AMCOR FIBRE PACKAGING

AUSTRALASIA

SESSION SIX

Session Six
Postharvest quality, outturn

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RESOLVING LONG DISTANCE SHIPPING DISORDERS IN 'HASS' AVOCADOS

John P Bower
Horticultural Science
University of KwaZulu-Natal
South Africa

UNIVERSITY OF KWAZULU-NATAL

Long distance shipping implies

- Long periods at low temperatures
- High potential for defects

Defects to be avoided

- Fungal

Defects to be avoided

- **Physiological**

Defects to be avoided

- Premature softening
- Uneven ripening
- External chilling injury

Defects from two sources

- Preharvest
- Postharvest

Preharvest causes

- Fungal infections
  - Need adequate spray programme
  - Postharvest fungicides
- Physiological disorders

Orchard history important

- Mineral nutrition (especially N)
- Stress levels

Postharvest

- Fruit removed from the tree creates
  - Water stress
  - Carbohydrate stress

Results in

- Oxidative stress leading to membrane damage
- Enhances ethylene production and ripening
- Results in external and internal defects

Focus of our work

- Reduce water loss and respiration rate to:
  - Reduce stress
  - Enhance shelf life
- Is based on experience with other cultivars

Methodologies

- Used fruit from:
  - Limpopo province (North)
  - KwaZulu-Natal (KZN) (South)
- Results over 2 seasons

Season 1 treatments

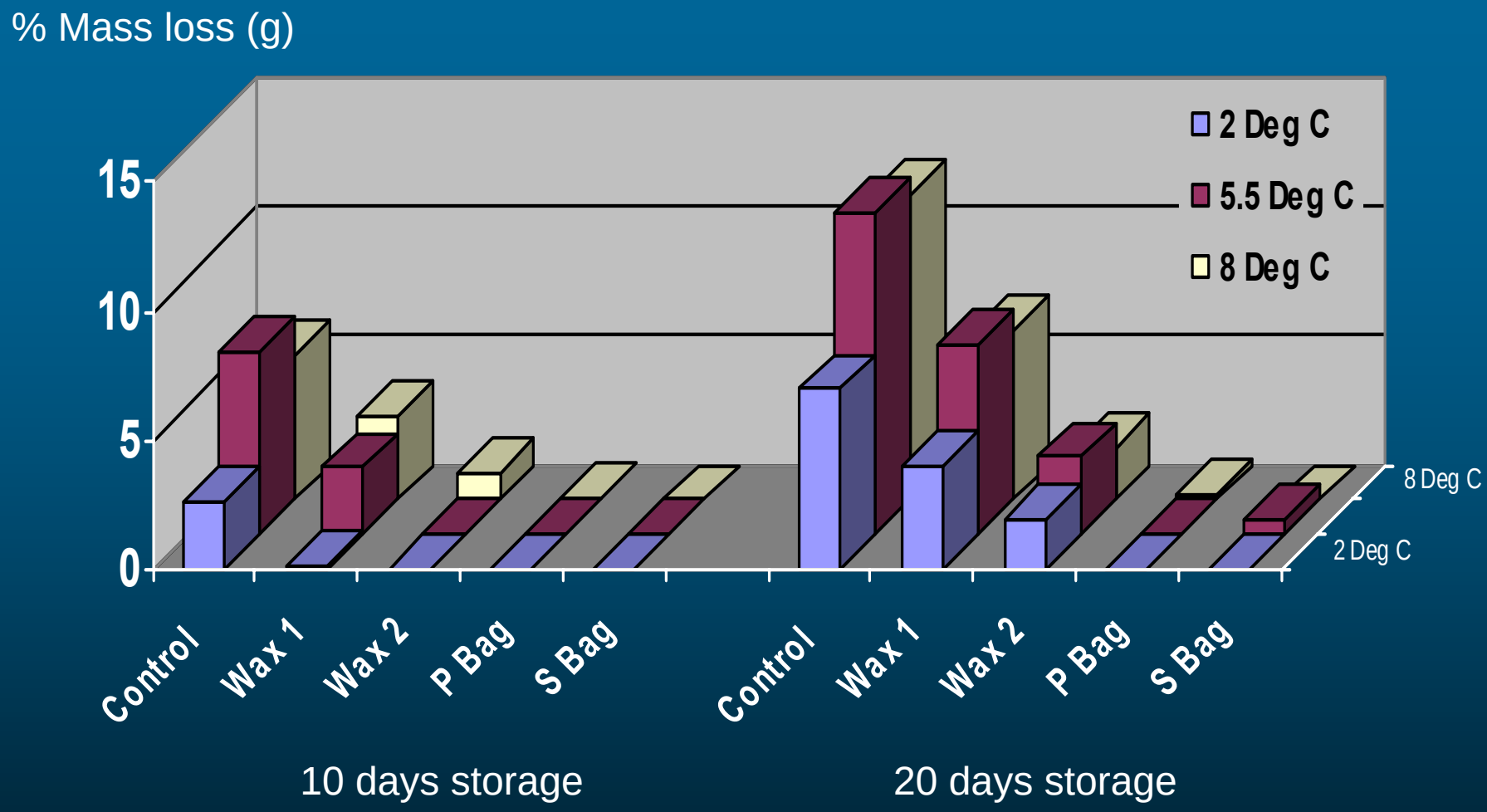
- Control – no treatment
- Wax 1
- Wax 2
- Polybag – micro-perforated polypropylene
- Polyscrub bag – polyethylene with ethylene absorber

Storage and evaluations

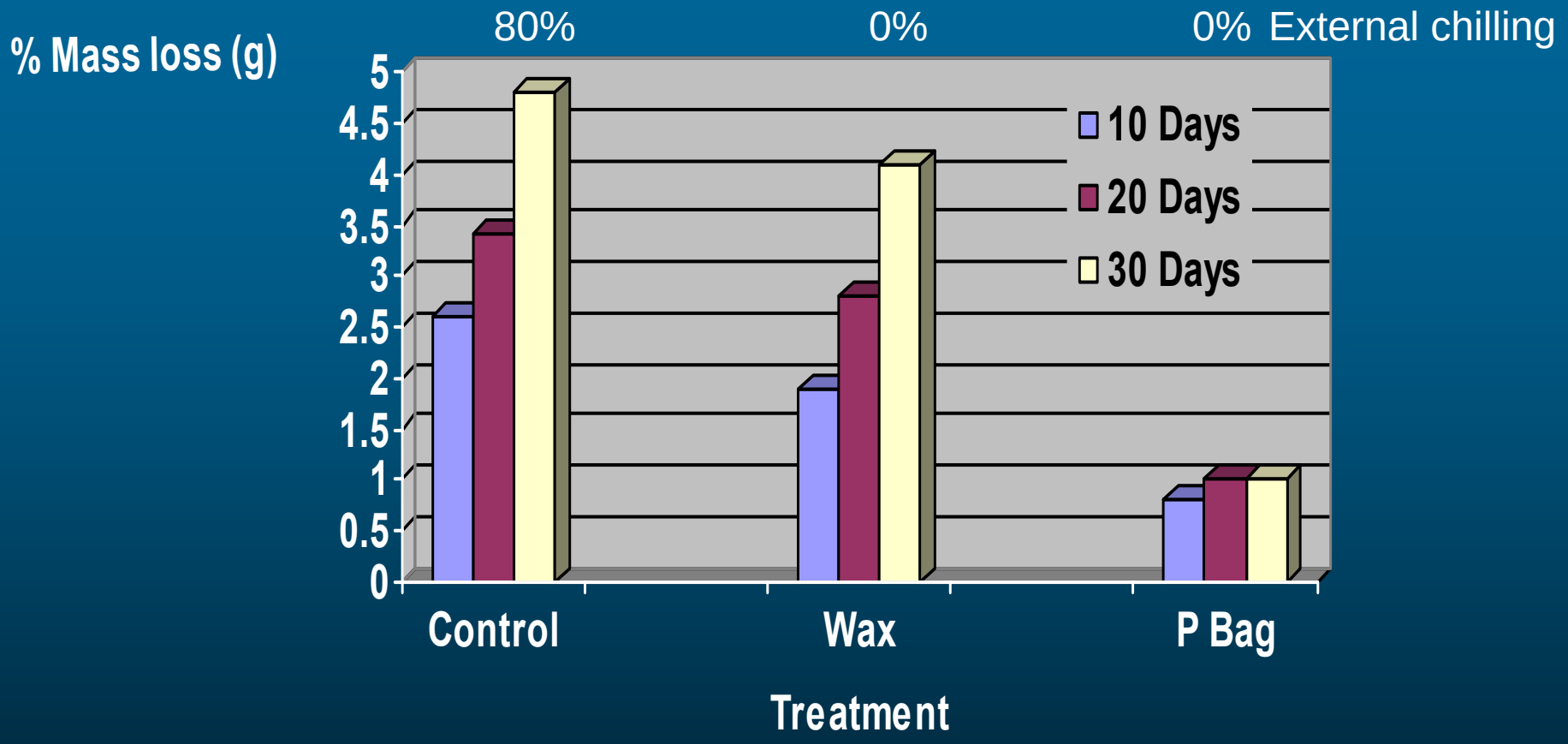
- 30 days at 2^0C; 5.5^0C; 8^0C
- Fruit mass change
- CO_2 evolution
- Ripening
- Defects

Season 2 treatments

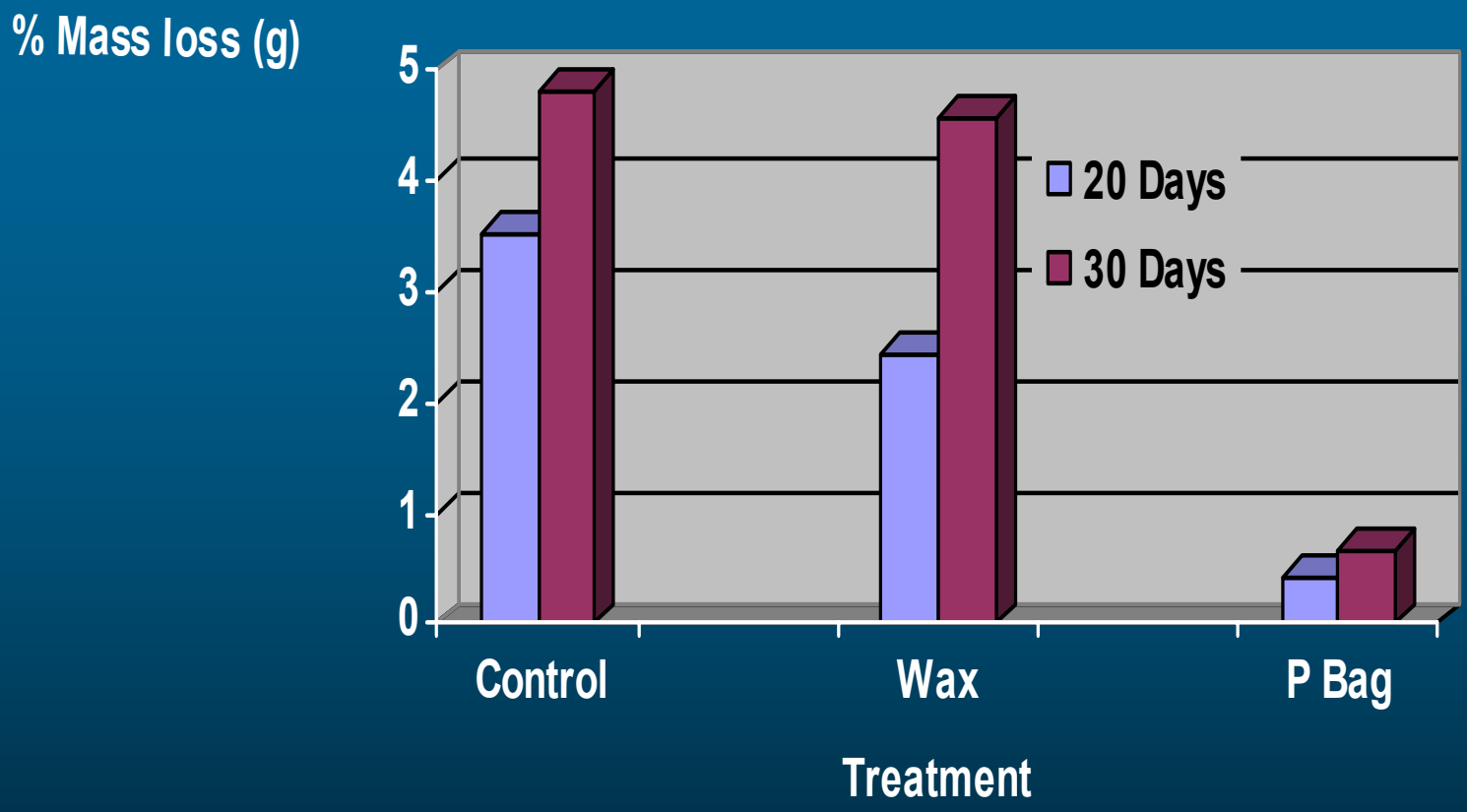
- Control
- Wax
- Polybag
- Storage 30 days at 2^0C; 5^0C
- Evaluations at 10, 20 and 30 days



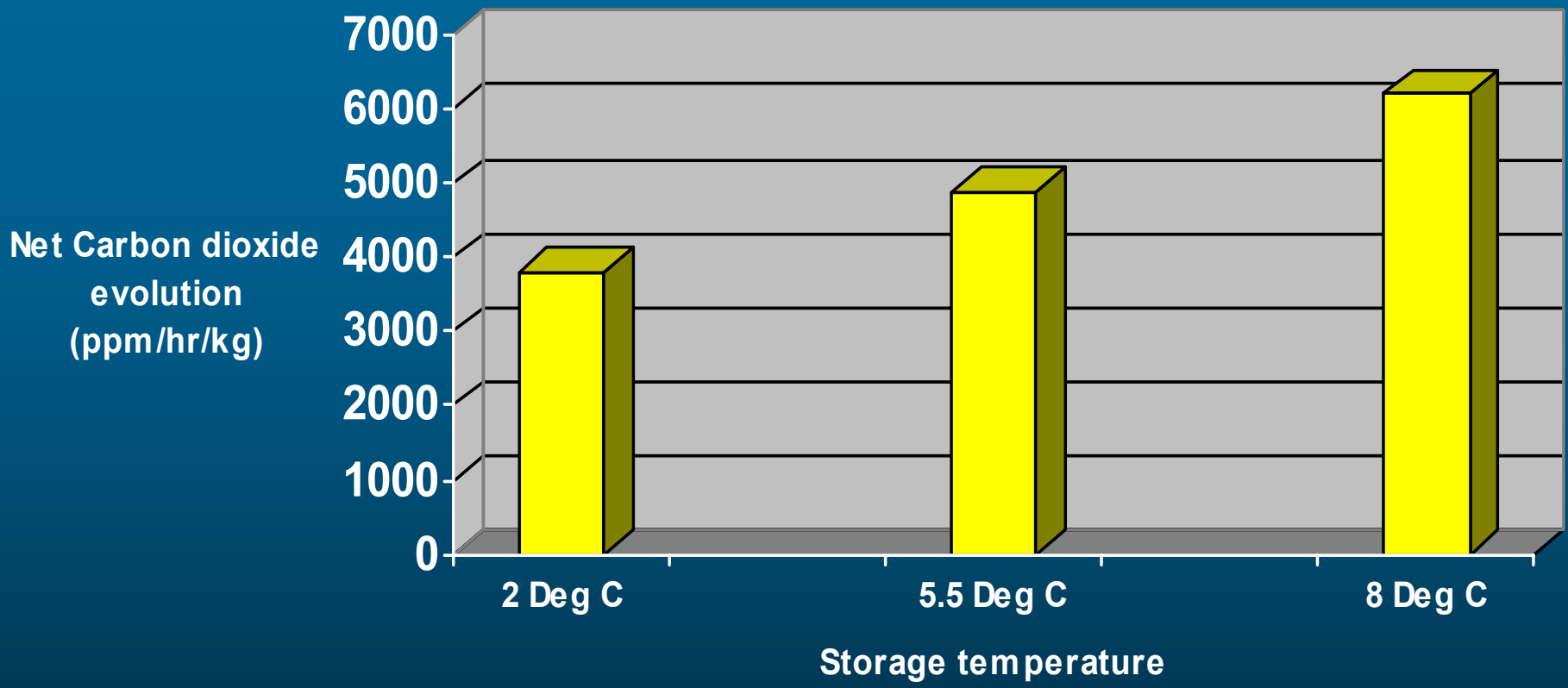
Fruit mass loss season 1



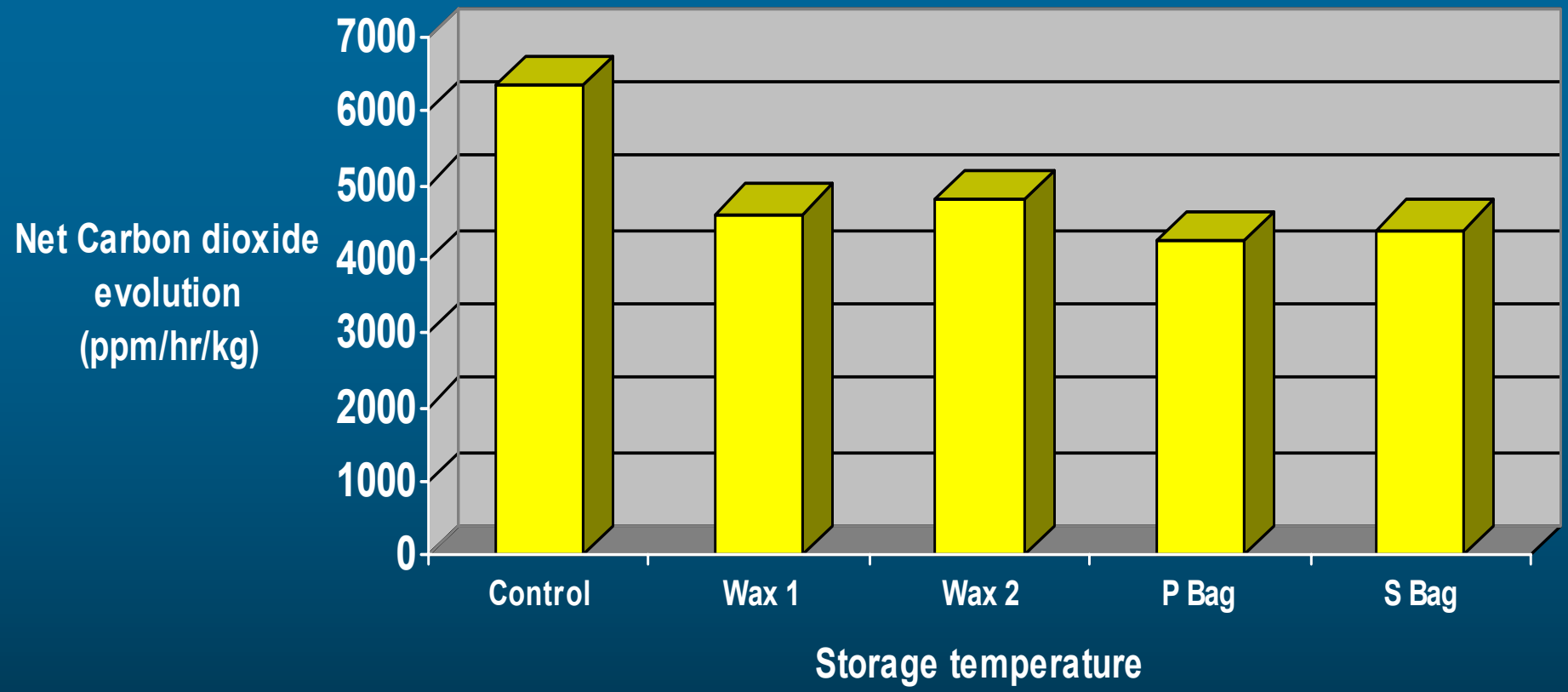
Mass loss at 2^0C season 2 Limpopo



Mass loss at 2^0C season 2 KZN



Effect of temperature on CO_2 evolution

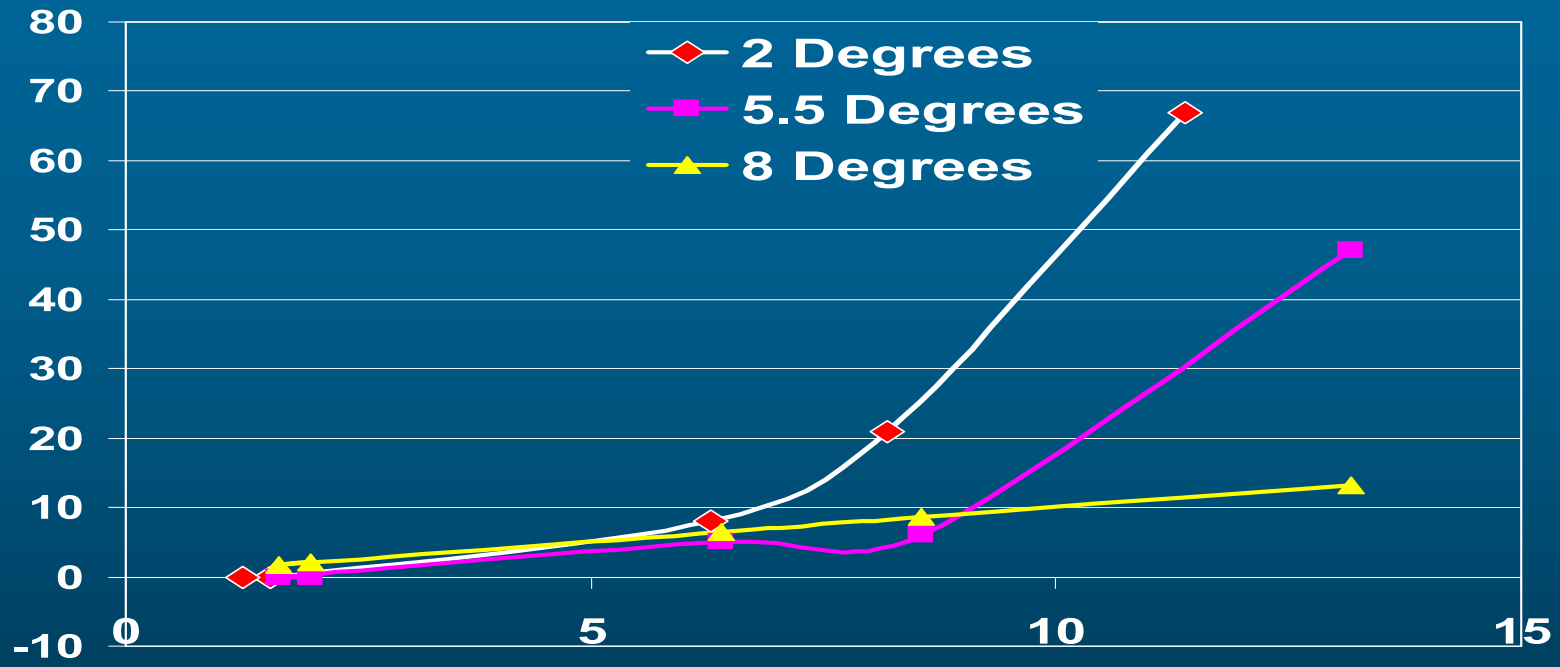


Effect of treatment on CO_2 evolution

It is clear that

- It is possible to decrease water loss
- Micro-perforated polypropylene bags seem best
- Considerable water loss during pre-cooling period
- Seems to be interaction between temperature and water loss

Chilling injury (%)



Mass loss (%)

EFFECT OF MASS LOSS ON CHILLING INJURY

Low temperature

- Decreases CO_2 evolution (respiration)
- Decreases potential for disorders

Therefore suggest that

- Consider preharvest factors
- Decrease postharvest stress
- Minimise water stress with appropriate packaging
- Consider pre-cooling techniques

Minimise respiration

- Ship at low temperature
- 2^0C or lower is possible

Provide perfect fruit at destination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