

# Monitoring Australian mangoes through to retail in the United States—a case study trialling new digital tracking technology

Australian mangoes in the United States (U.S.) are positioned as a premium, high flavour mango. With the long distance involved from, for example, a packing shed in the Northern Territory (NT) to a retailer in Texas (TX), there are risks of either delays or the fruit being subjected to incorrect temperatures in the supply chain. Any delays and incorrect temperatures could impact on the premium quality necessary in this competitive market.

After identifying temperature and quality challenges in the 2016/17 Australian mango season, Northern Territory Department of Primary Industry and Resources (NTDPIR), together with participating growers and exporters and AMIA, reviewed the available monitoring technology in an effort to improve the temperature and location monitoring of Australian mangoes being exported to the U.S.

With support from Telstra and Hort Innovation, two Sendum PT300D devices were acquired by NTDPIR. These devices capture and transmit, in real time, location, temperature, pulp temperature and relative humidity data. This data is transmitted to 'The Cloud' (software and services that run on the internet), and is accessible in real time by registered users. This means that all parties involved with a shipment; growers, exporters, importers, and retailers, can have access to the same real time

information on location and temperature. A particular useful feature of the device is the ability to switch into flight mode, meaning it is airline approved and can be used on export airfreight shipments. All Australian mangoes to the U.S. go by airfreight.

Three trials were conducted in the 2017/18 Australian mango season. One trial was from a mango packing shed in Darwin, NT to an importer in Los Angeles. Another was from a mango packing shed in Bowen, Queensland (QLD) to a retail distribution centre in San Antonio, TX.

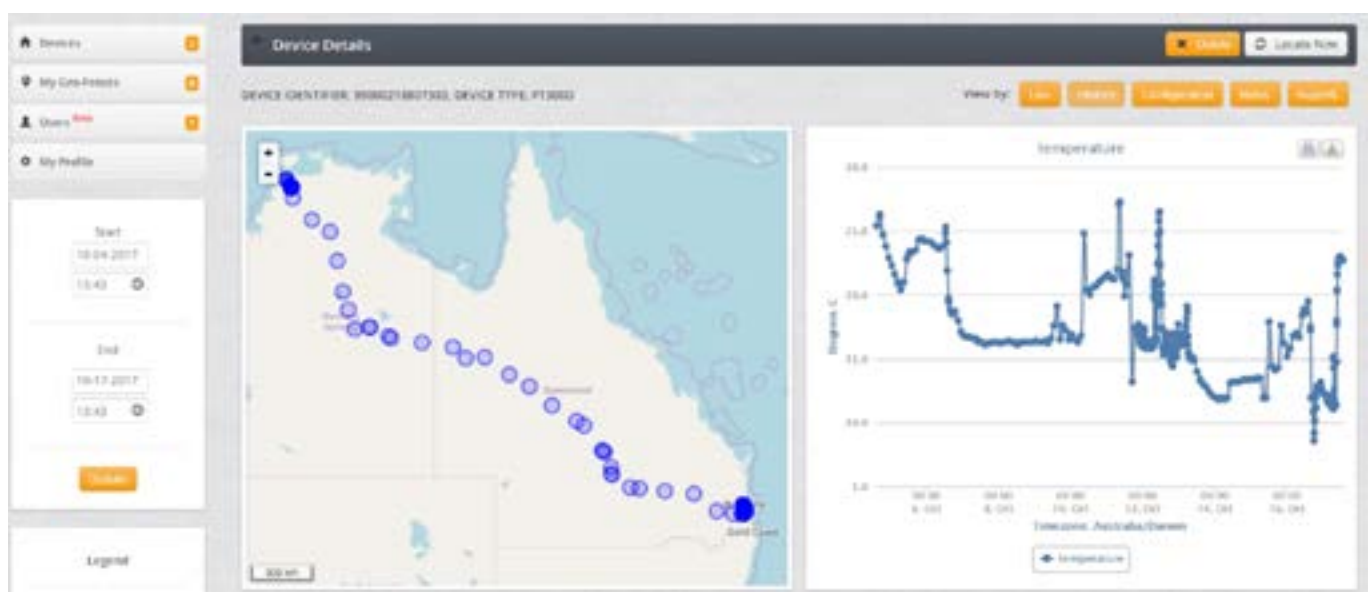
Australian mangoes that go to the U.S. must be irradiated to treat fruit fly and the pallet netted in a fruit fly resistant mesh. The devices were attached to the outside of the mesh, so as not to impact the fruit fly treatment, and on the top of the pallet to reduce the risk of accidentally being knocked off during pallet handling.

Trial one landed safely in Los Angeles and connected to the network but, unfortunately, the device was not then reloaded when it went on to the delivery truck by the importer.

Trial two, unfortunately, was not reloaded by the export treatment facility in Brisbane and therefore no data was recorded on the export flight.

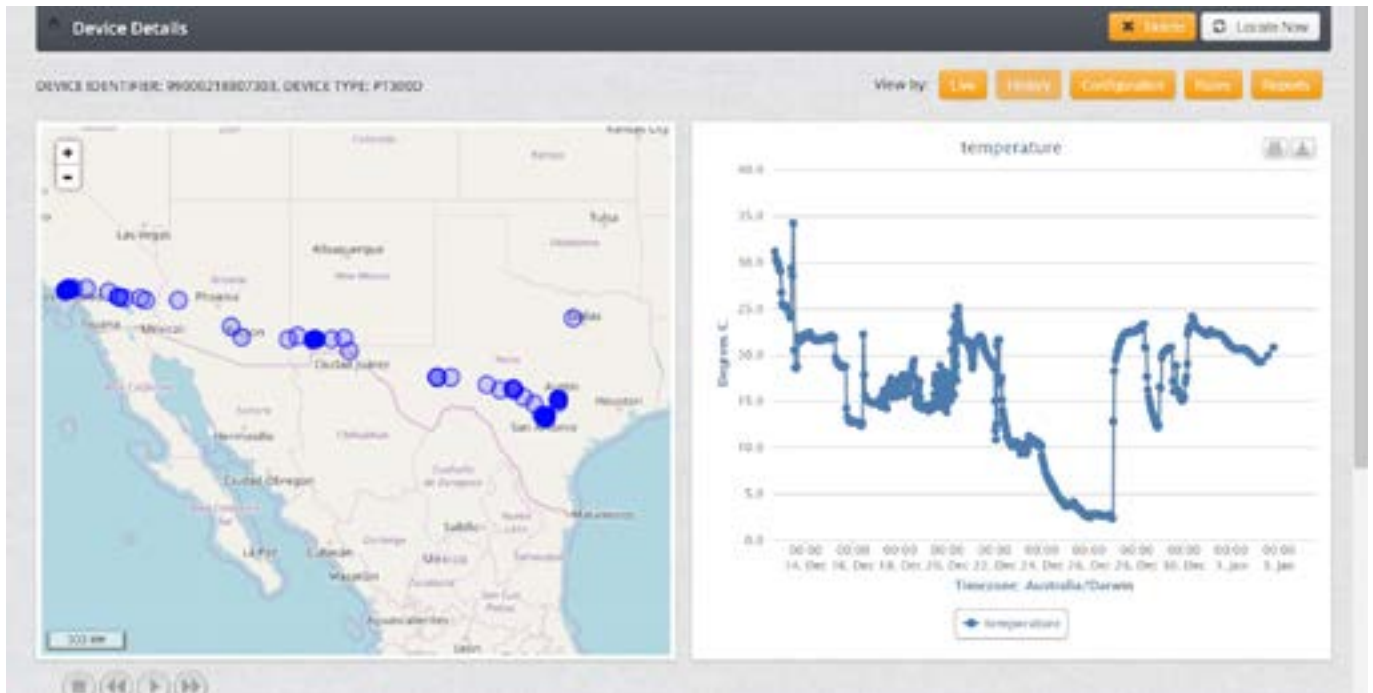
These trials demonstrated that; it is possible to attach a temperature and location monitoring device on mango shipments from the packing shed to the export customer, that the device transmits data in real time as specified, and this data can be accessible to a wide group of shipment stakeholders. The trials also indicated more temperature variations than desirable, and longer delays at some points in the distribution chain than were expected.

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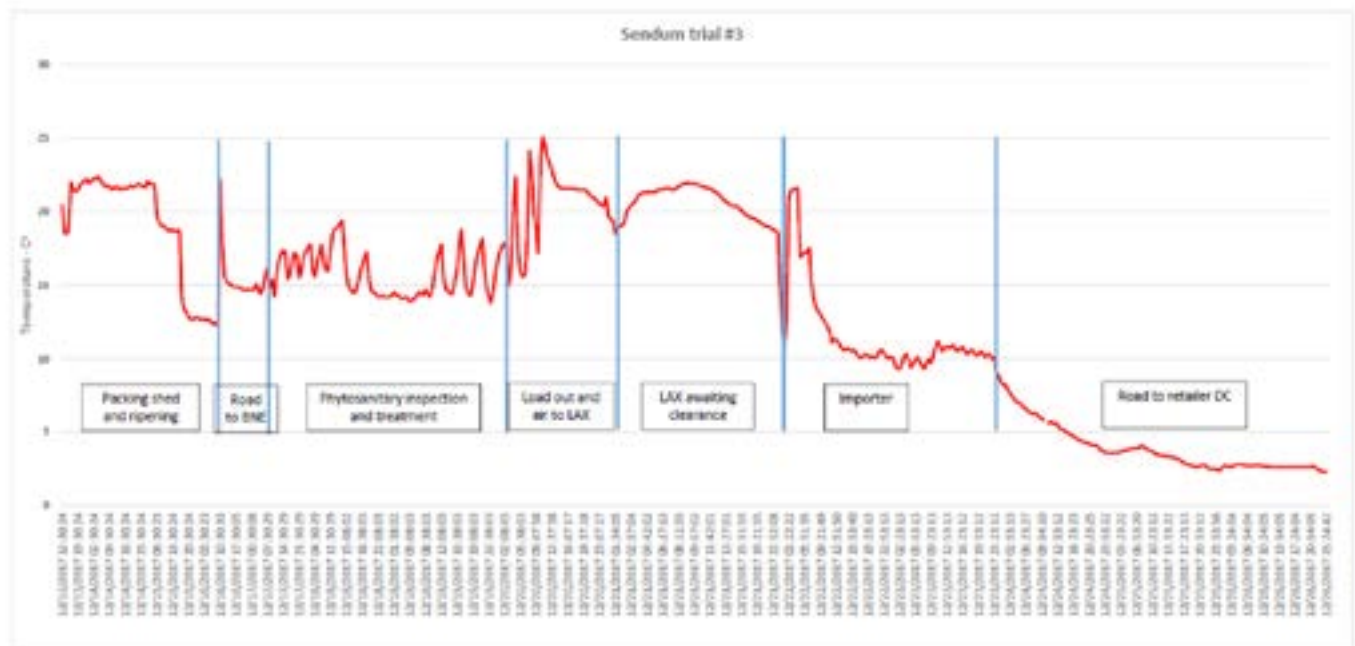


**Trial one:** Device software displaying tracking of the shipment from Darwin to Brisbane and the temperature of the shipment.

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**Trial three:** Device software displaying tracking of the shipment from Los Angeles to the retail distribution centre in San Antonio, TX. The Australian phase of the trip has been removed from this image for clarity.



**Trial three:** The temperature graph from the packing shed in Bowen, QLD to the retail distribution centre in San Antonio, TX.

**Acknowledgments:** Monitoring mangoes through the supply chain to the USA - 2 (MG16003) has been funded by Hort Innovation, using the mango research and development levy and contributions from the Australian Government. It is also supported by NT DPIR, AMIA and Telstra.

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