Post Harvest
Supply Chain Risks and costs

Presented by

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Data source provided by :

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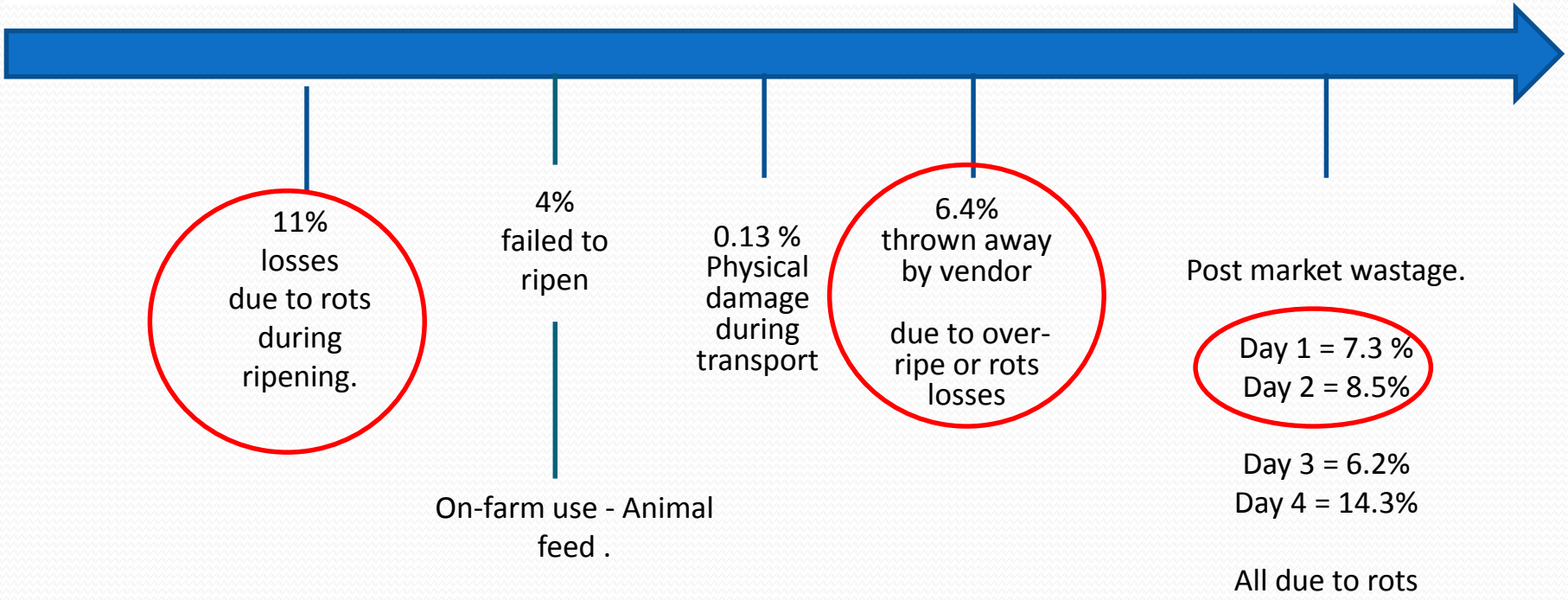
The cost of loss – example 58% loss after 4 days



Short and sharp supply chains

- Eight hours road transport (farm to market)
- All product was sold by the vendor within 30 hours (1 day's trading)
- Commercial loss = 21.4% (farm to vendor) and projected further 15.7% loss post-vendor (total = 37.1%)
- **Total 58% losses after 4 days of product leaving the farm**

Preliminary food safety assessment

It must be safe to eat.

- Purchased tomato from 15 different traders at the Suva markets on 28th August. All product was grown in the Sigatoka market.
- Samples were assessed for E. coli (food borne pathogen and a major cause of food poisoning in human) by the USP microbiology labs.

Food safety risk factors

- Use of uncomposited manures
- Quality of the water supply
- Poor postharvest temperature management
- Animal access to fields
- Handling hygiene
  - Absence of hand washing
  - Possible truck and field crates hygiene
- Product in contact with the ground pre or postharvest

Anticipate highest risk in lettuce and root crops.

Effect of too high and too low a temperature

Effect of temperature on Tomato fruit ripening

Good temperature range: 15-25°C

Best temperature: 20°C

Shelf-life/Storage/Ripening Conditions

- ✓ Temperature and ripening of different tomato types; update conventional tomato chart
- ✓ Impact of lower than recommended storage temperature; slight chilling; differences among varieties
- ✓ Ripening Temperature and ethylene treatment
- ✓ Temperature and RH -Impact on firmness and gloss

Table 1. Effect of temperature on ripening rates of conventional tomatoes.

	Days to full red color at indicated temperature					
Ripeness stage	12.5C	15C	17.5C	20C	22.5C	25C
Mature-green	18	15	12	10	8	7
Breaker	16	13	10	8	6	5
Turning	13	10	8	6	4	3
Pink	10	8	6	4	3	2

Source – UC Davis

Day 0 – pre-harvest in the field

Day 1 to 4 ambient ripening

Day 4 – packing in plastic boxes

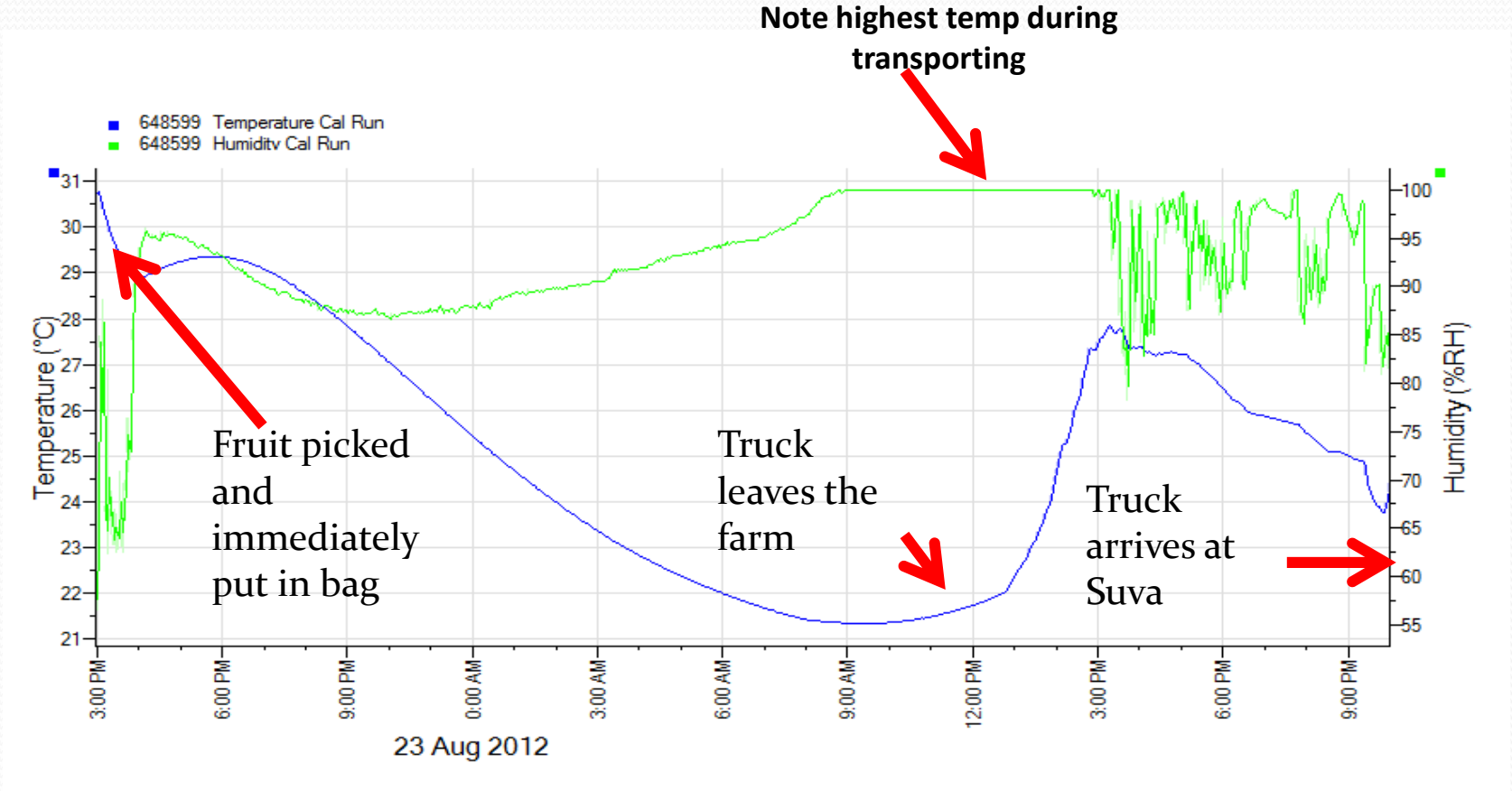
Day 6 Fruit for sale at the Suva municipal markets

Day 5 (3pm)– departs farm

Day 5 (9pm) arrives at Suva

The Path to Market

Monitoring Temperature during Transportation and storage.



Conditions inside the bag of eggplant, from picking to arrival.

Effect of bruising and damage during Transport and delivery

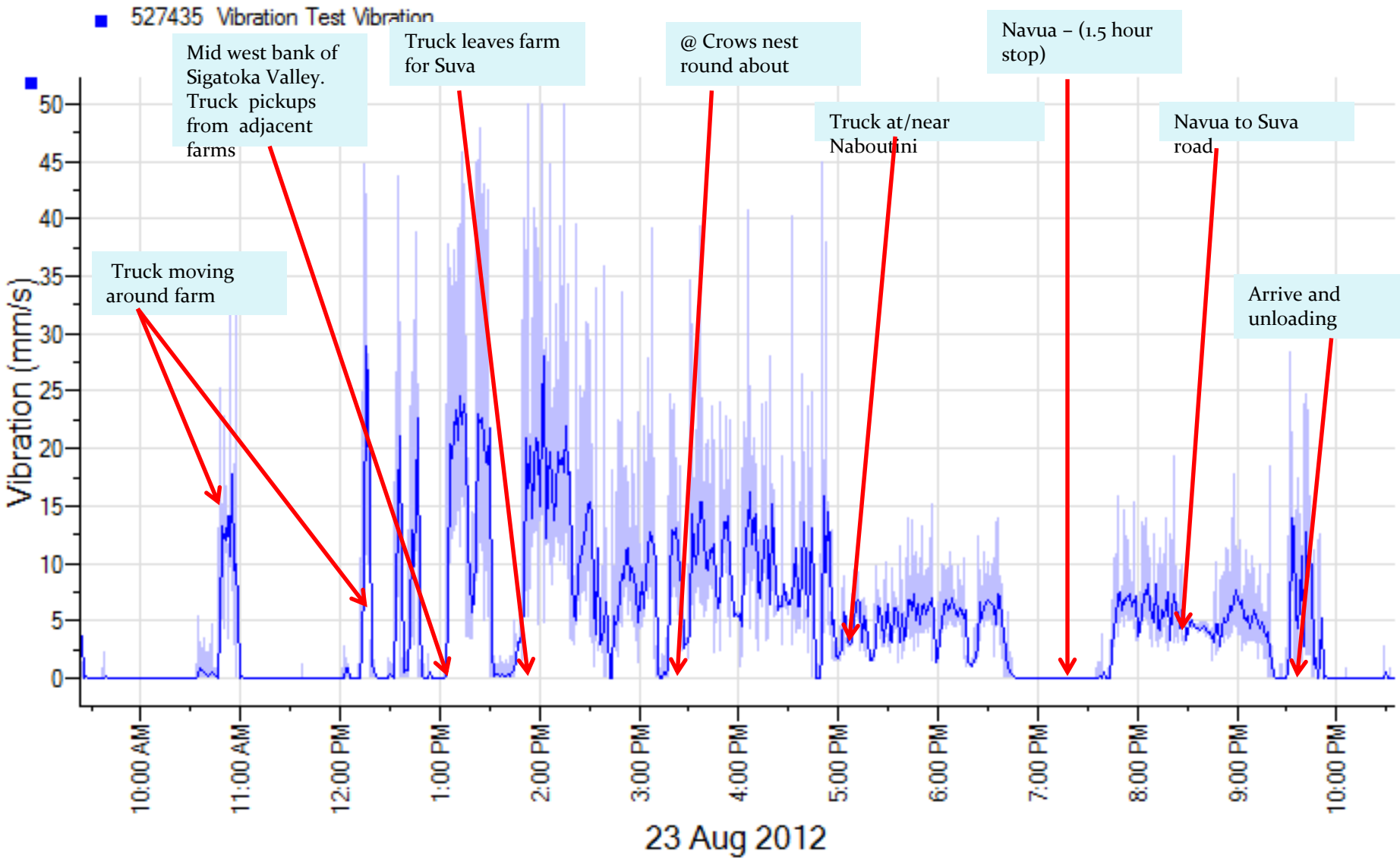
Assessment of the stresses product was exposed to during transport to the market.

Why is this important?

Is there a need to modify packaging to reduce in-transit injury

Is the loading/unloading , and the actual load configuration needing to be addressed

Test Vibration



Day 1 - On the truck ready to leave

Day 1 – just picked

Day 3 – Saturday

Day 5 - Monday

Thrown away due to decay – New opportunities

<u>What can we do to turn a loss into a profit.</u>
Juicing, pesto, preserves, chutneys…..domestic supply

Day 6 – Disposal

Quality is.....

...to the grower

- ease of harvesting and handling
- good appearance
- high yield
- disease resistant
- shipping ability
- Profitable

- Easy to grow and easy to sell

...to the wholesaler

- good appearance
- firmness
- package robustness
- long storage life
- supply/demand
- shipping ability
- Profitable

- High price & low wastage

...to the consumer

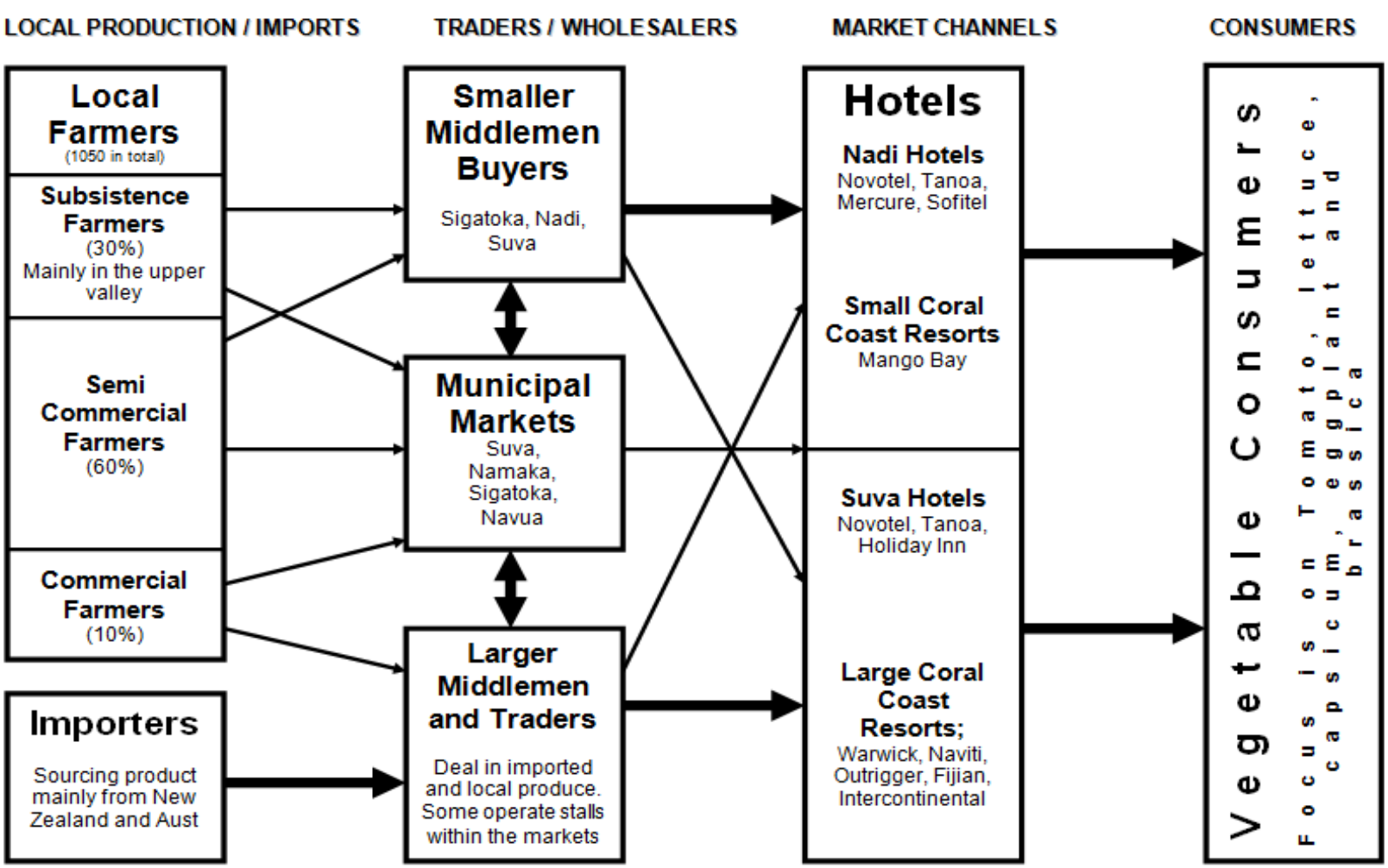
- good appearance
- soundness/safety
- firmness
- flavour
- aroma
- nutritious
- Price

- Taste, appearance, healthy and safety

The new target – Supply the Tourism Market

- Who is your target Market – do you have what they want for the price they will pay?
- What does your target market expect in terms of quality?
- Can you supply the quantity and range, to your customers?
- Can you supply them consistently?
- What are the risks and costs to sell to this market?
- **Will the F&B industry in Tonga pay extra $ for Quality ?**

Vegetable Chain Map into Fiji Hotel & Resorts



The Fresh value chain

1. First Pick Farm direct (Chef has exclusive access to field and personally selects the produce)
2. Pick from pack house (Chef/ purchasing officer selects produce from pack house before distribution)
3. Pack to order (customer send order, pack house packs for pick up or delivery)
4. Delivery van on circuit stopping at each establishment
5. Purchase from early morning market [approved growers] (Chef/ purchasing officer browse the market for quality, variety and quantity.

Know what your customers Value

1. Advertise / promote your products and services
2. Talk and listen to your customers
3. Understand your customers – Price, quality what they like, what they want. What they don't like.
4. Build a relationship of reliability and trust .

Remember Price is not always the reason your customers returns.

4. Use this information for future cropping decisions

Need to understand supply and demand.

5. When your customers are happy they will want more

More Customers = More Work = More **$$$**

End of Post Harvest Supply Chain Risks and costs

Malo Apito

Luke Berrell (Nishi Trading /USC)

Question To growers – what are the additional costs do you think you need to cover for this market?