

The New Zealand Institute for Plant & Food Research Limited

Plant & Food
RESEARCH
RANGAHAU AHUMĀRA KAI



Dynamic CA storage of avocados

Technology for managing exports?

Jem Burdon

Presentation overview

- Why dynamic CA (DCA) storage?
- What is DCA and how is it operated?
- How does New Zealand 'Hass' respond to DCA?
- DCA as a technology for managing exports?

Why dynamic CA storage?

- Export based industry
- Storage life to reach markets
- Quality after prolonged storage

Why dynamic CA storage?

Alternative technologies:

- Refrigeration, Air
 - Insufficient storage life
 - High rot incidence
- CA with low O₂ and high CO₂
- SmartFresh^(SM)
 - Both: Increased storage life
 - Prolonged ripening period
 - High rot incidence

Effect of SmartFresh on ripe fruit quality

	Air	SmartFresh
Days to ripen	4.1d	10.5d
Stem End Rot	29%	74%
Body Rot	38%	78%
External Rot	5%	52%
Diffuse Flesh Discoloration	14%	1%

What is dynamic CA?

Static CA (SCA)

a pre-determined O_2 level is maintained

Dynamic CA (DCA)

O_2 level is set dependent on the fruit response to low O_2

Allows greater optimisation and matching of storage conditions to the fruit tolerance to low O_2

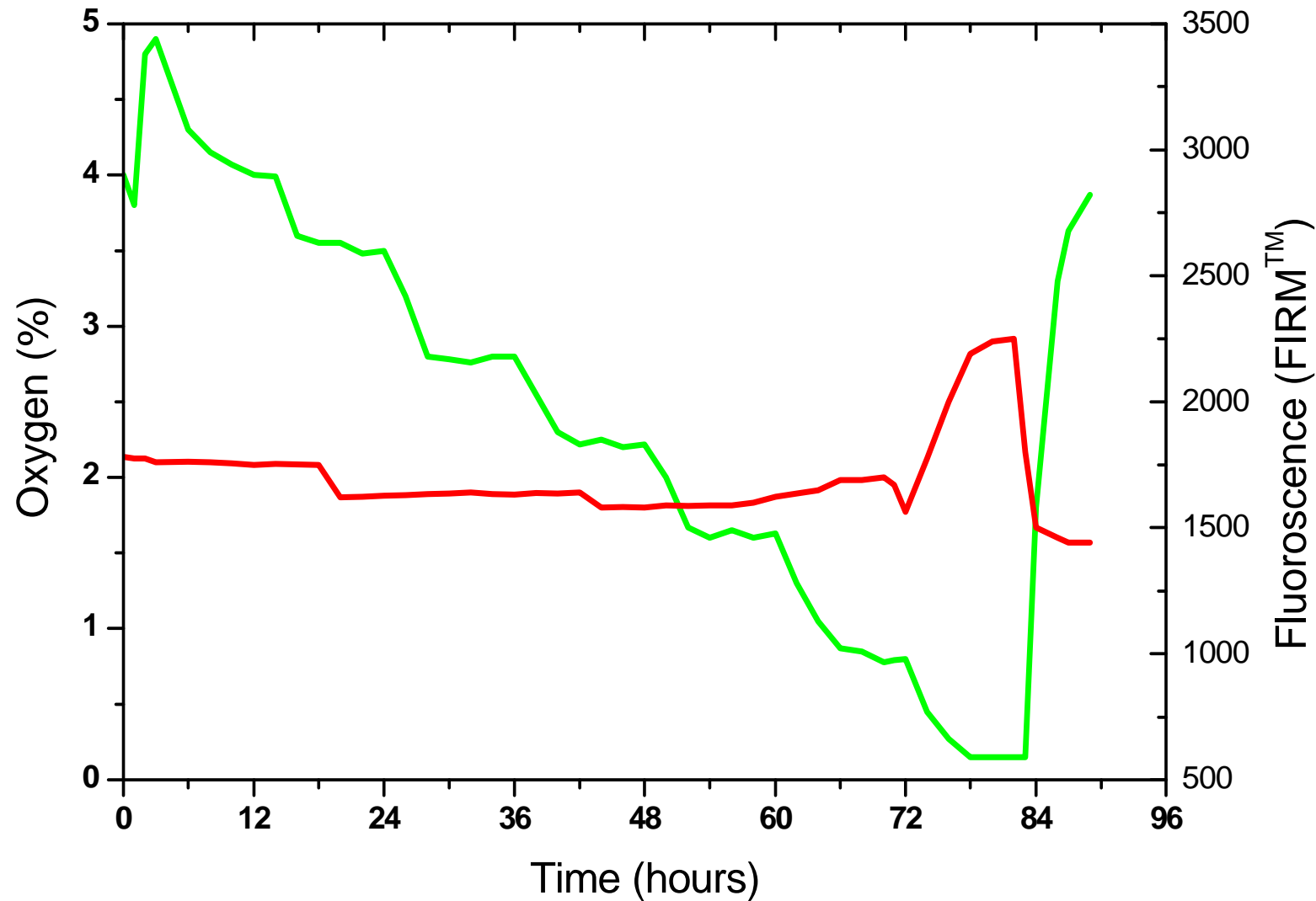
Improved CA effect at low CO_2 level

Dynamic CA: Monitoring the fruit

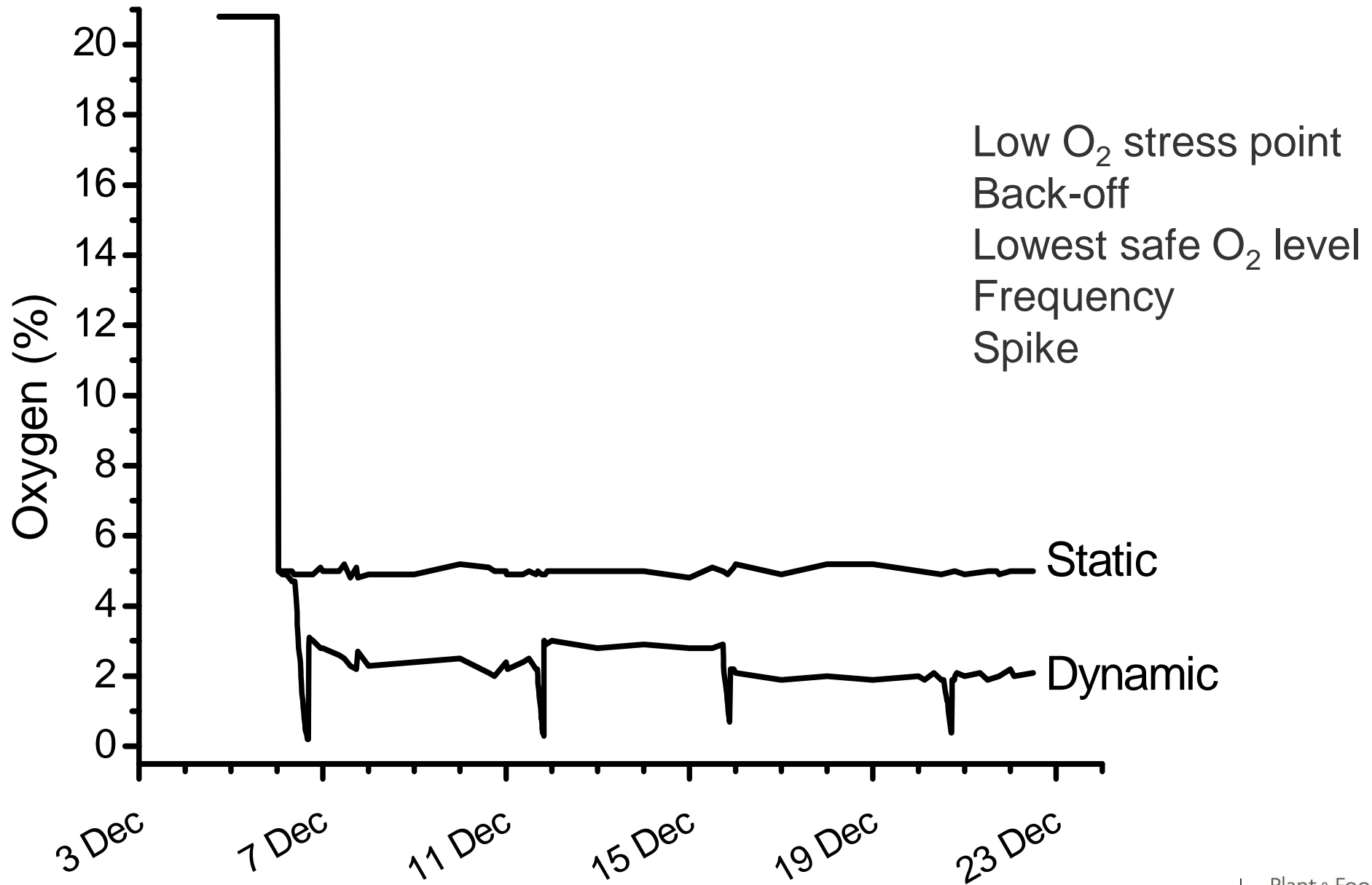


Monitoring fruit stress under low oxygen

Stress monitored as skin fluorescence by HarvestWatch™



Oxygen levels in SCA and DCA



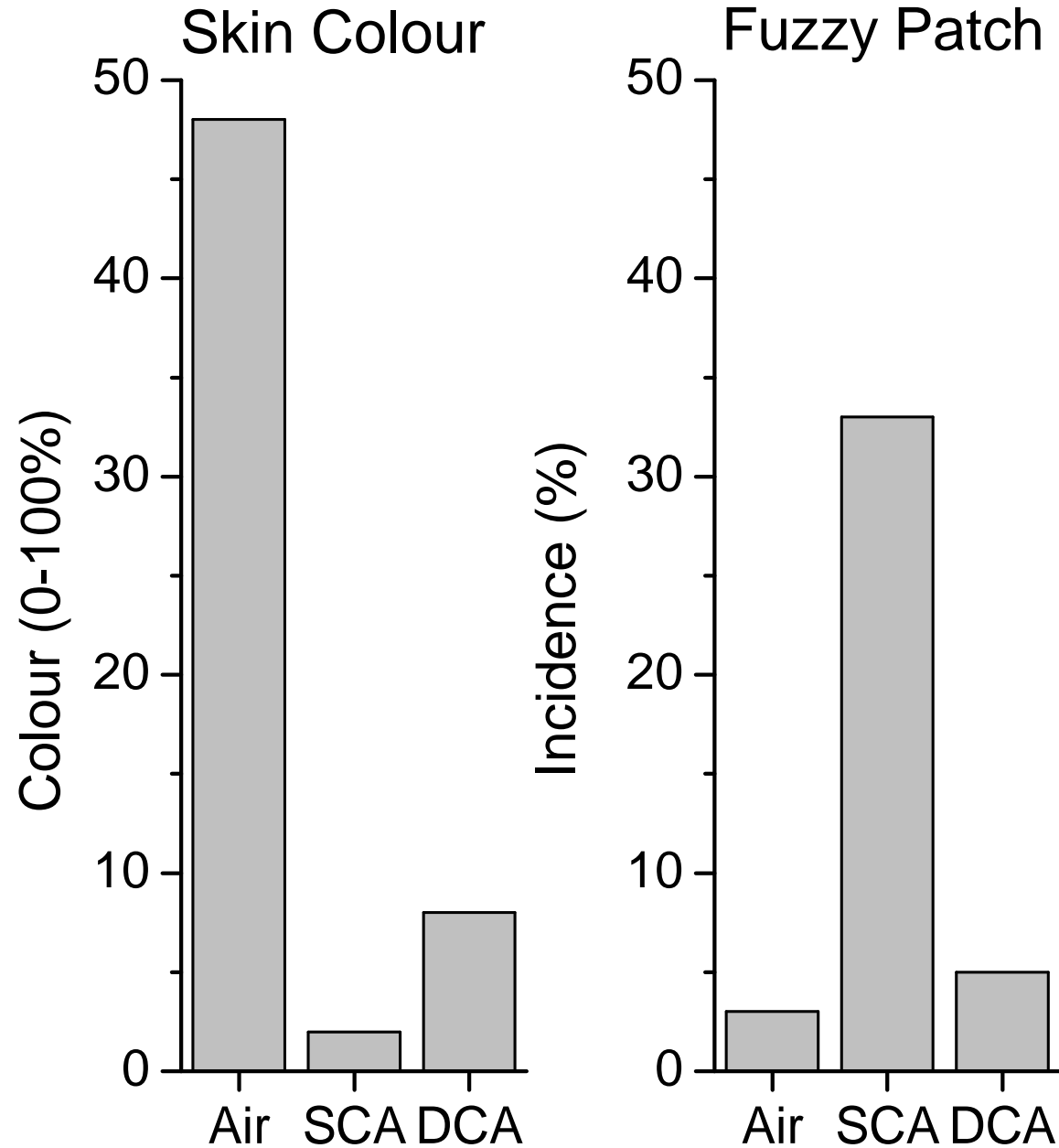
How does NZ 'Hass' respond to DCA ?

Comparison of fruit stored in air, SCA and DCA

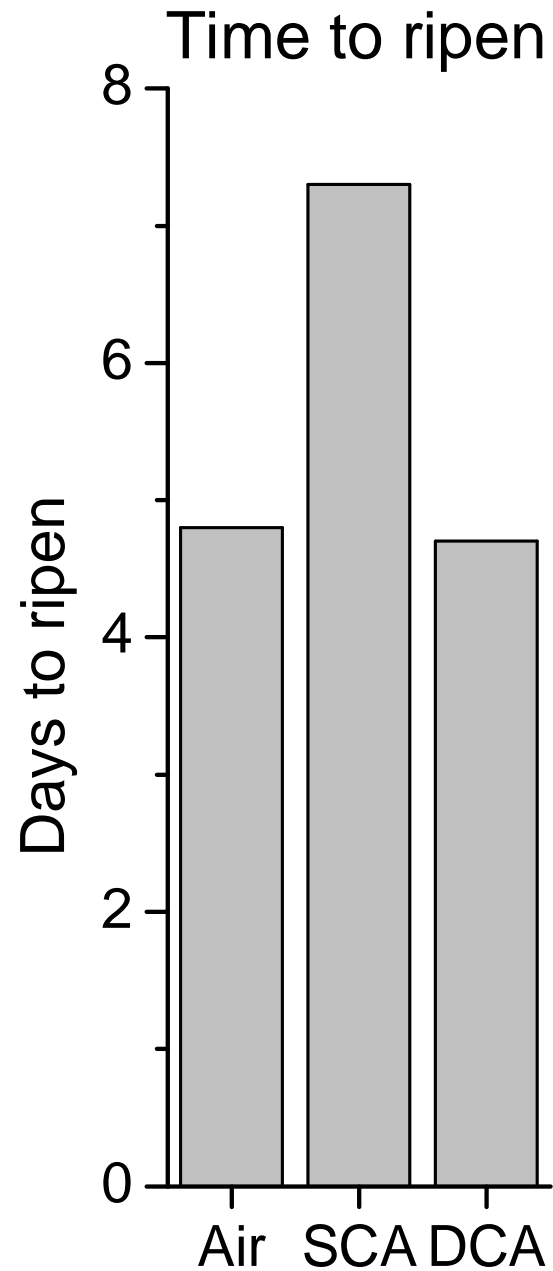
Key aspects

- fruit condition at the end of storage
- time to ripen
- disorders when ripe

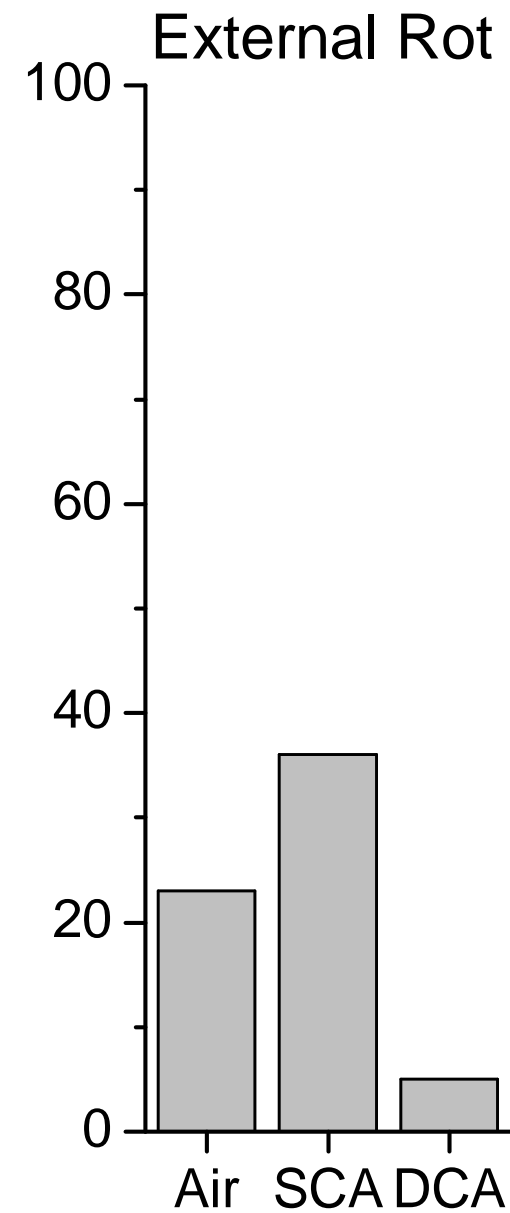
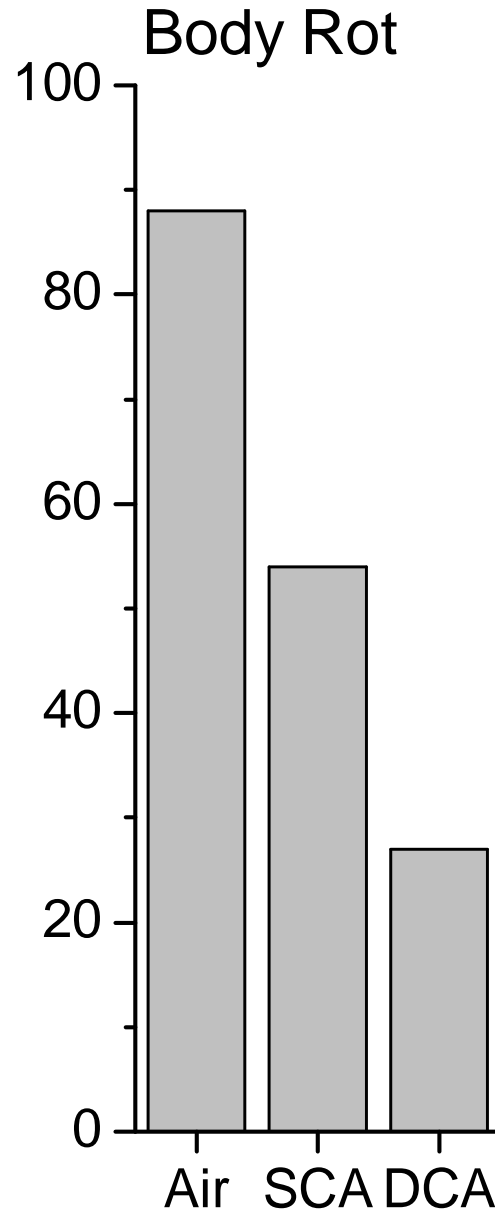
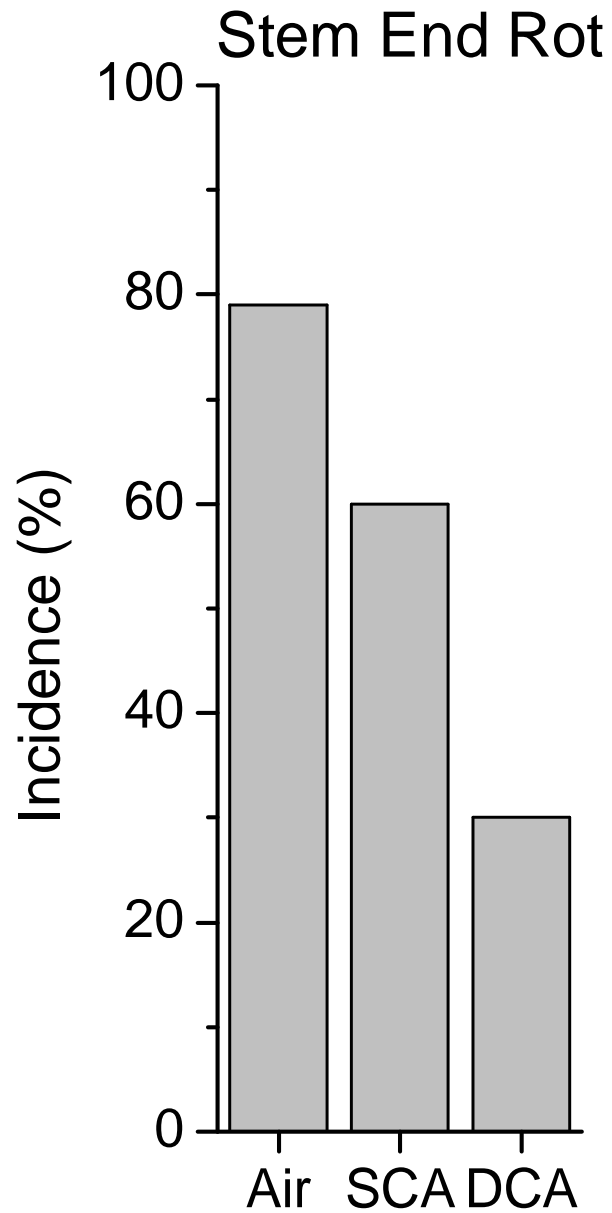
At the end of storage



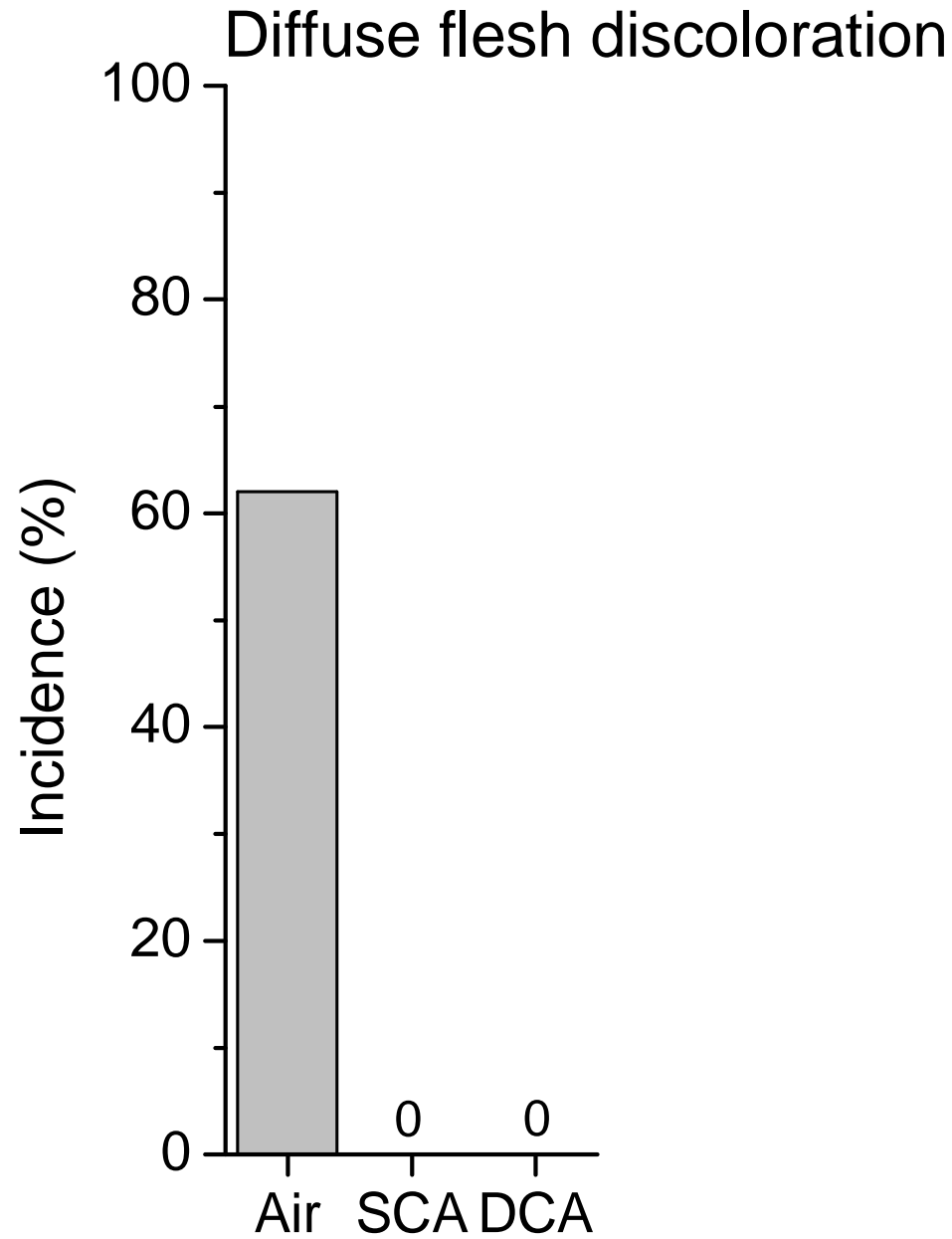
Time to ripen



When ripe



When ripe



How does NZ 'Hass' respond to DCA ?

DCA is suitable for NZ 'Hass'

- prolonged storage life
- short ripening time
- reduced rots

DCA as a technology for managing exports?

Onshore

- Harvest better fruit / when favourable weather and store
- Supply out of inventory
- Dependent on suitable facilities

Export

- More distant markets
- Improved quality
- Dependent on capability of shipping containers

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