



Economic Development,
Jobs, Transport
and Resources

Asian Markets: Serviced Supply Chains

Stone fruit cultivar performance and predicting shelf life

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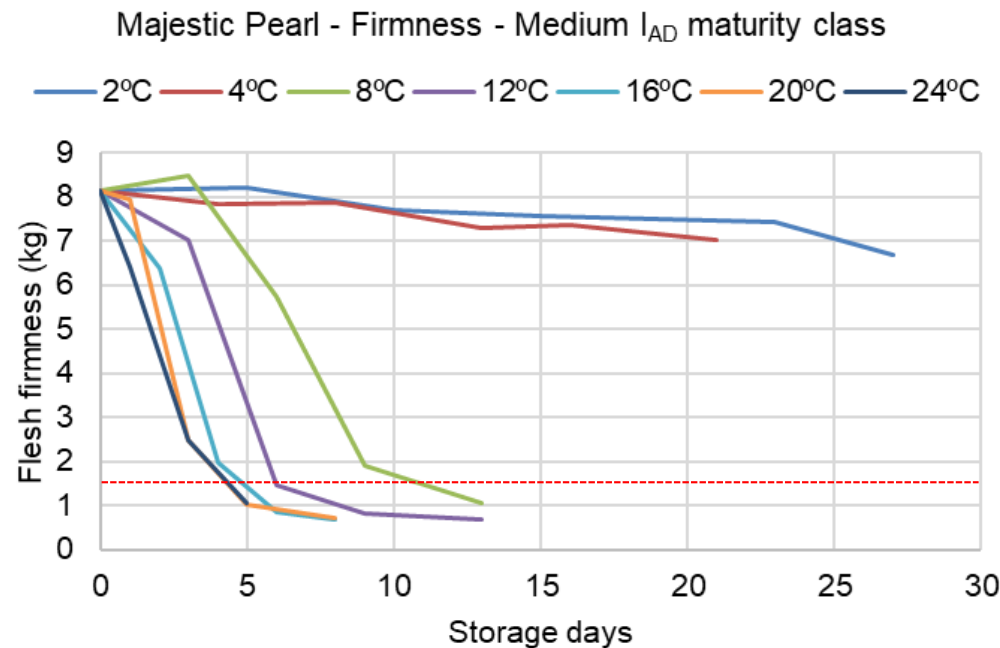
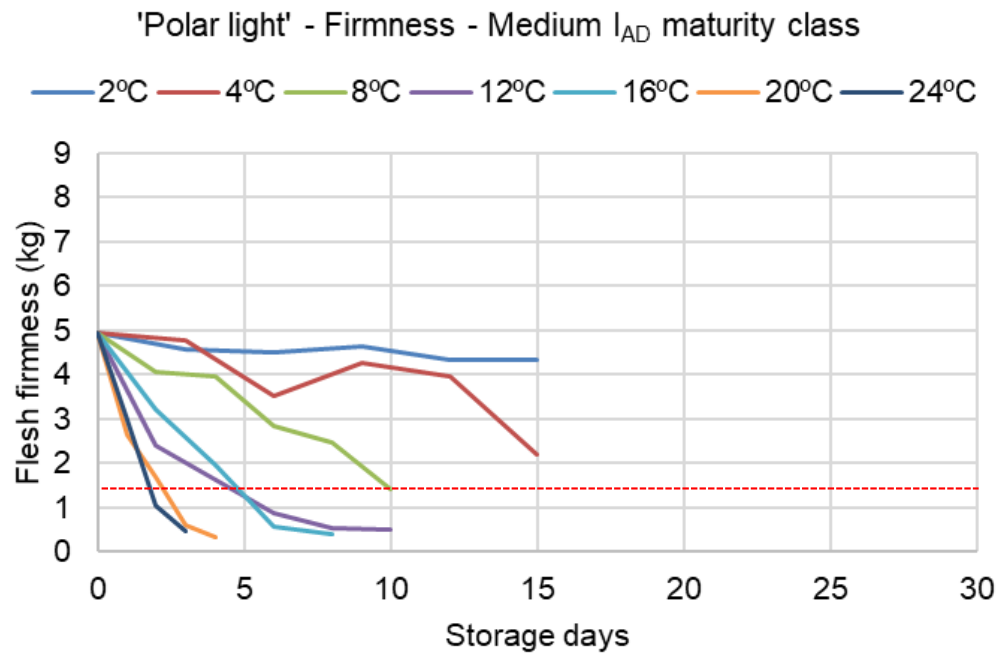
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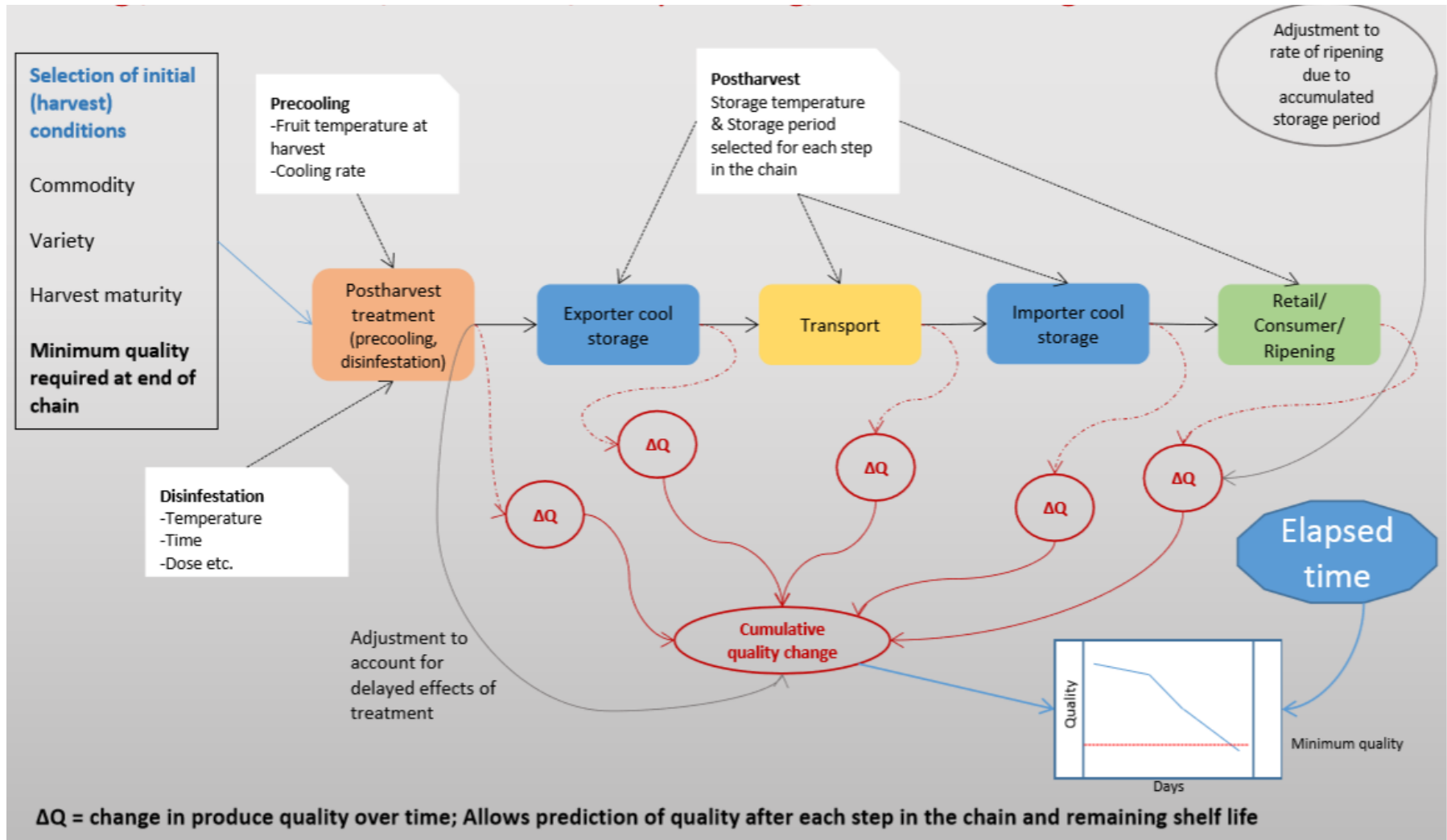
What we'd like to know?

- **Domestic and Export** – Can we predict stone fruit quality changes and remaining shelf life?
- **Sea freight** - Export duration before excessive fruit softening or storage (chilling) disorders appear?
- **Air freight** - What kind of temperature abuse required before there is a significant effect on shelf life and quality?
- **Harvest and precooling** – How does fruit maturity impact on chilling disorders and quality, and can we treat fruit to minimise injury e.g., delayed cooling or pre-conditioning?

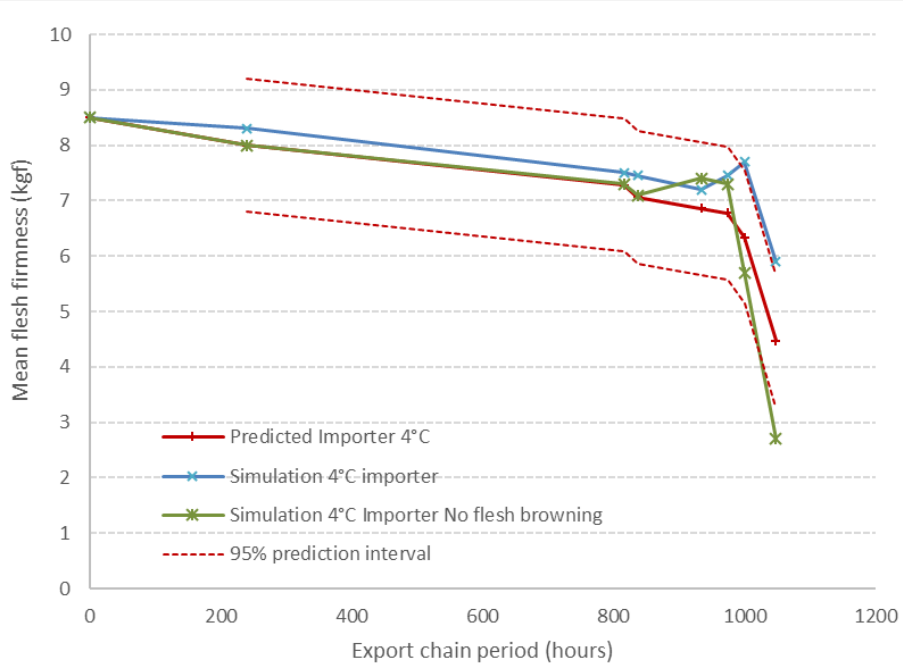
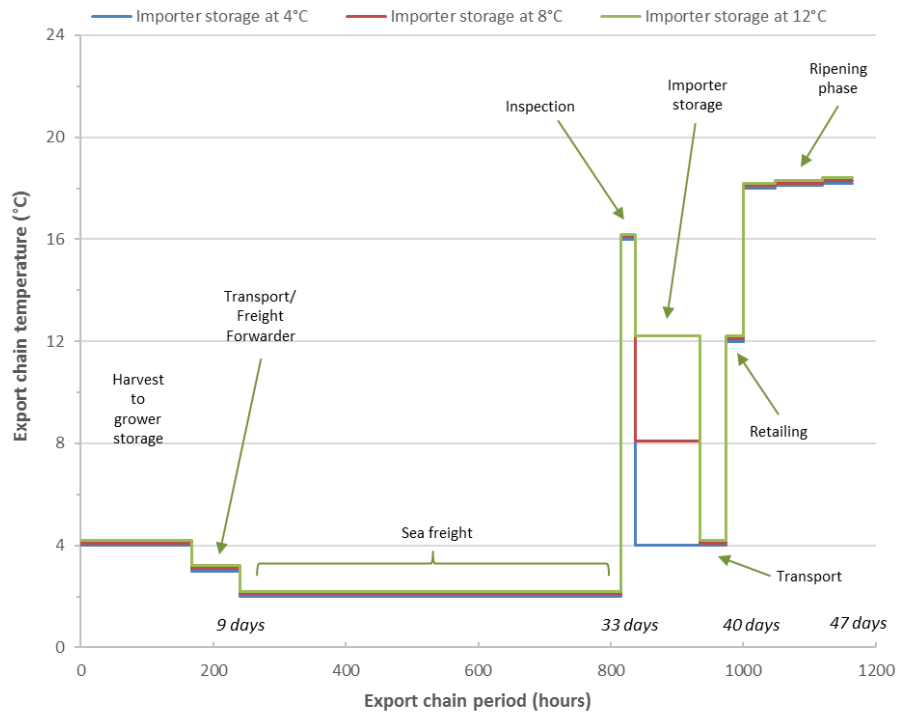
Predicting fruit quality and shelf life



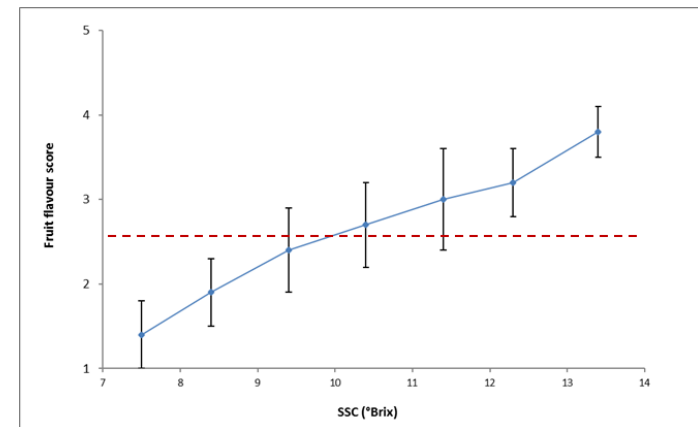
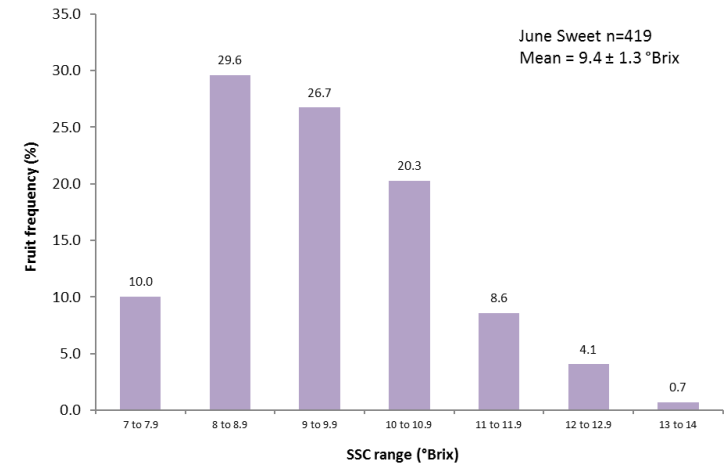
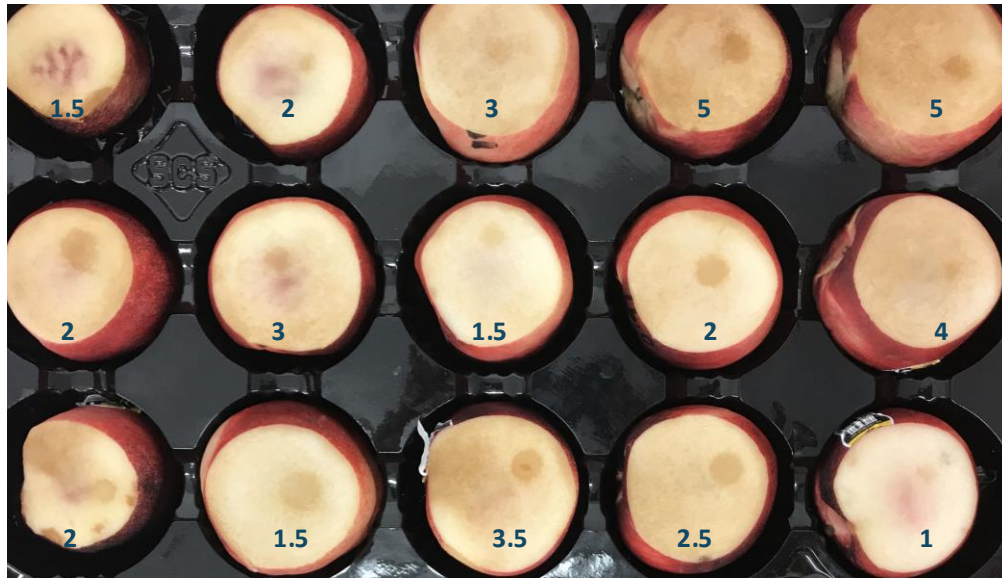
Predicting fruit quality and shelf life



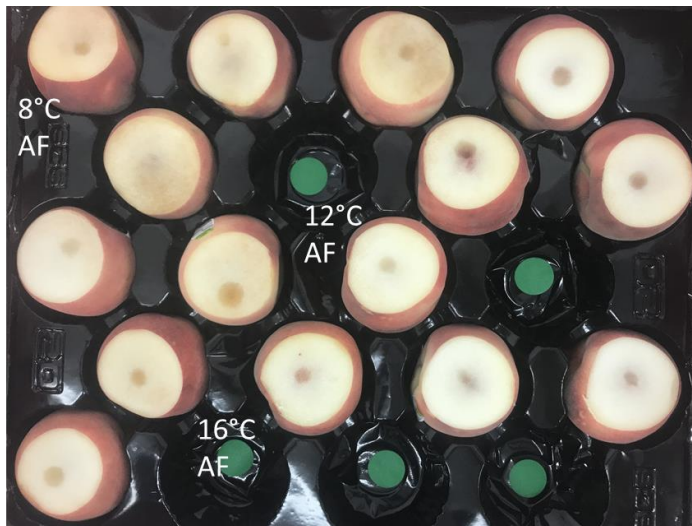
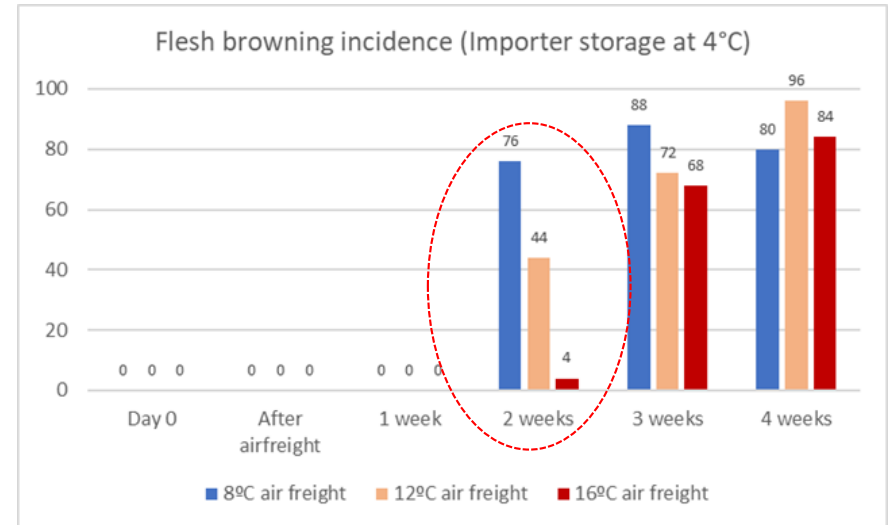
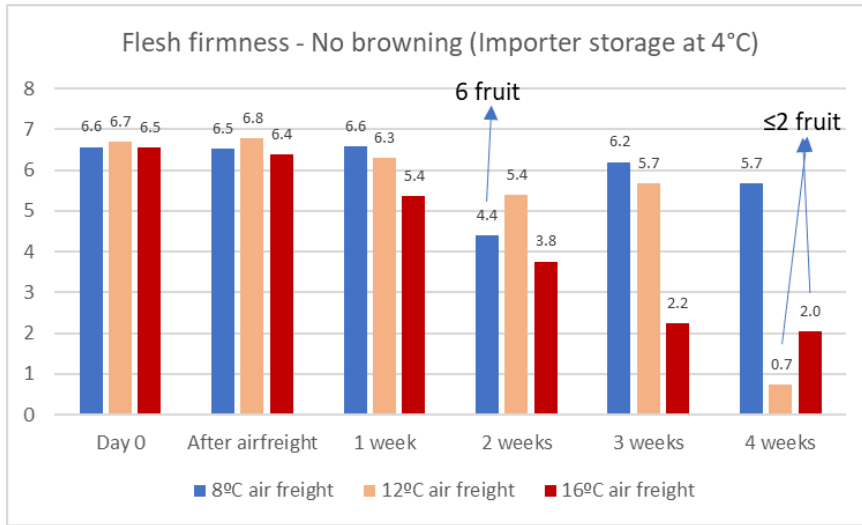
Simulated sea freight and quality prediction – Majestic Pearl



Fruit quality issues – SSC and cool storage



Air freight temperature vs flesh firmness (kgf)



Stone fruit pre-conditioning – a solution?

Sea freight

Harvest

Precooling to
12-16°C

Storage at 12-
16°C for 48
hrs

Packing

Fast cooling
to 2°C

Transport at
2°C

Freight
forwarder at
2°C

Air freight

Harvest

Precooling to
12-16°C

Storage at 12-
16°C for 24
hrs

Packing

Room cooling
to 12°C

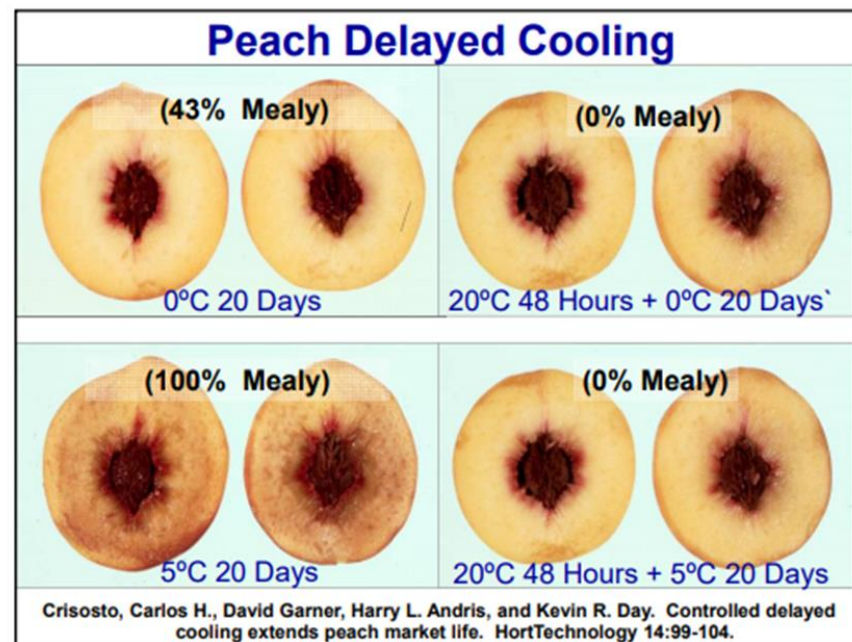
Transport at
12°C

Fumigation at
18°C

Freight
forwarder
cooling to 2°C

Air freight

- Benefits after storage and ripening?
 - Better flesh texture and higher juice
 - Reduction in chilling injury (O' Henry & Flavour Top)
 - Initiates fruit cell wall breakdown and reduces development of browning compounds (PPO)
 - Reduces flesh mealiness/ wooliness



Preliminary cultivar recommendations – Extended storage

Type	Cultivar	Sea freight FB risk	Max. storage duration at 2°C	Limiting factors for storage	Maximum harvest maturity (I _{AD} value)
<i>White nectarine</i>	White Knight	Low	2 weeks	Fruit softening	?
	Polar Light	Low	2 weeks	Fruit softening	?
	Diamond Pearl*	Moderate/ High	3 weeks	Chilling injury	?
	Flavour Pearl*	Low	4 weeks		?
	Majestic Pearl*	High	3 weeks	Chilling injury	?
<i>White peach</i>	Polar Princess*	High	2 to 3 weeks	Chilling injury	?
	Autumn Snow	Moderate	3 weeks	Chilling injury	?
	Polar Queen	High	2 to 3 weeks	Chilling injury	?
	Sierra Princess*	Moderate/ High	3 weeks	Chilling injury	?
	Snow Fall*	Moderate/ High	3 weeks	Chilling injury	?
<i>Plum</i>	Sunshine*	Low/ Moderate	4 weeks	Softening/ Shivel	?
	Red Phoenix	Low	4 to 5 weeks	Shivel	?
	Autumn Honey*	Low	?		?
<i>Yellow nectarine</i>	Sol Candy	Low	4 weeks	Fruit softening	?
	September Bright*	High	3 weeks	Chilling injury	1.20
	June Sweet*	Low	3 to 4 weeks		?

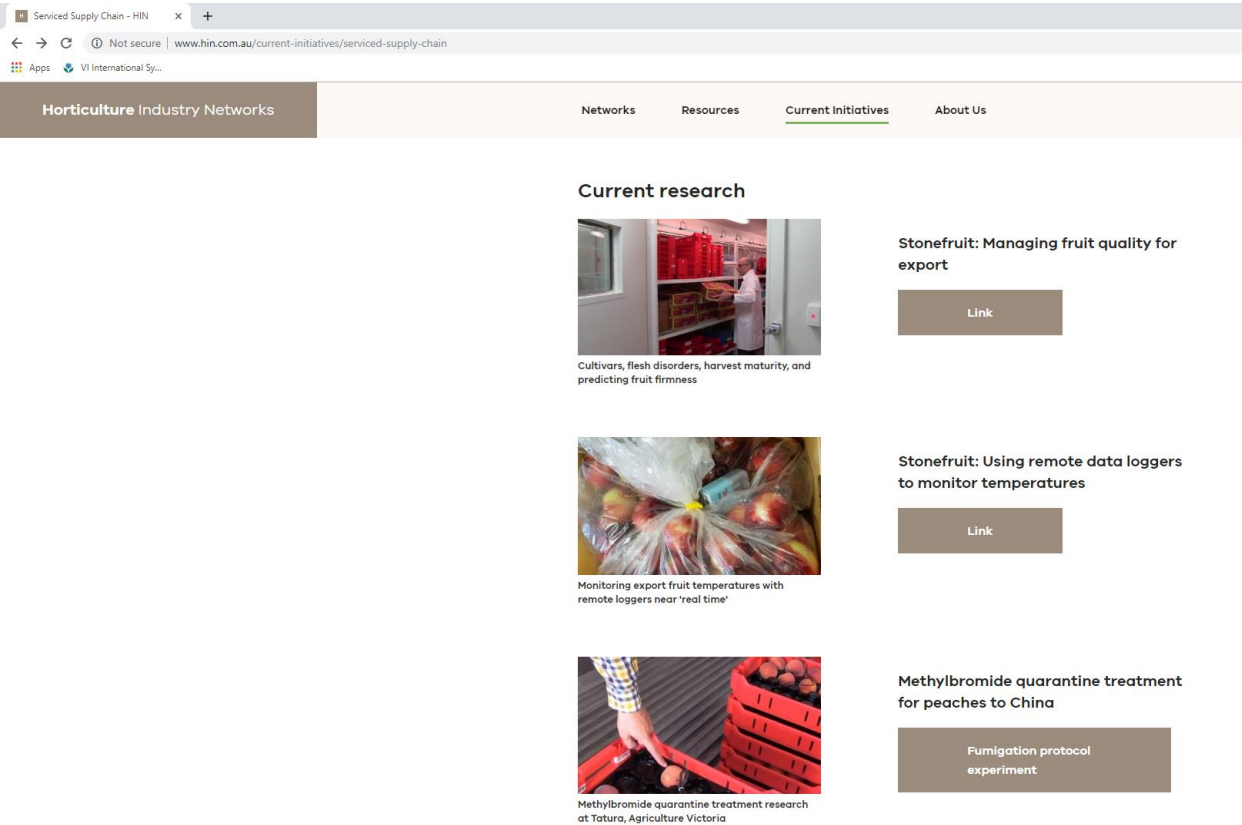
FB = Flesh browning symptoms associated with chilling injury and flesh mealiness

Maximum storage duration based on first appearance of FB or excessive softening of fruit during storage


*Recommendations based on ≥2 storage trials

Maximum harvest maturity above which proper ripening is unlikely


Thank you.....




The screenshot shows a web browser window with the URL www.hin.com.au/current-initiatives/serviced-supply-chain. The page features a navigation menu with 'Horticulture Industry Networks', 'Networks', 'Resources', 'Current initiatives', and 'About Us'. Under 'Current initiatives', there are three research items:

- Current research**
 - Stonefruit: Managing fruit quality for export**


Cultivars, flesh disorders, harvest maturity, and predicting fruit firmness

[Link](#)
 - Stonefruit: Using remote data loggers to monitor temperatures**


Monitoring export fruit temperatures with remote loggers near 'real time'

[Link](#)
 - Methylbromide quarantine treatment for peaches to China**


Methylbromide quarantine treatment research at Tatura, Agriculture Victoria

[Fumigation protocol experiment](#)



<http://www.hin.com.au/current-initiatives/serviced-supply-chain>