



10TH
INTERNATIONAL
TABLE GRAPE
SYMPOSIUM

26 NOV
TO
1 DEC 2023

SOMERSET WEST
SOUTH AFRICA



Comprehensive Management of Dehydration in Table Grapes

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Exporting is a risky business



Each passing day has an impact on
the quality of your fruit



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4%

weight loss

Can represent over **\$115 MM** in losses per season for the chilean market.





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Symptoms of dehydration



Physical process

Associated with water loss in tissues.
Directly related to environmental conditions (Temperature and humidity).

Chemical/enzymatic process

Associated with oxidative and degradative processes related to metabolism and senescence (“browning”).



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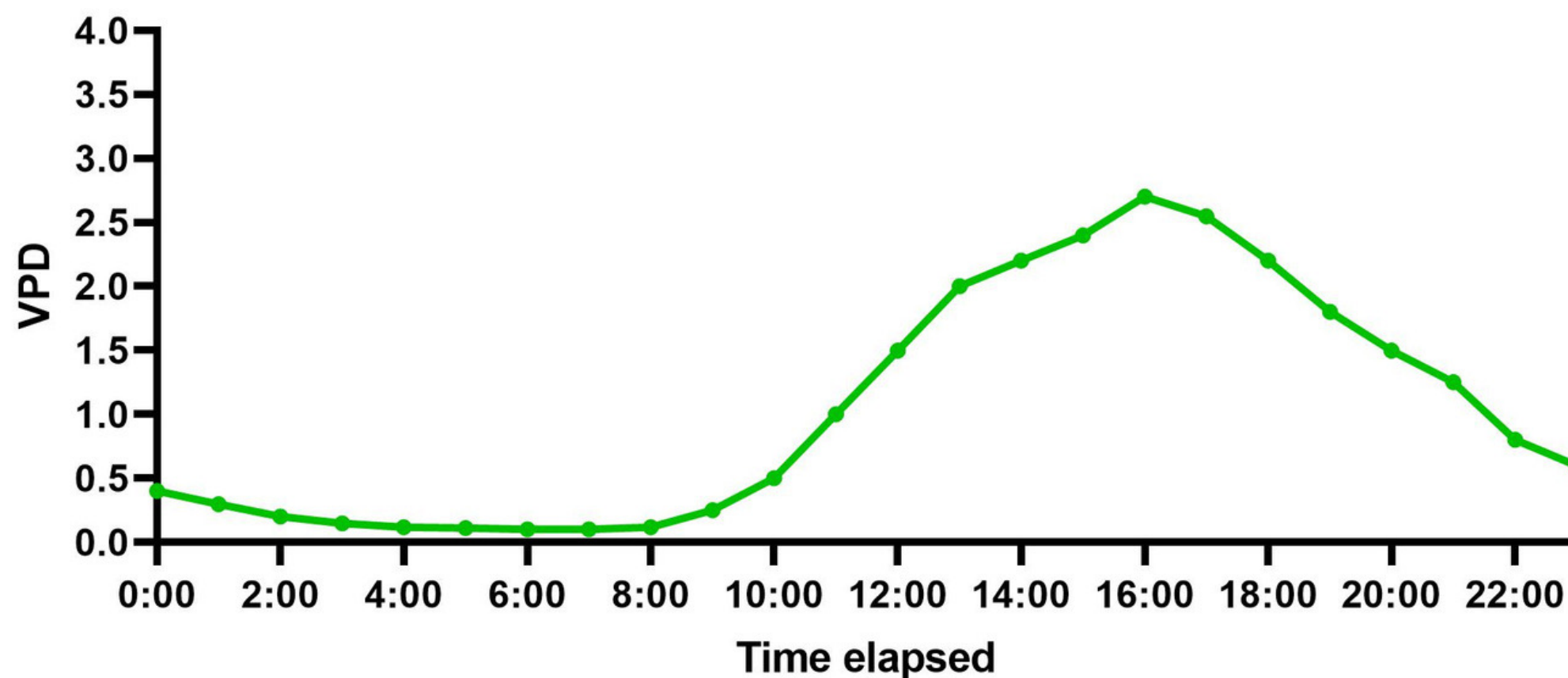
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Environmental conditions for dehydration - Vapor Pressure Deficit (VPD)

Vapor Pressure Deficit Progression



01

Vapor Pressure Deficit: difference between the amount of moisture in the air and how much moisture the air can hold when it is saturated.

02

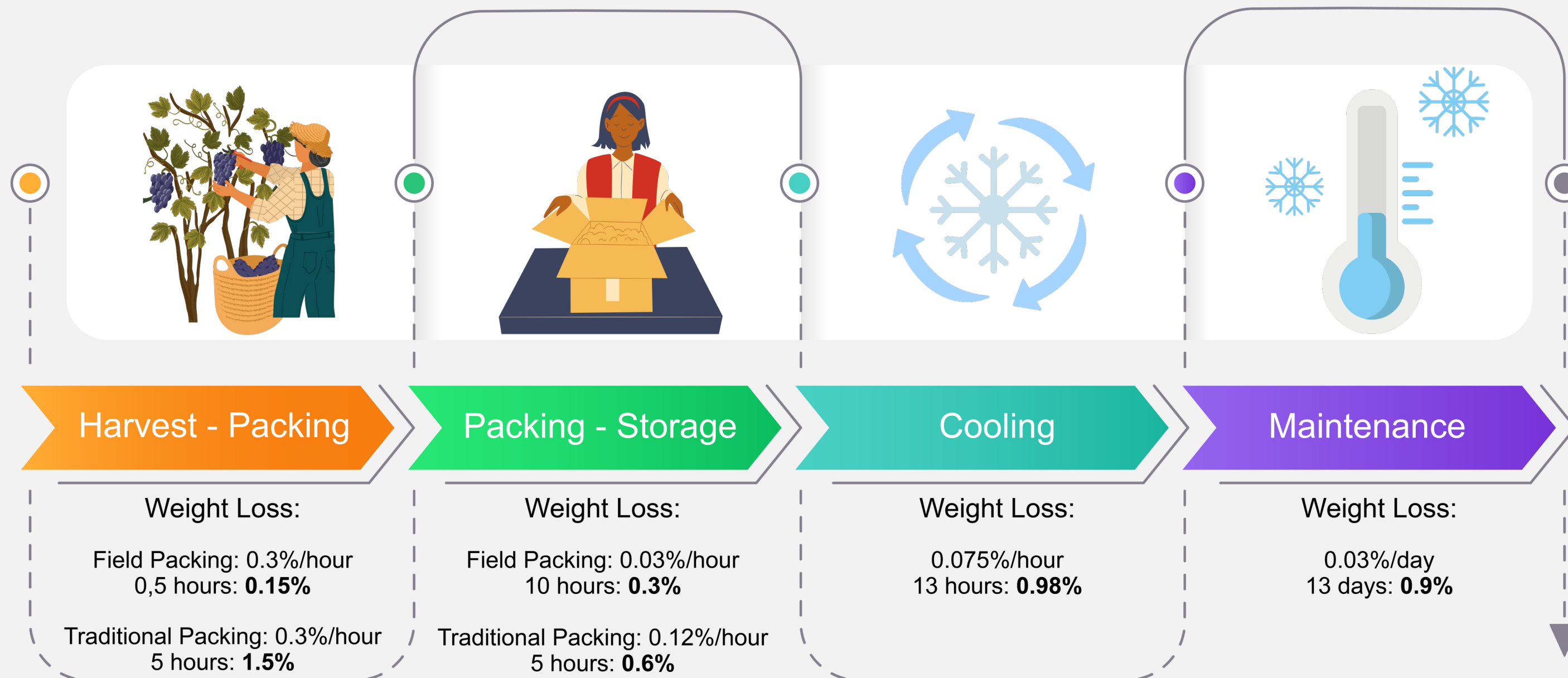
The lower the VPD, the less dehydrating the environment is for the fruit.



Exportadora Río King - A Case Study

Central Valley in Chile

The Value Chain



Where should we focus our efforts?



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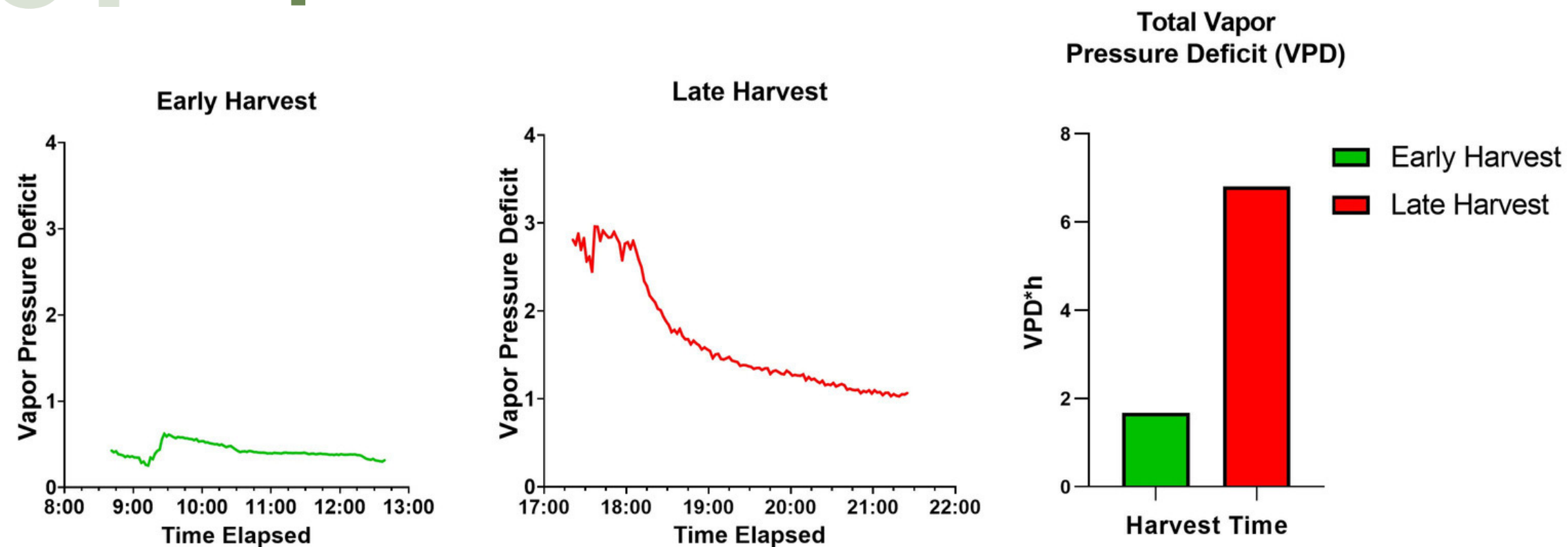
Early vs late harvest



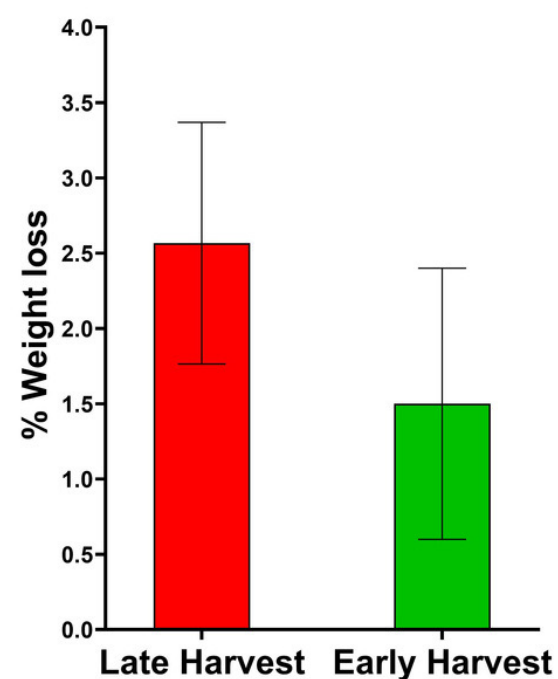
"A grape idea"



01 Vapor Pressure Deficit



02 Weight loss in table grape bunches



Sweet Globe table grapes after 40-day storage.

Early harvest significantly decreases VPD exposure and weight loss.



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"A grape idea"

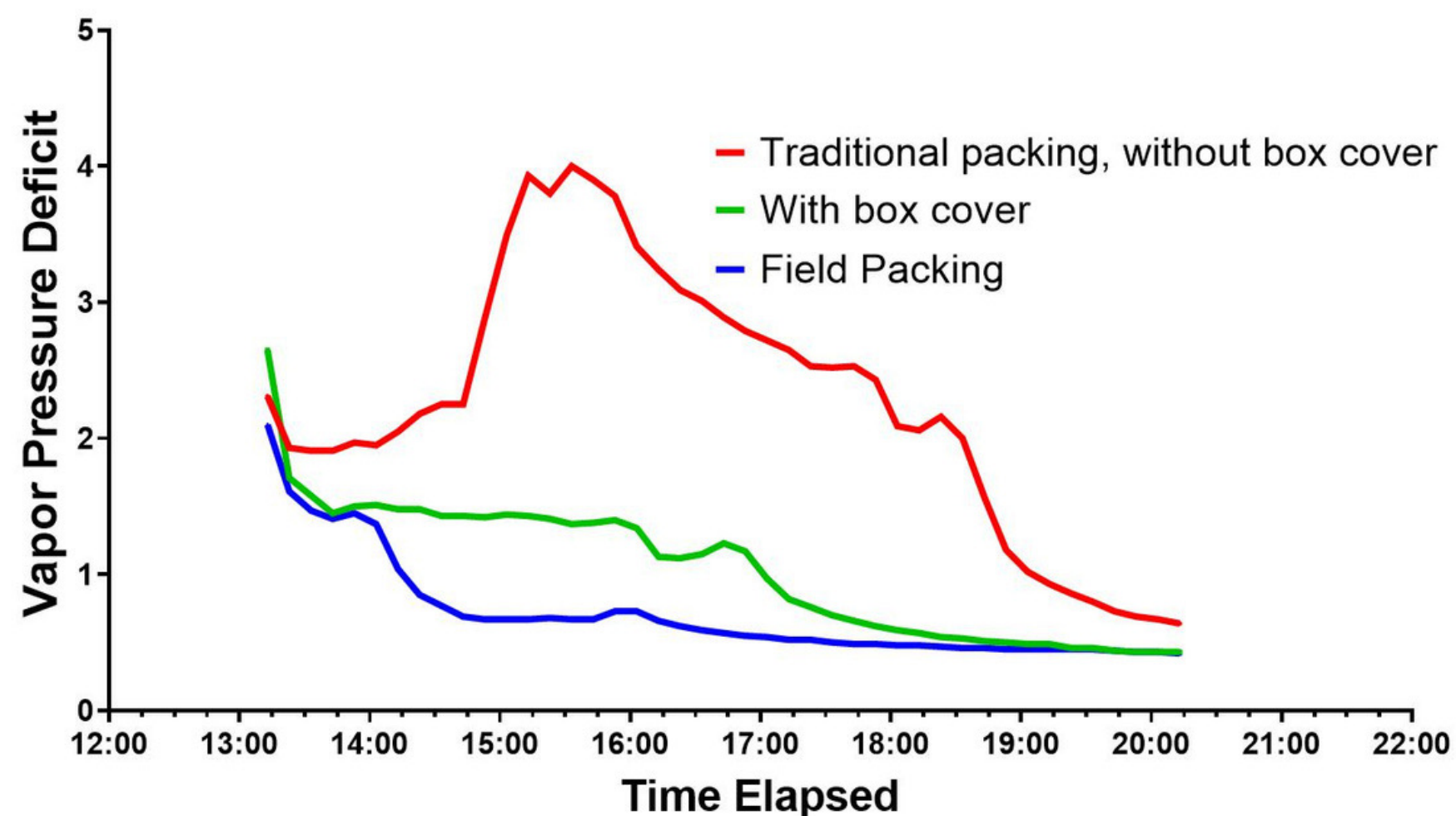
Use of harvest box covers



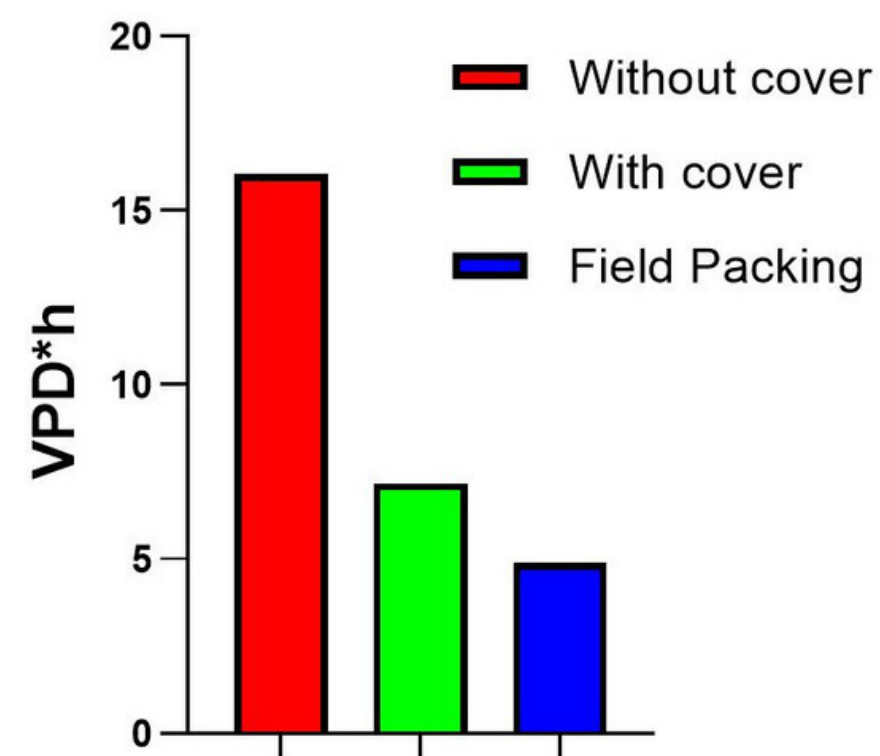


01 Vapor Pressure Deficit

Use of box covers during harvest



Total Vapor Pressure Deficit (VPD)



Use of harvest box covers in traditional packing operations significantly decreases VPD exposure to levels similar to field packing conditions.



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Use of humidifiers in packing houses

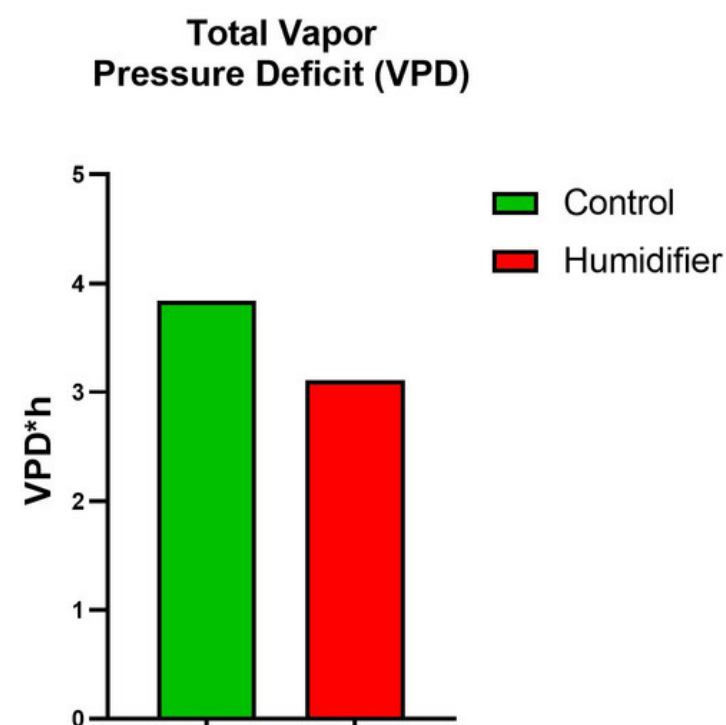
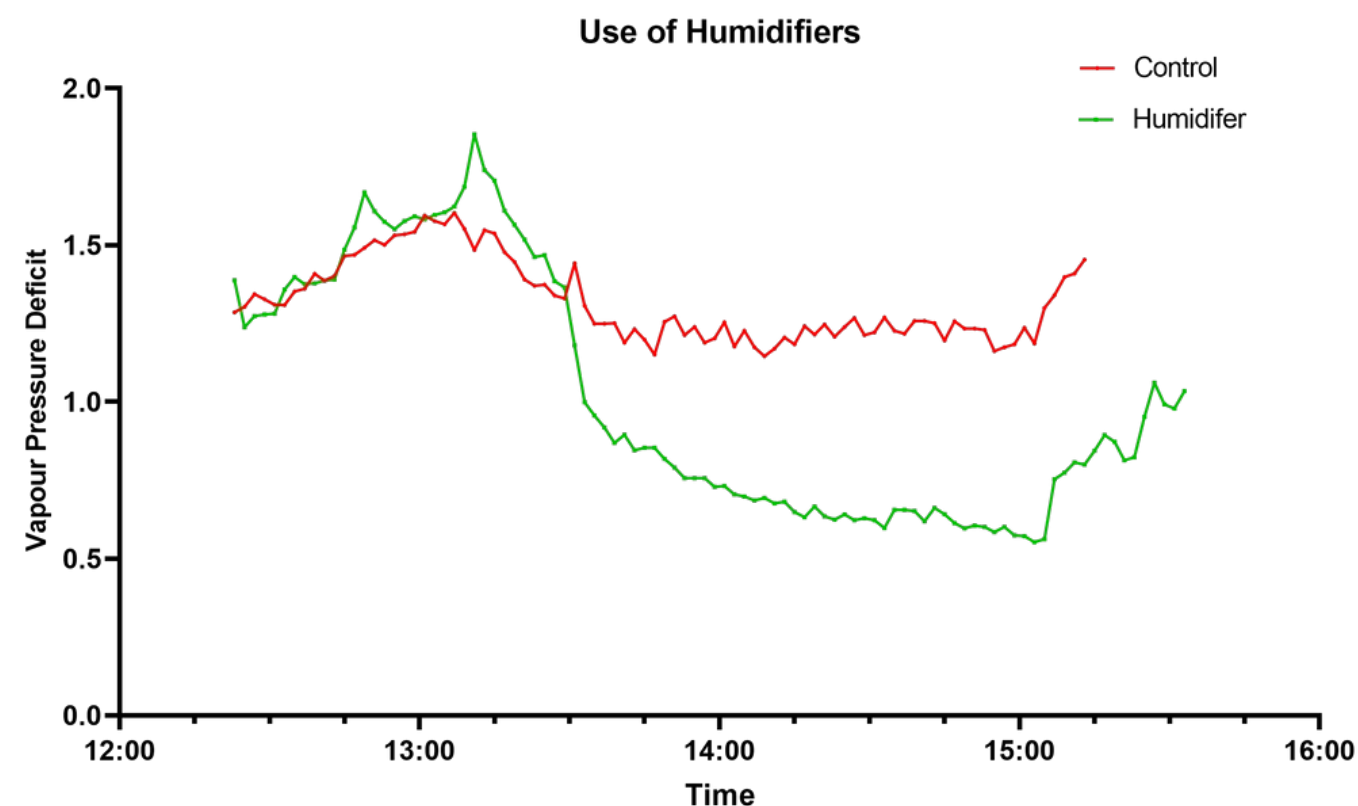


"A grape idea"

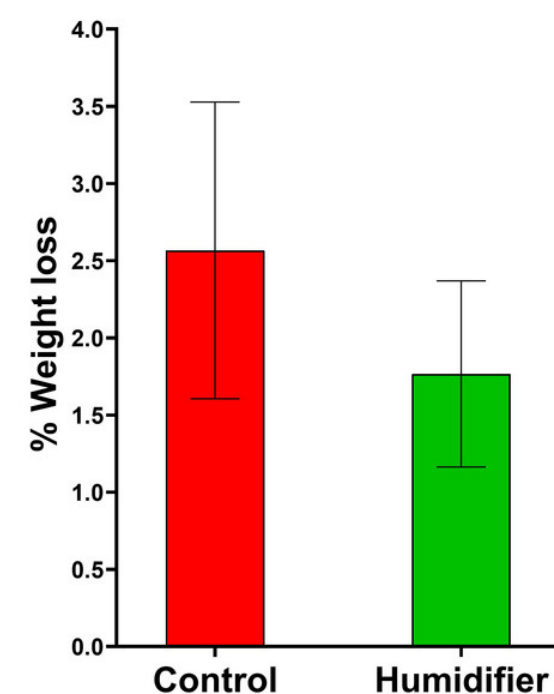




01 Vapor Pressure Deficit



02 Weight loss in table grape bunches



Sweet Celebration
table grapes after 40-
day storage.

**Use of humidifiers in packing
house decreases VPD
exposure and weight loss.**



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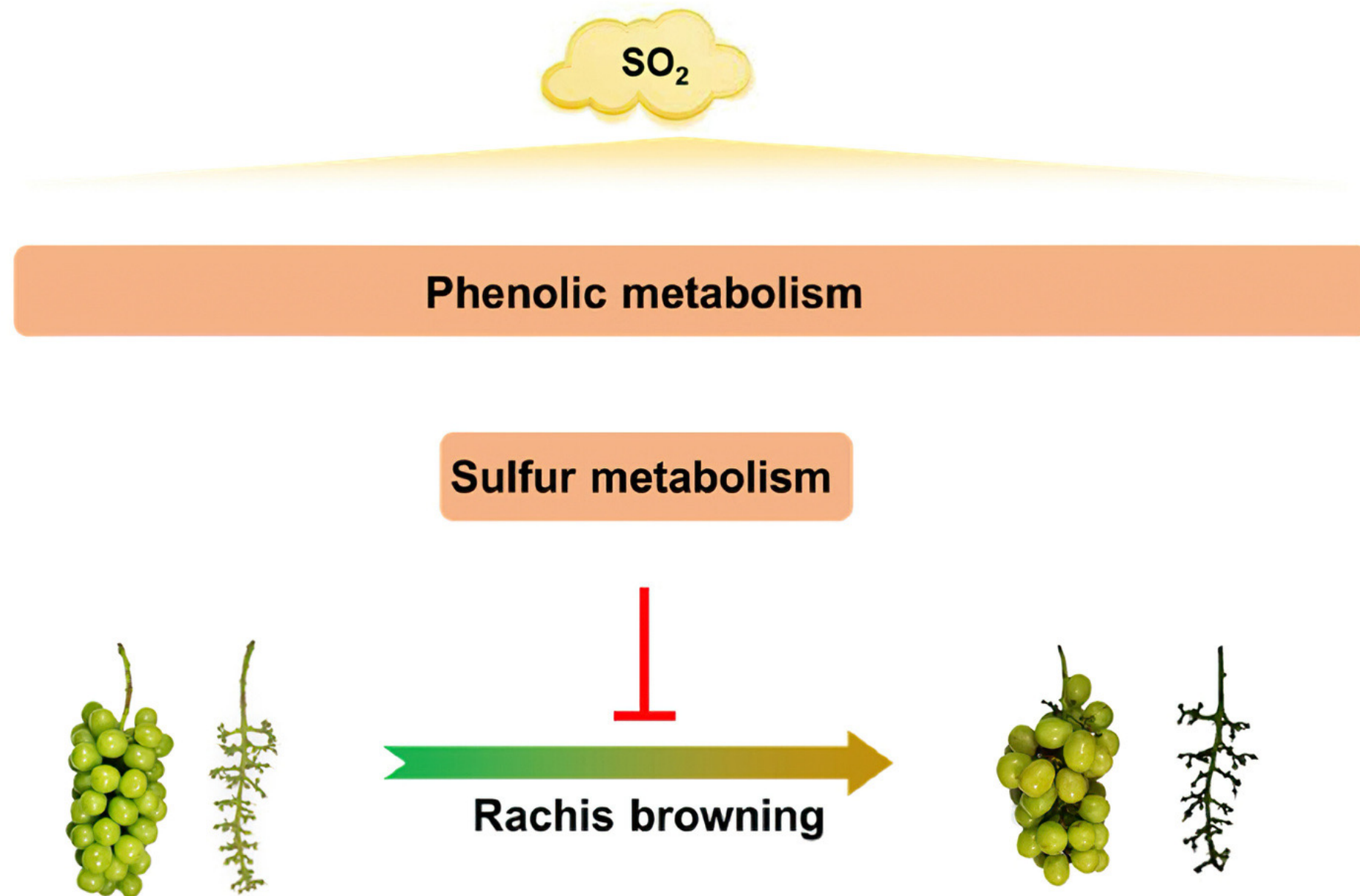
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Use of (the right) SO₂ pads



"A grape idea"





Sulfur dioxide to minimize browning

Choosing the right SO₂ pad can make a difference in one of the key symptoms of rachis dehydration.

Especially useful in the later stages of the chain where fruit is already in transit.

Image edited from: Li, Z., Chen, S., Qi, M., Yang, M., Yuan, H., Xu, Y., Huang, J., Li, D., Zhou, W., Yuan, Y., Luo, Z., & Li, L. (2023). Inhibition of postharvest rachis browning of table grapes by sulfur dioxide: Evidence from phenolic metabolism and sulfur assimilation. *Postharvest Biology and Technology*, 204, 112413. <https://doi.org/10.1016/j.postharvbio.2023.112413>.



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Evidence-based approaches are the way forward

01

‘Harvest, pack and cool as quickly as possible’ still holds true, but deviations from ideal conditions require careful allocation of resources.

02

Growers and exporters have several tools at their disposal to minimize the effects of dehydration and browning.

03

Solution providers must also keep this approach in mind to deliver technologies and services with real added value.



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