

Rā Tuarua - Rāmere 18 Mahuru 2026

Day 2 - Friday 18 September 2026

Wāhanga (session) 1: Yield vs Quality



BRADEN CROSBY

Discussion

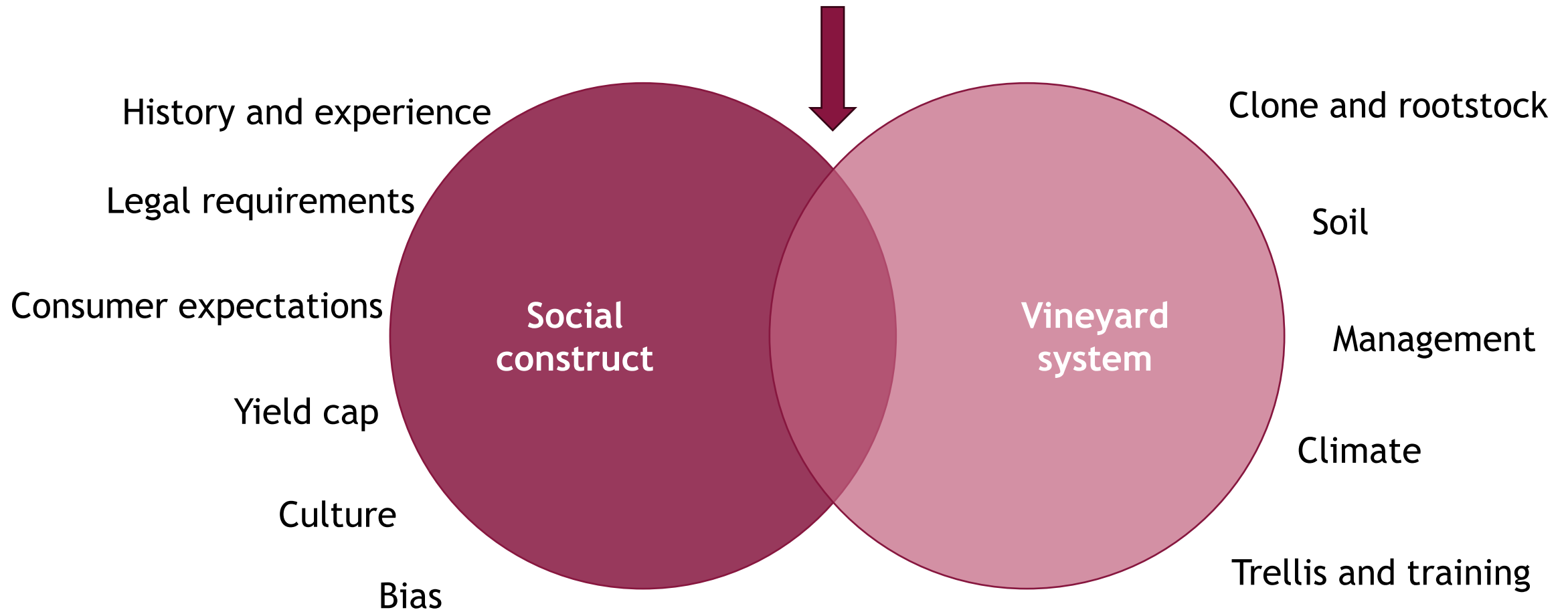
Yield
Harvest date

Two key questions:

Can we grow more without sacrificing quality?

Can we harvest earlier without sacrificing quality?



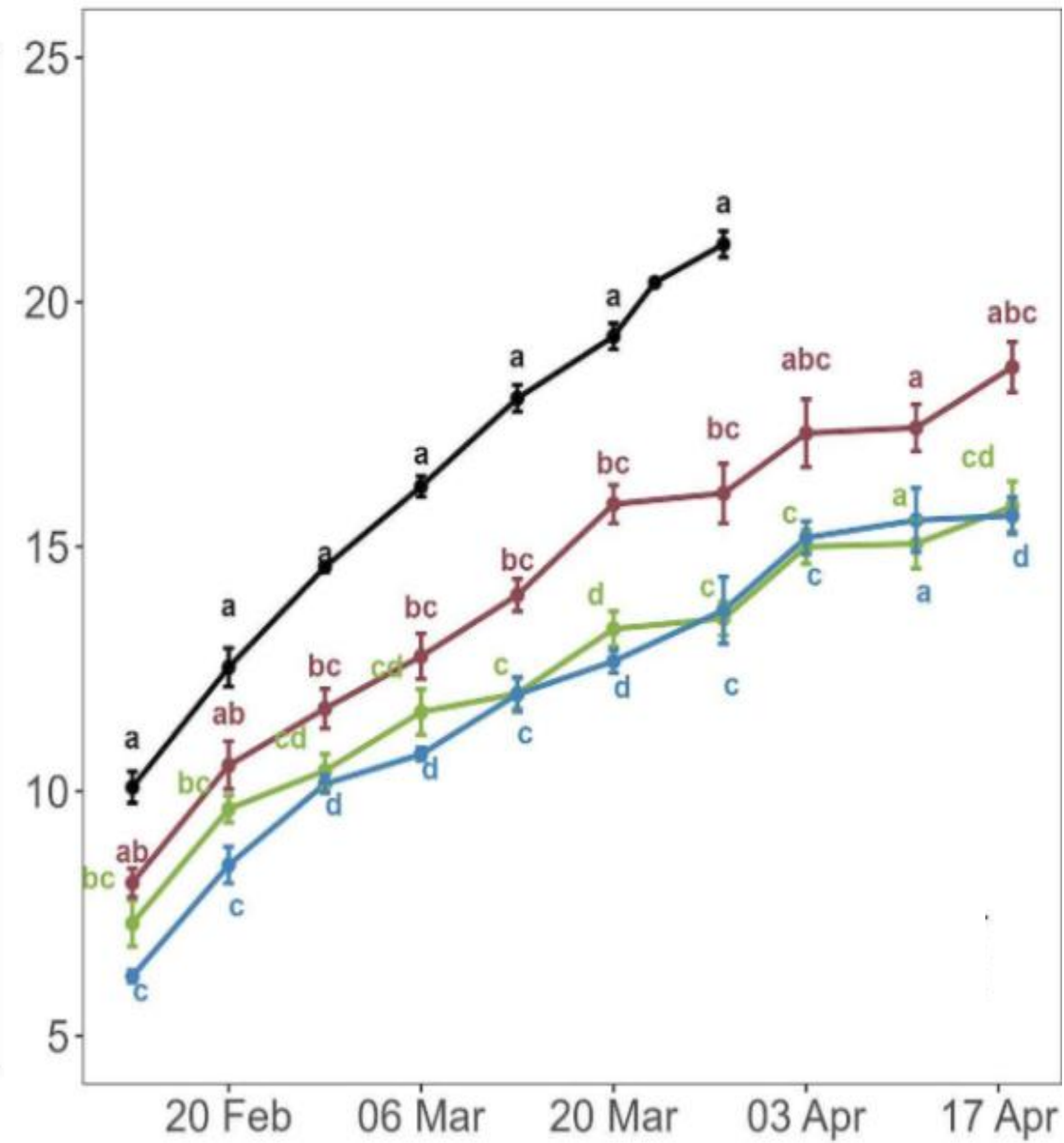
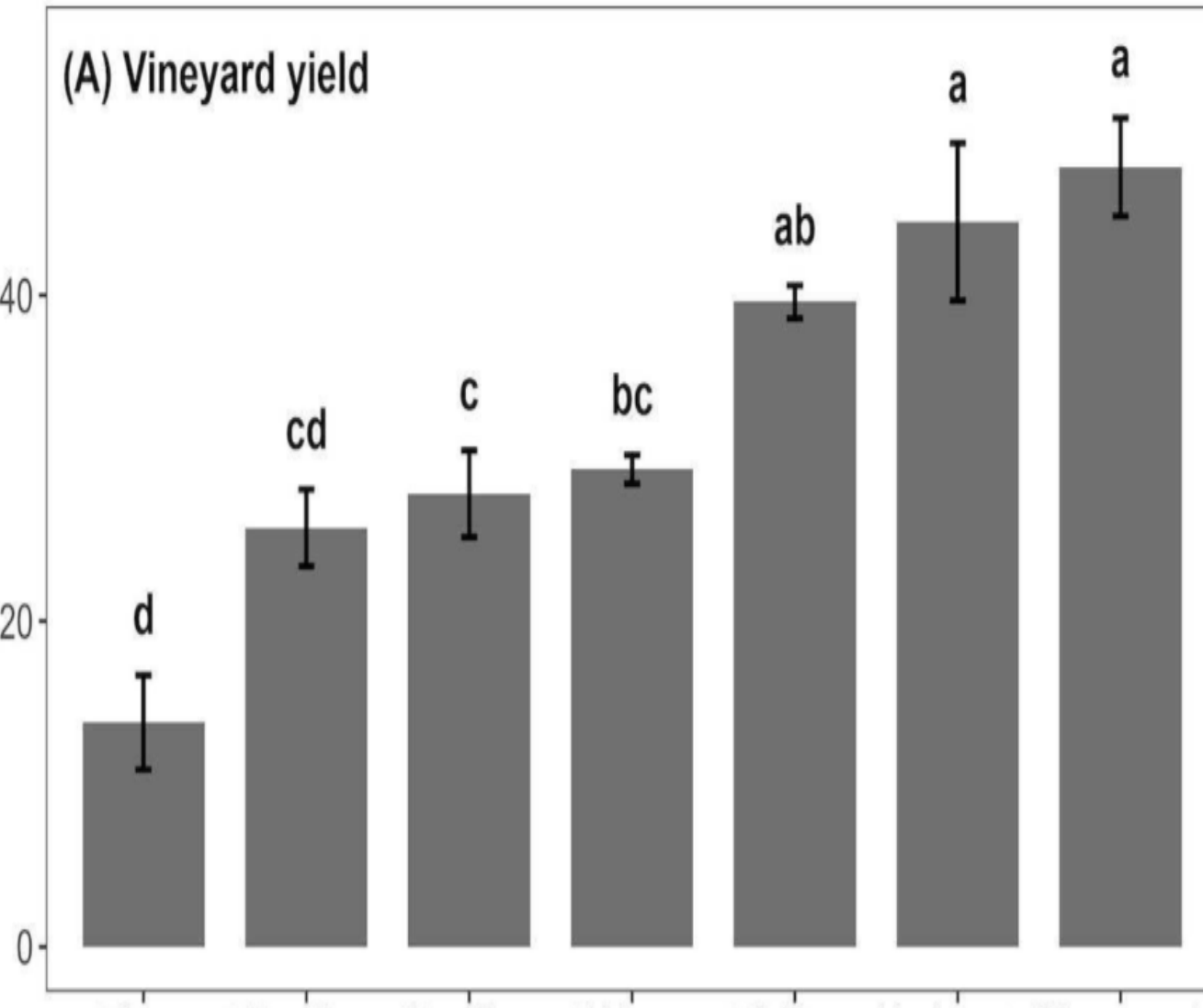


BURGUNDY AOC CLASSIFICATION	BASE-YIELD RANGE
Regional AOC	55-75 hl/ha
Village AOC	45-70 hl/ha
Premier Cru	45-68 hl/ha
Grand Cru	40-64 hl/ha

INAO (Institut National de l'Origine et de la Qualité).

Vineyard yield (t/ha)

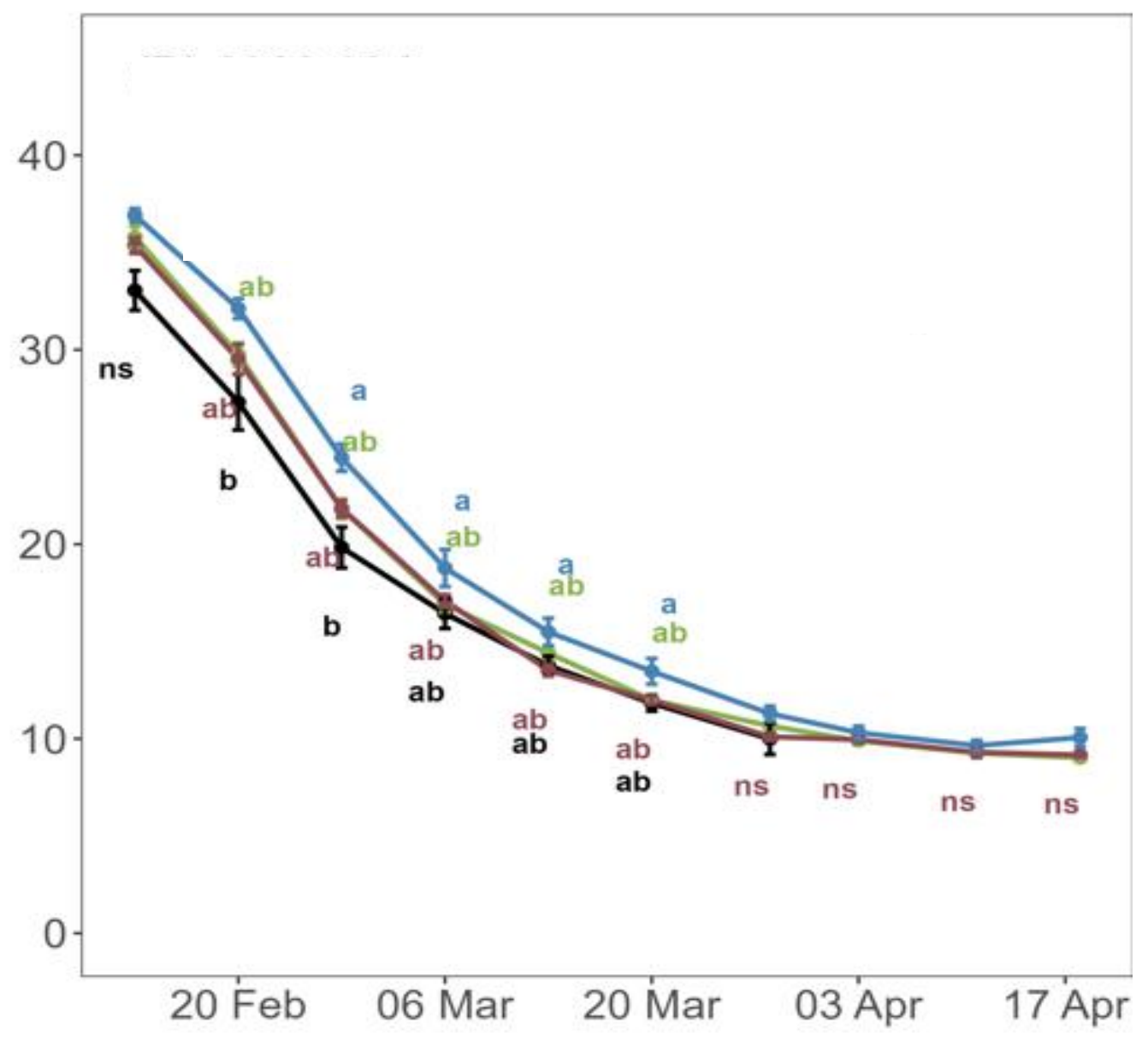
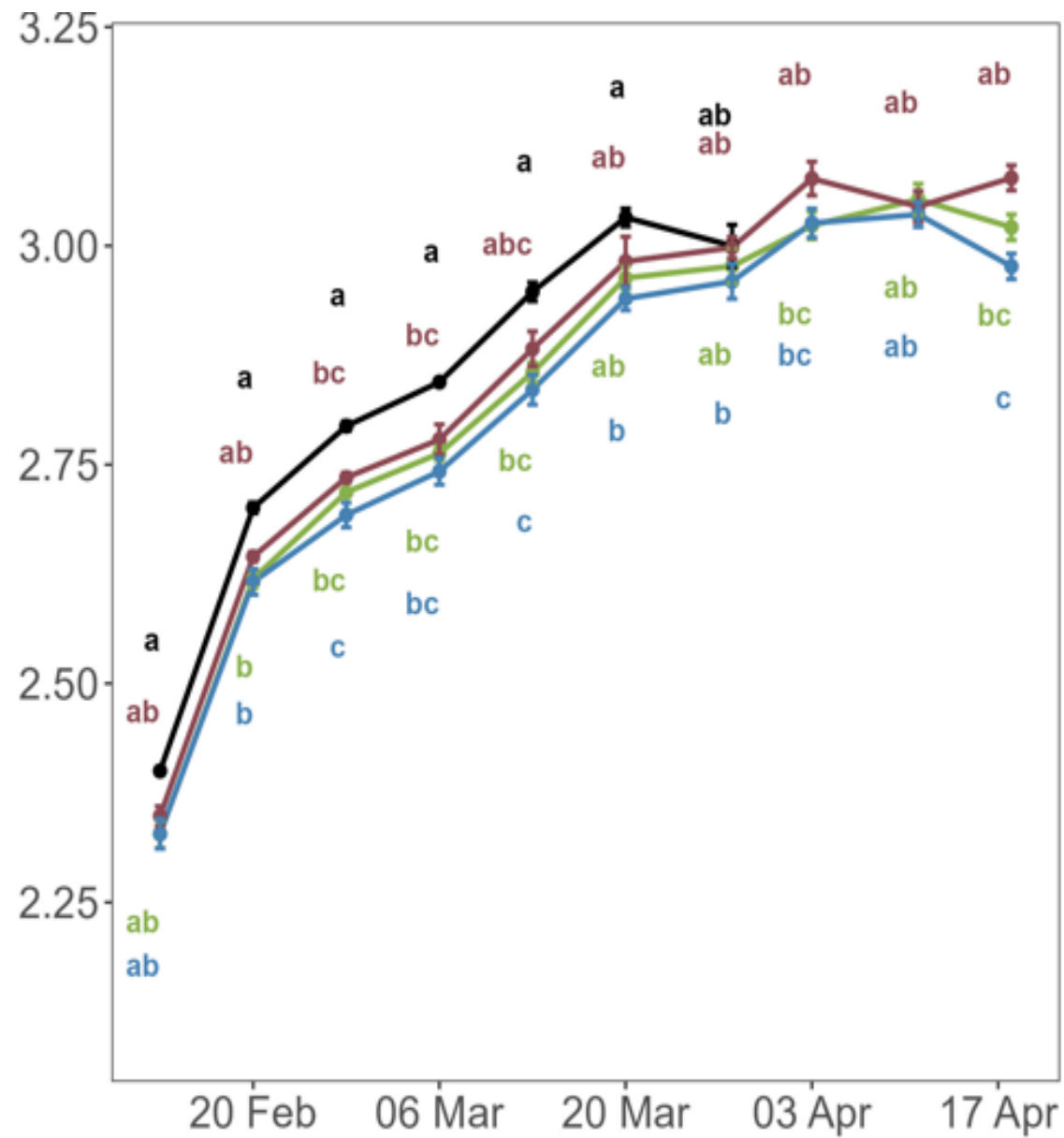
(A) Vineyard yield



World-leading research from grape to glass



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SLIDO QUESTIONS:

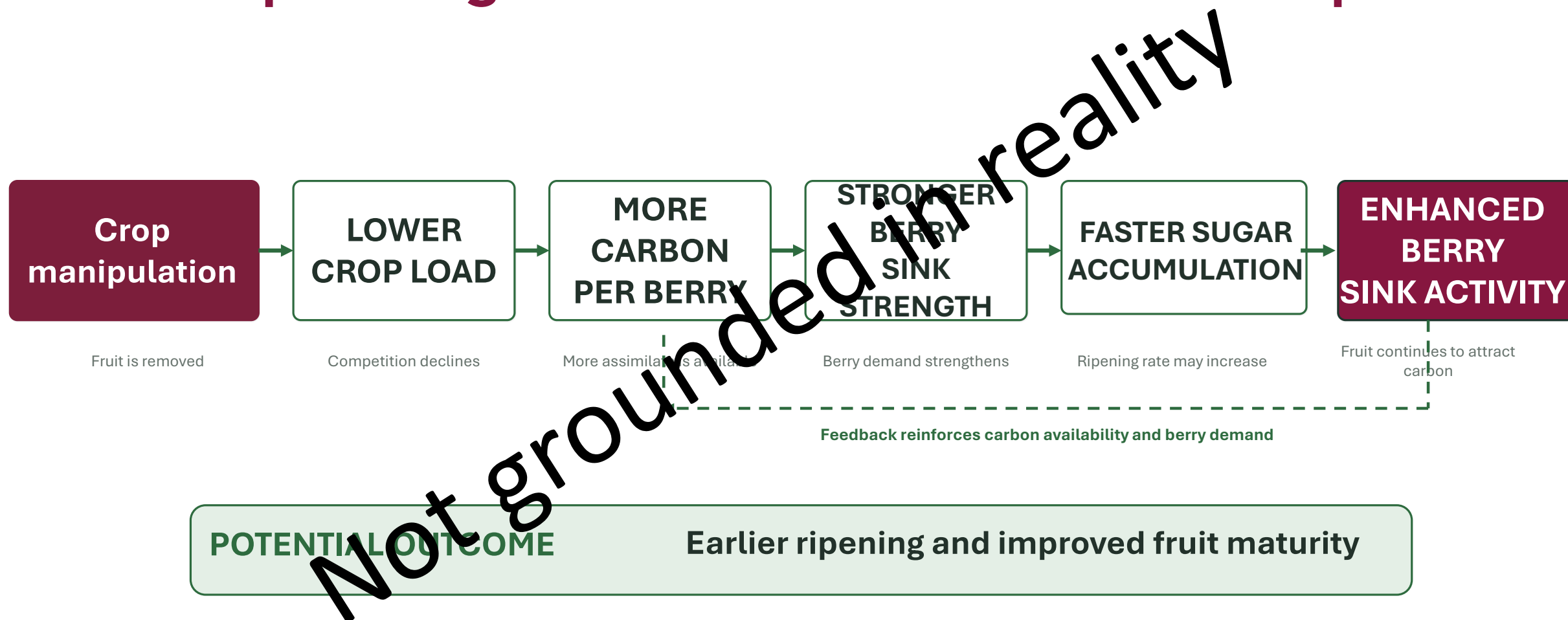
- What is your optimum yield?
- What is your optimum yield during a El Niño?
- What is your optimum yield during a La Niña?
- Why do you manage yields?

Why investigate yield?

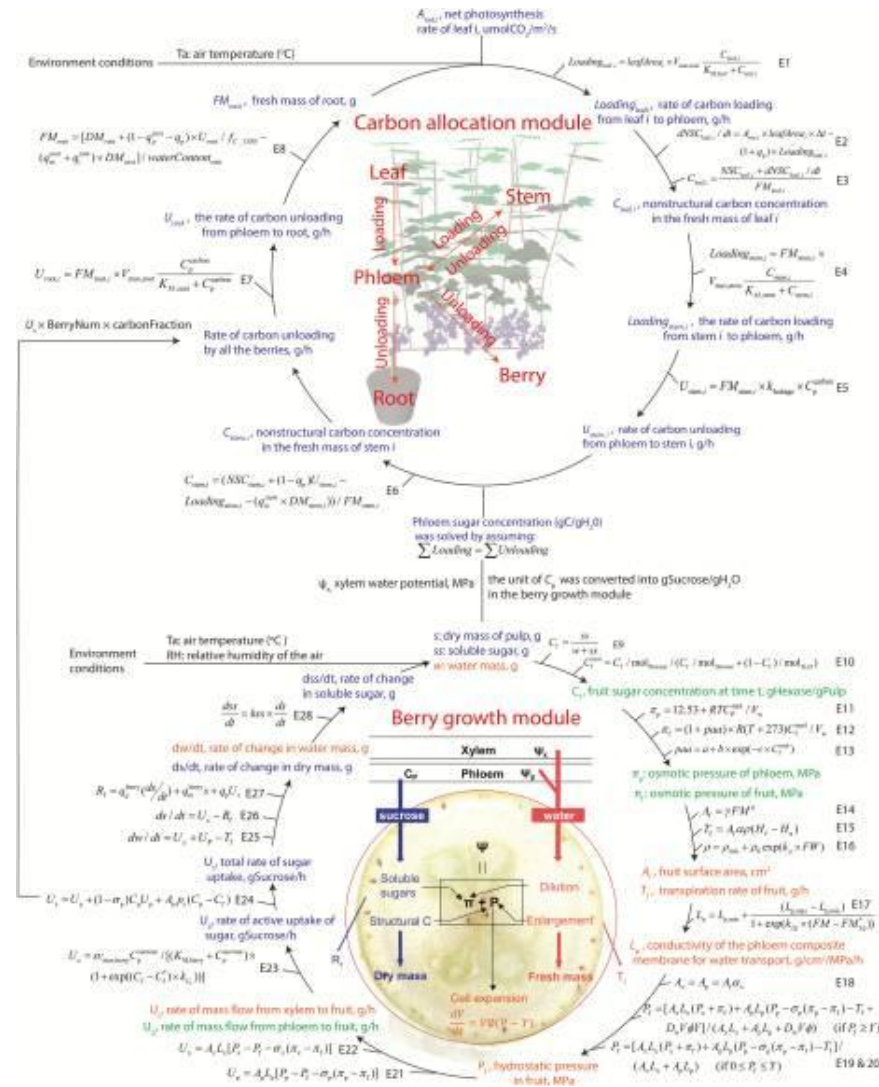
- Yield is a major driver of vineyard profitability
- Crop manipulation is expensive
- Little New Zealand data links yield directly to Chardonnay wine style
- Test whether quality actually changes as much as assumed
- Everybody likes to talk about yield



Manipulating the source : sink relationship

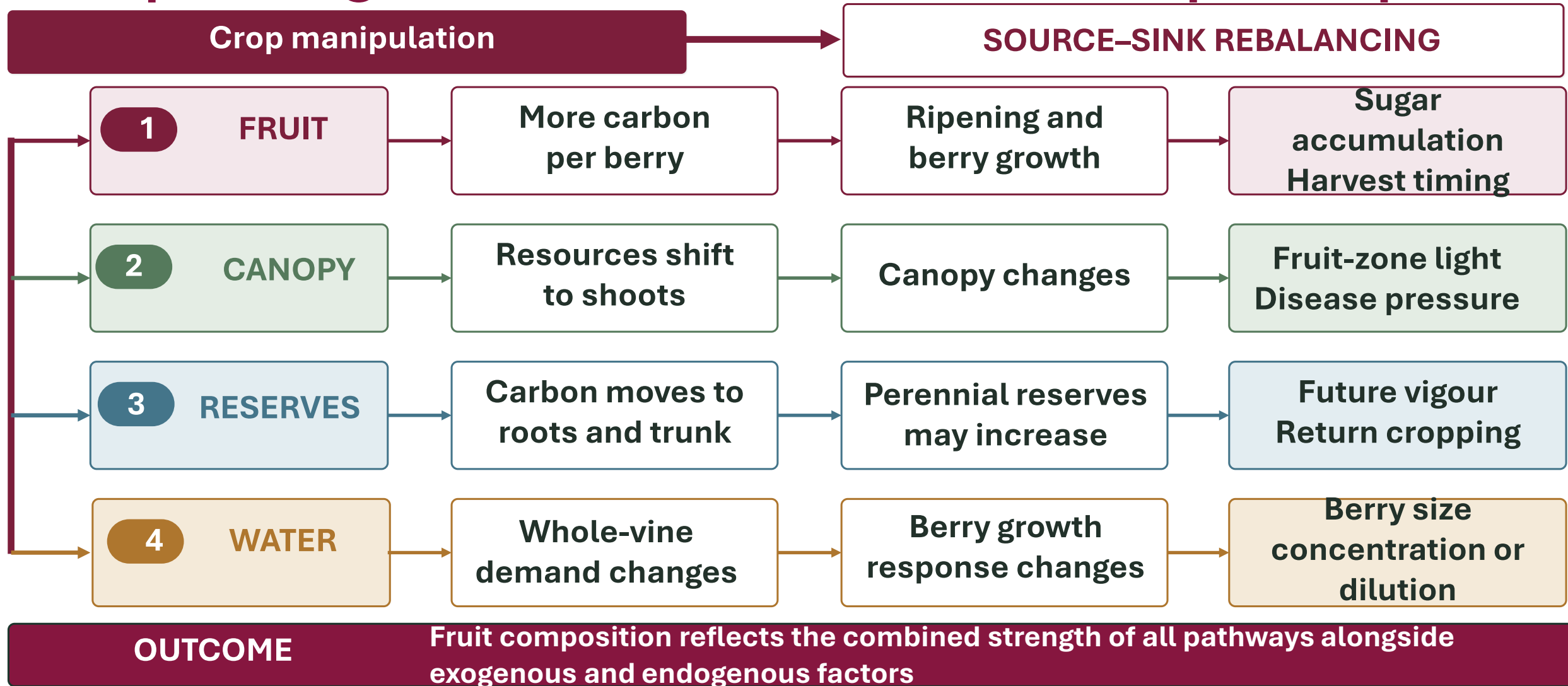


Manipulating the source : sink relationship - the reality

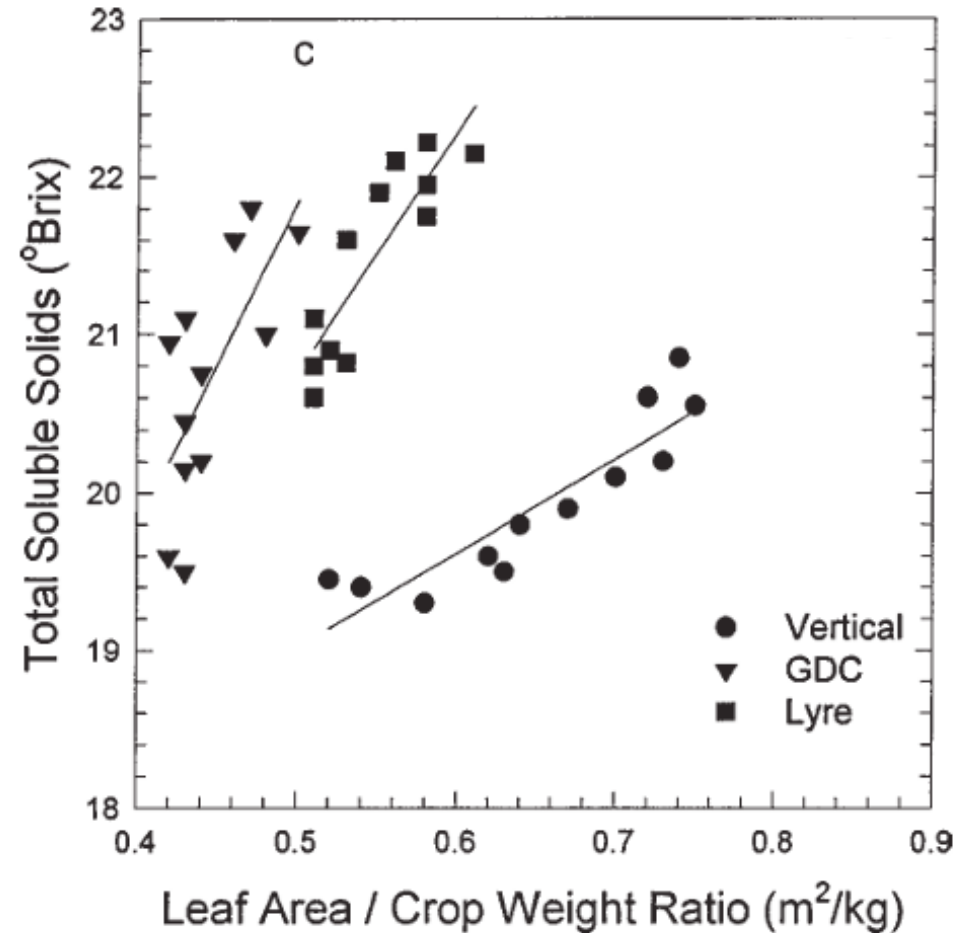
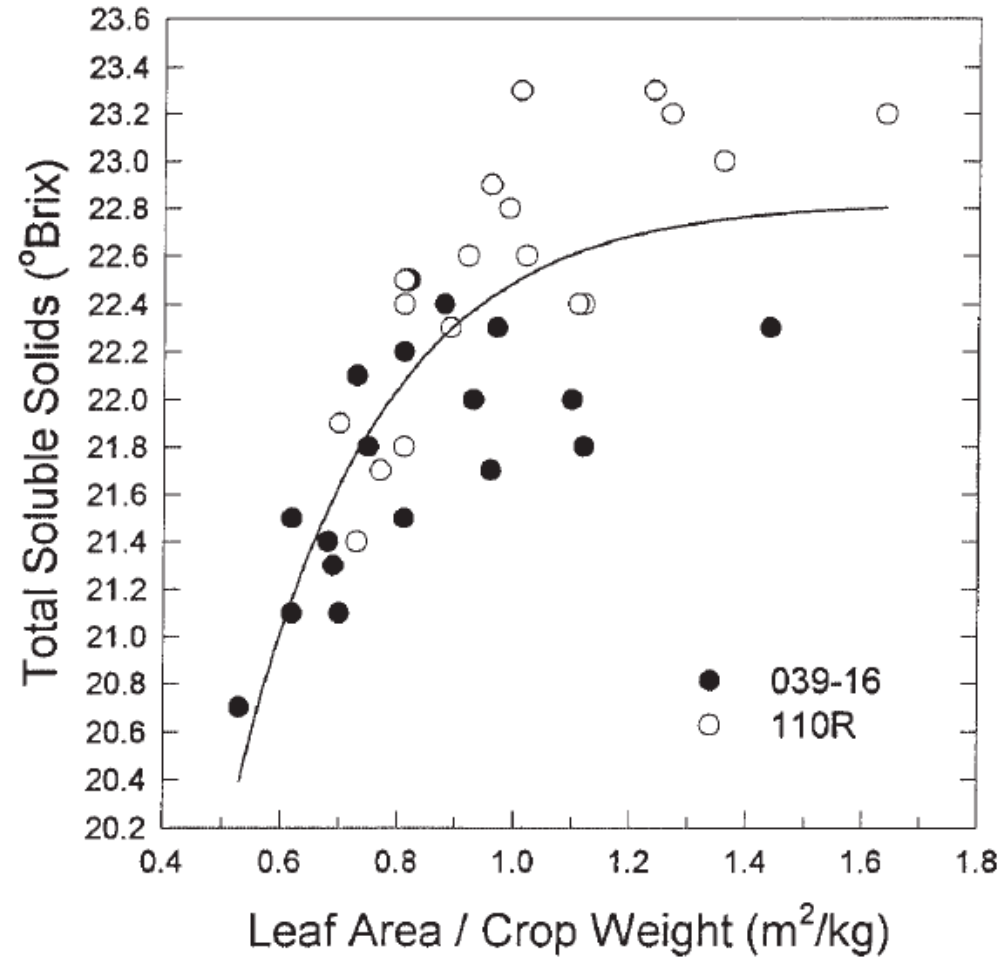


Zhu et al. (2018)

Manipulating the source : sink relationship - simplified

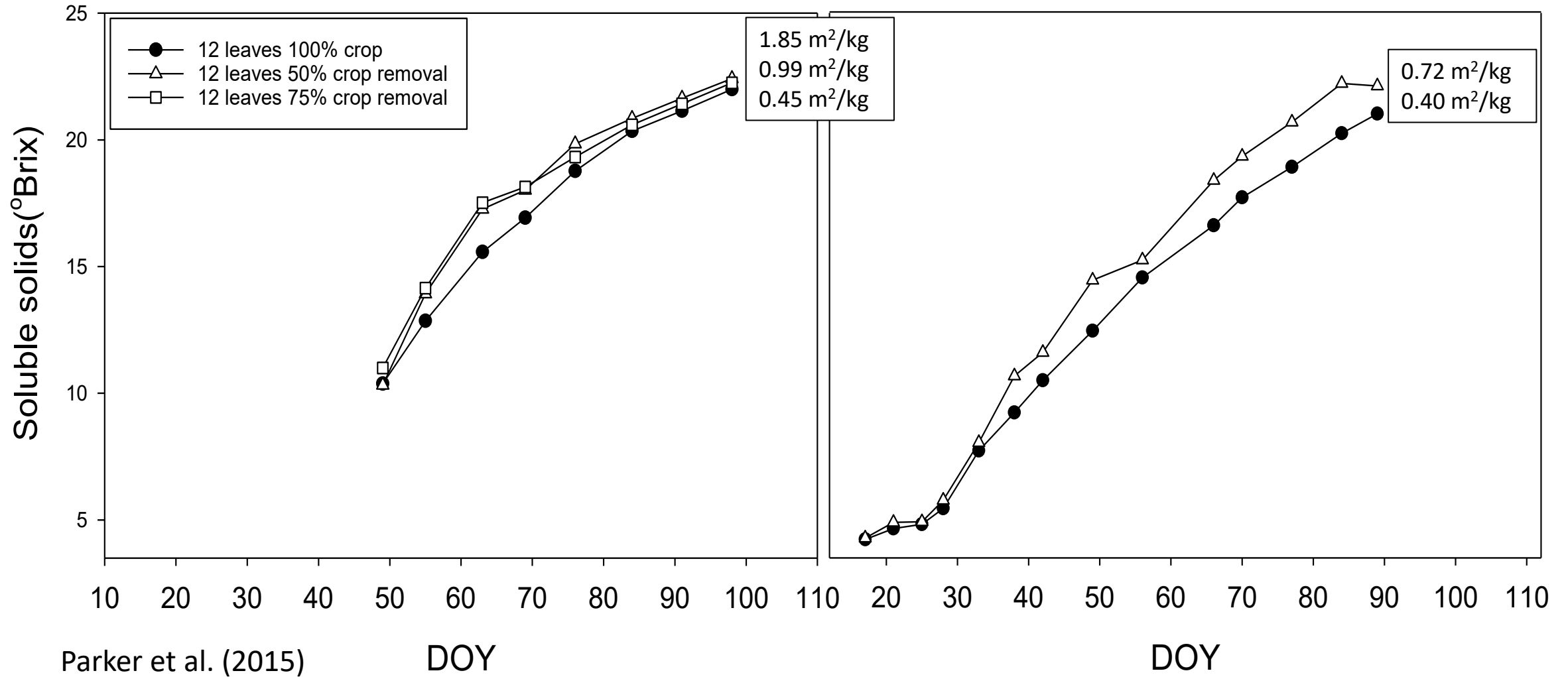


Balanced vines



Kliewer and Dokoozlian (2005)

Balanced vines



The yield trial

Parameter	
Clone	B95/3309
Vine Density	2.5m x 1.8m (2,222 vines/ha)
Location	Bridge Pa Hawke's Bay
Treatments	6T 9T 12T
Trial Design	Replicated - thinning at pea size
Harvest Date	19 th February 2026



The vines

6



9



12



World-leading research from grape to glass



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Vine response

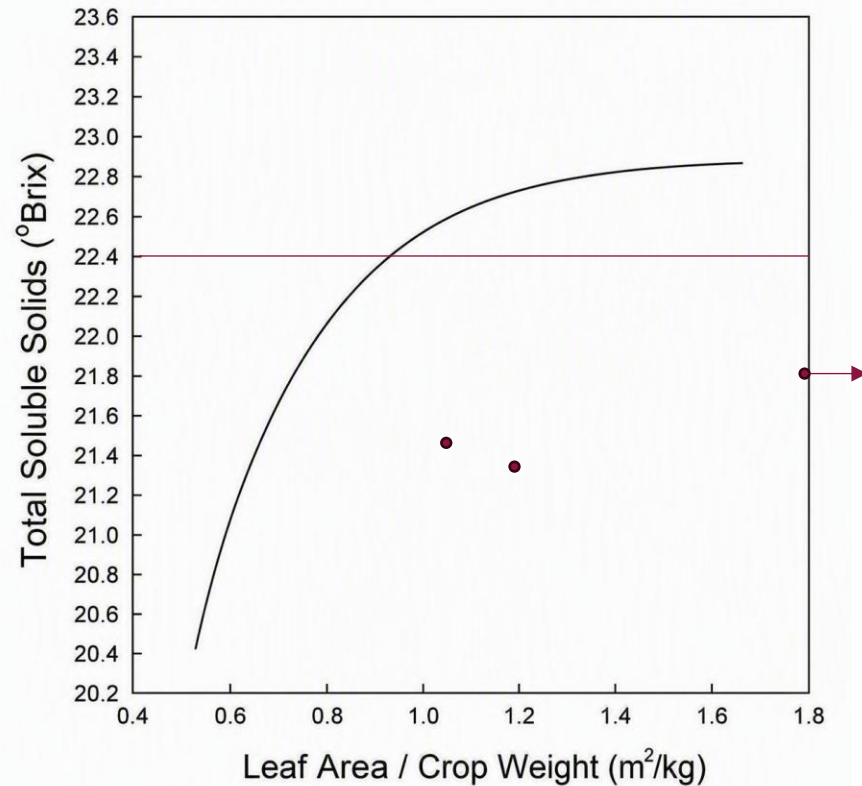
Treatment	Vine Yield (kg/vine)	ABW (g)	Bunch number/vine
6T	4.07 ± 0.30 ^c	1.76 ± 0.04 ^a	22.58 ± 0.70 ^c
9T	5.37 ± 0.33 ^b	1.75 ± 0.05 ^a	34.75 ± 1.65 ^b
12T	8.31 ± 0.29 ^a	1.71 ± 0.04 ^a	50.42 ± 1.72 ^a

Fruit response

Treatment	°Brix	pH	TA (g/L)
6T	21.80 ± 0.14 ^a	3.07 ± 0.01 ^a	9.26 ± 0.24 ^a
9T	21.53 ± 0.11 ^a	3.08 ± 0.01 ^a	9.30 ± 0.24 ^a
12T	21.42 ± 0.09 ^a	3.06 ± 0.01 ^a	9.43 ± 0.16 ^a



Were vines balanced?



Treatment	Total leaf area (m²)	TLA:FW (m²/kg)
6T	4.92	2.24 ± 1.01 ^a
9T	3.44	1.21 ± 0.78 ^a
12T	5.65	1.22 ± 0.28 ^a

Interesting findings

- Removing fruit made no difference to vegetative growth of the canopy
- Laterals may have been contributing factor to ripeness in high crop treatment
- There was no berry size compensation or difference in bunch weight
- Thinning made no difference to grape parameters

Harvest date

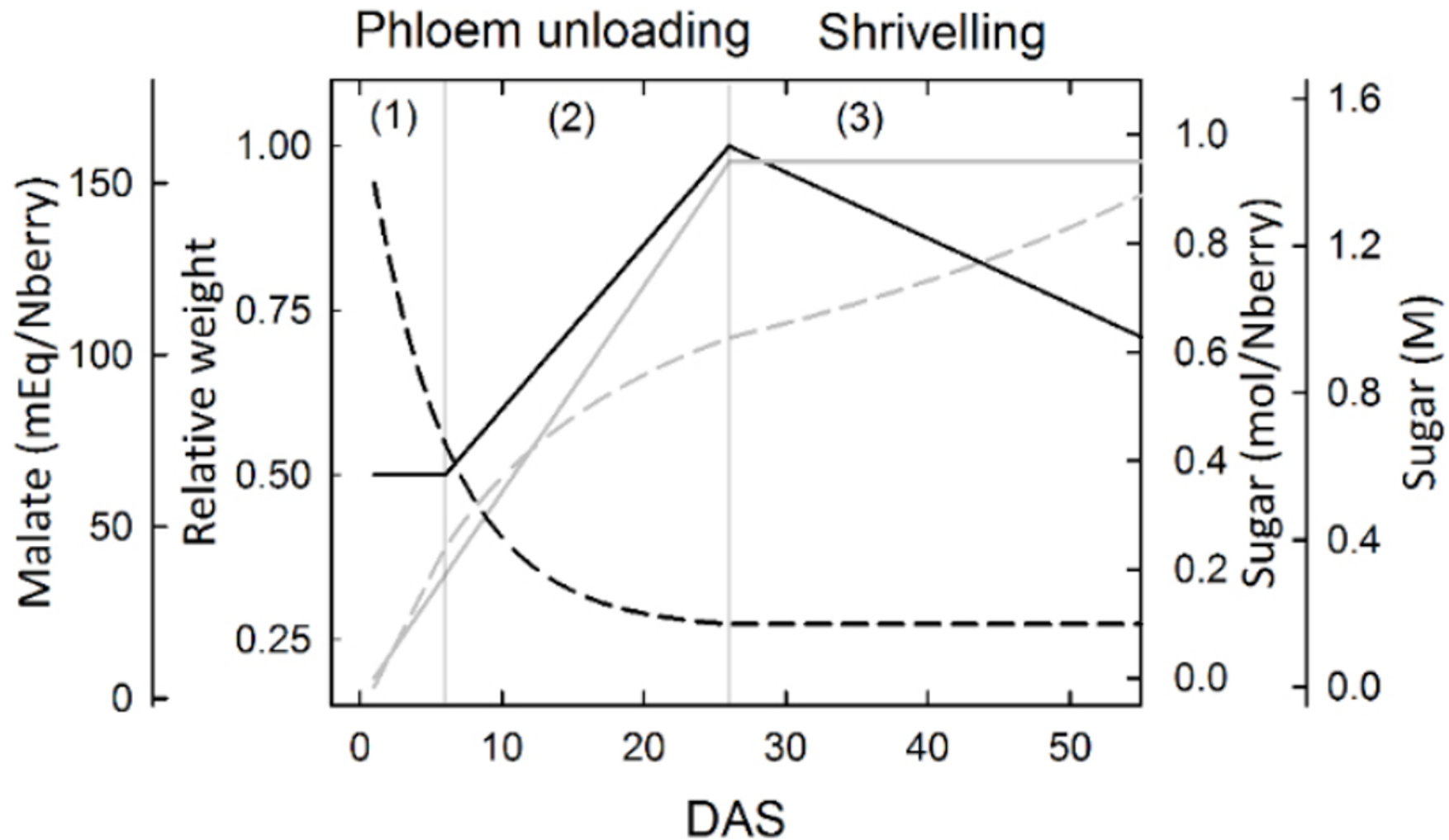
Lighter, fresher wines and
contingency for changing climates



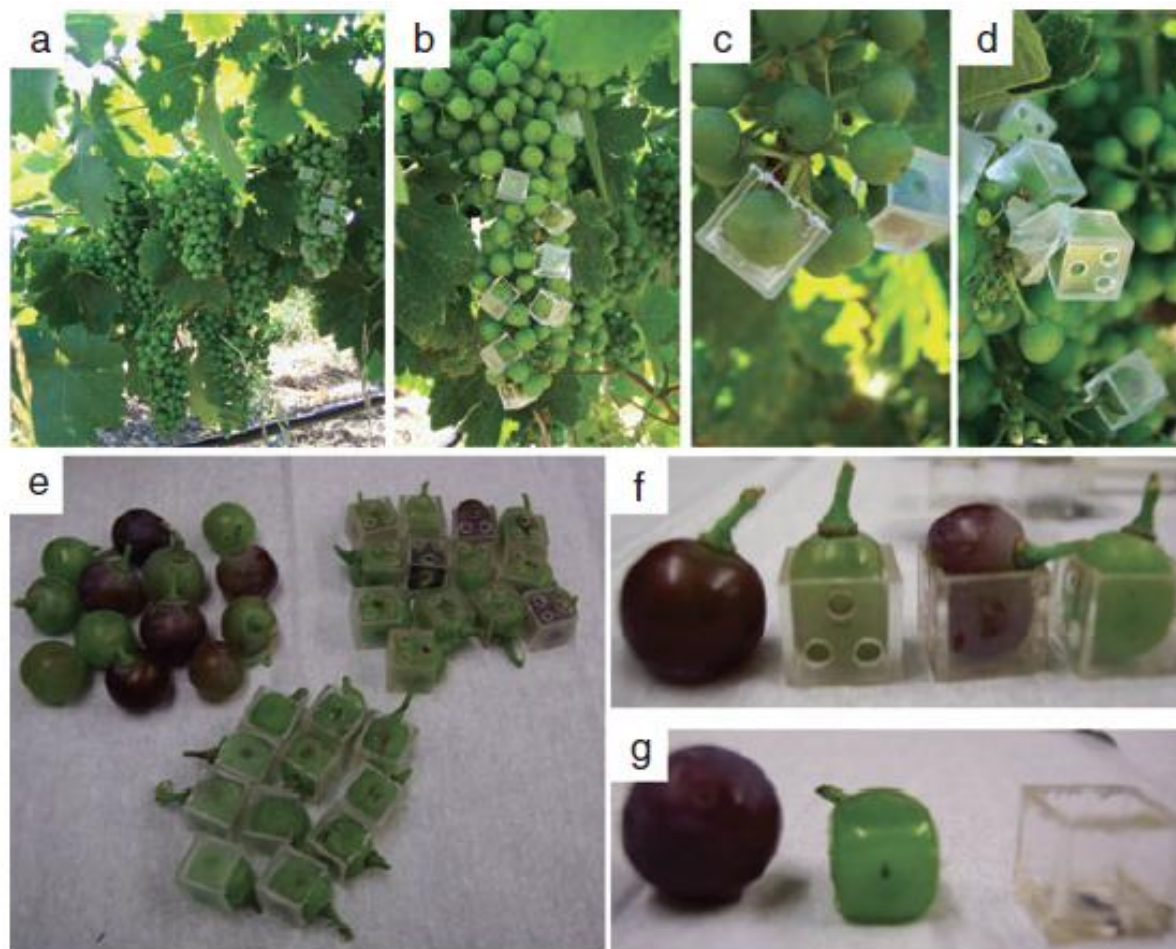
Grape sugar loading or (phloem unloading)

- Sugar is transported from the leaf into the phloem
- Sugars are unloaded from the phloem into the grape berry cells
- Speed of sugar accumulation depends on sugar concentration in the phloem and its rate of flow into the berry
- High turgor at the berry end of the system (low VPD, shade, very tight bunches) leads to slow sugar inflow into the berry
- Berries become weak sink over time
- Hang-time - period from the end of sugar loading to harvest
- Ammonium and amino acid ratio will vary at different loading





Shahood R, Torregrosa L, Savoi S, Romieu C 2020. First quantitative assessment of growth, sugar accumulation and malate breakdown in a single ripening berry. *OENO One* 54(4): 1077-1092.



Matthews et al. (2009)

What is extended hang-time

- Grape berry cells have a finite lifespan.
- This decline is correlated with fruit cell death.
- Metabolic processes completely different to active ripening
- Faster sugar loading can mean longer “hang-time” is available before berry condition deteriorates.

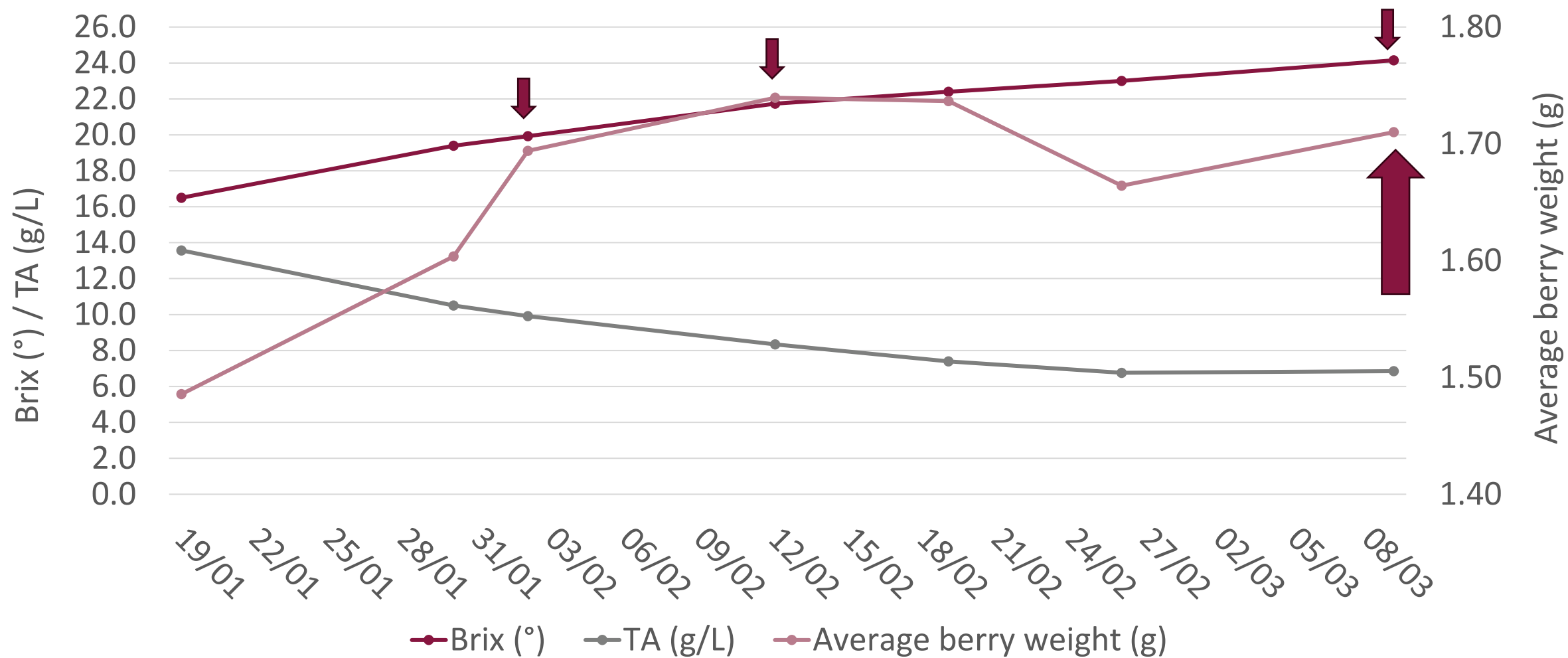
(Martin, D.)



The harvest date trial

Parameter	
Clone	B95/3309
Vine Density	2.0m x 1.5m (3,333 vines/ha)
Location	Gimblett Gravels Hawke's Bay
Treatments	Early - 02 February 2026 Mid - 12 February 2026 Late - 09 March 2026
Trial Design	Replicated block design

Ripening curves

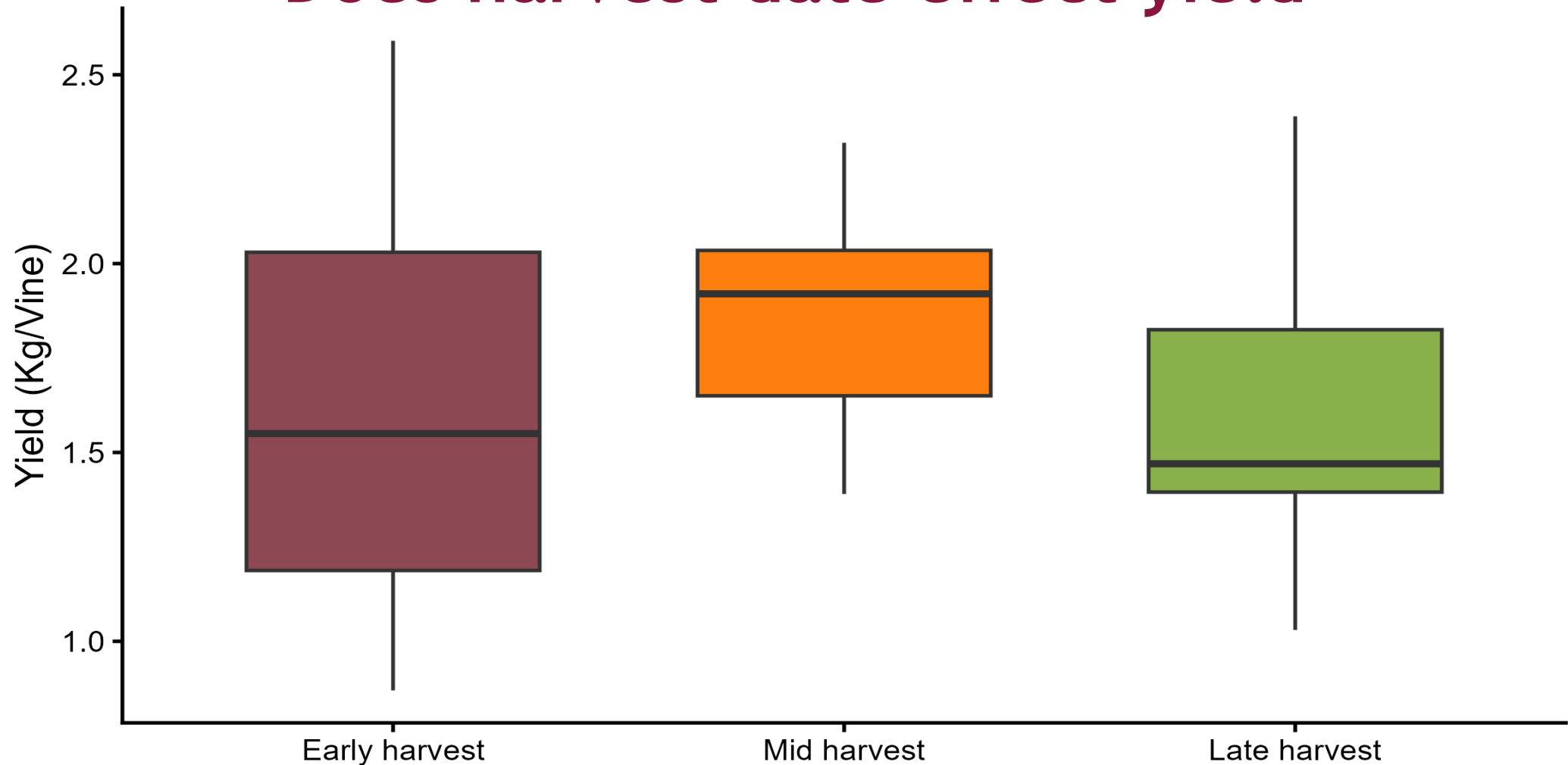


Fruit composition at harvest

Treatment	°Brix	pH	TA (g/L)	Average berry weight (g)
Early	19.93 ± 0.23 ^c	2.94 ± 0.03 ^c	9.91 ± 0.37 ^a	1.69 ± 0.06 ^a
Mid	21.72 ± 0.20 ^b	3.01 ± 0.03 ^b	8.34 ± 0.26 ^b	1.74 ± 0.04 ^a
Late	24.15 ± 0.27 ^a	3.33 ± 0.01 ^a	6.85 ± 0.30 ^c	1.71 ± 0.05 ^a



Does harvest date effect yield



Trial Wines - Tasting



Wine analysis

Treatment	Alcohol (%)	Wine pH	Wine TA (g/L)	Malic acid (g/L)	RS (g/L)
6	12.63 ± 0.13 ^a	3.09 ± 0.02 ^a	7.85 ± 0.20 ^a	2.92 ± 0.05 ^{ab}	0.09 ± 0.01 ^a
9	12.53 ± 0.15 ^a	3.10 ± 0.03 ^a	7.83 ± 0.19 ^a	2.84 ± 0.06 ^b	0.08 ± 0.00 ^a
12	12.33 ± 0.17 ^a	3.07 ± 0.02 ^a	7.78 ± 0.17 ^a	3.02 ± 0.07 ^a	0.08 ± 0.01 ^a

Yield trial

Treatment	Alcohol (%)	Wine pH	Wine TA (g/L)	Malic acid (g/L)	RS (g/L)
Early	11.13 ± 0.18 ^c	2.95 ± 0.02 ^c	8.84 ± 0.20 ^a	3.40 ± 0.05 ^a	0.04 ± 0.01 ^a
Mid	12.32 ± 0.12 ^b	3.05 ± 0.02 ^b	8.00 ± 0.06 ^b	2.70 ± 0.08 ^b	0.06 ± 0.01 ^a
Late	15.77 ± 0.23 ^a	3.60 ± 0.03 ^a	6.24 ± 0.10 ^c	2.26 ± 0.05 ^c	2.86 ± 2.00 ^a

Harvest date trial

Interesting findings

- Grape berry size appears to peak around 22.4 brix suggesting sugar loading is completed around this time in HB chardonnay
- Up to maximum berry size, sugar accumulated up 1.5 times more quickly than it did afterwards
- In both premium and commercial yields inter-vine cropping varied significantly

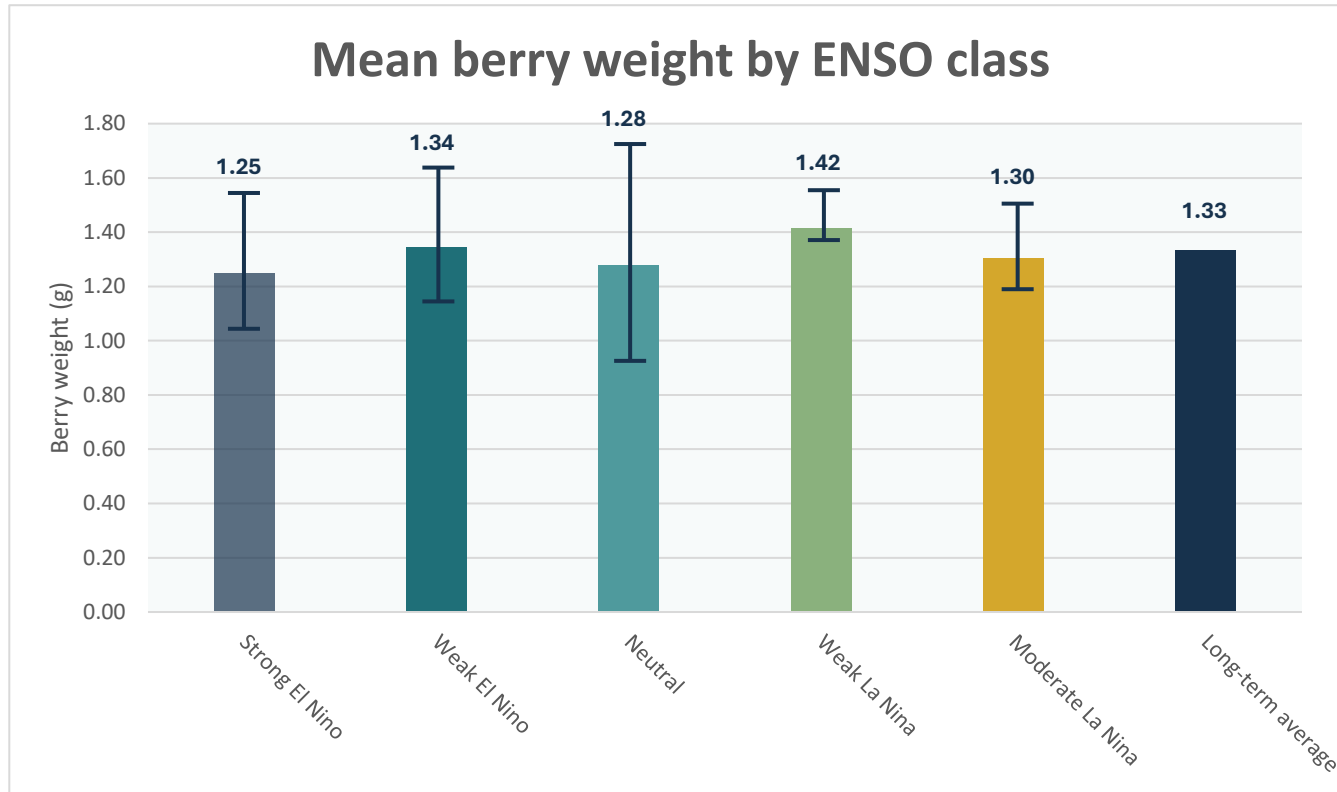


Did we achieve the target yields?

Treatment Goal	Actual
6 T/ha	9.0 T/ha
9 T/ha	11.9 T/ha
12 T/ha	18.5 T/ha



The effect of El Niño and La Niña

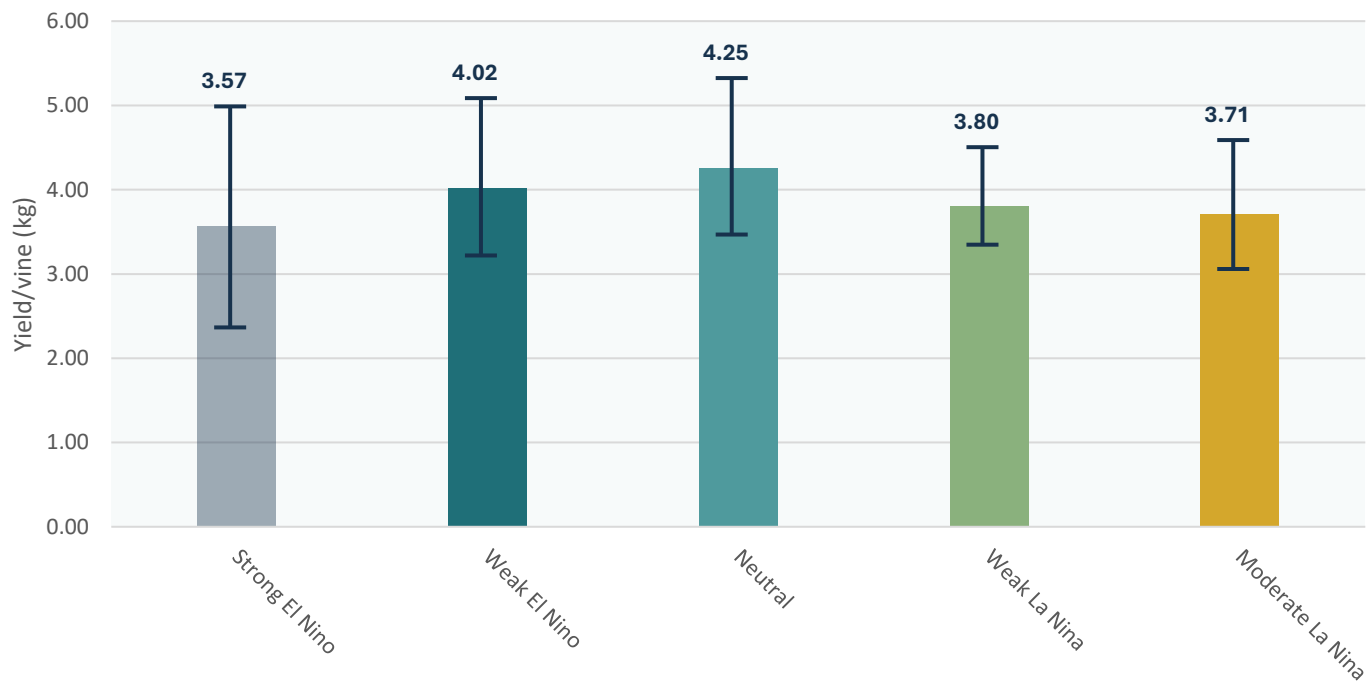


Vine Facts (2015 – 2026)

Category	Harvest
Strong / Very Strong El Niño	2016, 2024
Weak El Niño	2015, 2019
Neutral	2020
Weak La Niña	2017, 2025, 2026
Moderate La Niña	2018, 2021, 2022, 2023

The effect of El Niño and La Niña

Mean yield per vine by ENSO class



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Thank you

- Dr Chandré Honeth - EIT
- Raquel Kallas - Natural Selection
- Craggy Range - Jonathan Hamlet and Nick Putt
- Constellation - Adam Evans and Paul White
- Hawke's Bay Wine
- Aotearoa Chardonnay Symposium Organising Committee
- Vinefacts



Ellie

