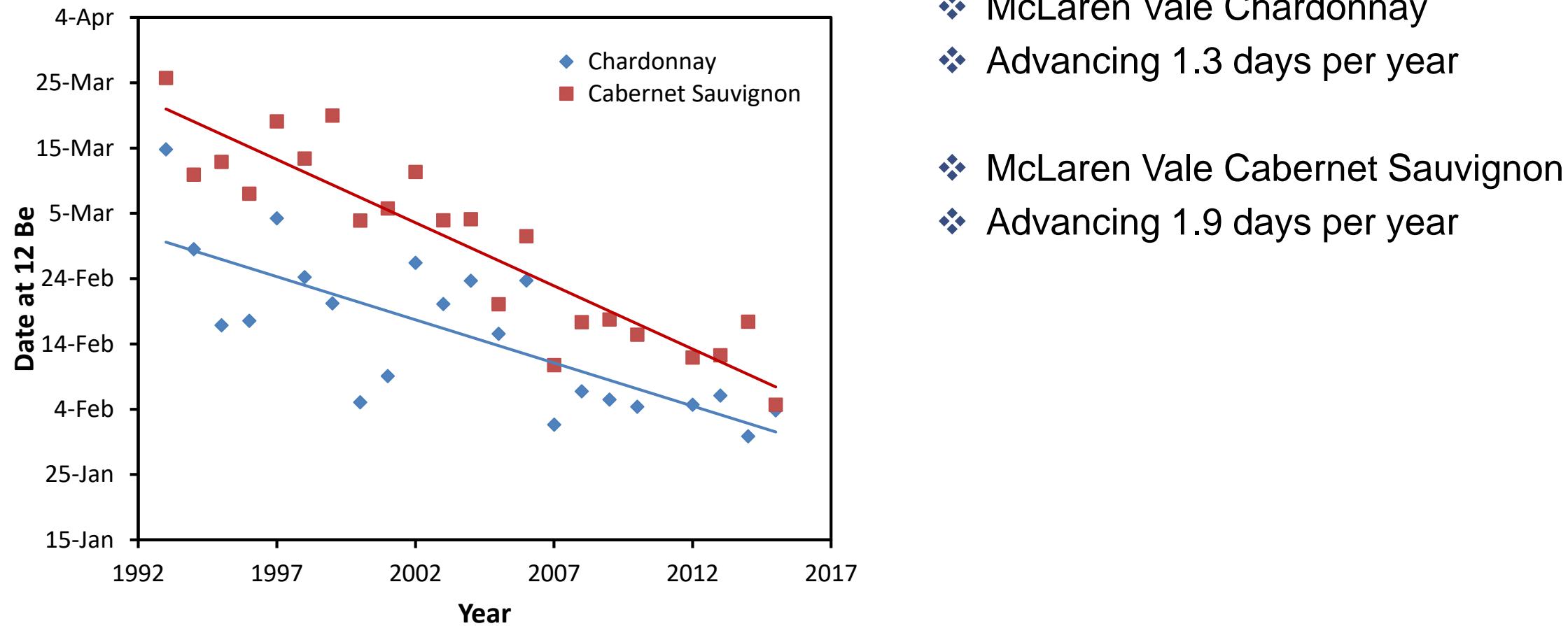
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Vintage advancement and compression



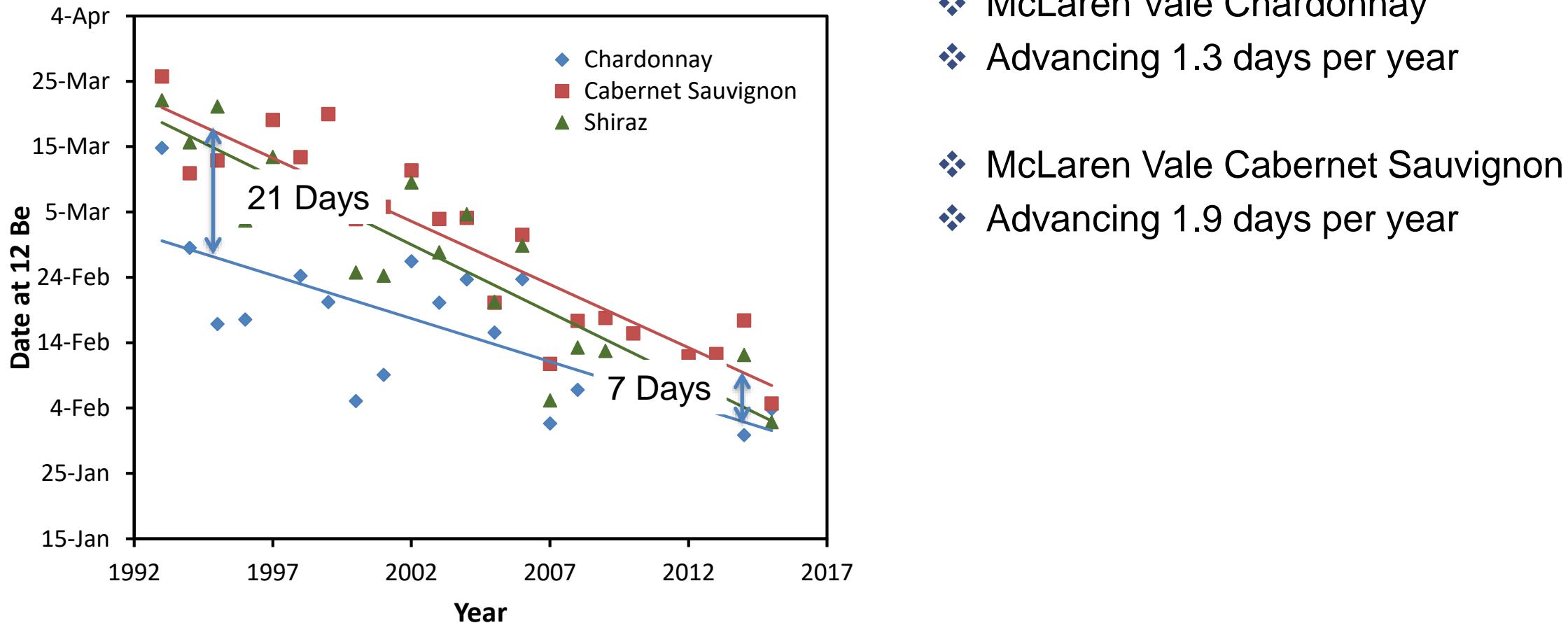
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Vintage advancement and compression



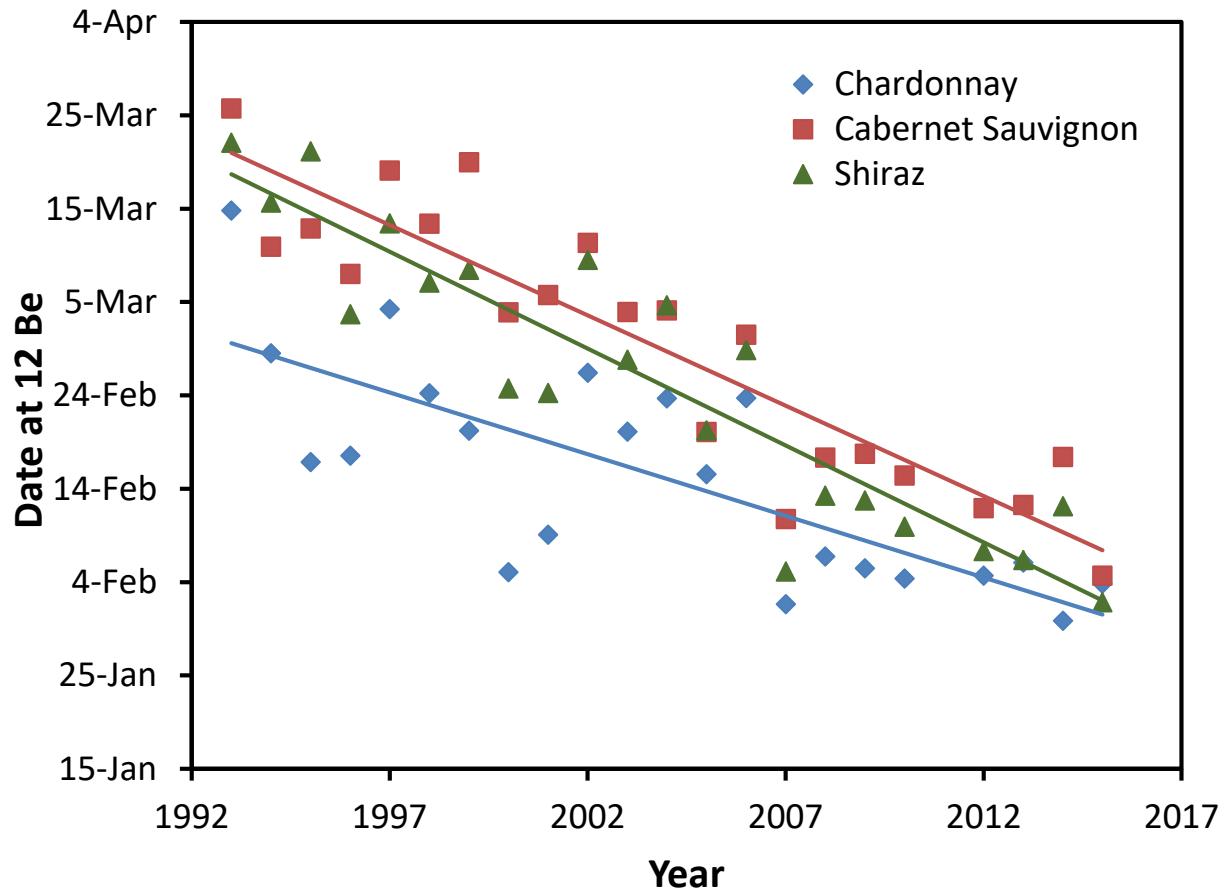
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Vintage advancement and compression

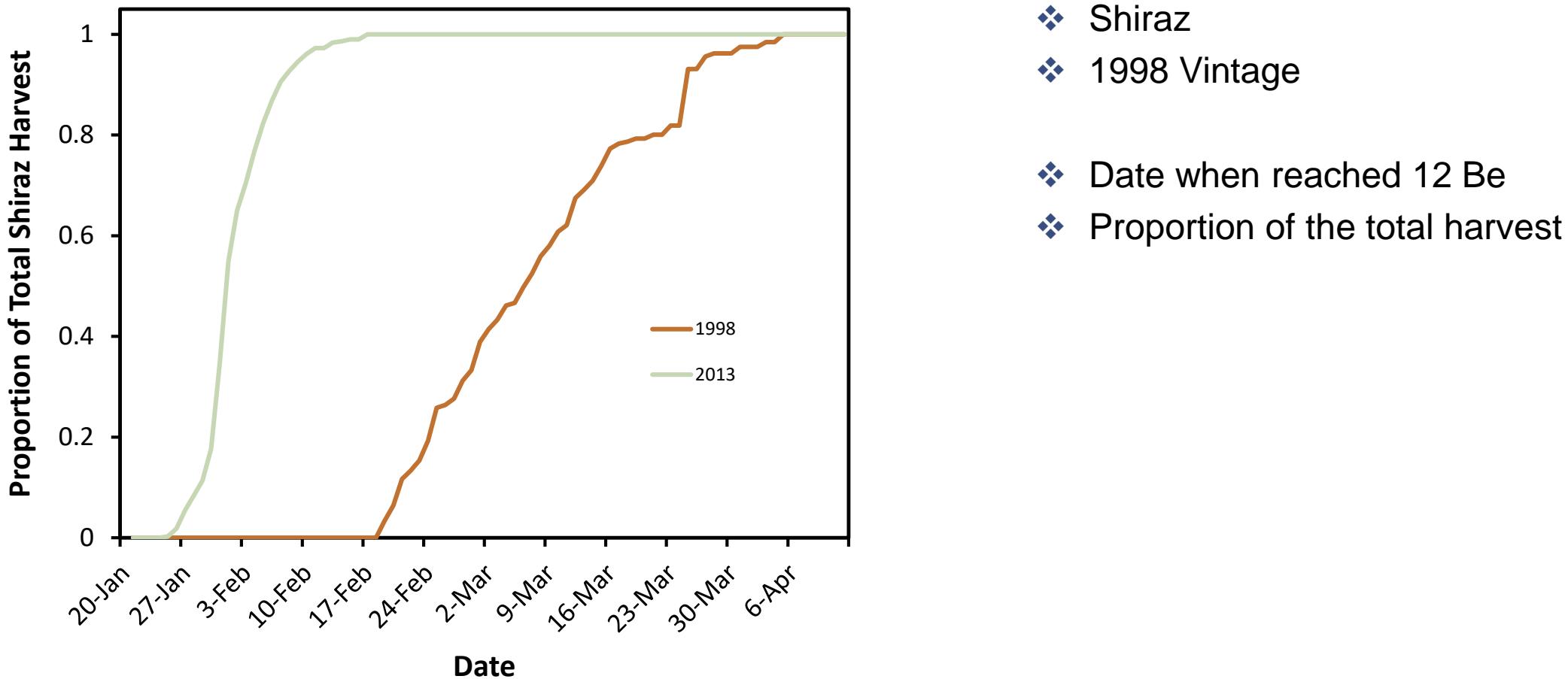


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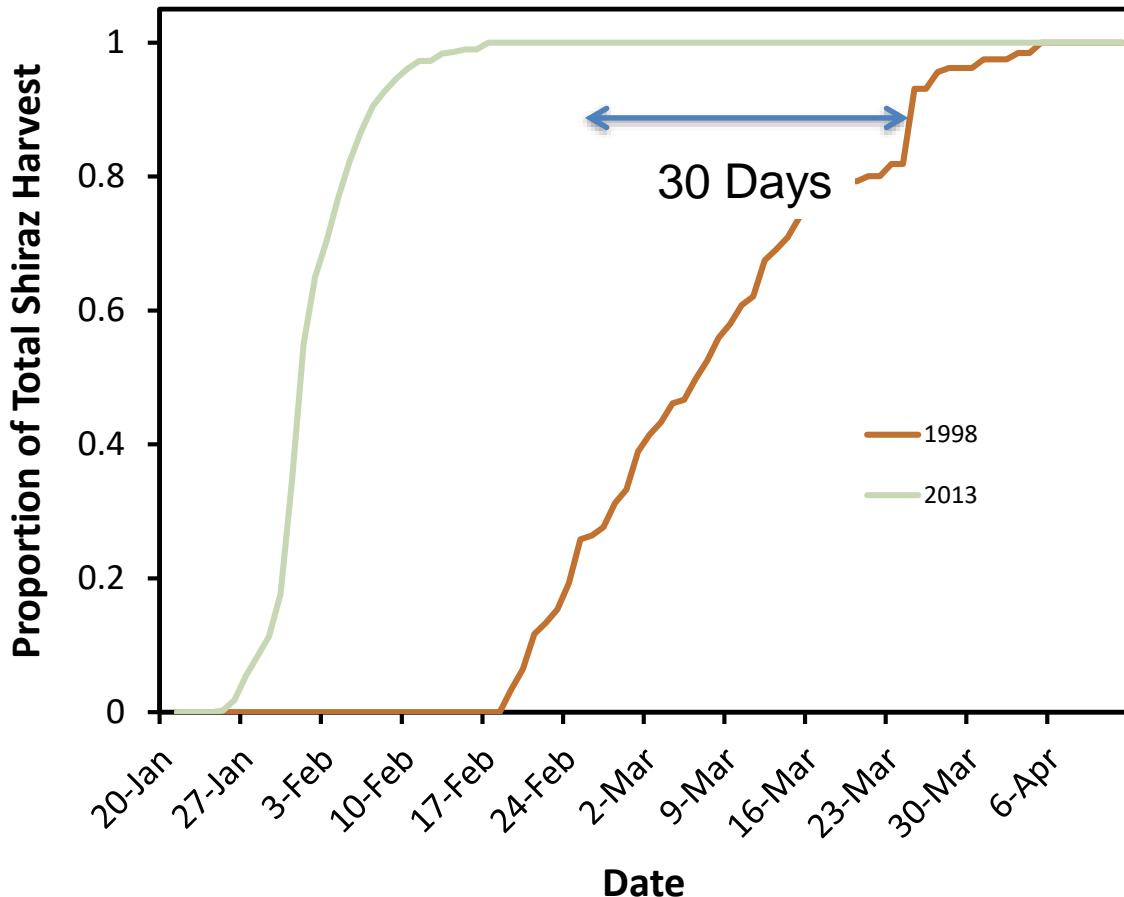


- ❖ McLaren Vale Chardonnay
- ❖ Advancing 1.3 days per year
- ❖ McLaren Vale Cabernet Sauvignon
- ❖ Advancing 1.9 days per year
- ❖ Shiraz needs to be harvested and crushed in between

Ripening over a shorter time

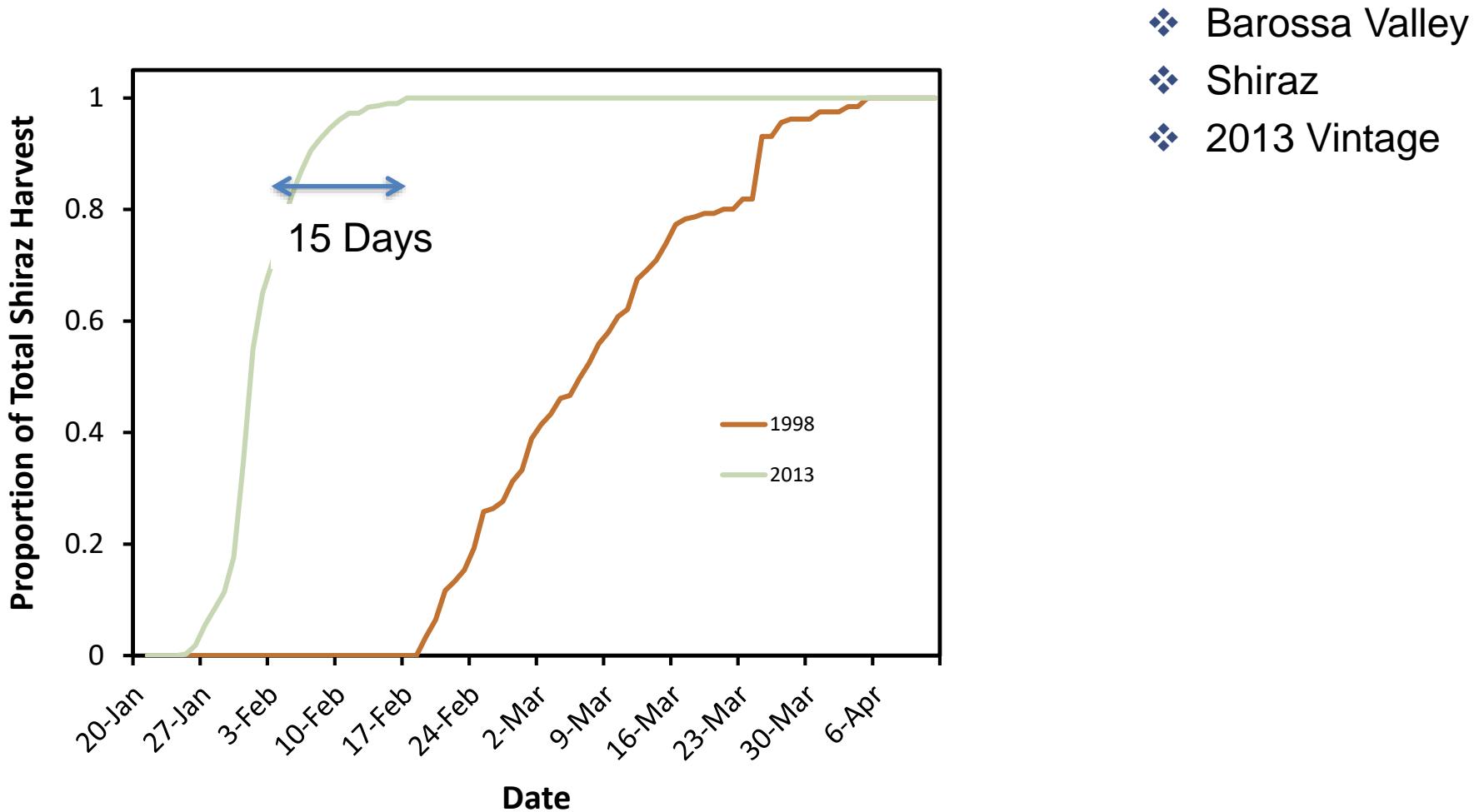


Ripening over a shorter time

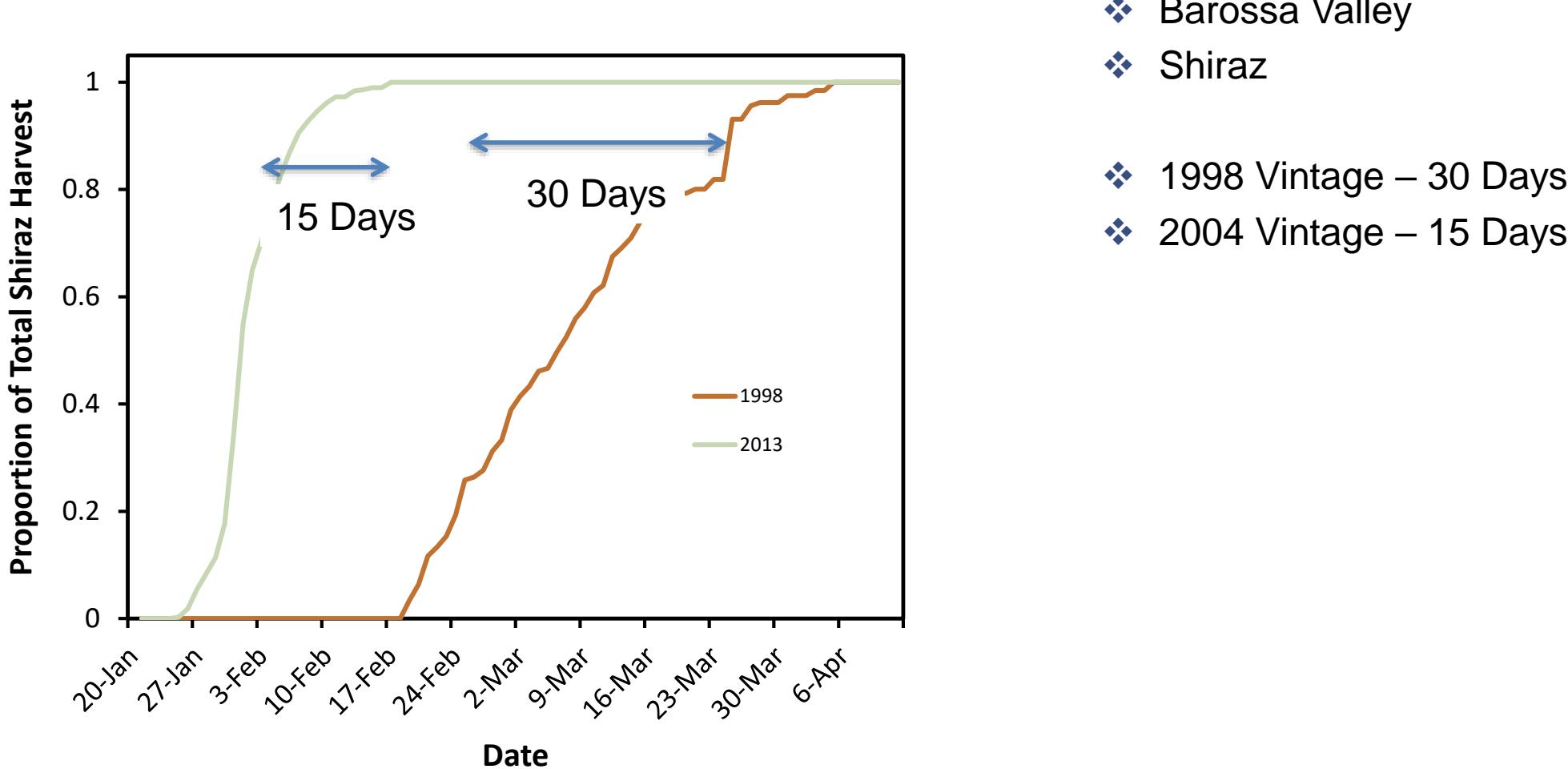


- ❖ Barossa Valley
- ❖ Shiraz
- ❖ 1998 Vintage
- ❖ Date when reached 12 Be
- ❖ Proportion of the total harvest
- ❖ Bulk of fruit ripened over 30 days

Ripening over a shorter time



Ripening over a shorter time

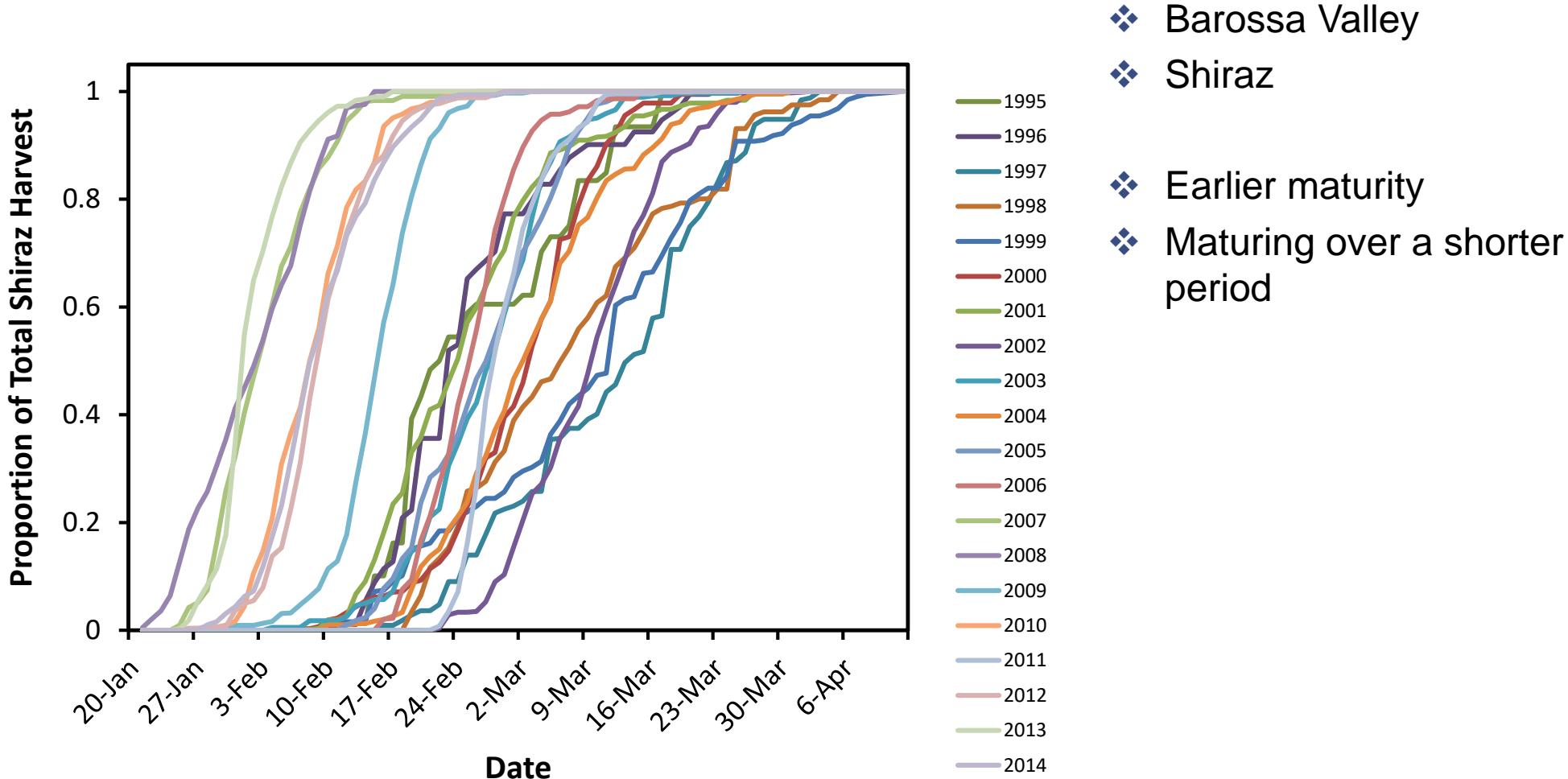


- ❖ Barossa Valley
- ❖ Shiraz
- ❖ 1998 Vintage – 30 Days
- ❖ 2004 Vintage – 15 Days

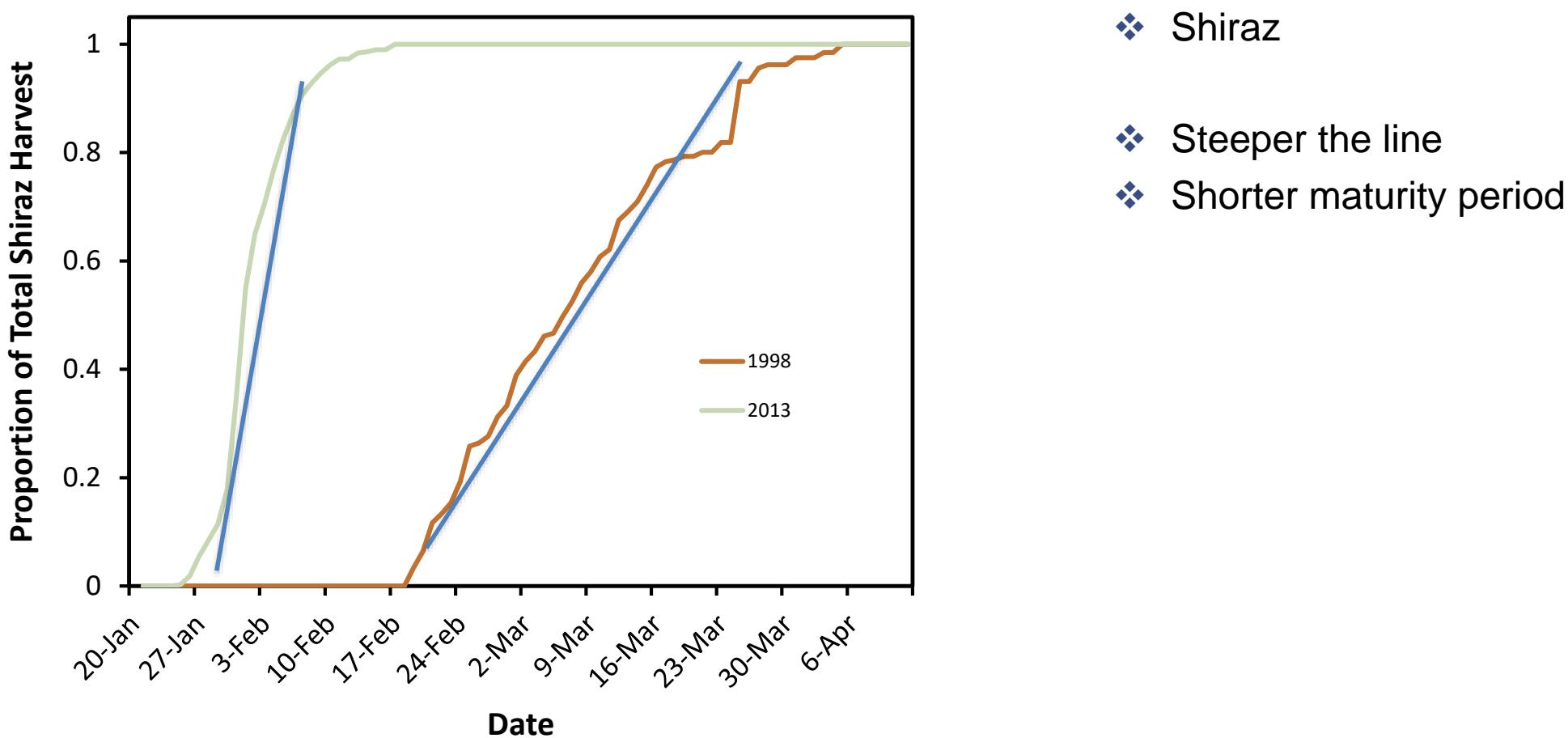
Ripening over a shorter time



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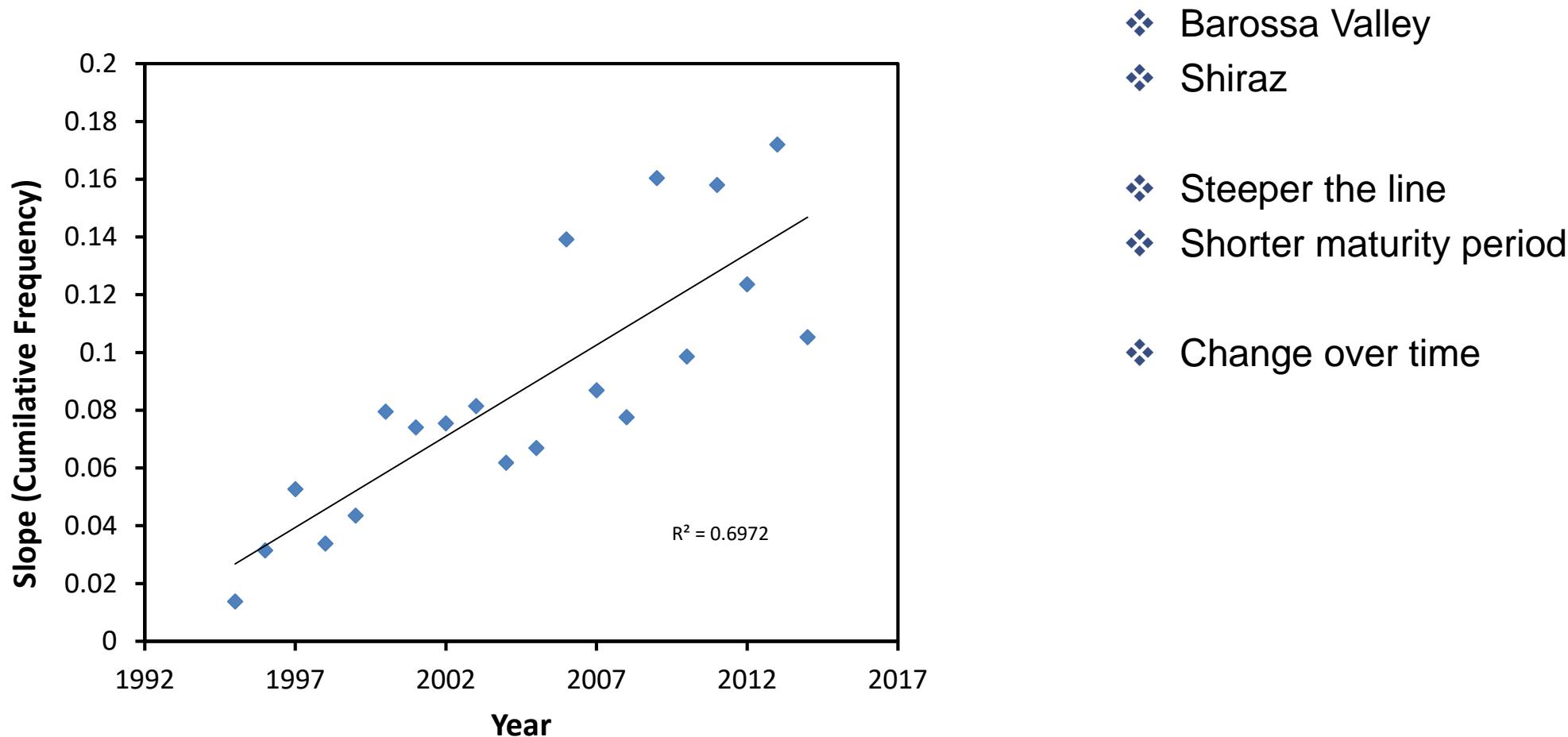
Ripening over a shorter time



Ripening over a shorter time

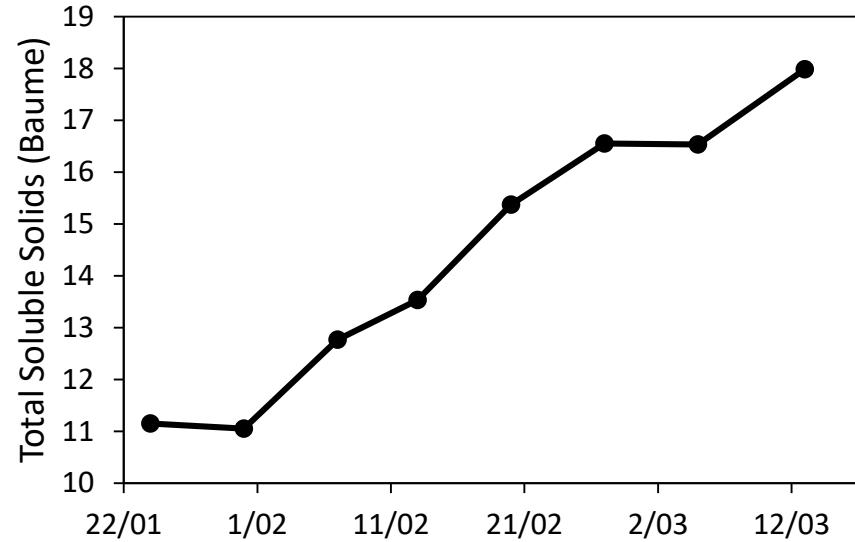


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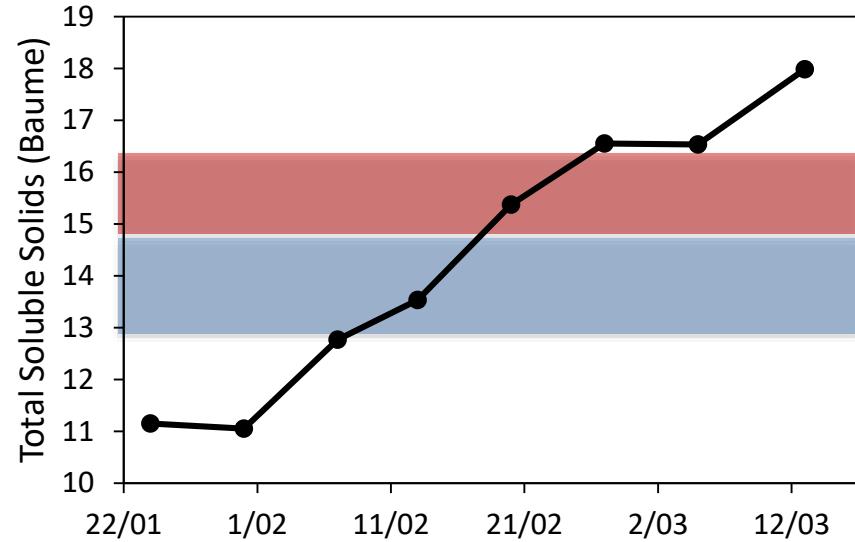
- ❖ Barossa Valley
- ❖ Shiraz
- ❖ Steeper the line
- ❖ Shorter maturity period
- ❖ Change over time

Consequences



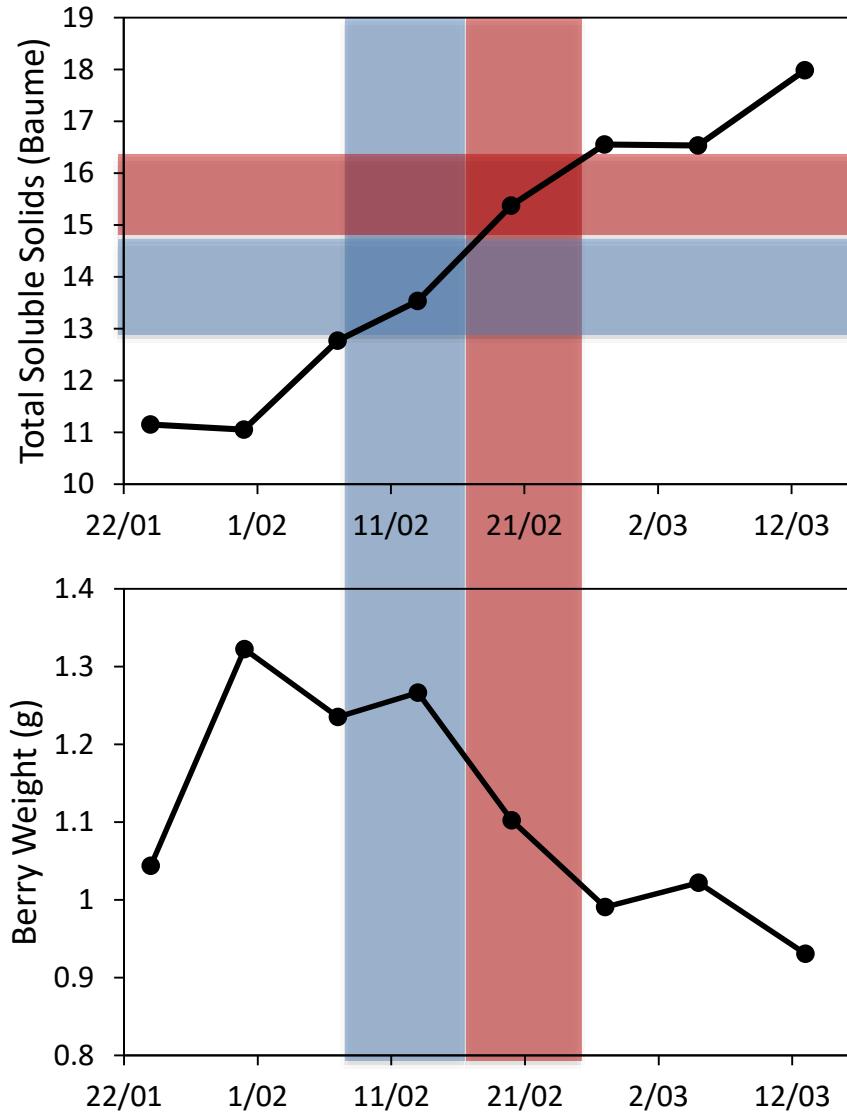
- ❖ Accumulation of sugar in Barossa Shiraz over time

Consequences



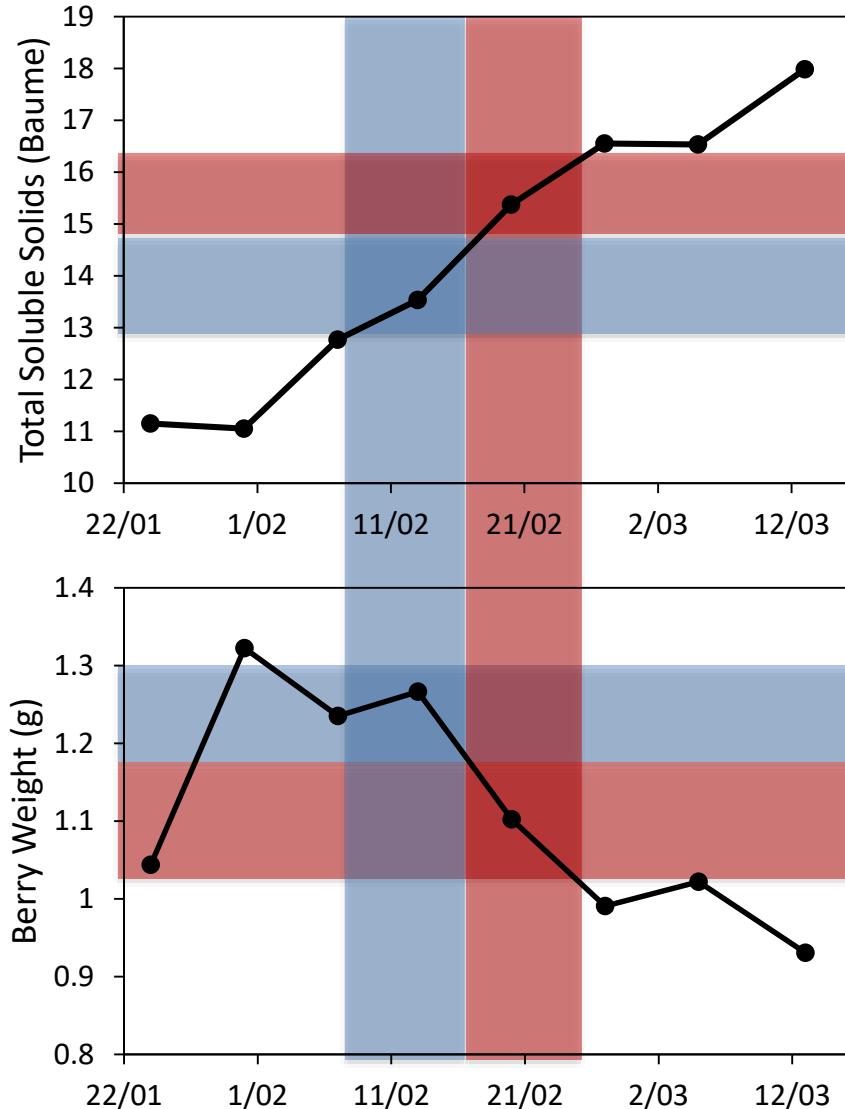
- ❖ Accumulation of sugar in Barossa Shiraz over time
- ❖ Logistical issues delay harvest

Consequences



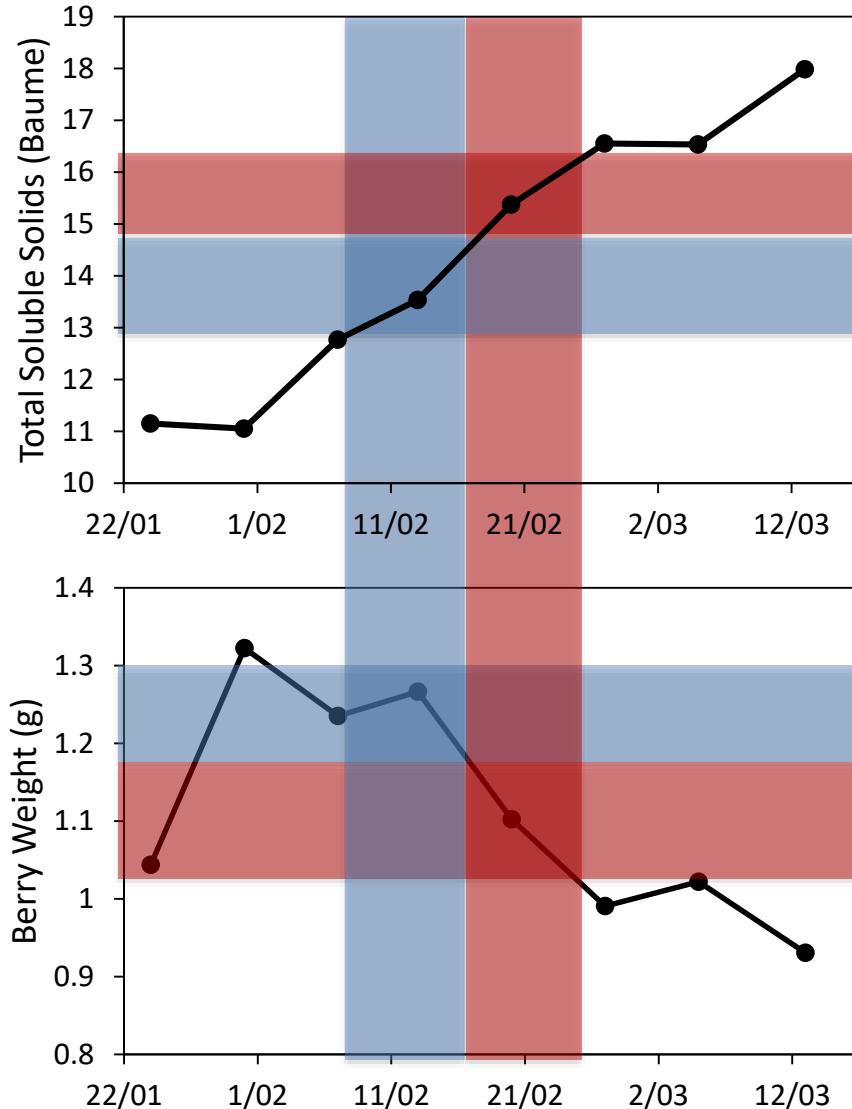
- ❖ Accumulation of sugar in Barossa Shiraz over time
- ❖ Logistical issues delay harvest
- ❖ Increase in sugar concentration due to dehydration

Consequences



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- ❖ Reduces berry size and yield by 10%

Consequences



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- ❖ Increase in sugar concentration due to dehydration
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Photo courtesy of
Martin Moran



- ❖ Phenology is advancing
 - In Australia and world wide
- ❖ Vintages are becoming more compressed
- ❖ Different varieties are maturing at a similar time
- ❖ Individual varieties are maturing over a shorter time
- ❖ Pressure on harvest logistics
- ❖ Fruit harvested at sub-optimum quality

Delay maturity



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- ❖ Delay maturity into a cooler part of the season
 - Better quality?
- ❖ Improved harvest logistics
 - Harvest at optimal time
 - Better use of facilities
- ❖ Reduced risk
 - Extreme events i.e. heat wave
- ❖ Even a week is valuable



Delayed pruning



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- ❖ Can we use delayed pruning in order to delay harvest and move ripening into a cooler part of the season?

Delaying maturity



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Unpruned 22 September (Shiraz)

- ❖ Five Pruning Dates
- ❖ 26 May (early normal)
- ❖ 4 August (late normal)
- ❖ 5 September (bud burst)
- ❖ 22 September
- ❖ 18 October

Delaying maturity



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- ❖ Five Pruning Dates
- ❖ 26 May (early normal)
- ❖ 4 August (late normal)
- ❖ 5 September (bud burst)
- ❖ 22 September
- ❖ 18 October

Pruned 26 May and 22 September (Shiraz)

Tracking fruit colour at veraison



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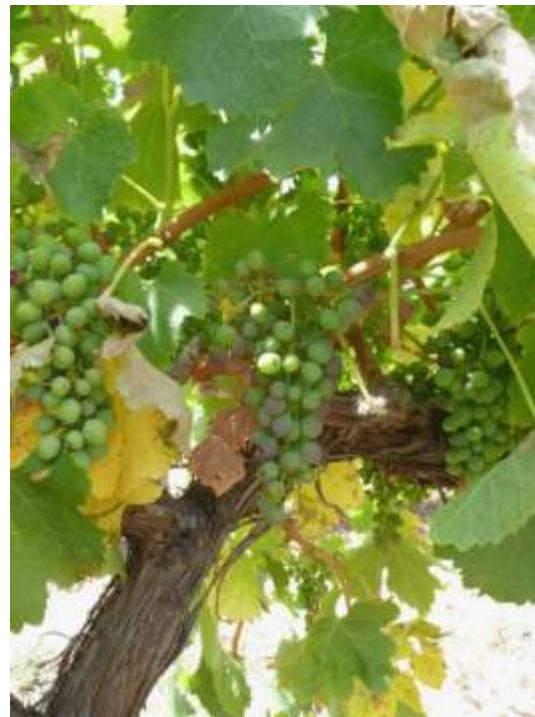
Tracking fruit colour at veraison



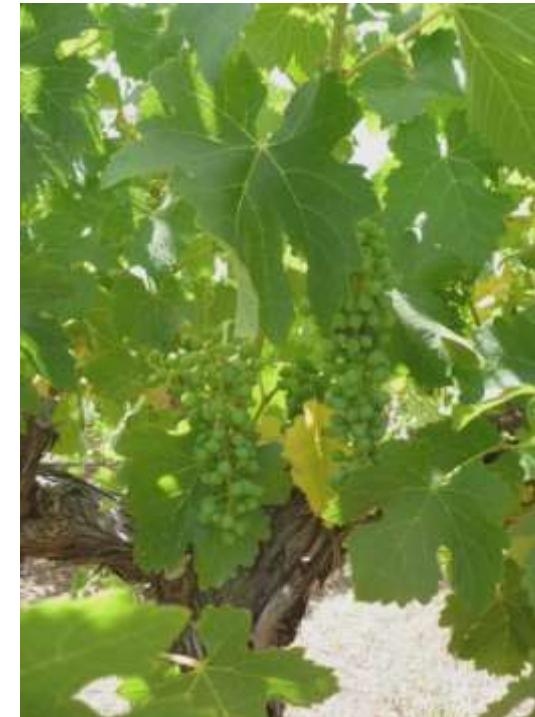
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Pruned 26 May



Pruned 22 Sept



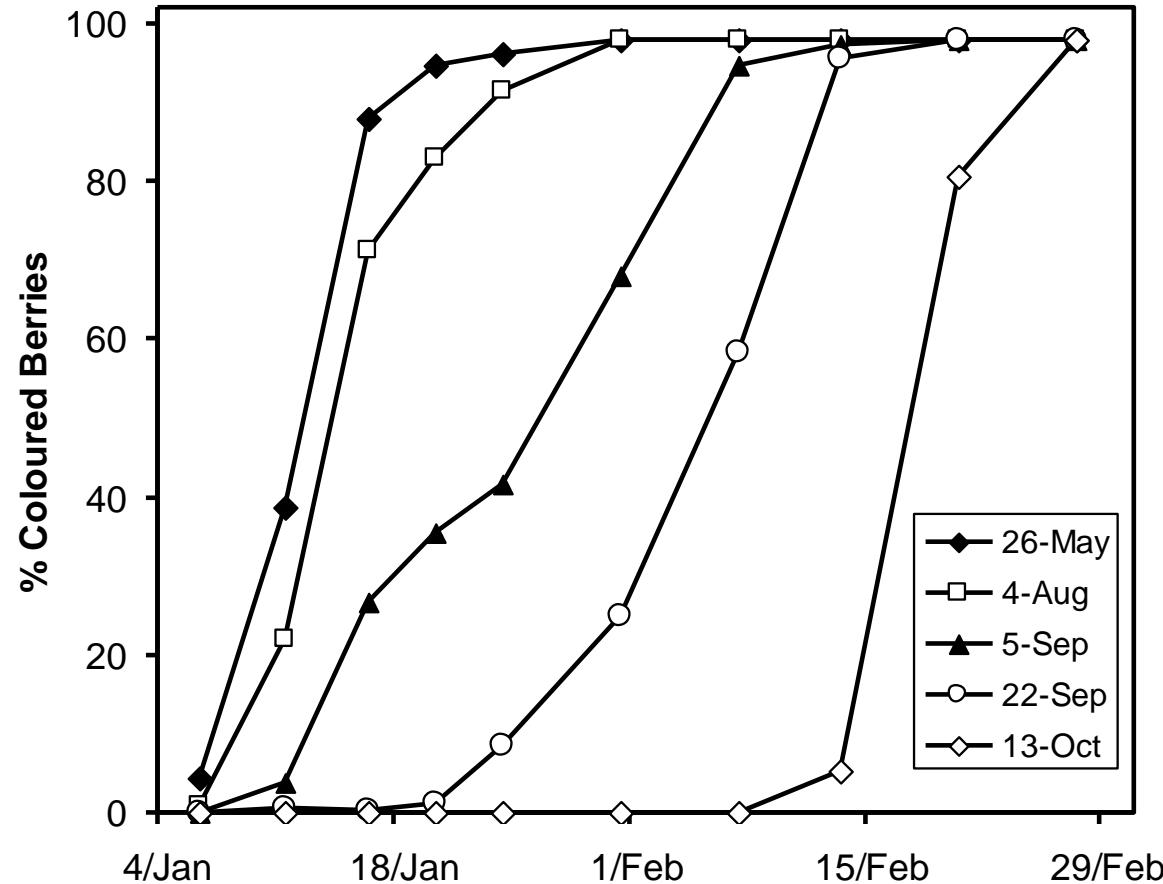
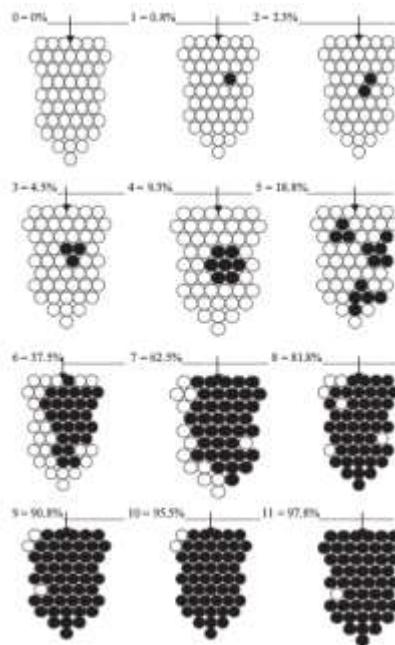
Pruned 13 Oct

Tracking fruit colour at veraison



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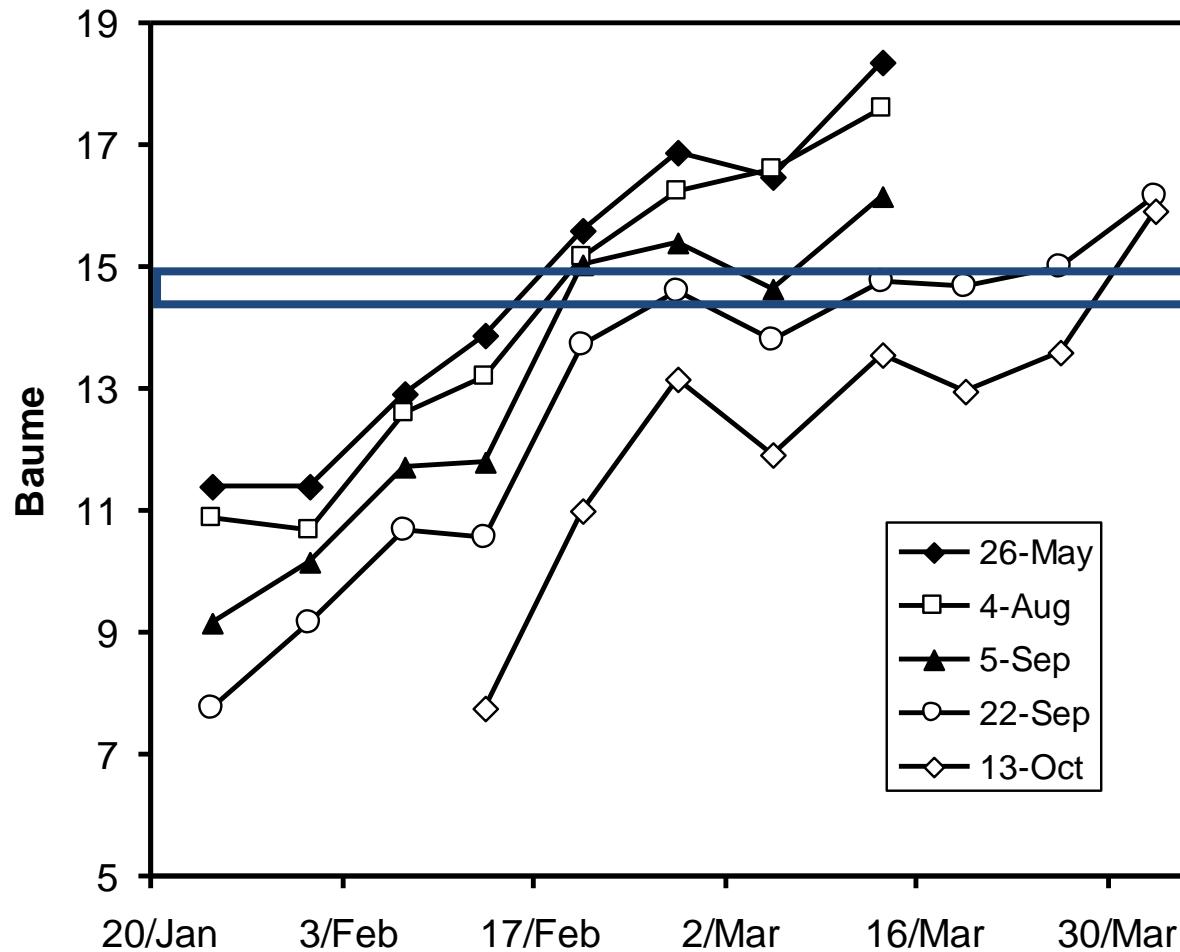
- ❖ Visual scoring
- ❖ Large spread between later pruning times.



Tracking Maturity



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- ❖ Large spread between later pruning times
- ❖ Earlier pruning times now closer
- ❖ Fruit harvested about 14.5 Be for winemaking

Yield components



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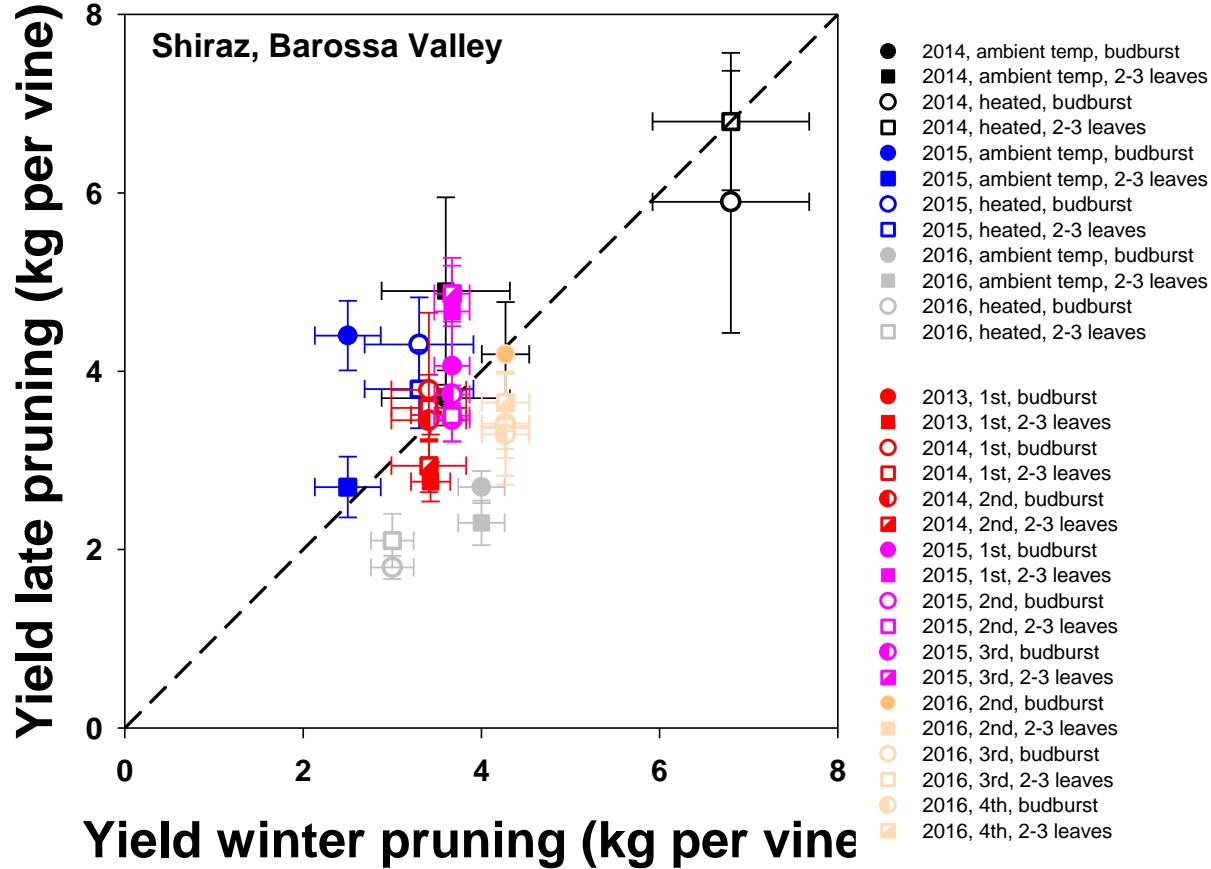
Pruning Date	Harvest Date	Yield (kg/vine)	Bunch No	Bunch Wt (g)	Berry Wt (mg)	Pruning Wt (g)
26 May	20 Feb	3.9	64.5	51.7	1.1	1137
4 Aug	20 Feb	3.6	67.6	58.0	1.1	1161
5 Sept	28 Feb	2.6	57.3	43.8	1.0	1118
22 Sept	5 March	3.1	78.6	44.1	0.9	887
13 Oct	4 April	1.4	47.3	27.7	0.9	453

Thinned vines yielded approximately 3kg

Impact on Yield



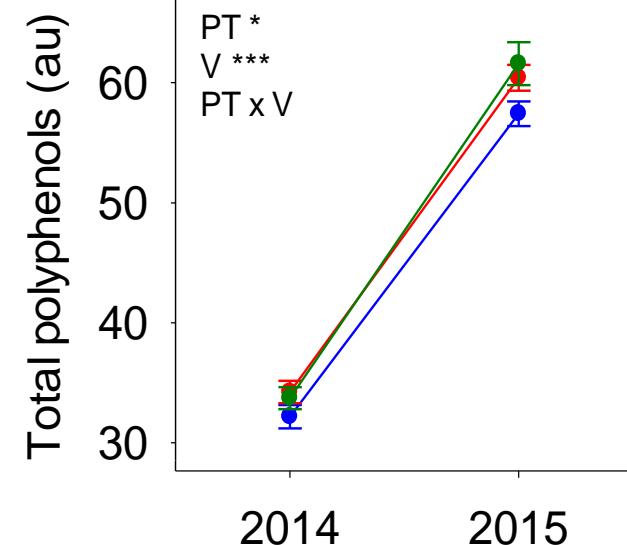
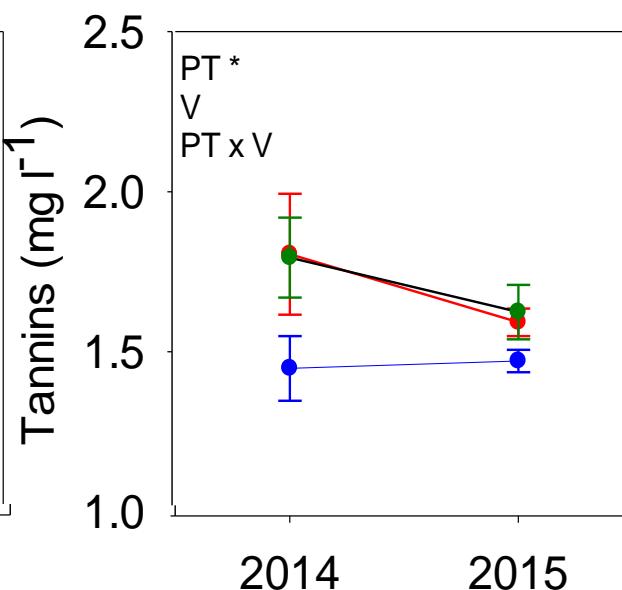
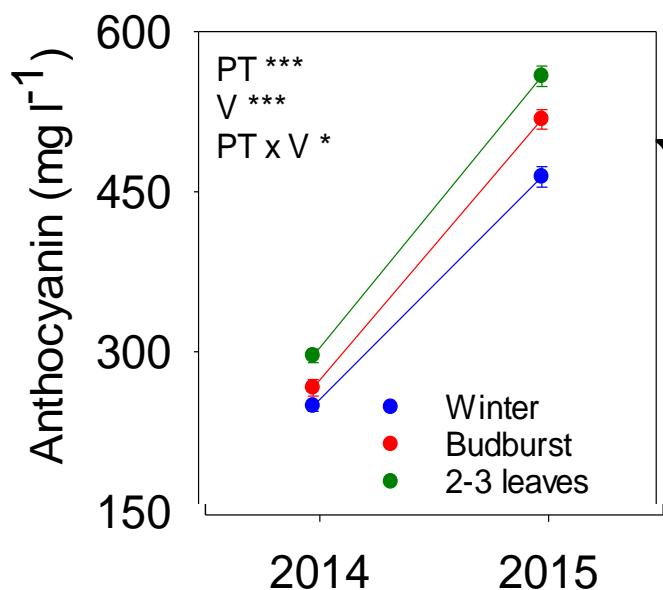
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- ❖ Yield varies between seasons
- ❖ Similar on average to winter pruning
- ❖ Didn't decline over multiple years of delayed pruning
- ❖ Very dynamic system

Wine quality

- ❖ Harvested at similar maturity
- ❖ Higher anthocyanins
- ❖ Higher tannins
- ❖ Higher total polyphenols

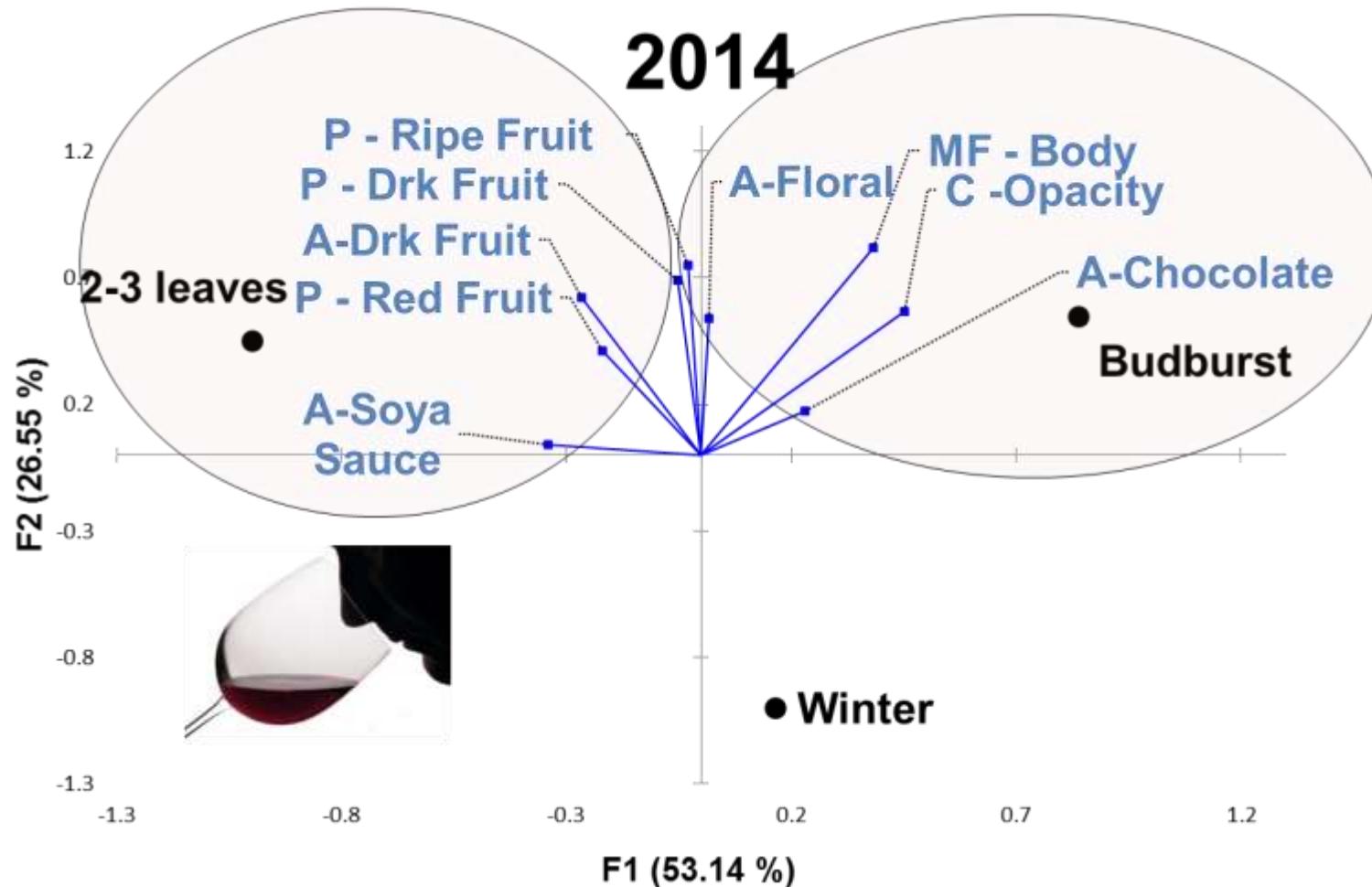


Vintage

Delayed pruning



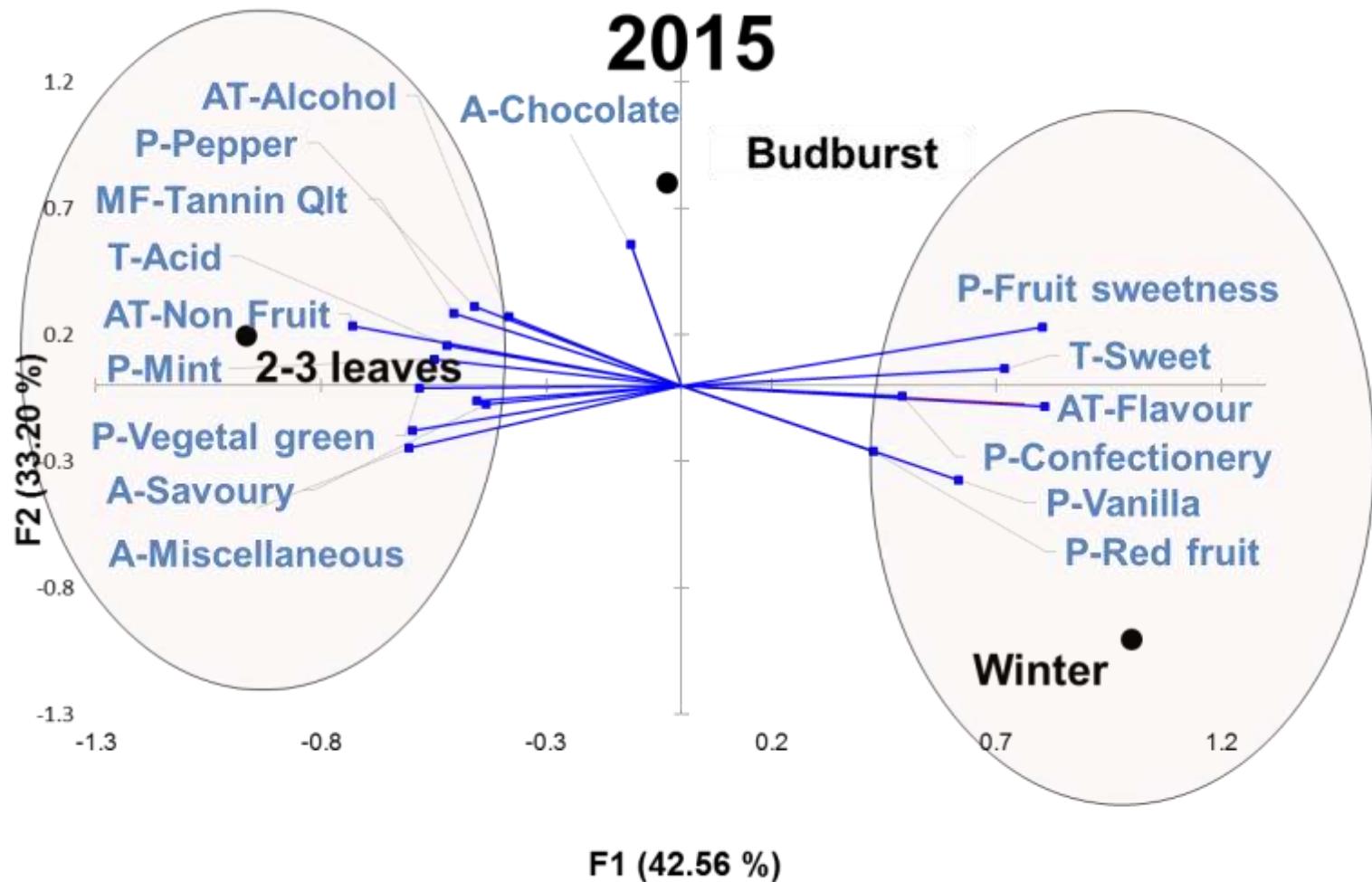
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Delayed pruning



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Delayed pruning

- ❖ Didn't effect yield on average
 - pruned prior to 2-3 leaves expanded
- ❖ Delayed maturity by up to 2 weeks
- ❖ Consistently improved anthocyanin and tannin content
- ❖ Increased colour opacity, mouth feel (body), and tannin quality
- ❖ Well demonstrated for Barossa Shiraz
 - Likely to work on other spur pruned systems
- ❖ Supported for use in other varieties
- ❖ No experience in machine pruned systems

Acknowledgements



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