



10TH
INTERNATIONAL
TABLE GRAPE
SYMPOSIUM

24 NOV
10 |
1 DEC 2023 |
KONFERENS WEST
SOUTH AFRICA



Comprehensive Management of Dehydration in Table Grapes

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Infruta S.A.

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.



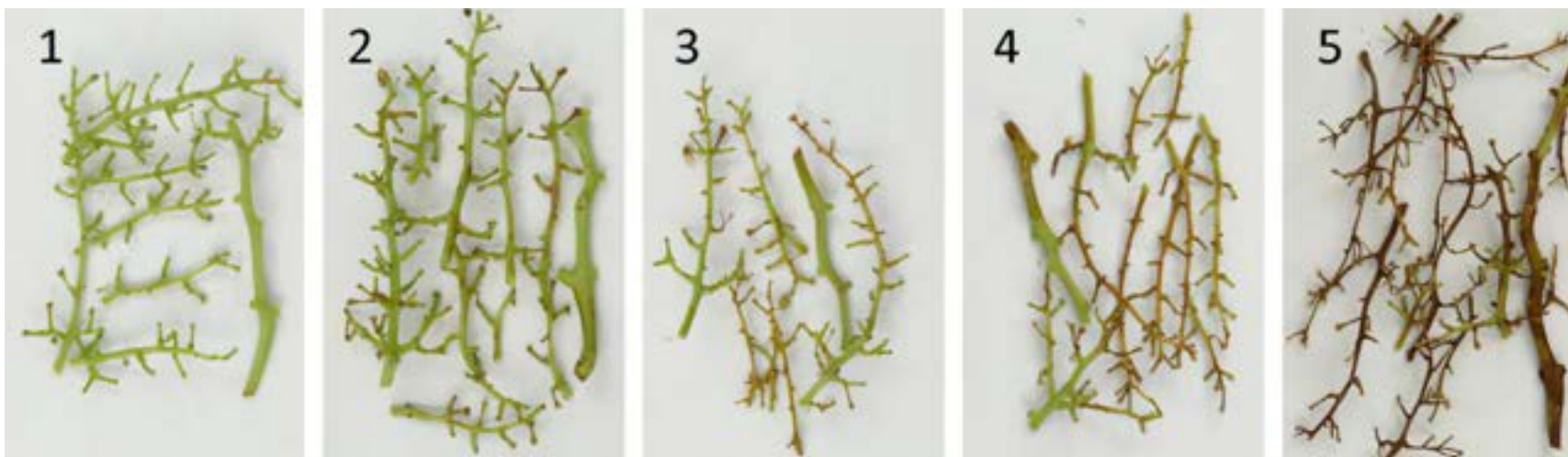


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Symptoms of dehydration



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”).



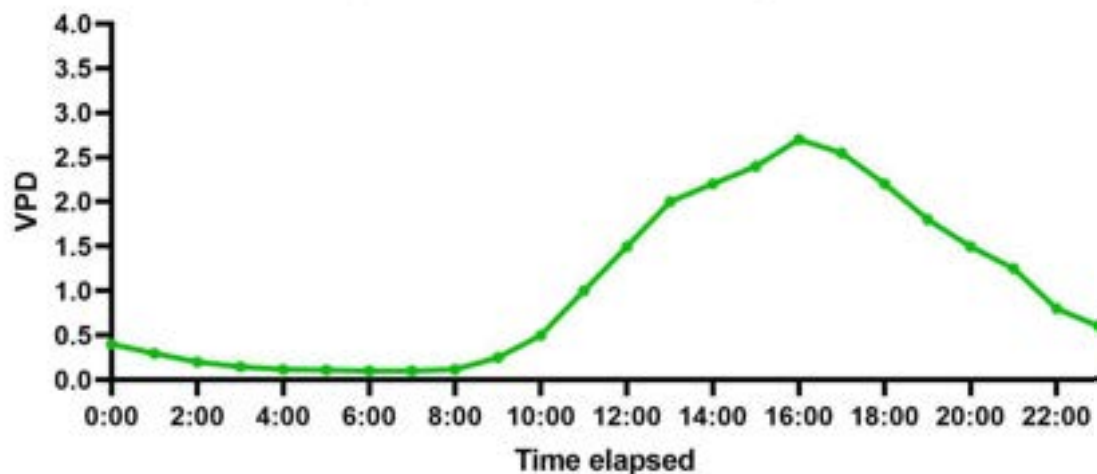
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Environmental conditions for dehydration - Vapor Pressure Deficit (VPD)

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.

A photograph of a vineyard with rows of grapevines and a dirt path. The vines are lush green and supported by wooden stakes. The path is made of dirt and is flanked by the rows of vines. The lighting is bright, suggesting a sunny day.

Exportadora Río King - A Case Study

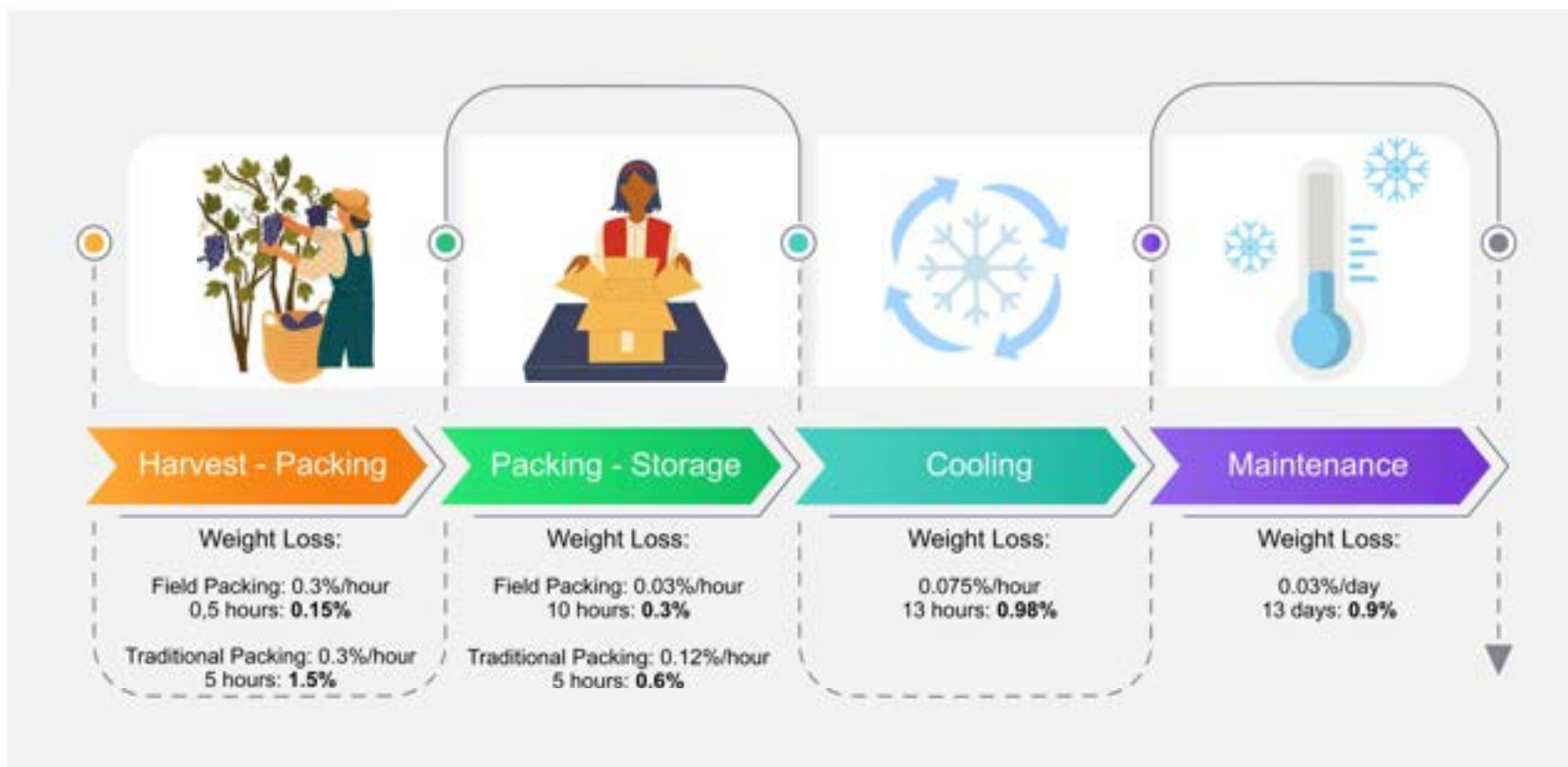
Central Valley in Chile



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The Value Chain



Where should we focus our efforts?



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20-22 NOV
2019
A BACCAREDO

CONGRESS HOTEL
BOVENS ARONA

Early vs late harvest



PROTEKU
GRAPE GUARDS
PROTEKU INFRUTA
EUROPA CHILE
"A grape show"

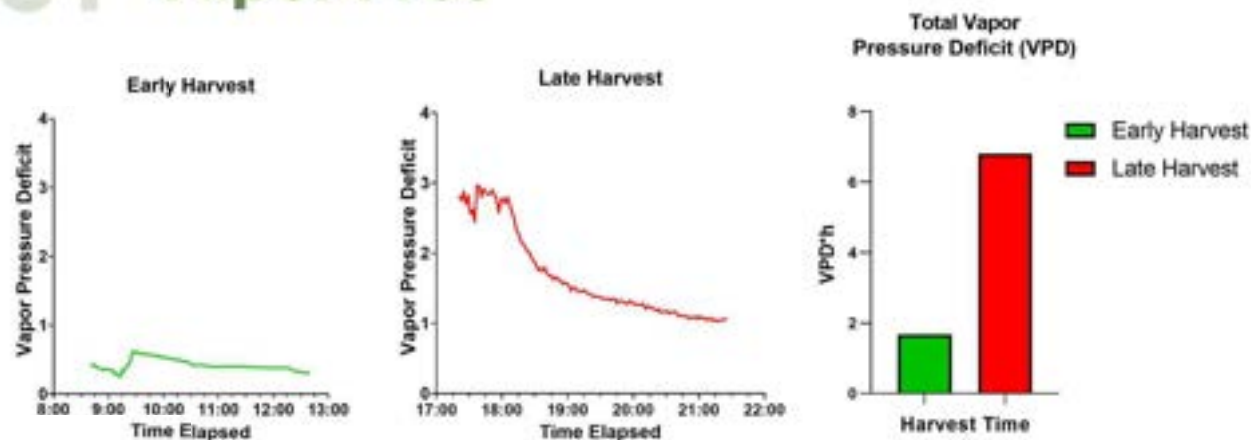


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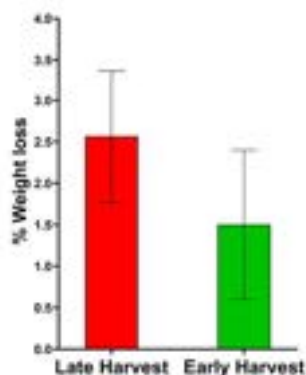
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01 Vapor Pressure Deficit



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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Use of harvest box covers



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"A grape show"



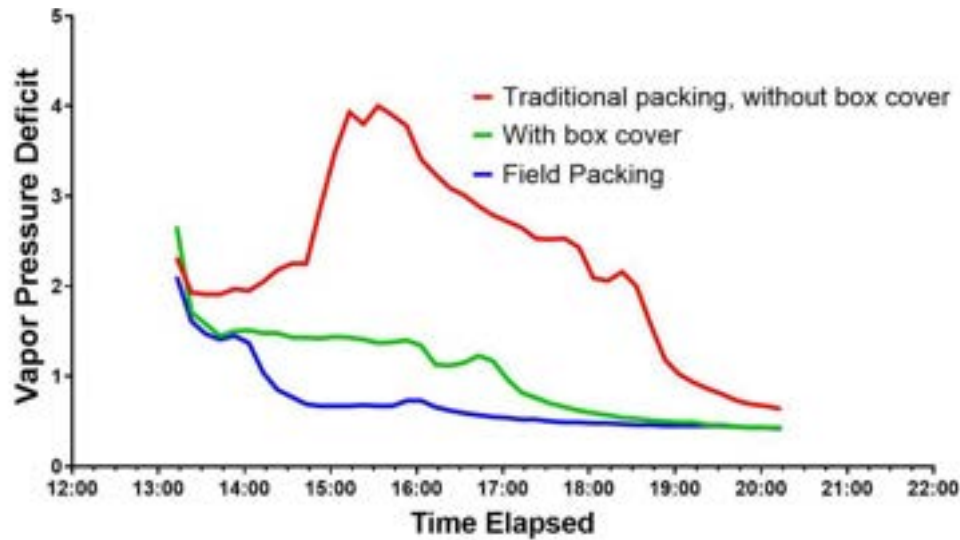
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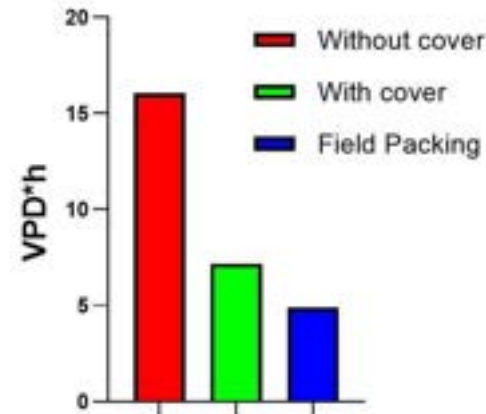


01 Vapor Pressure Deficit

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



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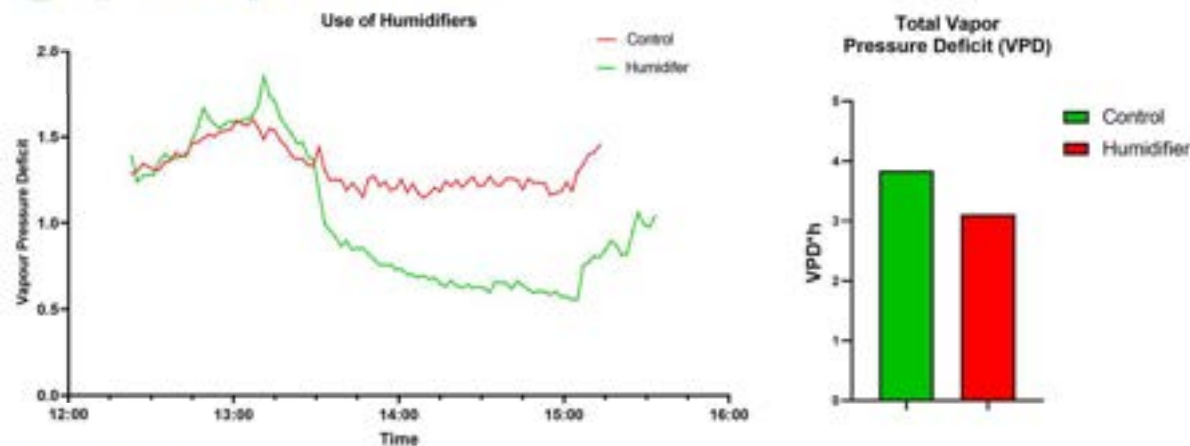


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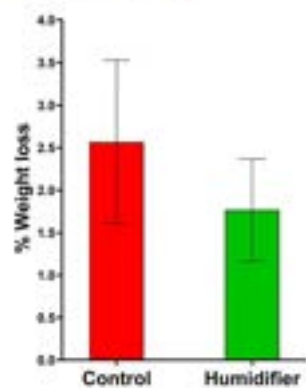
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01 Vapor Pressure Deficit



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.



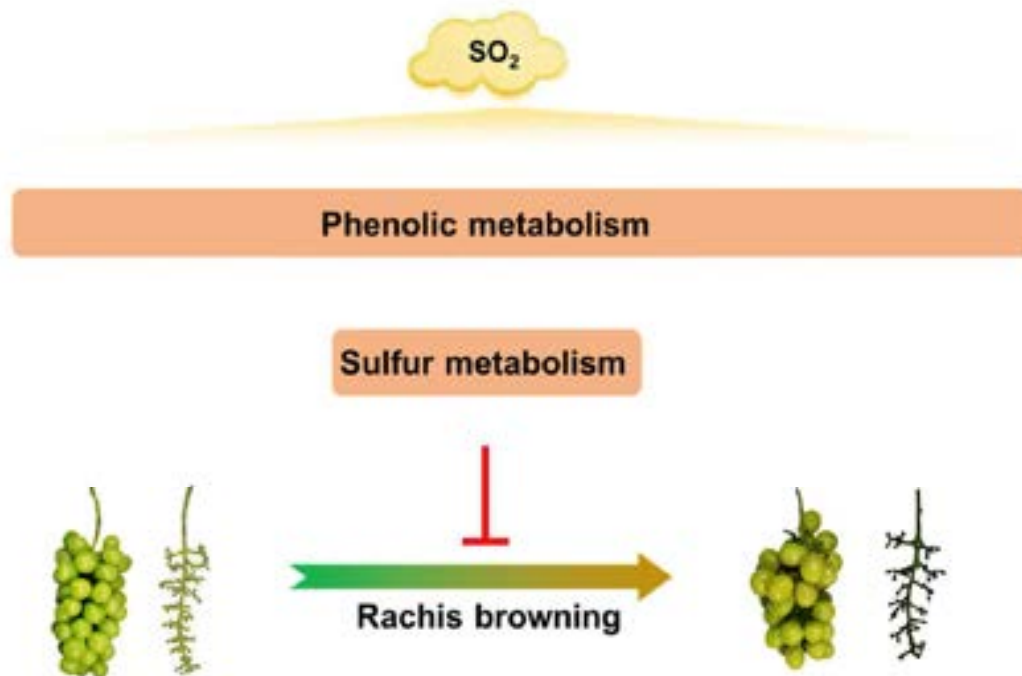
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CONGRESS HOTEL
BOUH ARROCH

Use of (the right) SO₂ pads



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"A grape show"



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>.

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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