

Impact of shoot quality on table grape quality at harvest and postharvest

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South African
Grape and Wine
Research Institute

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Introduction

- utilising bunches on thin shoots to reach the desired crop load
- is a practice applied by several producers
- thin shoot = diameter less than pencil thickness (< 8 mm)
- thin and short shoot = diameter less than 8 mm and shorter than 50 cm
- limited research on impact of shoot quality on bunch quality
- no published results available regarding the impact of shoot thickness on bunch quality (at harvest and after post-harvest cold storage)

Project Aim: to determine the impact of shoot quality on grape quality

- at harvest
- after post-harvest cold-storage

Materials and methods: Experimental vineyards

Sweet Globe™	
Site	Irene (JDK Farms), Paarl
Rootstock	Ramsey
Trellis system	Gable
Row spacing	3 m × 1.5 m
Irrigation system	Microsprinkler
Soil type	Sandy clay loam
Plant year	2015

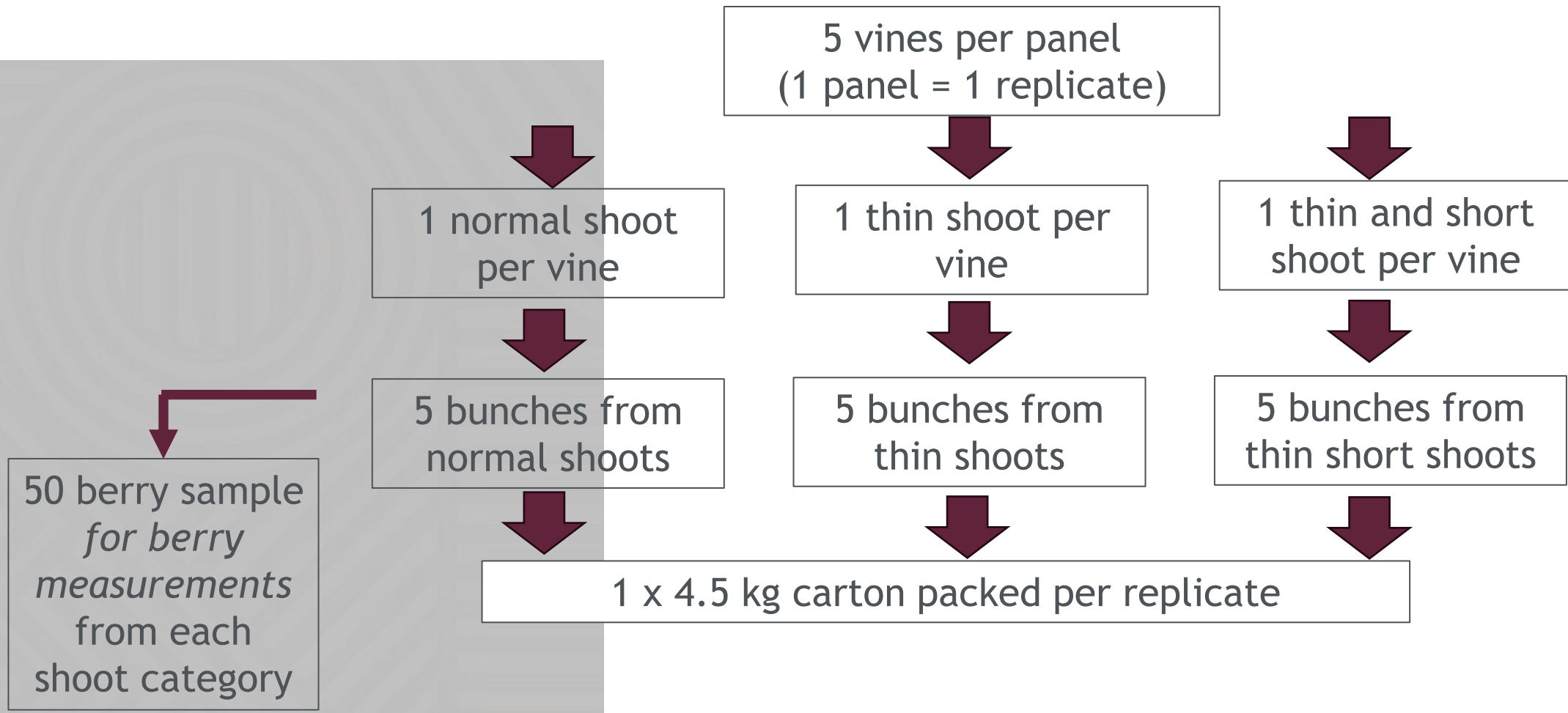
Scarlotta Seedless®	
Site	Uitkyk(JDK farm), Paarl
Rootstock	Ramsey
Trellis system	Gable
Row Spacing	3 m ×1.87 m
Irrigation system	Microsprinkler
Soil type	Sandy clay loam
Plant year	2009

Materials and methods

Experimental layout	Randomised block design with 10 replications Two rows in the central part of block were selected Five panels allocated within each row
Bunch allocation	Shoots of three quality categories with accompanying bunches were marked and numbered (before harvest) <ul style="list-style-type: none">➤ 23/1/2024 - Sweet Globe™➤ 15/2/2024 - Scarlotta Seedless®
Allocated crop load	Sweet Globe™ : <ul style="list-style-type: none">➤ 30 bunches per vine (2022/23)➤ 35 bunches per vine (2023/24) Scarlotta Seedless® : <ul style="list-style-type: none">➤ 28 bunches per vine (2022/23)➤ 38 bunches (2023/24)
Viticultural practices, including bunch preparation	According to cultivar-specific guidelines (Van der Merwe, 2021)

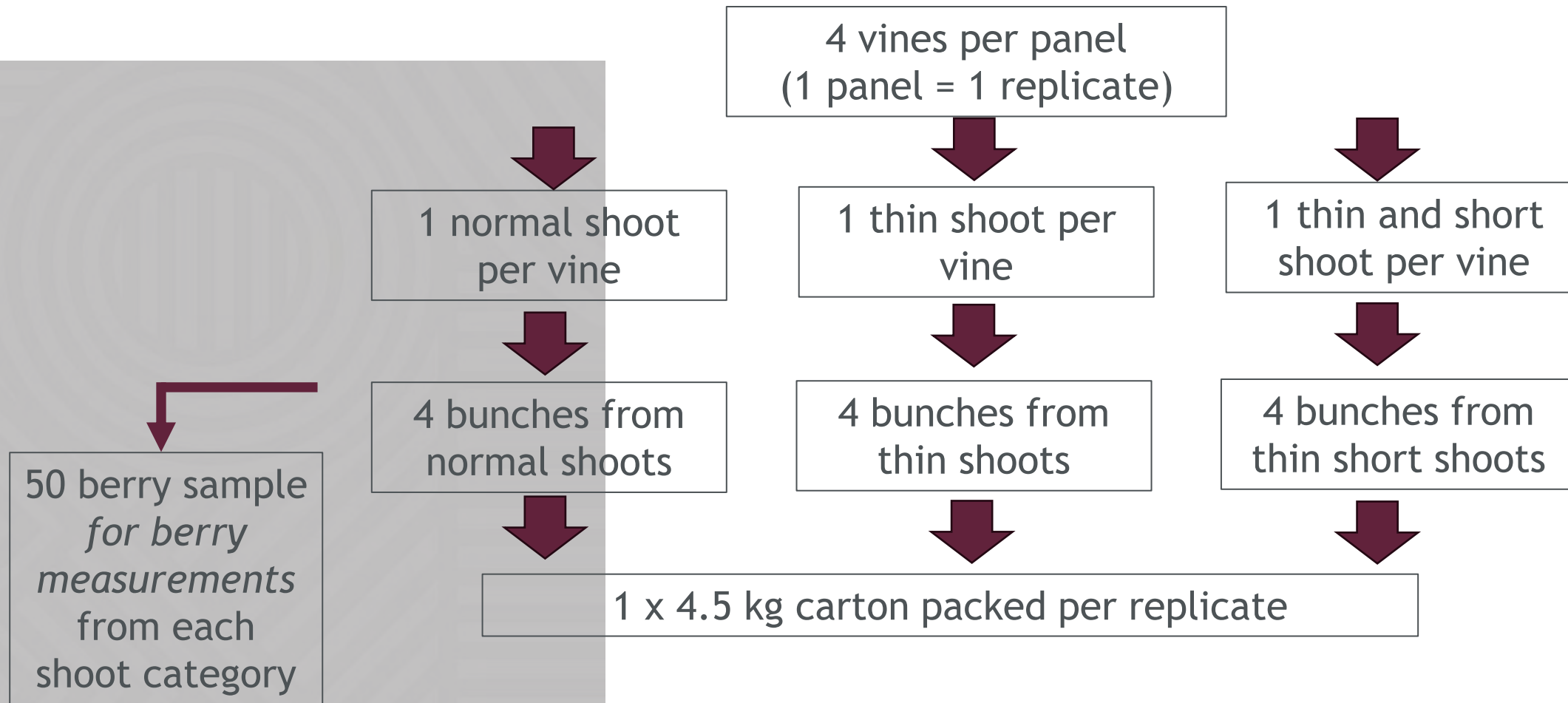
Material and methods

Experimental layout for Sweet Globe™



Material and methods

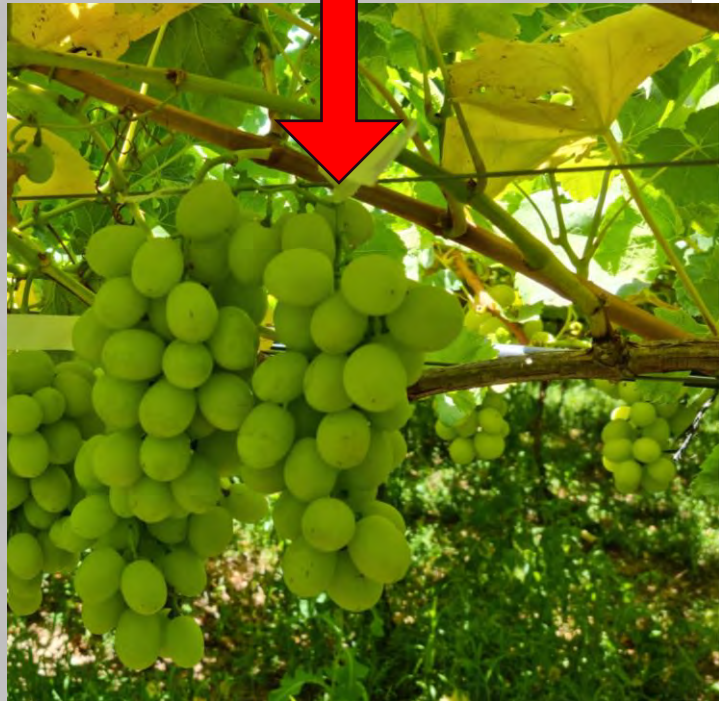
Experimental layout for Scarlotta Seedless®



Material and methods

Bunch quality categories

Normal shoot



Thin shoot



Thin Short shoot



Material and methods

Storage protocol

- stored at Experico facilities in Stellenbosch
- -0.5°C for 6 weeks followed by 4 days at 7.5C
- post-cold storage quality evaluation
- using the standard Experico protocols



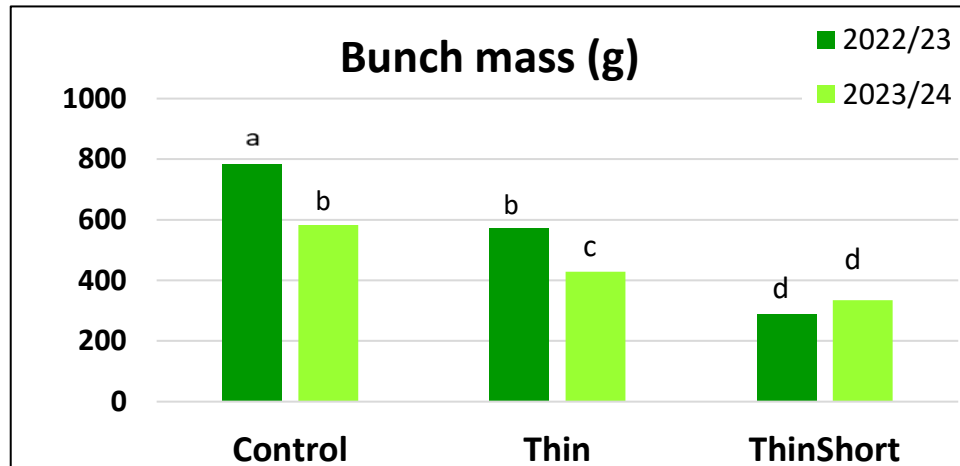
Material and methods

Measurements and assessments

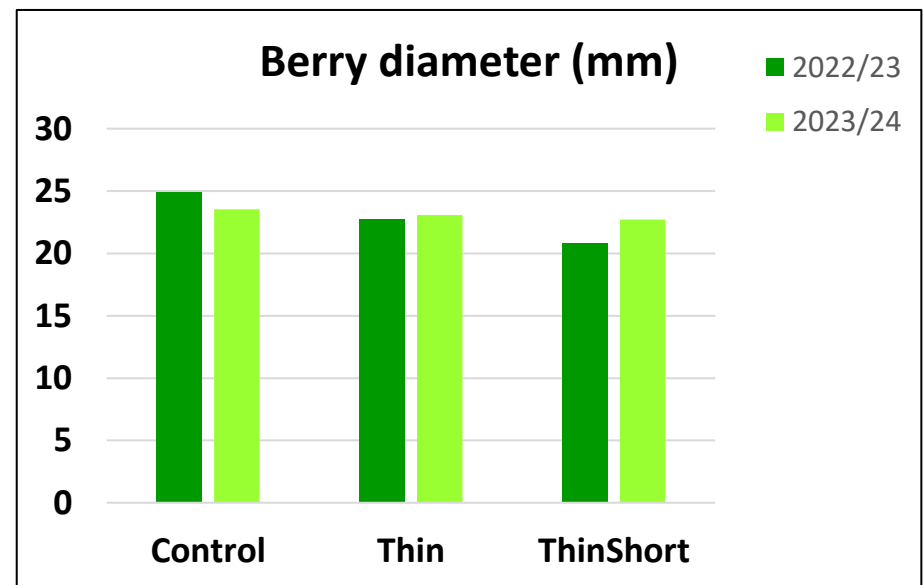
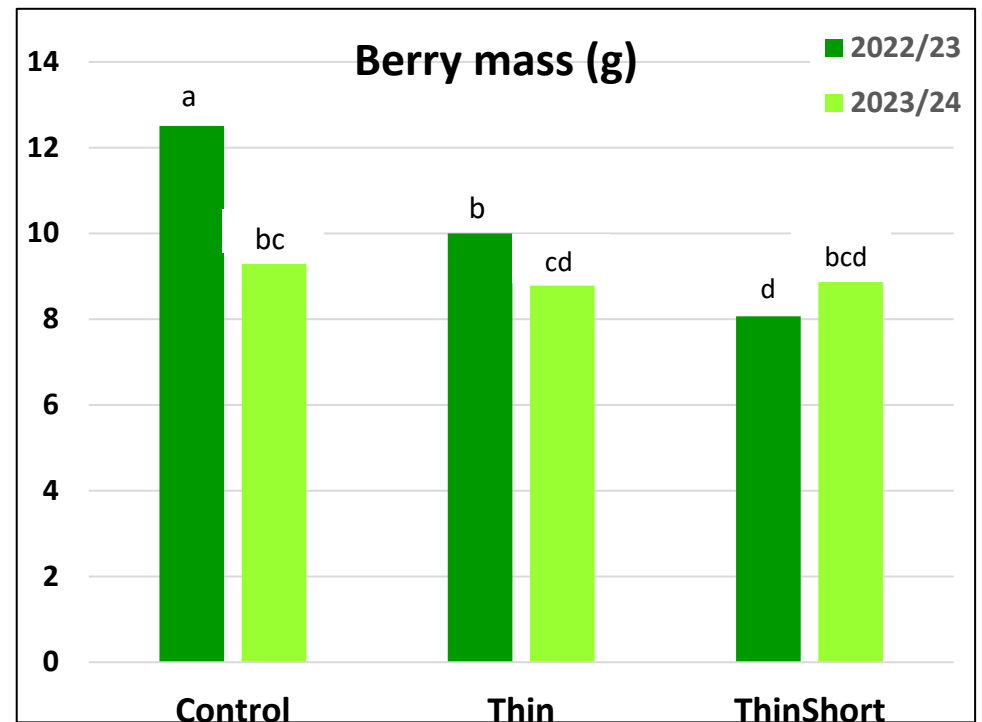
Berry quality parameters at harvest <ul style="list-style-type: none">- Sweet Globe® 29/1/2024- Scarlotta Seedless™ 20/2/2024	Bunch and berry mass Berry diameter Firmness Total soluble solids (TSS) Titratable acid (TA)
Berry quality parameters after cold storage	Firmness, TSS, TA
Evaluation after cold storage (standard Experico protocols)	Occurrence of defects: decay, split berries, loose berries, SO ₂ damage Rachis and pedicel condition



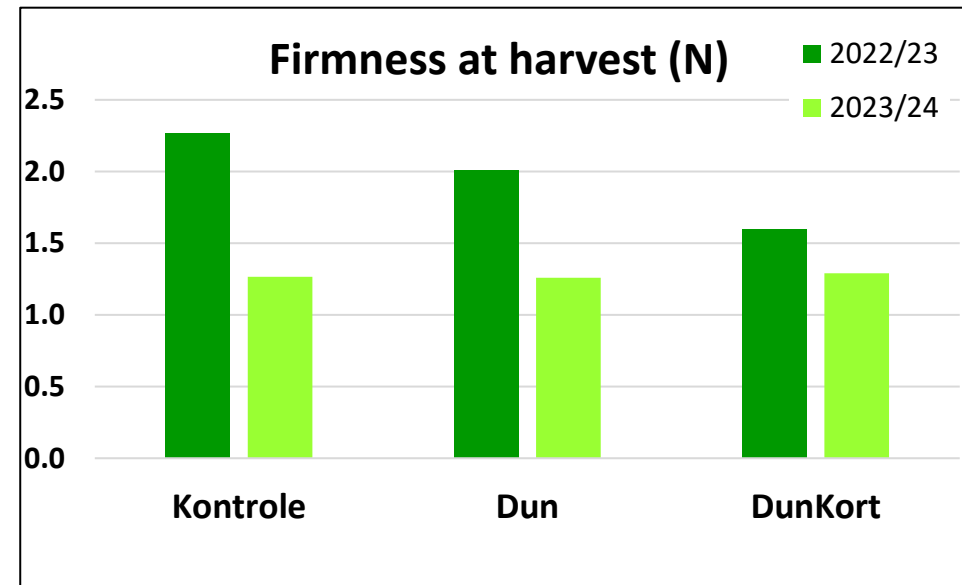
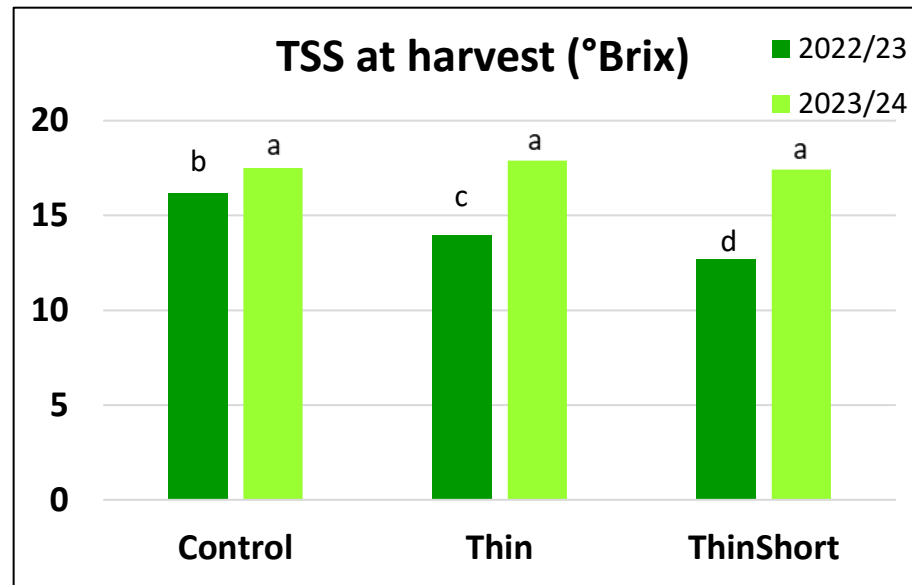
Results: Sweet Globe® at harvest



Bunch mass (g)	
(average of two seasons)	
Control	700.4 a
Thin	508.4 b
ThinShort	317.7 c

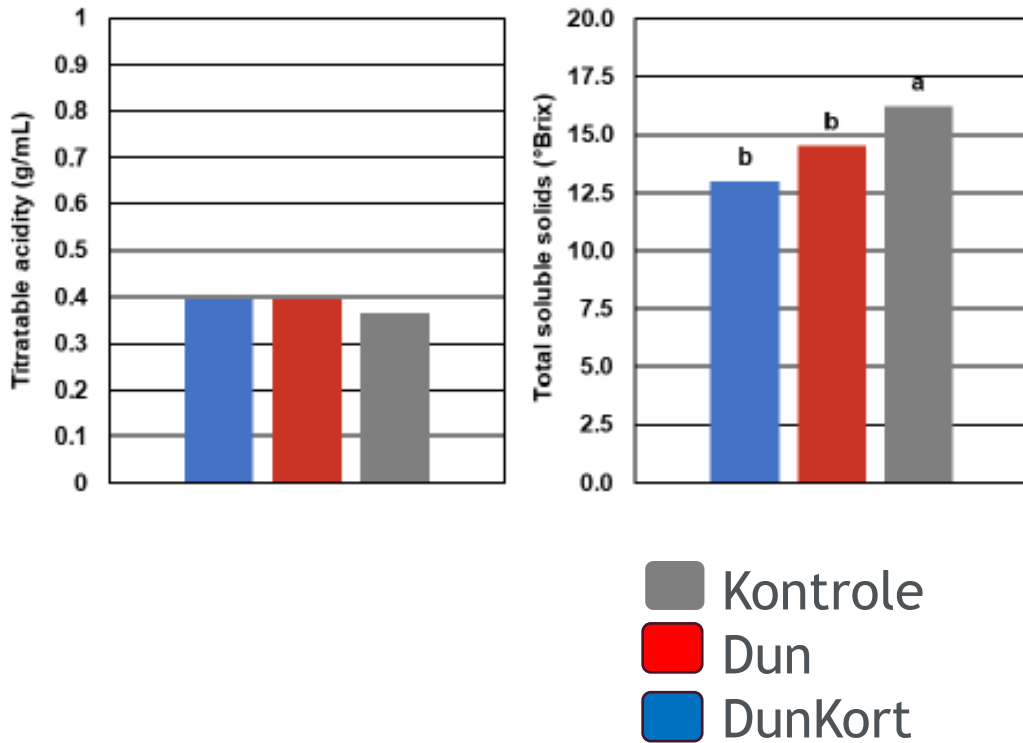


Sweet Globe™: Berry quality parameters at harvest

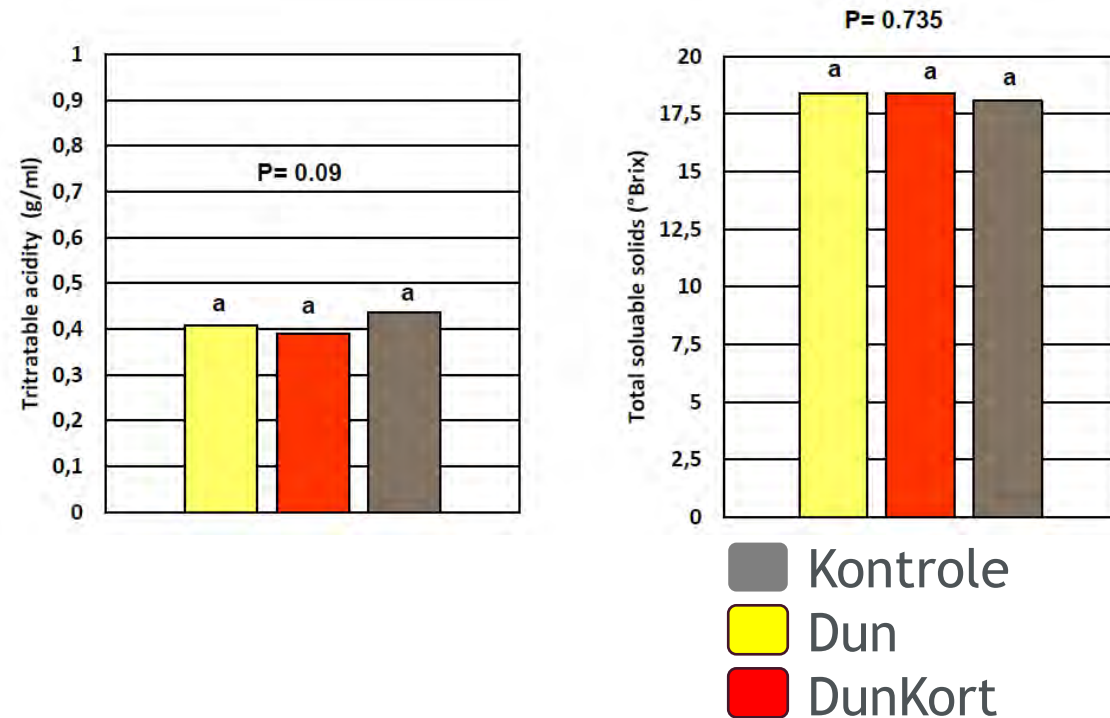


Sweet Globe™ : Berry parameters after cold storage

2022/23

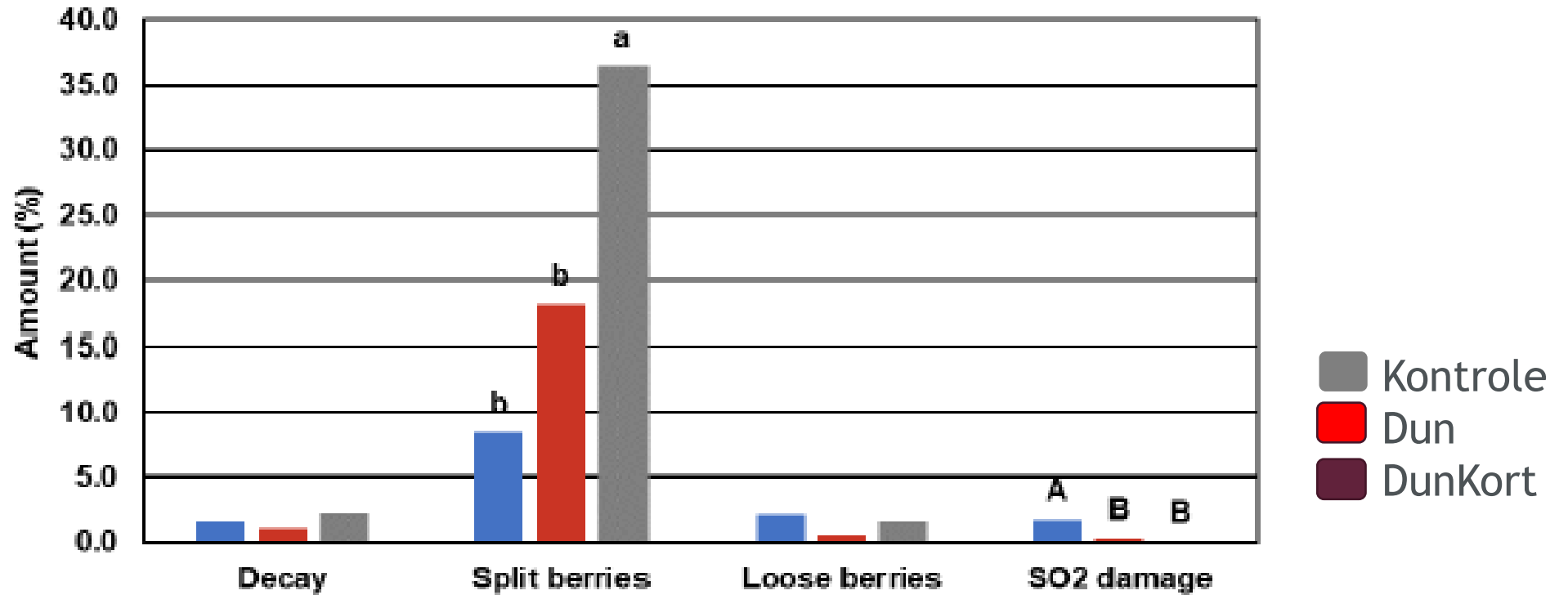


2023/24

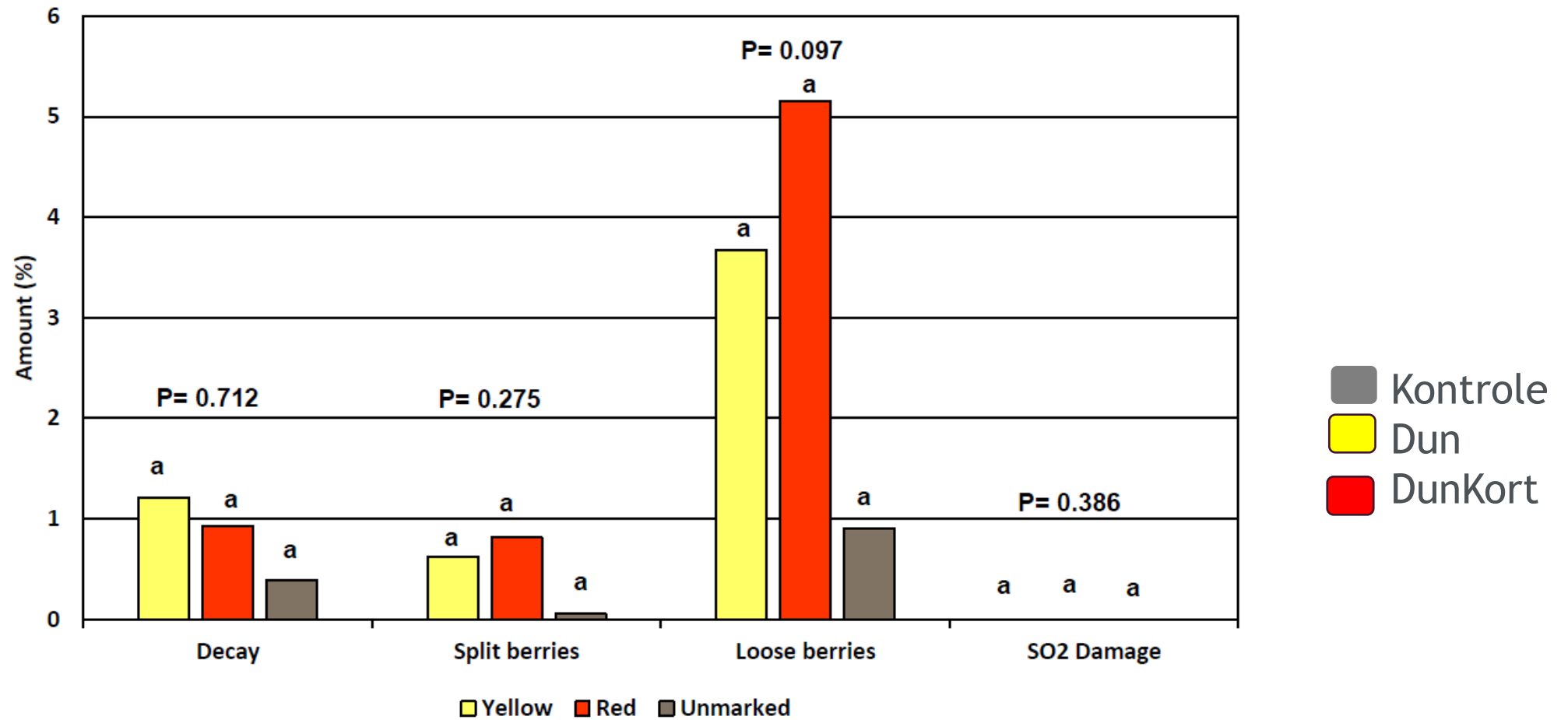


Sweet Globe™:

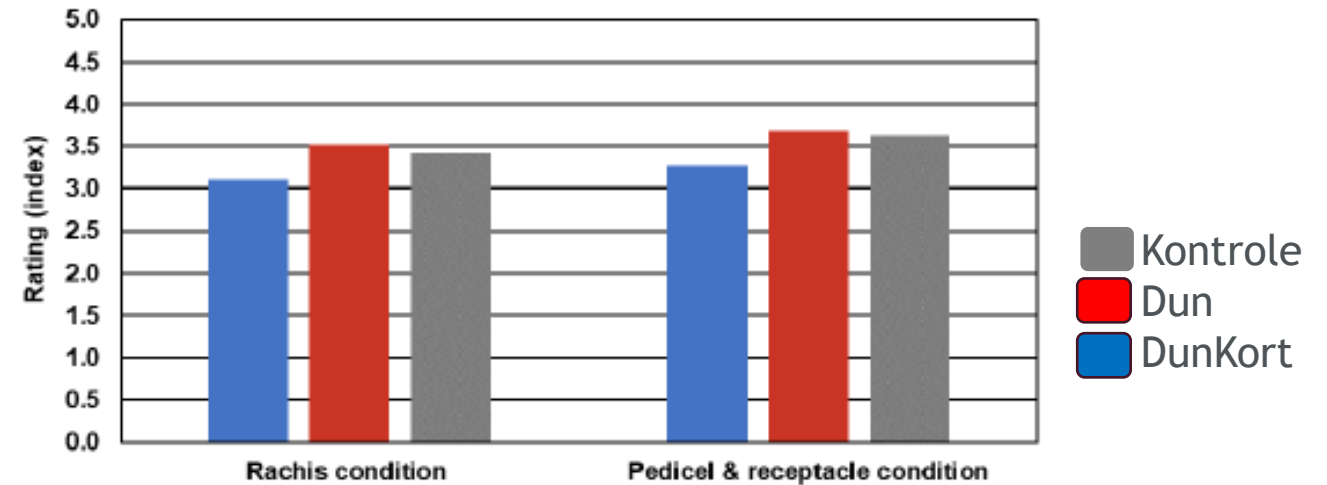
Occurrence of defects after cold storage (2022/23)



Sweet Globe™: Occurrence of defects after cold storage (2023/24)

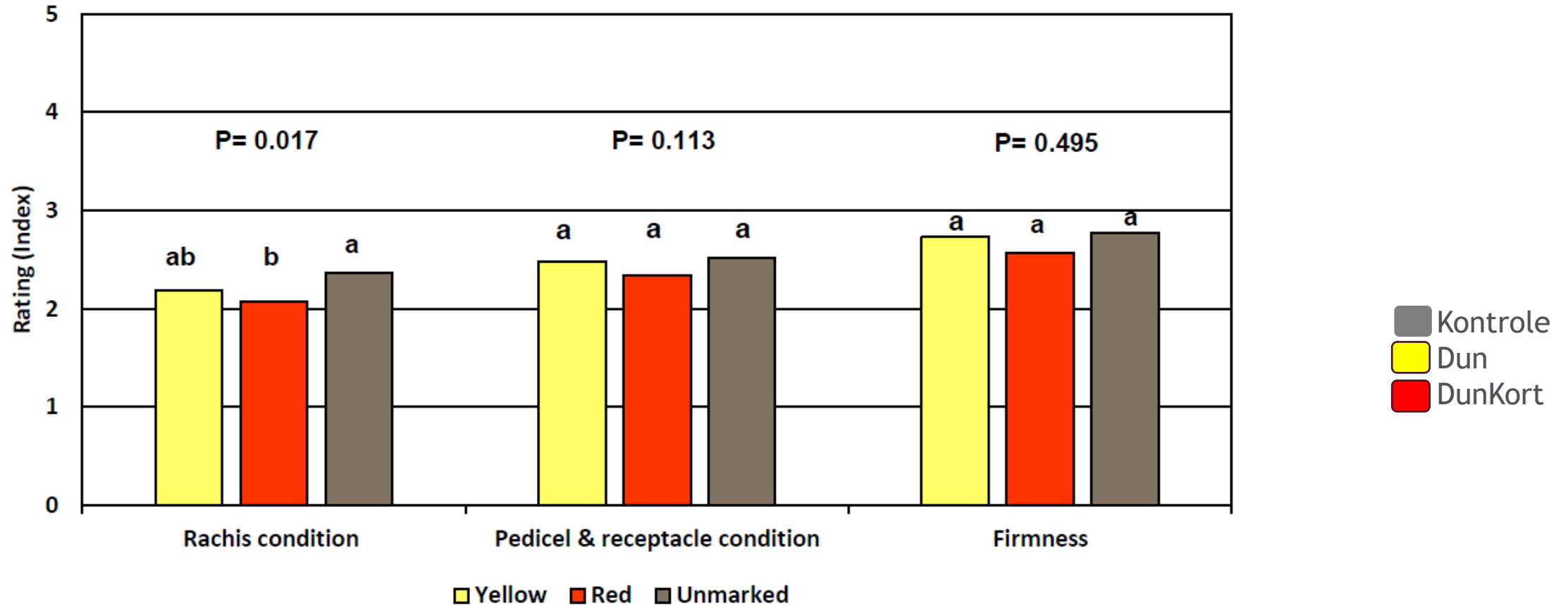


Sweet Globe™: Rachis and pedicel condition after cold storage (2022/23)



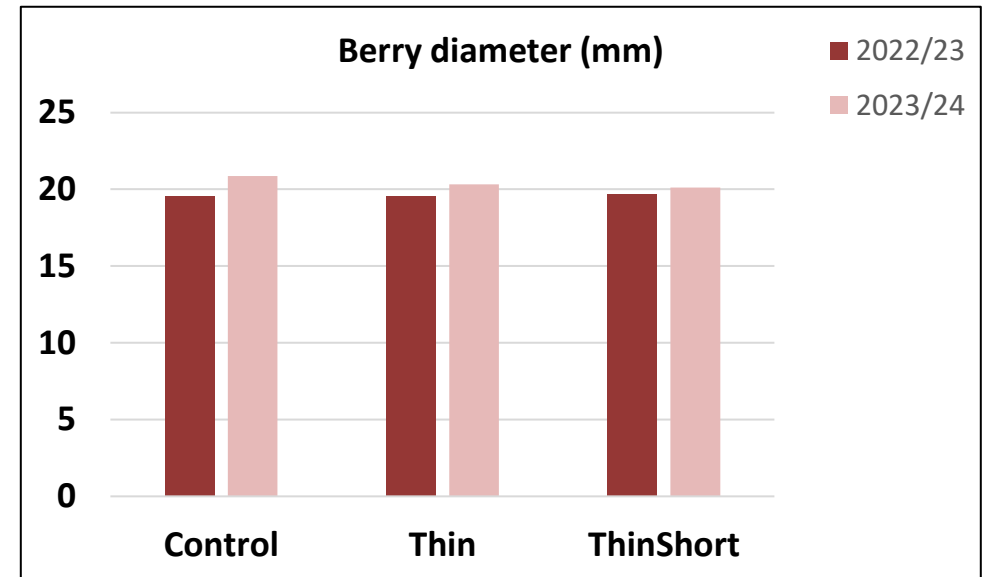
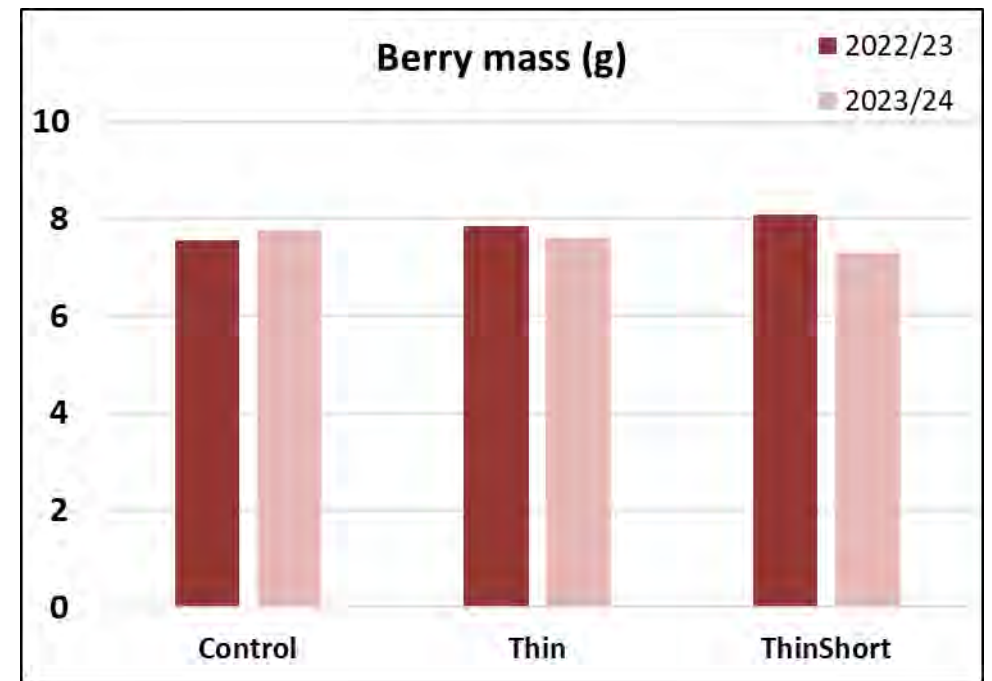
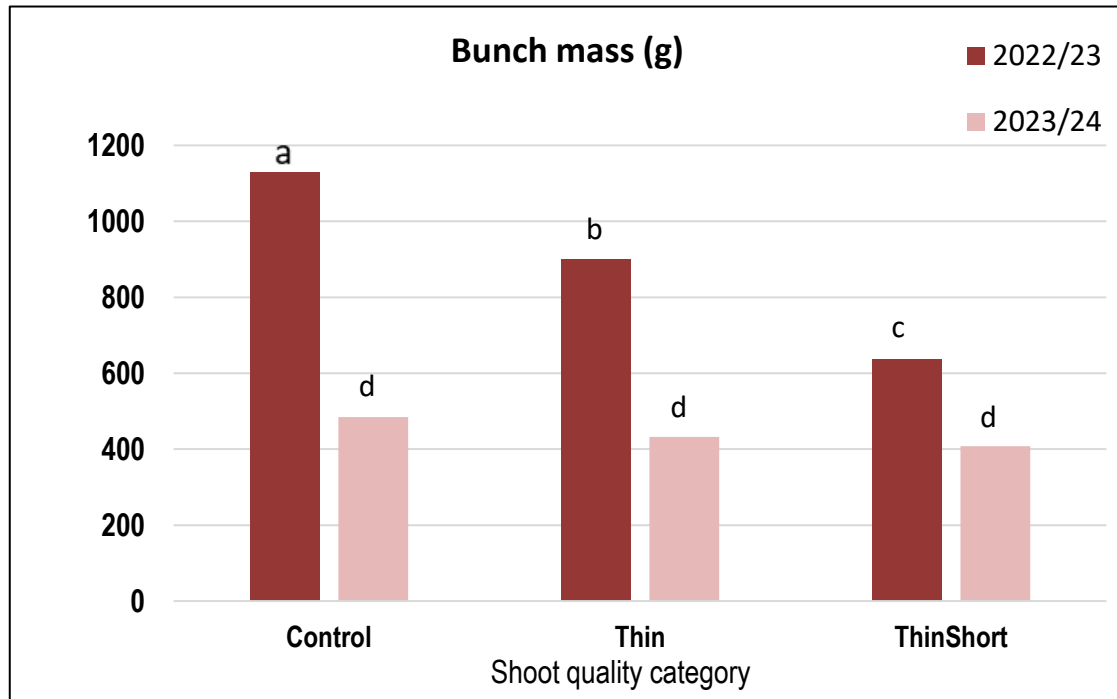
Index: 1 - 5; 1, green & turgid; 5, dark brown and desiccated

Sweet Globe™: Rachis and pedicel condition after cold storage (2023/24)



Index: 1 - 5; 1, green & turgid; 5, dark brown and desiccated

Results: Scarlotta Seedless® at harvest

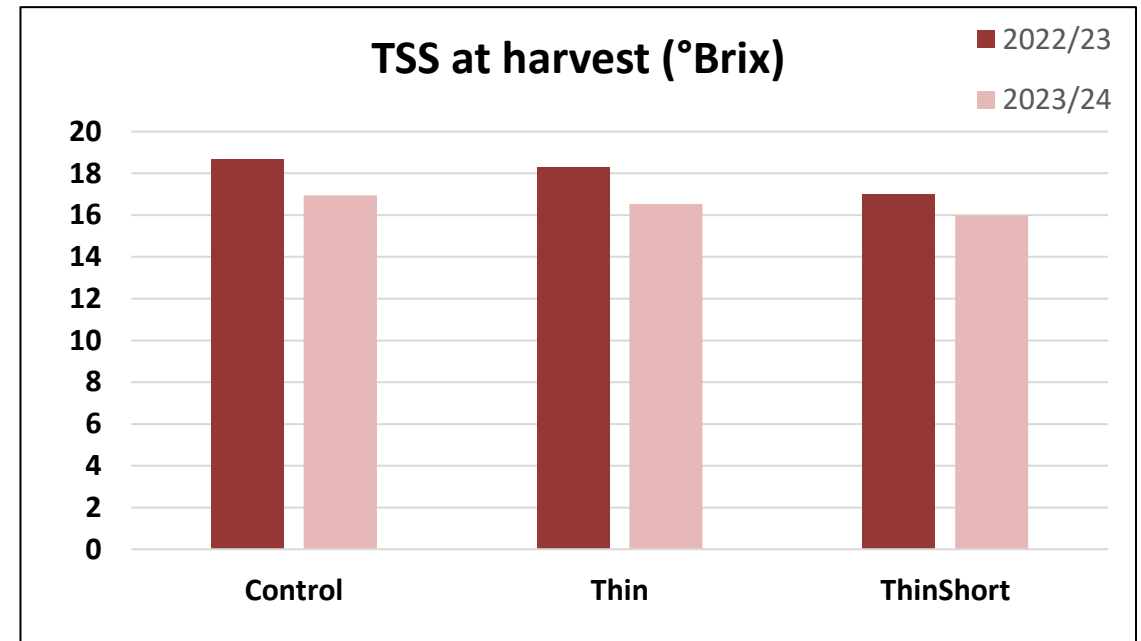
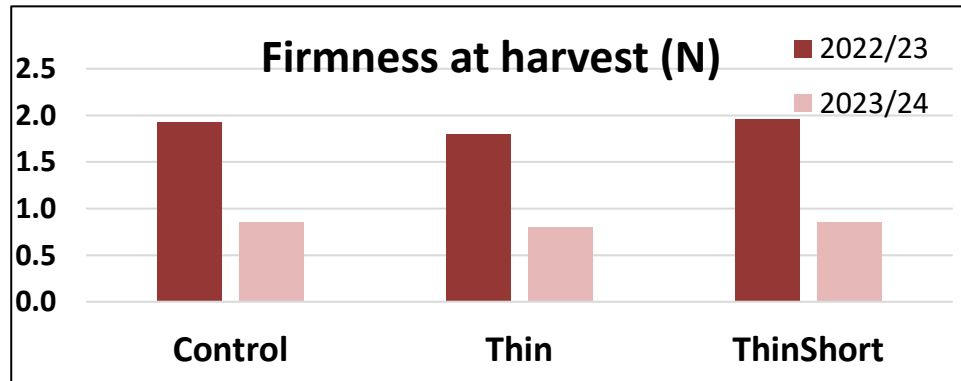


Scarlotta®: Classification of bunches at harvest 2022/23

Loot-kategorie	Korrelgrootteklas (%)		
	XXL	XL	L
Kontrole	46.0 a	41.7 a	12.3 b
Dun	46.9 a	44.7 a	8.4 b
DunKort	6.7 b	40.0 a	53.3 a



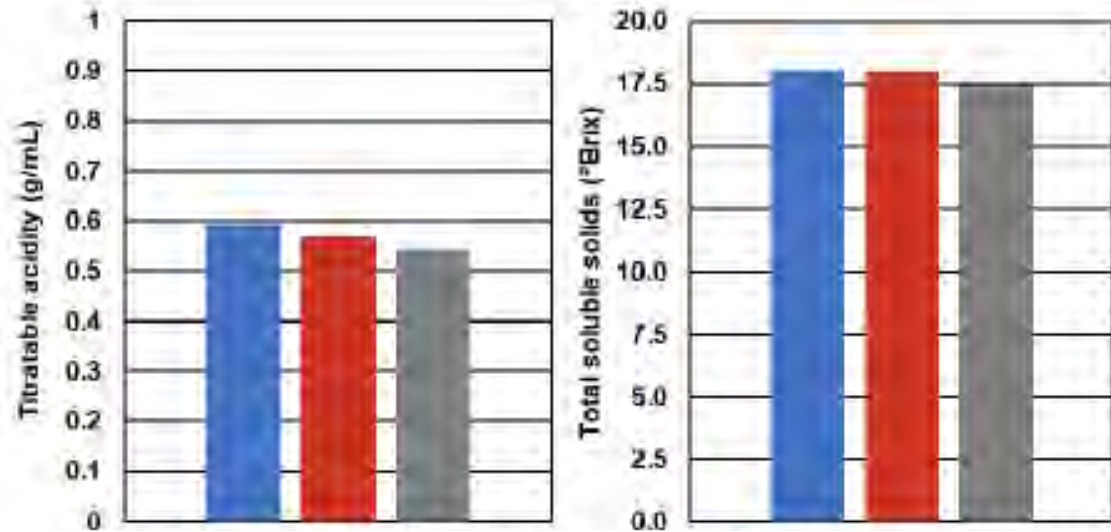
Scarlotta[®]: Berry quality parameters at harvest



Scarlotta Seedless®:

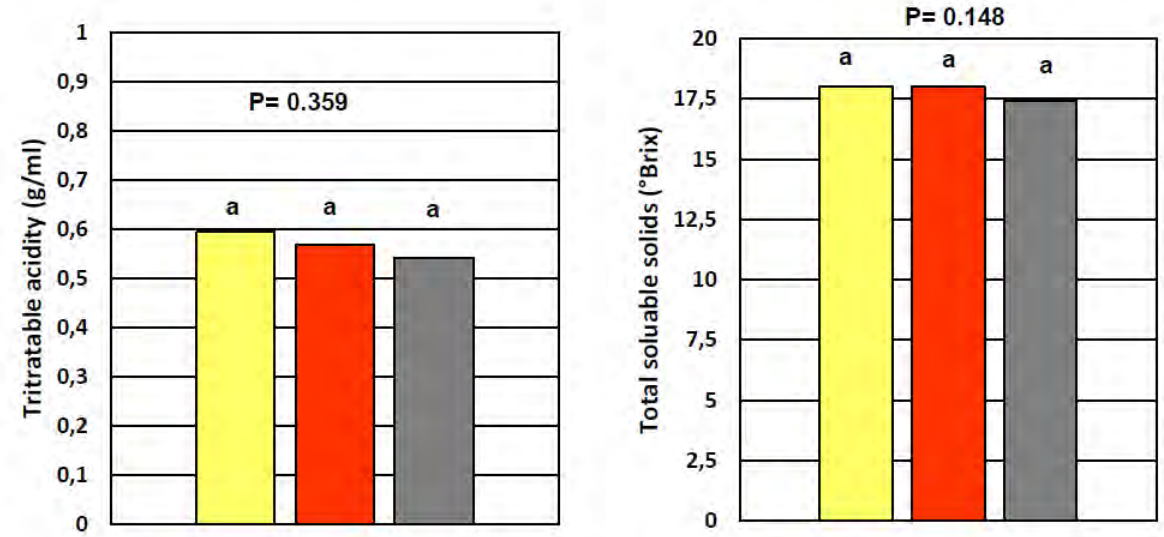
Berry quality parameters after cold storage

2022/23



Control
 Thin
 ThinkKort

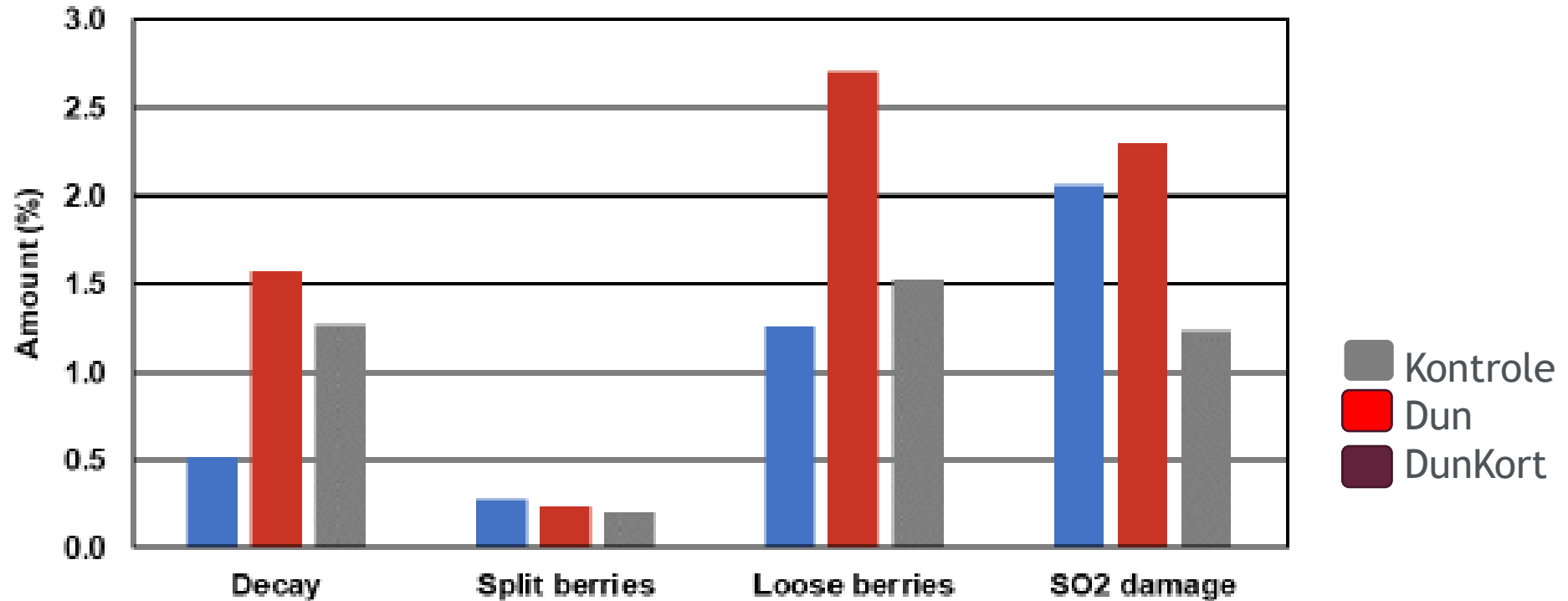
2023/24



Kontrolle
 Dun
 Dunkort

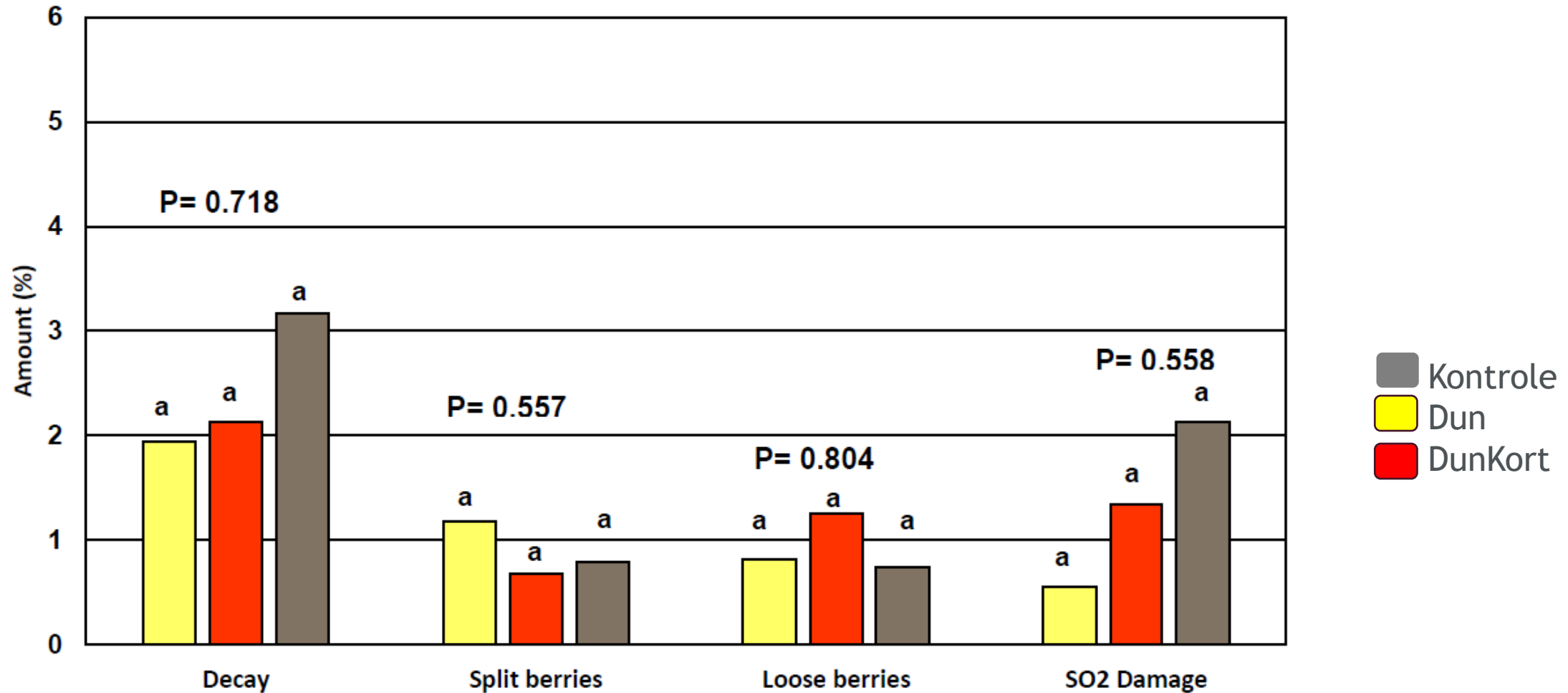
Scarlotta Seedless®:

Occurrence of defects after cold storage 2022/23



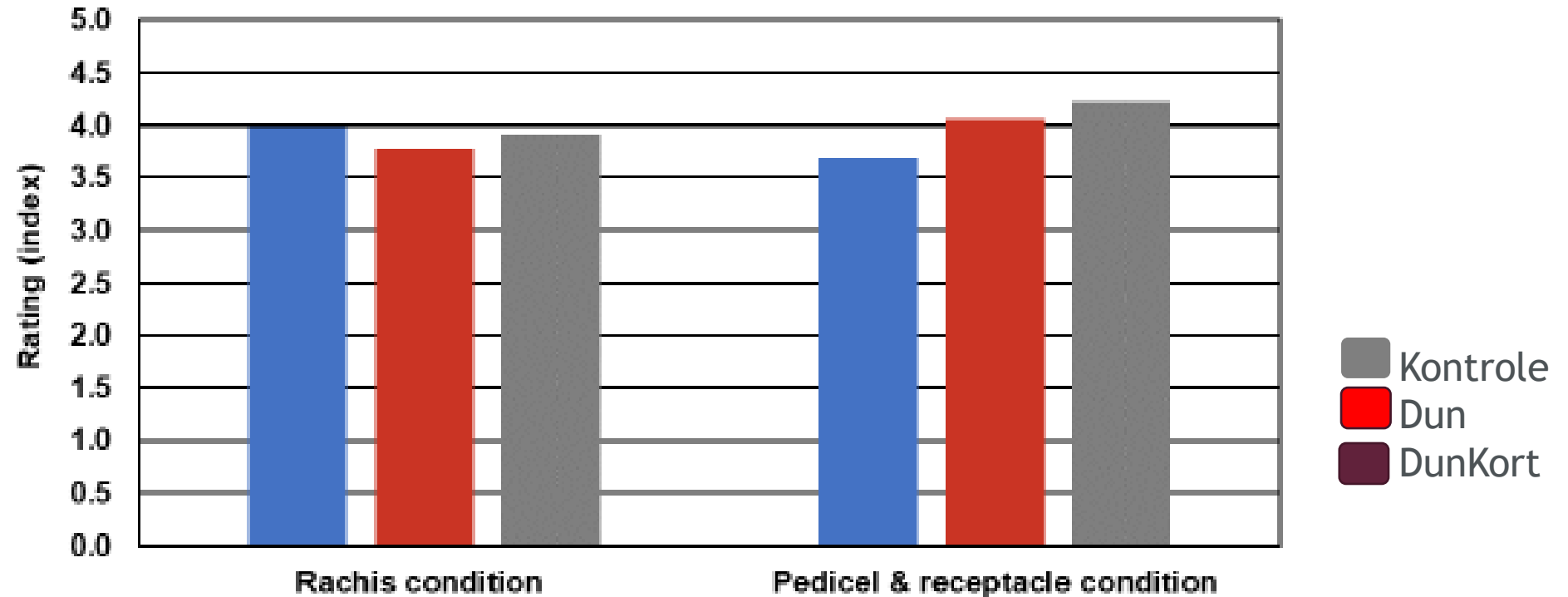
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Scarlotta Seedless[®]:

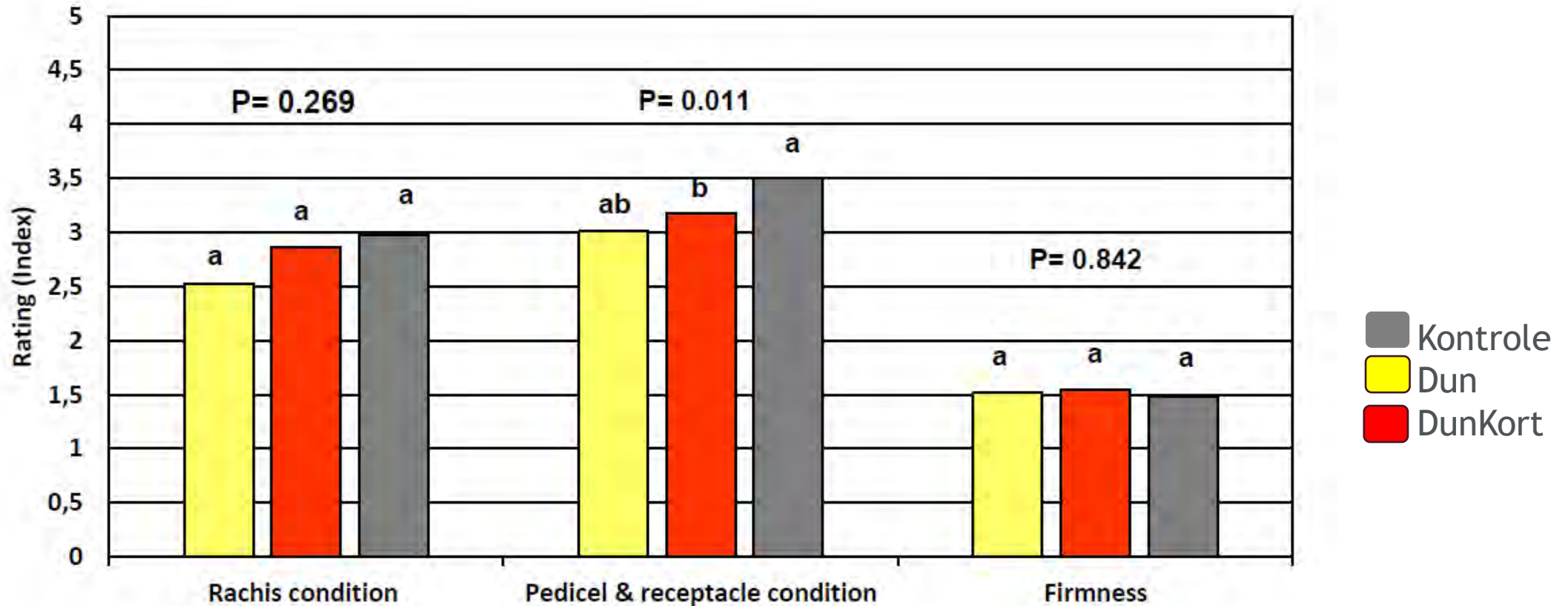
Rachis and pedicel condition after cold storage 2022/23



Index: 1 - 5; 1, green & turgid; 5, dark brown and desiccated

Scarlotta Seedless®:

Rachis and pedicel condition after cold storage 2023/24



Index: 1 - 5; 1, green & turgid; 5, dark brown and desiccated

Conclusion/ Gevolgtrekking

DUN lote en KORTDUN lote het nie 'n impak op druifgehalte na koelopberging gehad nie,

met uitsondering van:

SO₂-skade by Sweet Globe®

DUN lote en KORTDUN lote het 'n negatiewe impak op rypwording en druifgehalte by oes:

.....*maar* korrelgrootte in beide seisoene het steeds aan uitvoerstandaarde voldoen

Sweet Globe ® ↓ Trosmassa ↓ Korrelgrootte ↓ Suiker (2022/23) ↓ Fermheid by oes (tendens)	(Dun + DunKort) [inkort-aksie deur plaas?] (Dun + DunKort) (DunKort) (DunKort)
Scarlotta Seedless ® ➤ Korrelgrootte-klassifikasie (2022/23) ➤ ↓ Kleurontwikkeling (2022/23) ➤ TSS en kleur nie betekenisvol beïnvloed in 2023/24	DunKort → 53% L + 7% XXL vs 46% XXL + 42% XL by Kontrole waarskynlik agv kleiner trosse by al drie lootkategorieë [inkort-aksie deur plaas?]

Conclusion/ Gevolgtrekking

Resultate stem ooreen met vorige bevindings ... soortgeleelyke proef uitgevoer op Crimson Seedless en Regal Seedless in Hexriviervallei in 2021/22 seisoen (Xogwa, Avenant & Avenant, 2022)

- geen/ geringe impak op na-koelopberging gehalte
- negatiewe impak op rypwording en sommige gehalteparameters by oes

Toeken van trosse op Kort&Dun lote moet vermy word

Indien enkele trosse op Dun Lote toegeken word:
beperk trosgrootte

Acknowledgements



- Project funding

- SATI
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- Nexus

- Technical Support and Inputs

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- Eurica Scholtz (BTPV)
- Trix Quixley (Nexus)



Thank you
Enkosi
Dankie