Horticulture Innovation Australia

Final Report

Monitoring mango fruit quality through the supply chain to the US - 2

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MG16003

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Summary

The project objective was to monitor compliance and quality across varieties and exporters from the export treatment to retail display in the United States of America (US) through the 2016/17 US mango program, reporting back to growers and exporters on quality and supply chain activity.

The target audience for the project is Australian mango growers, exporters and freight forwarders.

The project captured information on all 18 planned shipments for 2016/17. Project activities included visual observations at treatment, import and retail, and talking with growers, exporters, treatment provider, freight forwarders, importers and retail produce managers.

Outputs were an updated *Guide for Australian mango growers, crop monitors, packers and exporters considering participating in the 2016/17 US program* (refer to Appendices 1), three summary 'market snapshot' reports emailed from the US to stakeholders during the season (refer to Appendices 3, 4 and 5), reporting back to the US Working Group and the program debrief in March 2017 (refer to Appendices 6).

No compliance issues were reported in the US or from the USDA audit visits.

Australian mangoes were sold in supermarkets in Texas, Arizona, New York, California (Los Angeles area) Pennsylvania and Colorado. An estimated 85% of the Australian mangoes in the US in 2016/17 were sold, as in past seasons, through one retailer in Texas. No variety preferences were identified. Quality issues (appearance) in the middle of the season impacted on retail momentum and total volume in 2016/17. These quality issues were attributed to under ripe fruit at the export treatment and transport issues in Australia. Sound, attractive Australian mangoes at retail meet with interest and remain popular with US retailers and consumers.

Sales velocity, 'stock turn' or matching supply with demand to ensure the freshest fruit on display and minimising old fruit continues to be a challenge as old, poor appearance fruit dampens retail demand.

Recommendations are:

- More attention by exporters to the stage of ripeness at treatment, in accordance with recommendations;
- Shared understanding by exporters of the actual level of retail (consumer) demand and therefore what should be supplied per week to minimise old fruit;
- Continued monitoring of compliance and prompt follow up of issues such as documentation; and
- Investigation and monitoring of actual cool chain performance, preferably from packing shed to retail, including the use of insulated foil during the air freight.

Keywords

Mango, export, United States, irradiation, airfreight

Introduction

The US is the world's largest mango import market at around 400,000 tonnes per annum and growing in volume and value[1]. After 15 years of negotiation Australian mangoes gained access to the mainland US in January 2015, commencing with a three pilot program developed between the Australian Government Department of Agriculture and Water Resources (DAWR) and the United States Government Department of Agriculture (USDA). The requirements of the program are detailed in the Operational Work Plan (OWP)[2] .

The opportunity for Australian mangoes in the US market, where they land for typically three to four times the cost of mangoes from other sources, is considered by the Australian mango industry to be a better flavoured, more attractive fruit from Australia. The better flavour and colour requires ripe fruit, which brings cool chain management challenges.

Two initial commercial shipments of Australian mangoes (Calypso® and Keitt varieties) were successfully made to the US in the 2014/15 season, a total of five tonnes. These were observed in the US and reported on in a Horticulture Innovation Australia (HIA) funded and Northern Territory Department of Primary Industry and Resources (DPIR) and Australian Mango Industry Association (AMIA) supported project (Daysh, M., 2015).

Thirteen commercial shipments of Australian mangoes, totaling approximately 75 tonnes, were made to the US in the 2015/16 season comprising Calypso®, Keitt, Honey Gold, R2E2 and Kensington Pride (KP) varieties. The shipments were principally in January and February 2016.

One shipment was overheated and unsaleable and another shipment was overripe and largely unsaleable. The other 11 shipments landed successfully. Two of the 11 shipments were short shipped due to the interception of more than one pest of US concern in a lot within the shipment at the export inspection in Brisbane. Two further shipments were cancelled prior to packing because the grower/packer did not have the necessary US program approval. This was also reported on in a HIA funded and DPIR and AMIA supported project (Daysh, M., 2016).

The objective of the 2016/17 program was to build on the first two seasons, correct problems identified in 2015/16, involve more growers and expand the volume.

The 2016/17 program was the third year of access for Australian mangoes to the US market, and the second year of the USDA's three year pilot; first year volume was too small to be assessed for the pilot. Preparations were informed by the experience from the 2014/15 and 2015/16 programs.

Organisational arrangements were described in the report for 2015-16, MG15004

Industry preparation and communication was described in the report for 2015-16, MG15004.

[1] US National Mango Board http://www.mango.org/en/Home

[2] http://micor.agriculture.gov.au/Plants/Pages/Documents.aspx

The nominated start date (dispatch of first exports) for the US program is important as the OWP requires that USDA be advised of approved growers and packers at least 30 days prior to the start. DAWR seeks advice from the industry body, AMIA, on the suitable start date.

DAWR called for applications from growers and packers to register for the US mango program in May 2016[3] and AMIA undertook crop monitor training from July 2016. The Working Group of stakeholders, particularly exporters, meeting regularly, sharing information and making collective decisions as an industry on the US program, was reactivated from May 2016 with weekly meetings that went to fortnightly in July 2016. The role and purpose of the Working Group was described in the report for 2015-16, MG15004. The Working Group resolved to add a third US importer, Favco, to the importer panel in addition to Melissa's World Variety Produce and Giumarra. The pathway from harvest to the US consumer for Australian mangoes was described in the report for 2015-16, MG15004.

The USDA undertook two audit visits to Australia during the 2016/17 program to monitor compliance with the OWP. No issues arising from these visits were reported by DAWR.

[3] http://www.agriculture.gov.au/export/controlled-goods/plants-plant-products/ian/2016/2016-22

Methodology

The project was undertaken by working with exporters, treatment provider, freight forwarders, importers and retailers and observing shipments and fruit through the supply chain from export inspection, export loading, import arrival to retail display.

The objective was to observe as much fruit as possible in as many situations as possible, engage with the commercial parties and build a picture of Australia mangoes and issues in the US supply chain in the 2016/17 season.

The fruit observed was all commercial fruit in the commercial pathway. Observations were subject to commercial timing and constraints. Observations were supplemented and supported with interviews with and feedback from exporters, treatment operator, freight forwarder, importers, retailers and US consumers.

Observations were reported back to growers and exporters as detailed in the Outputs section of this report. Export observations were undertaken in Brisbane and import observations were undertaken in Los Angeles where US importers were located. Retail observations were subject to where the fruit was distributed. Retail observations and discussions with store staff were undertaken in the Los Angeles and Dallas - Fort Worth areas.

Results

Shipments in 2016/17

Fifteen commercial shipments of Australian mangoes were made to the US in the 2016/17 season from October 2016 to February 2017, a total of approximately 81 tonnes. Two further shipments were cancelled prior to export due to Maximum Residue Limits (MRL) concerns and a further shipment was cancelled due to an insect interception and time constraints on identification. There were quality issues reported with shipments #6 and #7 on arrival and at retail. This was subsequently attributed to a transport issue from the farm in Australia. In addition, there were quality issues with shipments #11 and #14. This was subsequently attributed to under ripe fruit at treatment.

Table 1 - Summary of 2016/17 shipments

Shipment #	Month	Variety	Qty (trays)	Issues / comments
1	Oct	KP	240	some fruit went to the Produce Marketing Association's (PMA) *Fresh Summit* national trade show
2	Oct	KP	760	issues with documentation
3	Nov	KP	780	issues with documentation
	Nov	KP		cancelled / MRL concerns
4	Nov	KP/R2E2	773	issues with documentation and labelling
5	Nov	KP	798	issues with documentation
6	Nov	R2E2	720	issues with documentation, quality issues in the US
7	Nov	R2E2	720	issues with documentation, quality issues in the US
	Dec	Honey Gold		cancelled / MRL concerns
8	Dec	R2E2	710	
9	Dec	R2E2	660	Some moisture weakened cartons in Los Angeles

10	Dec	Honey Gold	720	
11	Dec	Calypso®	2160	Quality issues in the US
12	Dec	R2E2	660	
13	Dec	Honey Gold		cancelled / live insect, in sufficient time to ID
14	Dec	Calypso®	3600	live insect found, treated to 400 Gy, quality issues in the US, some fruit took 16 days to arrive in Los Angeles
15	Jan	Honey Gold	720	
16	Jan	Keitt	717	
17	Jan	Keitt	720	
18	Jan	Keitt	720	
	Total		16,178	trays and boxes
			80.89	tonnes

Data source – treatment provider, exporters, importers

Table 2 - 2016/17 shipments by production area

Supply area	Qty (cartons and trays, approx)	% of total
Katherine	4,791	30%
Burdekin	2,750	17%
Mareeba/Dimbulah	8,637	53%
Total	16,178	100%

Compliance

Australian mangoes for the US must comply with the USDA's OPW, US Environmental Protection Agency (EPA) MRL requirements, US Food and Drug Administration's (FDA) Foreign Food Facility registration requirements, Australian export requirements and aviation cargo security requirements for US bound cargo[4].

[4] https://infrastructure.gov.au/security/air-cargo/us-bound-air-cargo-security-arrangements.aspx

In Australia

There were compliance issues at the export inspection for documentation, labels and one instance of a live insect interception that could not be identified in the time available.

DAWR did not find live insects of concern on most shipments (87%). This meant the exporter had the option[5] to reduce the irradiation treatment dose from 400 Gy to 300 Gy, a 25% reduction in the dose with the potential benefit of reduced treatment damage. It appeared that exporters are now clear on this option and tended to exercise it.

On-arrival in the US

DAWR advised at the US program debrief in March 2017 that they had not received any advice of non-compliance from the USDA during the 2016/17 season.

Pesticide residues

Some pesticides registered in Australia are either not registered in the US or have a lower MRLs. The pre-export MRL test process adopted by the Working Group was described in the report for 2015-16, MG15004. In 2016/17 two growers detected residues of Prochloraz in their pre-export testing and cancelled their shipment. This fungicide, which is registered in Australia but does not have an MRL for mangoes in the US (anon, 2016) appears to have been used in the packing shed for another line to another market, leaving a residue in the packing line which was picked up by fruit being prepared for the US.

Fruit

Varieties

Calypso®, Keitt, Honey Gold, R2E2 and Kensington Pride varieties were exported to the US in 2016/17. Retailers generally displayed the mangoes by variety under *Australian Mangoes* point of sale (POS) material. While importers and retailers made comments on the merits of various varieties, there was no consensus and quality issues in 2016/17 may have influenced their thinking.

Stage of maturity

The Working Group resolved in 2015/16 that only fruit complying with agreed industry maturity standards would be exported to the US. This was to ensure that only mature and well flavoured fruit would be marketed to US consumers.

Stage of ripeness

The important of the stage of ripeness of mangoes for the US was described in the report for 2015-16, MG15004.

[5] The OWP specifies a minimum dose of 300 Gy for the US pests of concern (fruit flies + MSW). 400 Gy is an internationally / USDA accepted generic dose for Lepidopteran eggs or larvae (or most other insects of potential quarantine concern).

Counts

A range of counts were reportedly shipped in 2016/17. A US importer reflected that they had little involvement in what counts were shipped, that some counts were too large for the target consumer while some were too small and were repacked into clamshell prepacks.

Appearance

As in 2015/16, the Working Group resolved that only Class 1 (or better) fruit would be exported to the US.

Cool chain management

The cool chain pathway was described in the report for 2015-16, MG15004. There were no overheated arrivals in 2016/17.

There were reports that some exporters, on the advice of their freight forwarder, did not use insulated foil to protect their shipment. This practice was not discussed at the Working Group and came as a surprise to other exporters. This practice exposes the fruit directly to weather (sun, rain), chilling risk during the flight and provides no temperature control.

Figure 1 - export airline pallet with no weather or temperature protection

Exporters tended not to use temperature data loggers and no complete through-chain (packing shed to retail display) temperature log was obtained. One exporter expressed concern about the US domestic distribution temperatures, and the risk of chilling. The low US distribution temperatures and risks were described in the report for 2015-16, MG15004 and also in the 2014/15 season report.

Packaging

The OWP requires Australian mangoes for the US to be packed in pest secure, USDA approved, packaging. The development of a netted pallet with Mod 12 tray was described in the report for 2015-16, MG15004. This new package was adopted in 2016/17 for all shipments other than the first, which was small and not economic for a full PMC[6] load. No issues were reported other than damp cartons on arrival for shipment #9, which was attributed to an Australian packing shed problem.

The adoption of the netted pallet with Mod 12 tray, which allows for better air circulation and temperature control, may have had the unintended consequence of allowing the cold temperatures in the US distribution system (reported above) faster access to the fruit possibly resulting in some of the poor appearance seen at retail. More investigation of this is required.

Figure 2 - Compliant netted pallets with Mod12 trays prepared for export treatment

US distribution and marketing

Australian mangoes land in the US for typically three to four times the cost of mangoes from other suppliers in the same season. To be successful, Australian mangoes will need to differentiate themselves on variables other than price such as flavour, appearance and provenance, and then work with US importers and retailers who see value in those variables.

[6] PMC – largest airline unit load device, a flat aluminium sheet with a capacity of around 4,500 kgs

Arrival and importer

As in previous seasons, mangoes in the 2016/17 US program were exported from Brisbane to Los Angeles[7]. Three shipments were via Auckland (Air New Zealand) and the other 13 were direct (Virgin Australia). No mangoes were exported from other Australian airports and no mangoes arrived at other US airports. On arrival the mangoes are taken to the Cargo Terminal Operator (CTO) of the respective airline. That can take about 1-2 hours. The fruit is then queued for US Customs and Border Protection (CBP) inspection. That queue can be within the CTO, where the fruit is typically at ambient temperate for around four hours, or at the importer's warehouse, where the fruit is under temperature control and the queue can be 6 – 8 hours. In addition to CBP, FDA may also be involved in the clearance process. Typically, the fruit is cleared on the day of arrival.

Figure 3 is an example of excellent quality fruit, typical of the sound shipments, on arrival at the importer having successfully passed through pathway outlined above.

Figure 3 - Shipment #8, at importer, example of excellent quality

[7] Industry had requested DAWR/USDA approval in 2016/17 for non-direct routing via Auckland and Hong Kong to increase capacity and direct entry to other US ports such as San Francisco, Dallas-Fort Worth and New York.

Retail

Target US consumers are looking for interesting, new and flavourful products (mangoes) and are relatively unconcerned about the price point for a product that meets their needs. There are pockets of these consumers throughout the US, and there are retailers throughout the US in regional chains that meet this consumer demand. This was described in the report for 2015-16, MG15004.

Australian mangoes were sold in supermarkets in Texas, Arizona, New York, California (Los Angeles area) Pennsylvania and Colorado. An estimated 85% of the Australian mangoes in the US in 2016/17 were sold, as in previous seasons, through one retailer in Texas. Californian (Los Angeles) and Colorado (Aspen) retailers carried Australian mangoes for the first time in select stores while the largest retail customer reduced shelf space following the quality problems.

Australian mangoes are in the US market at the same time as mangoes from Brazil, Ecuador and Peru. Some retailers will only carry one line of mango, which might be exclusively Australian, while others might stock three; Australian, a South American mango and an organic mango.

The observed retail pricing of Australian mangoes in 2016/17 ranged from US$3.98 to US$6.99 per fruit.

Retail produce manager comments were consistent with previous seasons; very positive and reflecting positive responses from their customers. Retail displays and merchandising, where fruit quality was good, continued with the same level of professionalism and enthusiasm seen in previous years.

Figure 4 - examples of retail display and merchandising

Food irradiation remains a topic of discussion in the US[8] and not all retailers will stock irradiated food. Gelson's (https://www.gelsons.com/) in Southern California are continuing to talk with Australian mango importers but were not stocking irradiated food including Australian mangoes.

[8] http://www.chapman.edu/scst/conferences-and-events/phytosanitary-irradiation-workshop.aspx

Fruit quality issues

Two different quality issues were observed on-arrival or at retail in 2016/17; poor appearance attributed to under ripe at export treatment and poor appearance attributed to chilling and / or a transport issue in Australia.

Figure 5 - shipment #11, example of poor quality on-arrival

Figure 6 - shipment #14, example of poor quality on-arrival

Figure 7 – shipment #6 at retail, 22 days from packing

Figure 8 - Shipment #7 - at the importer, 16 days after packing

The quality problems in the middle of the season impacted on retailer sales. The major US retailer advised importers on 2 January 2017 that they were stopping their Australian mango program until the problems were addressed;

"As you can see it's the same discoloration that we have seen for the most part of the entire AU season. Sales are very slow due to the product on the display. It's an endless battle as the stores try to remove the fruit as it starts showing the issue. We have had to shrink quite a bit of fruit on the last two deliveries.

We will not be able to take anymore fruit until the issue has been corrected. This season has not been a good one (included ALL AU varieties). We have really taken a hit with the sales being behind last year and shrink (costing us money). The stores don't have faith in the program at the moment either" Anon (2017).

Both exporters suspended their program, the poor quality fruit was cleared from the market and sales resumed though at a lower level as retailers became very cautious.

Sales velocity, stock turn or matching supply with demand to ensure the freshest fruit on display and there is little or no old fruit on display, continues to be a challenge. The issue seems to be an initial over ordering resulting in high stock levels in excess of actual consumer sales, which in turn results in old stock and then reduced sales levels as consumers turn away from old, less attractive fruit.

The solution, as previously reported on, could be smaller, regular (weekly?) deliveries across the program, with the retailer selling out and looking for fresh Australian mangoes each week. One importer is close to that solution, delivering three times a week to their Los Angeles retail customer.

Figure 9 - Shipment #15 at retail – fruit about 38 days from packing

Lenticel spotting and discolouration (Holmes, R. et al., 2009) was again observed on the Keitt. Most fruit had some percentage of lenticel spotting, mainly of a minor level, and very similar to the lenticel spotting observed on-arrival and at retail on the Keitt in the 2014/15 and 2015/16 season.

Figure 10 - Shipment #18 - extreme example of lenticel spotting

Table 3 - Summary of 2016/17 issues

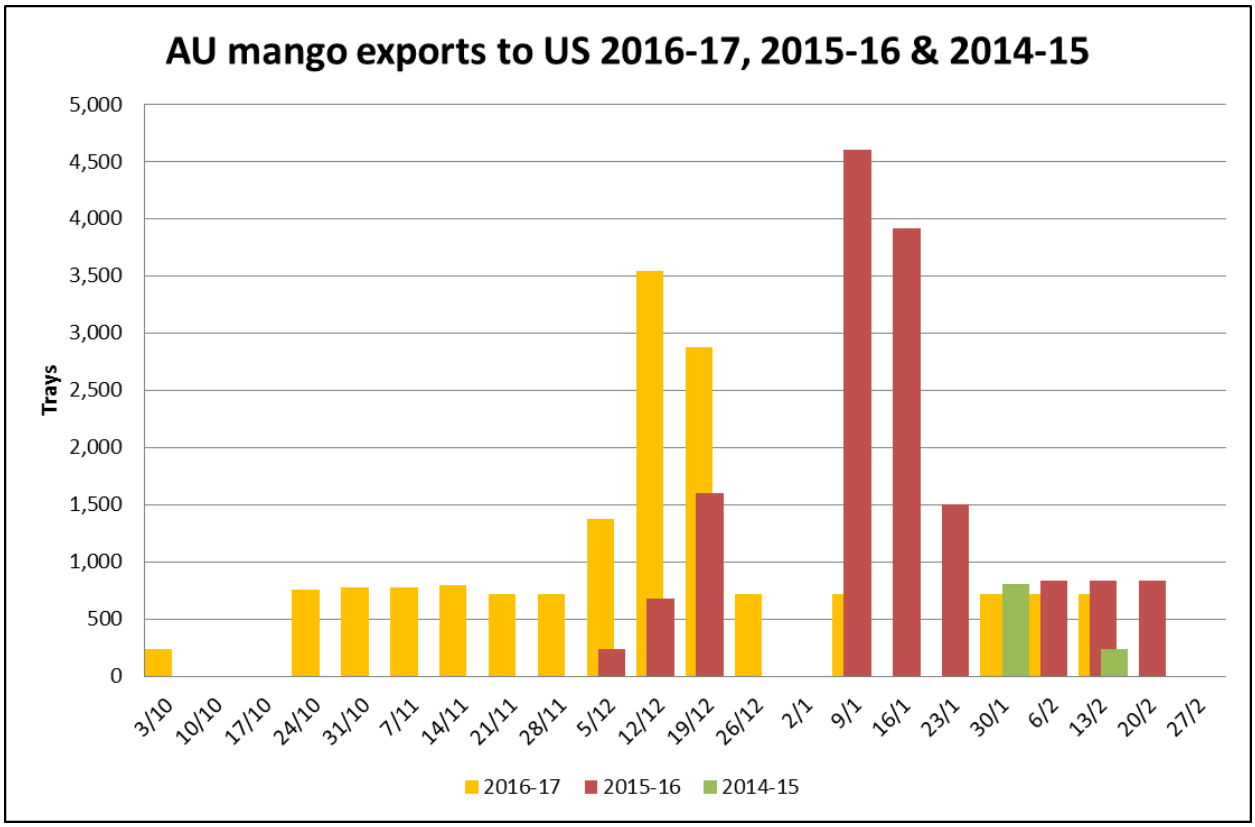
Issue	Action during the 2016 / 17 program	Recommendation for 2017/18
Incorrect stage of ripeness at treatment leading to poor appearance in the US	Confined to one exporter Discussed with exporter, treatment provider and freight forwarder	More attention by exporters to the stage of ripeness at treatment, in accordance with recommendations
Old fruit at retail	Discussed with importers and exporters, provided market snap shots to exporters and growers	Shared understanding by exporters of the actual level of retail (consumer) demand and therefore what should be supplied per week to minimise old fruit
Compliance at pre-export, particularly with documentation	Principally from one grower. Discussed with treatment provider and freight forwarder	Continued monitoring of compliance and prompt follow up of issues such as documentation
Poor appearance with some fruit at retail. Uncertainty regarding actual cool chain performance, including internal US distribution and the use of insulated foil during the air freight.	Principally from one grower. Discussed with importers, exporters, treatment providers and freight forwarders, provided market snap shots to exporters and growers	Investigation and monitoring of actual cool chain performance, preferably from packing shed to retail, including the use of insulated foil during the air freight.

Table 4 - Comparing 2016/17 results with recommendations from 2015/16

Recommendation from MG15004 in 2015/16	Action / result in 2016/17
Improved cool chain management, with all fruit leaving Australia fully cooled and no fruit arriving in the US overheated	Achieved, no overheated arrivals in 2016/17
Improved ripening management resulting in no fruit arriving either overripe or unripe	Not achieved, about 36% of fruit was under ripe at treatment resulting in poor quality arrival in US
Consideration of the reasons for the Keitt lenticel damage and the implementation of any recommendations	Not achieved, similar rates of Keitt lenticel damage as previous season
Improved grower awareness of the MSW and not registering or not packing from 'at risk' blocks resulting in less interception of MSW at inspection and less rejected shipments	Achieved, no interception of MSW
No issues with the adoption of the new netted pallet with Mod12 tray through adequately informing packers of the requirements	Achieved, new netted pallet adopted by all participating growers and exporters May have contributed to chilling damage in US distribution
Fruit at PMA in October to launch the 2016/17 program with US retailers	Achieved
Widening the distribution of Australia mangoes beyond the current major retail customer	Partly achieved, three new retailers added but light volumes as they test marketed Australian mangoes with their customers
Lengthening the supply season of Australian mangoes in the US market by starting the program earlier	Achieved, fruit from the Northern Territory in October
Consideration of the branding and promotion of Australian mangoes in the US, including the use of the Australian Mangoes brand on Mod12 trays and on the fruit sticker	Partly achieved, poor quality in the middle of the program reduced opportunities for promotion
Review and reaffirm the Working Group's role	Achieved
Developing, with exporters and importers, a season long program for Australian Mangoes in	Not achieved, poor quality with some shipments

the US market including timing, varieties, counts, supply 'slots' and promotional activities	slowed momentum
Clarification and communication of the pending new US air cargo security requirements	Achieved
Improved communication between grower, exporter and importer, including programs, count preferences and firm pricing prior to shipment.	Partly achieved, some participants more successful than others

Table 5 - US export volumes by week



Outputs

The Working Group held regular meetings by teleconference from May 2016 until February 2017. The Working Group was open to all exporters, growers and stakeholders interested in the US market. All attendees had the opportunity to raise matters relevant to the US program and meetings were minuted and the minutes were circulated.

Guide for Australian mango growers, crop monitor, packers and exporters considering participating in the 2016/17 US mango program summarising the OWP, the packaging, market and MRL requirements was circulated to exporters and stakeholders.

Growers, exporters and other stakeholders supported two USDA audits, managed by DAWR, during the 2016/17 program.

Growers, exporters, DAWR and other stakeholders could contact AMIA and the writer out of session during the season with questions as they arose.

In addition to Working Group meetings, the writer provided 'market snap shot' information back to exporters on arrival and retail appearance during the US field visits and responded to exporter queries and DAWR requests.

A debrief for participating exporters was held in Brisbane on 23 March 2017. All participating exporters, major growers, key service providers, AMIA, DAWR and HIA attended.

An item on the 2016/17 US program was prepared for the Spring 2017 edition of *Mango Matters*, the industry magazine.

Outcomes

- A slight increase in volume;
- One additional grower, one additional exporter, one additional importer;
- Season and program started about six weeks earlier;
- Documentation compliance issues at export for one grower;
- Wide spread successful adoption of the netted mod12 pallet;
- No on-arrival compliance issues;
- Quality issues on-arrival and at retail with four shipments in the middle of the season, which impacted on retail momentum; and
- Old fruit, over 25-days from packing and in poor condition on display at retail leading to reduced sales and demand.

There was an increase in the number of growers who packed for the US from two in 2014/15 to six in 2015/16 and to seven in 2016/17 (one did not ship) and a slight reduction in the concentration / increase in the spread of grower volume (refer to Table 6). Only one grower has shipped in all three seasons.

Table 6 - Summary of grower volume in 2016/17

	Number of boxes exported	**% of exports**
Grower A	5,760	36%
Grower B	4,791	30%
Grower D	2,157	13%
Grower C	2,040	13%
Grower E	720	4%
Grower F	710	4%
Grower G	0	0%
Total	16,178	100%

Table 7 - Comparative metrics – 2016/17 and 2015/17

Metric	2016/17	2015/16
Volume	16,178 trays and cartons	15,036 cartons and trays
Growers	8	7
Exporters	6	5
Importers	3	2
Shipments	18	15
Average shipment time from packing to Los Angeles	8.78 days, longest was 16 days	N/A
Compliance – at export	Documentation issues with one grower Fruit for sampling incorrectly prepared One label problem, two live insect interceptions	Mango seed weevil (MSW) intercepted. Some growers not registered with DAWR. Label problems
Compliance – on-arrival	No issues reported	No issues reported
MRL	Two shipments withdrawn due to grower concerns with Prochloraz residue	No issues reported
Packaging	Netted pallet / mod 12 tray adopted	Trial netted pallet / mod 12 tray
Cool chain	No overheated or over ripe arrivals, reports of chilling in US	Two overheated or over ripe arrivals
Quality	Two shipments may have been under ripe at treatment, resulting in poor appearance on-arrival and at retail, subsequent claims. Two shipments may have had transport issues in Australia, resulting in poor appearance on-arrival and at retail, subsequent claims Some old fruit at retail	Some old fruit at retail

Evaluation and Discussion

There was a slight increase in volume between 2015/16 and 2016/17 as quality problems in the middle of the program stalled retailer momentum. After working with exporters, it was concluded that the quality problems were mainly due to under-ripe fruit at export in two shipments and transport problems in Australia in another two shipments.

Californian (Los Angeles) and Colorado (Aspen) retailers carried Australian mangoes for the first time in select stores while the largest retail customer (in Texas) reduced shelf space following the quality problems. More retailers across more regions in the US need to be involved to broaden the demand base.

No packaging issues, other than damp trays attributed to a packing shed problem, were reported. There were no overheated shipments. There were reports of chilling damage, which may have been the cool chain temperature and / or the new netted pallet / tray which allowed for better ventilation and for cold air to get to fruit faster.

There may be a need for more communication between exporters and their US customers on weekly retail demand counts and count preferences.

There was a continuation of the lenticel spotting in Keitt that was seen in 2014/15 and 2015/16.

US retail prices ranged from US$3.98 to US$6.98 / fruit.

Recommendations

Recommendations are:

- More attention by exporters to the stage of ripeness at treatment, in accordance with recommendations (Ainsworth, N, 2015);
- Shared understanding by exporters of the actual level of retail (consumer) demand and therefore what should be supplied per week to minimise old fruit;
- Continued monitoring of compliance and prompt follow up of issues such as documentation; and
- Investigation and monitoring of actual cool chain performance, preferably from packing shed to retail, including the use of insulated foil during the air freight.

Scientific Refereed Publications

None to report

Intellectual Property/Commercialisation

No commercial IP generated

References

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This project was supported by the Northern Territory Department of Primary Industry and Resources and funded by Horticulture Innovation Australia.

Appendices

1. Guide for Australian mango growers, crop monitor, packers and exporters considering participating in the 2016/17 US mango program

2. Travel itinerary

3. US market 'snap shot #1 emailed to exporters

4. US market 'snap shot' #2 emailed to exporters

5. US market 'snap shot' #3 emailed to exporters

6. Debrief Power Point, Brisbane, 23 March 2017

Travel Itinerary

Trip #1

Date	Day	Activity
29-Nov	Tue	Darwin to Brisbane
30-Nov	Wed	Meet with Steritech and Brisbane freight forwarder
1-Dec	Thu	Fly to Los Angeles, visit Los Angeles stores looking for AU mangoes without success
2-Dec	Fri	Meet with importer, store visits, observed shipment #6 at retail
3-Dec	Sat	Travel to Dallas, observed shipment #4, # 5 and #6 at retail, returned to Los Angeles
4-Dec	Sun	Observed shipment #6 at retail in Los Angeles
5-Dec	Mon	Observed shipment #6 at retail
6-Dec	Tue	Observed shipment #6 at retail
7-Dec	Wed	Observed shipment #6 at retail
8-Dec	Thu	Travel to Dallas, observed shipments #5 and #6 at retail, returned to Los Angeles
9-Dec	Fri	Observed shipment #7 and #8 at importer, and #8 at retail, returned to Australia
11-Dec	Sun	Returned to Darwin

Trip #2

Date	Day	Activity
22-Jan	Sun	Darwin to Brisbane
23-Jan	Mon	Meet with Steritech and Brisbane freight forwarder
24-Jan	Tues	Fly to Los Angeles, meet with importer, observed shipment #15 at retail
25-Jan	Wed	Travel to Dallas, observed shipments #15 at retail, returned to Los Angeles
26-Jan	Thu	Observed shipment #15 retail in Los Angeles
27-Jan	Fri	Meet with importer, observed shipment #10 at retail
28-Jan	Sat	Observed shipment #15 at retail
29-Jan	Sun	Observed shipment #15 at retail, returned to Australia
31-Jan	Tue	Returned to Darwin

Trip #3

	Day	Activity
5-Feb	Sun	Darwin to Brisbane
6-Feb	Mon	Meet with Steritech, observe inspection and treatment of shipment #17
7-Feb	Tue	Observe loadout of shipment #17, fly to Los Angeles, observed shipment #15 in Los Angeles store
8-Feb	Wed	Waiting to observe shipment #17 at importer
9-Feb	Thu	Observed shipment #17 at importer, store visits to observe shipment #15
10-Feb	Fri	Travel to Dallas, observed shipment #16 at retail
11-Feb	Sat	Store visits in Los Angeles, observe shipment #15 returned to Darwin
13-Feb	Mon	Returned to Darwin

Guide for Australian mango growers, crop monitors, packers and exporters considering participating in the 2016/17 US program

2016/17 season
(Year 2 of 3 of the US Pilot Program)

Horticulture Innovation Australia

Steritech

AUSTRALIAN MANGOES

Northern Territory Government

Preface

The primary reference document for the USA Pilot Program is the *Pilot Audit Program for Irradiation Treatment and Certification of Mango and Lychee Fruit from Australia – Operational Work Plan – Between Australia and the United States of America* (OWP). The latest version of the OWP can be accessed on the Australian Department of Agriculture and Water Resources (DAWR) Manual of Importing Country Requirements (MICoR) web site at http://micor.agriculture.gov.au/Plants/Pages/default.aspx. Online registration with the MICoR site is required to access the OWP. The Australian Mango Industry Association (AMIA) can also provide a copy, but the online version on the MICoR site will always be the most up to date.

The USA Pilot Program is managed by DAWR and the United States Department of Agriculture (USDA).

DAWR announced the 2016/17 program dates for applications and audits on 11 May 2016 in their Industry Advice Notice 2016-12, available at http://www.agriculture.gov.au/export/controlled-goods/plants-plant-products/ian/2016/2016-22

DAWR recommends all parties involved in the export of fresh produce also read, understand and abide by the Plant Exports Operations Manual found on the DAWR web site at http://www.agriculture.gov.au/export/plants-plant-products/plantexportsmanual.

This document was compiled by AMIA, Steritech P/L and the Northern Territory Department of Primary Industries and Fisheries (NTDPIF) and is to be used as a guide only – **please take responsibility to ensure you are aware of all conditions and responsibilities in relation to exporting fresh Australian mangoes to the USA, as outlined in the OWP, prior to commencing any export program.**

Contents

Introduction

The United States has a population of around 320 million and is the world's largest mango import market, importing around 350,000 tonnes per annum. As such, this is a potentially valuable market for the Australian mango industry. Market access was achieved in late 2014. Successful pilot commercial shipments were made in February 2015 and further shipments were successfully made during the 2015/16 season.

There are strict compliance requirements for the United States. This document summarises the responsibilities of growers, crop monitors and packers to meet the United States' requirements for Australian mangoes to gain market access.

It is critical for the successful development of the United States market that growers, packers and crop monitors participating in the USA Pilot Program are familiar with, and comply with, the USA Pilot Program requirements.

Growers participating is the USA Pilot Program should work closely with their exporter to understand their market requirements. This includes fruit size, appearance, packaging, stickering and the stage of ripeness.

Please note: The Australian mango industry is working collaboratively and growers and exporters are working with a limited number of US importers. Before you commence working on your preparation to export to the US, please ensure you or your exporter is commercially linked with one of these US importers.

The opportunity for Australian mangoes in the US market, where they land for typically four times the cost of mangoes from other sources, is as better flavoured, better coloured, attractive appearance fruit from Australia. The better flavour and colour requires ripe fruit which brings cool chain management challenges.

To improve the information flow amongst growers and exporters AMIA facilitates a US Working Group, certified by the Australian Competition and Consumer Commission (ACCC) of participating exporters to discuss and coordinate the US program.

Two initial commercial shipments of Australian mangoes (Calypso, Keitt) were successfully made to the US in the 2014/15 season, a total of 5 tonnes. 13 commercial shipments of Australian mangoes were made to the US in the 2015/16 season (Calypso, Keitt, Honey Gold, R2E2, Kensington Pride), principally in January and February, a total of approximately 75 tonnes. Two of these shipments were over heated or over ripe and unsaleable. The other 11 shipments sold successfully in US supermarkets in Texas, Arizona, the US North East and North West. Two of these 11 shipments were short shipped due to the interception of more than one mango seed weevil in the lot at the export inspection resulting in those lots not being permitted to be exported.

Challenges at the Australian side in the 2015/16 season were:

- Some growers, expecting to harvest for the US, were not registered with DAWR;
- Labelling not complying with the OWP;

- Boxes not complying with the OWP;
- Interception of mango seed weevil at inspection;
- Inadequate cool chain management leading to overheated and / or over ripe fruit on arrival in the US;
- Not transmitting shipment details and documentation to the US importer in a timely manner.

Challenges at the US side in the 2015/16 season were:

- Late start to the program leading to less time to develop retailer interest;
- Lack of clear, consistent, supply and variety information leading to retailer confusion / reduced confidence in the 'Australian mango' story';
- Shipments not arriving in the US in accordance with plans with US importers leading to a lack of supply and not fulfilling retailer orders;
- Lack of information from Australian growers and shippers on events and activities impacting on supply;
- Overheated shipments leading to a shortfall in volume to retailers and disposal costs.

There is a significant opportunity to expand the US program by lengthening the season and by increasing distribution to additional US retailers. The AMIA target for the 2016/17 US program is an ambitious 1,000 tonnes. This will be achieved by committed growers and exporters working with US importers to deliver planned and consistent programs of high quality Australian mangoes across the season. This will require a level of commitment from growers and exporters to follow through and deliver on commitments.

While what you are about to read may look complex, in the 2015/16 program two committed grower / exporters delivered consistent quality and volume as planned and agreed with their US customers over multiple shipments; achieving great outcomes at US retail (see the images later in this guide) and attractive farm gate returns.

Grower Responsibilities

1. Read, understand and abide by the OWP. The DAWR auditor may ask to sight a copy of the current OWP.

2. Submit an application form to AMIA by the due date (go to http://www.agriculture.gov.au/export/controlled-goods/plants-plant-products/ian/2016/2016-22 for dates and application forms). AMIA will review the application to ensure all required information is provided and then forward the application to DAWR for approval. Growers need DAWR approval to participate in the US Pilot Program.

3. Nominate production units (orchards/growing blocks) to be included in the US Pilot Program. A map of the property defining each nominated production unit must be submitted with the application (hand drawn maps will not be accepted). Only fruit picked from, and traceable to, approved production units can be used in the US Pilot Program.

4. Be aware of the pests and pathogens of quarantine concern (see *Appendix 1* for detail) and utilise appropriate pest management control measures to ensure low populations of target pests. Ensure that an approved Crop Monitor for the US Pilot Program (see

Crop Monitor Responsibilities for details) performs crop monitoring and in-field controls for the approved production units.

5. Approved production units need to be monitored from ***flowering through to end of harvest*** for the pests and pathogens of quarantine concern. Monitoring is to be undertaken and documented on a fortnightly basis. If pests of US quarantine concern are found, remedial action should be taken or the production unit removed from the program. Specific controls are required for stem end rot.

6. Understand and comply with USA chemical MRL's for mangoes (see *Appendix 2* for detail). The Working Group has resolved that all growers shipping to the US provide a copy of a C6 (equivalent to *Freshcare*) analysis from the blocks they intend to export to the US.

7. Prepare for an onsite audit by DAWR and/or APHIS. This audit will include a visual inspection of grower facilities, production units and operations, and a review of all relevant records and documentation, (such as crop monitoring records and spray diaries/remedial actions and also storage, segregation, despatch and traceability records and documentation). Only following a satisfactory audit will DAWR approve the grower and nominated production units to participate in the USA Pilot Program. This audit is at the grower's expense.

8. Register with the US FDA for prior notice of food importation. The registration process can be found on the US FDA web site at https://www.access.fda.gov/oaa/createNewAccountflow.htm?execution=e1s1.

Crop Monitor Responsibilities

1. Read, understand and abide by the OWP. The DAWR auditor may ask to sight a copy of the current OPW.

2. Undertake the crop monitor training to become an approved crop monitor for the US Pilot Program. Training can be undertaken on-line, and a grower can be their own crop monitor. Please contact AMIA for details.

3. Be aware of the pests and pathogens of quarantine concern (see *Appendix 1* for detail) recommend appropriate pest management control measures to ensure low populations of target pests. Crop monitoring and recommended control measures/records need to comply with DAWR guidelines.

4. Approved production units (orchards/growing blocks) need to be monitored from ***flowering through to end of harvest*** for the pests and pathogens of quarantine concern. Monitoring is to be undertaken and documented on a fortnightly basis. Records must verify the presence or absence of all quarantine pests and pathogens, and, if present, any recommendation to the grower on any remedial actions to be taken.
5. If pests listed in *Appendix 1* are found, recommend remedial action to be taken to reduce population to minimal levels or remove the production unit from the program.
6. Stem end rot caused by *Cytosphaera mangiferae* must be controlled in field and/or packing shed with one of these specific measures:

   Option 1: The fruit must be treated with a broad spectrum post-harvest fungicidal dip; or

   Option 2: The fruit must originate from a production unit that was inspected prior to the beginning of harvest and the production unit lot was found free of the fungi of quarantine concern; or

   Option 3: The fruit must originate from a production unit that was treated with a broad spectrum fungicide during the growing season, inspected prior to harvest and the fruit was found free of the fungi of quarantine concern.

   For Option 1, the packhouse/grower must supply DAWR with a treatment certificate or post-harvest spray/dip record as part of the export phytosanitary record. A template is at Appendix 3.

   For Options 2 and 3, DoAWR requires a copy of the crop monitoring records that demonstrate freedom from the fungi as part of the phytosanitary inspection. DAWR will verify the fungicide application aspect as part of the audit.

7. Understand and comply with US MRL's for mangoes (see *Appendix 2* for detail).

8. During the grower audit, the Crop Monitor will be required to discuss crop monitoring procedures and knowledge of pests of quarantine concern and to present crop monitoring records and spray diaries/remedial actions. Failure to present required

records and documentation at time of audit will result in rejection of the grower's application.

Packer Responsibilities

1. Read, understand and abide by the OWP. The DAWR auditor may ask to sight a copy of the current OPW.
2. Submit an application form to AMIA by the due date. AMIA will review the application to ensure all required information is provided and then forward the application to DAWR for approval. Packers need DAWR approval to participate in the US Pilot Program. Application forms and due dates are published on DAWR's web site http://www.agriculture.gov.au/export/controlled-goods/plants-plant-products/ian/2016/2016-22 ..
3. DAWR will undertake an onsite audit all of facilities, operations, records and/or documentation related to hygiene, grading, handling, traceability, product segregation, packing pest monitoring, storage, segregation, despatch of fruit for export under the US Pilot Program. All required records and documentation must be provided at time of audit. This audit is at the packer's expense.
3. Only pack fruit for export to the USA which is sourced from approved growers and approved production units (orchards/growing blocks) and keep this fruit segregated from all other fruit.
4. Comply with packaging requirements of the OWP.

   All Australian mangoes are airfreighted to the US. The shipment size should optimise the airfreight unit (assuming the use of 4.5 tonne PMCs) to minimise the $/kg airfreight cost. There are currently two approved packaging options:

   - Pest secure 5 kg *Australian Mangoes* branded box available from Orora. 832 of these boxes stow on the airline PMC. No inserts or fruit pockets are required.

   - Mod 12 tray (5 kg) on a netted 1200x1000 ISPM 15 compliant pallet. No inserts or fruit pocket are required. 120 standard height (120mm) Mod 12 trays load on to a 1200x1000 pallet and 6 x 1200x1000 pallets (720 trays) load on to airline

PMC pallet. A deeper 134mm Mod 12 tray (suitable for R2E2) and a shallower 100mm Mod 12 tray (suitable for small fruit) are also approved.

14 layers / 140 trays of the 100mm Mod 12 will fit on a pallet. It is anticipated that 11 layers / 110 trays of the 134mm Mod 12 will fit on a pallet (to be confirmed).

The Mod 12 tray / netted pallet consists of;

- OWP compliant net and net tie,
- ISPM 15 compliant 1200x1000 pallet,
- Pallet pad,
- Mod 12 trays,
- Corner boards/net protectors,
- Tray or pallet lid (to ensure the net does not drape on to the top layer of fruit),
- Pallet strapping or ventilated stretch wrapping.

There are strict requirements (detailed in the OWP) on the net specifications. At the time of writing ProFresh Systems[1] are the only supplier in Australia of a US compliant net. Profresh Systems can supply packers with a kit of all the above elements. Recognising that some packers may already have their own 1200x1000 pallets, 1200 x1000 pallet pads, lids for the Mod 12 and pallet stretch wrap, Profresh must, at a minimum, supply the net and corner boards/net protectors. It is anticipated that:

- Profresh will have a system in place with clear deadlines to take orders and deliver to packing sheds in time for US packing, and that Profresh will include pallet / net assembly instructions with their kit;

[1] http://www.profreshsystems.com/, 07 31625051, sales@profreshsystems.com

- The netted pallet should have a pallet card with the information required on the package label (see Package labelling below) + “pallet 1 of X” and;

- An *Australian Mangoes* branded Mod12 tray may be available / an option.

For correct fruit temperature and cool chain performance, it is critical that packer, transport and exporter assess the ventilated pallet stretch wrapping or strapping options. This assessment needs to also take account of the netting which also reduces air flow. Some ventilated stretch wrapping, with smaller vent holes, requires forced draft cooling for effective cooling.

Commercially, it is important that only one count is loaded per pallet. It is very inconvenient for the US importer, your customer, if there are mixed counts on a pallet.

5. Comply with labelling requirements of the OWP. All packages must be labelled with the following information:
    - Production Unit Code (PUC) – which is a combination of the approved orchard number and the approved production unit (block) number the fruit was harvested from (both supplied by DAWR on the grower’s letter of approval following audit). The format is ‘orchard number – block number’;
    - Pack House Code (PHC) – which is your packing shed number (supplied by DAWR in your letter of approval following the DAWR audit);
    - Treatment Facility Number (TFN) – the treatment facility’s approval number (Steritech’s TFN is “2997”);
    - Treatment Identification Number (TIN) – this number will uniquely identify the US consignment and is made up of the PHC hyphen followed by the packer’s own batch number unique to the consignment (generated by the packer). We recommend a simple sequential number starting with 1 for your first US shipment;
    - Date the consignment was packed on. This should be in the format of 01-JAN-2000 to avoid confusion between AU and US date formats;
    - Radura symbol (may be pre-printed directly onto the package);
    - Words “Treated by Irradiation” (may be pre-printed directly onto the package);

    An example of a label for mango packages is:

PUC: NQ029-2
PHC: NQ030
TFC: 2997
TIN: NQ030-1
Packed on: 6-Feb-2015
Treated by Irradiation

The above requirements are in addition to standard Australian export label requirements of grower's name and address, variety, count, grade and 'Product of Australia' or equivalent.

6. Monitor during packing for the pests and pathogens of quarantine concern (see *Appendix 1* for detail). If any of the pests listed in *Appendix 1* are found, action should be taken to remove the affected fruit from the shipment. In production regions where mango seed weevil is present, a sample of fruit should be cut to ensure the consignment is free from seed weevil.
7. Ensure consignments are free of all pathogens listed in *Appendix 1*.
8. Take reasonable precautions to keep the packing shed, pallets and transport clean and free of non- target pests, hitch hikers and contaminants. Stored packaging is a known risk area for hitch hikers and contaminants.
9. Remove daily rotted, damaged or infested fruit from the packhouse.
10. Understand and comply with USA chemical MRL's for mangoes (see *Appendix 2* for detail), particularly for the post-harvest chemicals.
11. Register with the US FDA for prior notice of food importation. The registration process can be found on the US FDA web site at https://www.access.fda.gov/oaa/createNewAccountflow.htm?execution=e1s1.

Export Process after Packing

Inspection

There is a mandatory pre-treatment DAWR inspection. This takes place at Steritech's treatment facility at Narangba immediately prior to the irradiation treatment. The inspection sample of >150 fruit inspected and >30 fruit cut is drawn from each block, referred to as a 'lot'. Packer and exporter need to take account of the fruit cut and lost at inspection, ≈ four packages, in the number of packages dispatched from the packing shed and the number of packages to be exported to the US.

Presence of two or more target quarantine pests (fruit fly, mango seed weevil) at the pre-treatment inspection will cause rejection of the consignment for export to the US.

Presence of any non-target quarantine pests in the pre-treatment inspection will cause rejection of the consignment for export to the USA unless:

- The pest(s) are identified as pest(s) which are effectively treated at 400 Gy (*Lepidopteron* egg and larvae); or
- The pest(s) are identified as pest(s) that are not of quarantine concern.

Treatment

There is a mandatory pre export treatment of irradiation at a minimum 300 Gy for the US target quarantine pests. Steritech P/L at Narangba, Qld is the only facility registered with the USDA to provide the required irradiation treatment for Australian mangoes. A higher 400 Gy treatment may be used if non-target quarantine pests are detected at the pre-treatment inspection.

The exporter and / or grower will need to contact Steritech P/L well in advance of the shipment, complete commercial documentation and confirm arrangements.

Post Treatment

All facilities through which the mangoes move post treatment (e.g. freight forwarders) must be registered with DAWR as Export Registered Establishments and the fruit must move from the treatment facility to the freight forwarder or cargo terminal operator under a DAWR transfer certificate.

Customer Requirements

Growers participating is the US Pilot Program should work closely with their US customer and exporter to understand their market requirements. This includes fruit size, appearance, stickering and the stage of ripeness the US customer requires.

Quality

To deliver the US consumer the attractive, better flavoured and well coloured mangoes they are looking for it is important that:

- Fruit is mature. At a minimum, fruit should meet AMIA/Australian industry maturity standards;

- Fruit is Class 1 or better in terms of appearance;
- Fruit is not subject to sap burn or rots;
- Fruit has been harvested with care and not subject to recent stress events such as rain;
- *Green ripe* fruit is avoided. The opportunity for Australian mangoes in the US market is as coloured (yellow) fruit.

Examples of out of spec Australian mangoes at retail in the US in 2015/16 season.

These examples (over-heating, lenticel discolouration, and possibly sap burn) were a very small % of the 2015/16 volume but will need to be reduced even further as volume increases.


AUSTRA
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Counts

Counts and fruit size are a commercial matter and subject to discussion and agreement with your importer. The experience over two US seasons to date is that 11 and 13 counts in the 5 kg box / mod 12 tray are preferred by the US market.

Varieties

Varieties are a commercial matter and subject to discussion and agreement with your importer. Over two US seasons to date Calypso, Keitt, Honey Gold, R2E2 and Kensington Pride have been shipped. It is too soon to be confident on US variety preferences and preferences may be subject to whether the customer has had a consistent, high quality experience with a particular variety. The target retailers and consumers are sophisticated, well informed, critical and seeking attractive food experiences. No Kensington Pride have been retailed in the US at the time of writing.

Fruit labels

Fruit labels are a commercial matter and subject to discussion and agreement with your importer. The experience over two seasons to date is importers will require fruit labels with PLUs aligned to US retail.

Ripening and cool chain management

The marketing objective is to deliver the US consumer a high flavour, sweet and coloured mango, along with shelf life for the US importer and retailer that rewards the Australian mango grower. This will involve ripening the fruit. In addition, research and experience indicates that ripening the mango prior to the export treatment reduces the treatment damage[2].

The current recommendation is that the mango is ripened to colour stage 2/softness stage 1[3] prior to export treatment. This requires active cool chain management to succeed as you are exporting (sealed in the airline pallet for ≈24 hours) ripening fruit, which is then subject to US distribution of up to 5 – 7 days and in-store shelf life of another 5-7 days.

There is no current recommendation on the ripening time, temperature or whether gas (ethylene) is required. There are a range of successful commercial practises at the time of writing using different combinations of time / temperature and gas/ no gas.

There may be variety differences in the ripening / time / temperature response. There are differences with fruit from the same block as the season progresses; later season, more mature fruit, will ripen faster.

What is clear is that:

- Active cool chain management is required from packing to arrival in the US;
- It is essential to cool the fruit (at least to 16°C, preferably using forced draft) after ripening and prior to inspection & treatment;

[2] The most recent research is Ainsworth, N., (2015) Predicting the impact of irradiation on mango quality, Department of Agriculture and Fisheries, Brisbane

[3] Mango Quality Assessment Manual (2009); Holmes, Hofman and Barker, DEEDI

- Fruit must be firm at the point of inspection prior to export. Soft fruit at this point should be a **No Go** decision ;
- Fruit should be cooled again after the export treatment to at least 16°C, preferably using forced draft.

As the carton / pallet is sealed to comply with the OWP, it is difficult to get a comprehensive picture of the temperature of the fruit throughout the shipment. This needs to be considered when looking at temperature data and managing the fruit temperature through the cool chain from packing shed to import arrival. Grower, domestic road transport, treatment facility, freight forwarder and exporter need to be working together.

Marketing and promotion

The US market is large, sophisticated and very competitive. The opportunity for Australian mangoes is as *better flavoured*, *better coloured*, *attractive appearance mangoes* from *Australia* and objective is attractive returns for the Australian mango grower.

There are a number of US food retailers who have a clear vision of their customers and how they are seeking to satisfy their needs who are interested to offer Australian mangoes to their customers. The Australian mango marketing effort is to work with the US importers and supply those retailers with consistent information on Australian mangoes, varieties and the supply season and then deliver a program of consistent, attractive and high flavour Australian mangoes.

Australia and all matters Australian resonate with US consumers. The *Australian Mangoes* branded package is a very useful promotion tool. US retailers use the *Australian Mangoes* boxes to build displays; visually connecting consumers to the Australian mangoes. [*to be confirmed* – there may be an option for *Australian Mangoes* branded Mod 12 trays]

AMIA, working with the working group and US importers, plan to have an *Australian Mangoes* presence with fruit at the Produce Marketing Association Fresh Summit Convention and Expo (PMA) being held in Orlando, Florida in October 2016.

To support the development of the US market opportunity during the pilot phase, AMIA has:

- Established and facilitated a working group of participating exporters[4], growers and other interested stakeholders. The working group, open to all interested exporters, growers and other stakeholders, meets through a weekly teleconference to share information and come to a collective view on all matters concerning Australian mangoes to the US including packaging and pricing guidance;
- Developed US marketing guidelines (2015 guidelines attached as Appendix 4) for exporters marketing Australian mangoes to the US. The guidelines nominate two US importers and participating exporters are required to deal with one or other

[4] Participating exporters – exporters who have signed the US marketing guidelines and paid their contribution to the USDA audit fund


AUSTRALIAN MANGOS
$4.98


AUSTRALIAN MANGOES
Only available for a limited time! It's summer down under, so these mangoes are peak-of-season. They contain a smaller seed so you get more mango. They're air-freighted direct to Central Market for optimum freshness.


AUSTRALIAN MANGOES
Only available for a limited time!
Australian Mangoes
Summer From Down Under
$4.98


THERE ARE
FRUITS 27 and VEGETABLES 139
ORGANIC PRODUCTS AVAILABLE TODAY
APPLE PAZAZZ
$2.69
MANGOS
$4.98
AUSTRALIAN MANGOES

nominated US importer. These guidelines have been endorsed by the working group and certified by the ACCC;

- Supported HIA project MG15004 which funded a NT DPI&F officer to undertake and report on in-market observations during the 2015/16 season.

Exporters

Participating exporters are encouraged to actively participate in AMIA's weekly teleconference (starting on May 23, 2016 for the 2016/17 season).

One element of the OWP is that the USDA audit Australian processes and procedures each season. This is arranged by DAWR and funded by participating exporters through the AMIA managed USDA audit fund. Participating exporters are required to contribute to the USDA audit fund on a pro-rata basis based on exporters forecast program volume. The fund pays the USDA audit costs (required to be paid in advance to USDA) and the cost of the pre export MRL testing (one sample per exporting property in 2015/16) program.

Participating exporters are also required to commit to AMIA's US marketing guidelines.

US bound air freight security

Australia's Department of Infrastructure and Regional Development's Office of Transport Security has been advising industry to prepare for the enforcement of new security requirements by the US's Transportation Security Administration (TSA) for all air cargo entering the US on passenger aircraft. These requirements are mandatory 100% piece level examination (physical, X-Ray or ETD examination) of all air cargo on passenger flights to be performed by a registered examination facility prior to export to the USA **OR** being a *Known Consignor*. Measures to meet these requirements are expected to be implemented by 1 July 2017. Please refer to https://infrastructure.gov.au/security/air-cargo/us-bound-air-cargo-security-arrangements.aspx .

Communication

AMIA facilitates:

- Pre-season crop monitor training and grower briefings and information;
- A weekly teleconference open to all for interested US program growers, and other stakeholders such as service providers;
- An *Australian Mangoes* presence at PMA 2016;
- Post season debrief for participating exporters and other stakeholders.

There are also communications in Mango Matters and AMIA, NT DPIF and Steritech are available to answer any further questions or queries.

For further enquiries or clarification, please contact NTDPIF, AMIA or Steritech:

NT DPIF	**AMIA**	**Steritech P/L**
Michael Daysh	Trevor Dunmall	Seth Hamilton
P: 08 8999 2300 M: 0438 355 634 | E: Michael.Daysh@nt.gov.au	P: (07) 3278 3755 M: 0400 808 689 IDM@mangoes.net.au	(07) 3293 1566 SHamilton@steritech.com.au

In-market visits to the US which inform this Guide were supported by AMIA and NT DPI&F.

The project was funded by Horticulture Innovation Australia using the mango industry levy and funds from the Australian Government.

Appendix 1: USA Quarantine Pests

Pests of Quarantine Concern to the US:

- Insects:
  - *Bactrocera aquilonis* (DIPTERA:Tephritidae)
  - *Bactrocera cucumis* (DIPTERA:Tephritidae)
  - *Bactrocera frauenfeldi* (DIPTERA:Tephritidae)
  - *Bactrocera jarvisi* (DIPTERA:Tephritidae)
  - *Bactrocera kraussi* (DIPTERA:Tephritidae)
  - *Bactrocera murrayi* (DIPTERA:Tephritidae)
  - *Bactrocera neohumeralis* (DIPTERA:Tephritidae)
  - *Bactrocera opiliae* (DIPTERA:Tephritidae)
  - *Bactrocera tryoni* (DIPTERA:Tephritidae)
  - *Ceratitis capitata* (DIPTERA:Tephritidae)
  - *Sternochetus mangiferae* (COLEOPTERA:Curculionidae)
- Fungi:
  - *Xanthomonas campestris*
  - *Cytosphaera mangiferae*
  - *Lasiodiplodia pseudotheobromae*
  - *Neofusicoccum mangiferae*
  - *Neoscytalidium novaehollandiae*
  - *Phomopsis mangiferae*
  - *Pseudofusicoccum adansoniae*
- Bacteria:
  - *Xanthomonas campestris pv. mangiferaeindicae* (Xanthomonadales: Xanthomonadaceae)

Non-Target Pests Quarantine Pests:

- Mollusks, pathogens, mites, Lepidopteran pupae or adults, or other insect pests

Appendix 2: Chemicals MRL Guide

The following tables provide a comparison of the Australian and USA MRLs of chemicals that are approved for use on mangoes in Australia. The information in the following tables is taken from a compilation supplied by Kevin Bodnaruk of AKC Consulting and was updated June 2015.

Pesticide	Aust WHP (Days)	Aust MRL (mg/kg)	USA MRL (mg/kg)
Buprofezin (Applaud)	28	0.2	0.9
Imidacloprid		1	1
Maldison (Malathion, Fyfanon)	3	2	8
Pyrethrins (Various)	1	1	1
Pyriproxyfen (Admiral)	28	0.05	1
Spinetoram (Success Neo Insecticide)	NR	0.3	0.3
Spirotetramat (Movento 240 Insecticide)	14	0.3	0.6
Thiamethoxam (Actara)	130	T0.2	0.4
Carbaryl (Bugmaster)	7	2	0
Chlorpyrifos (Lorsban)	21	*0.05	0
Cyfluthrin (Bulldock)	7	T0.1	0
Dicofol (Kelthane)	7	5	0
Dimethoate (Saboteur)	7	1	0
Fipronil (Various)	56	T*0.01	0
Methidathion (Suprathion)	21	2	0.05
Trichlorfon (Lepidex)	7	T3	0

Fungicide / PGR	Aust WHP (Days)	Aust MRL (mg/kg)	USA MRL (mg/kg)
Azoxystrobin (Amistar)	3	0.5	2
Copper (Various)	1	Exempt	Exempt
Fludioxonil (Scholar)	NR	3	5
Iodine (AIS Iodine Granules Post-harvest sanitizer)	NR	Exempt	Exempt
Mancozeb (Dithane)	14	7	15
Methylcyclopropene (Smartfresh)	NR	Exempt	Exempt
Peracetic acid (Tsunami on farm)	NR	Exempt	Exempt
Pyraclostrobin (Aero Fungicide)	14	0.1	0.6
Ethephon (Ethrel)		T*0.02	0
Metiram (Polyram)	1	7	0
Paclobutrazol (Syntar PGR, Austar PGR, Ospray Pack-out)		T1	0
Prochloraz (Octave)	NR	5	0
Thiram (Barmac Thiram DG)	14	7	0

Herbicide	Aust WHP (Days)	Aust MRL (mg/kg)	USA MRL (mg/kg)
Carfentrazone-ethyl (Hammer, Punch, Spike)	NR	*0.05	0.1
Glyphosate (Roundup)	NR	*0.05	0.2
Paraquat (Gramoxone)	NR	*0.05	0.05
Diquat (Spray.Seed)	NR	*0.05	0
Fluazifop (Fusilade)	14	0.05	0
Glufosinate (Basta)	NR	0.2	0
Haloxyfop (Verdict)	NR	*0.05	0
Isoxaben (Gallery)	NR	*0.01	0
Oxyfluorfen (Goal, Crossbar)	NR	*0.01	0
Pendimethalin (Stomp)	NR	*0.05	0

AUST MRL ≤ USA MRL AUST MRL > USA MRL

NR = Not Required

T = Temporary; maybe associated with permit use rather than label use

* = MRL is set at the limit of quantification

Appendix 3 – Fungicide template

US Mango Program – packing shed fungicide certification

I confirm that the following mangoes;

PUC	
LOT/s	
PHC	
TIN	
Number of cartons (shipment + inspection sample = total)	+ =

were subject to one of the following fungi mitigation option (select one) in accordance with the Operational Work Plan (OWP);

Fungi mitigation options	Tick or cross one box
1. Treated with the broad spectrum post-harvest fungicide (name)_____ by dip / flood spray (delete one) at _____ml in_____L of water at_____ °C for _____minutes (label rate).	
2. The fruit originated from an orchard that was inspected prior to the beginning of harvest during the growing season and the **orchard** was found free of Cytosphaera mangiferae. **Please attach survey and crop monitoring records demonstrating freedom.**	
3. .The fruit originated from an orchard that was treated with a broad spectrum fungicide during the growing season, inspected prior to harvest and the fruit was found free of the fungi Cytosphaera mangiferae. **Please attach spray and crop monitoring records.**	

Signed Date Position

THIS CERTIFICATE MUST ACCOMPANY THE SHIPMENT TO BRISBANE AND BE MADE AVAILABLE TO THE DEPARTMENT OF AGRICULTURE AND WATER RESOURCES WHEN BOOKING APPOINTMENT FOR EXPORT PHYTOSANITARY INSPECTION. FAILURE TO PROVIDE APPROPRIATE EVIDENCE MAY RESULT IN DELAY AND / OR REJECTION FOR EXPORT TO THE US.

Appendix 4 – US marketing guidelines

AMIA guidelines for the export of fresh mangoes to the US

Australian mangoes have achieved access to the US market, the world's largest mango import market, on a three year pilot basis.

Access to the US market is a valuable opportunity for Australian mango growers, but this access comes with significant compliance requirements across biosecurity, chemical MRLs and aviation security.

It is important that compliance is maintained at a high level particularly during the pilot program period when it is anticipated there will be a high level of regulatory monitoring.

The US market is large and sophisticated, selling around 350,000 tonnes per annum of mainly low priced mangoes from Central and South America.

Australian mangoes are high cost to grow and pack. Adding on the cost of compliance and the freight from Australia to the US means the landed price of Australian mangoes is significantly higher (≈4x) than mangoes from Central and South America.

The sustainable opportunity for Australian mangoes in the US market is only as a high quality mango from Australia. The challenge for Australian mango growers and exporters to locate US consumers interested to buy high quality mangoes from Australia, and then consistently deliver them an attractive, value for money, mango from Australia.

The purpose of these guidelines is to support that positioning of Australian mangoes in the US market during the three year pilot as high quality mangoes from Australia;

1. Exporters participating in the US mango program are termed 'participating exporters'

2. Exporters are free to join as a participating exporter at any time

3. AMIA will facilitate a working group of participating exporters to discuss and decide issues regarding the export of Australian mangoes to the US market. In the absence of a working group discussion or consensus, AMIA will decide on an issue

4. Participating exporters agree to abide by the terms of these guidelines

5. Participating exporters agreed contribute funds to activities agreed by the working group e.g. USDA audits, dose mapping, MRL testing, etc. Failure to contribute funds as decided by the working group will result in the exporter no longer being a participating exporter

6. Participating exporters agree on packaging specifications that may be decided by the working group from time to time

7. Participating exporters agree on minimum quality specification that may be decided by the working group from time to time

8. Participating exporters agree to deal only with US importers that may be nominated by the working group from time to time. At the time of writing the agreed importers are Melissa's World Variety Produce and Giumarra Corp

9. Participating exporters agree to minimum pricing by count and variety to the US market that may be decided by the working group from time to time (A$ or US$, FAS or C&F tbc)

10. Participating exporters agree on an MRL testing program that may be decided by the working group from time to time (details attached)

11. Participating exporters agree on a USDA audit funding process that may be decided by the working group from time to time (details attached)

12. Steritech P/L agrees to only deal with participating exporters for the US mango program

13. These guidelines are subject to any required approval by ACCC

14. There guidelines are subject to annual post season review by AMIA, the Dept of Agriculture, and possibly HIA and AHEA.

Signed by Participating exporter or other party to this agreement

Company name:_____

Company addres:_____

_____

Authorised officer (name):_____

Authorised officer (signature):_____

Date:_____

Overview and summary of 2016-17 US mango program

Michael Daysh
23 March 2017

DEPARTMENT OF **PRIMARY INDUSTRY AND RESOURCES**

Horticulture Innovation Australia

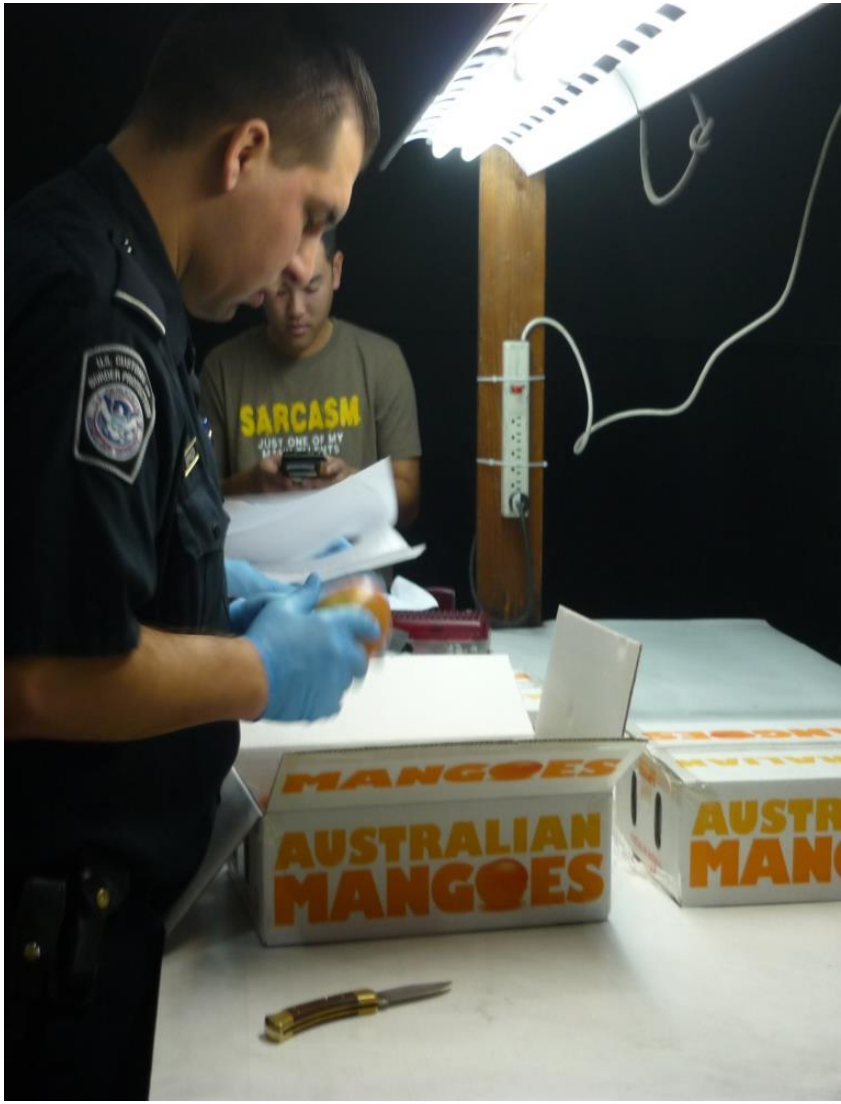
AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Positives

- Compliance on arrival

No issues reported with either USDA or FDA



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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Positives

- Compliance on arrival
- Extension success

Most growers complied with Work Plan, documentation and residue requirements without problems

Horticulture Innovation Australia

AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Positives

- Compliance on arrival
- Extension success
- MRL / residues

Two growers self selected to not export due to concerns

amal ANALYTICAL — Laboratory Services for the Environment and Occupational Health

Certificate Of Analysis

30929

Date Received: 6-Oct-16
Date Reported: 13-Oct-16
Page number: 1 of 1

Client Name: Australian Mango Industry Assoc.
Client Details: PO Box 376
Brisbane Markets, QLD 4106
Attention: Trevor Drumall

Method: AMAL Method S - Pesticide Residues in Tissue Samples.
Results: Milligrams per Kilogram (mg/kg), As received
LOR: Level of Reporting.
Sample Analysed as Received.
NT: Not Tested.

Client ID: Australian Mango Industry Assoc.
Sample ID: Mangoes - MD1-1 - Mareeba
Laboratory Number: P 4025

OC Pesticides	LOR	Result
Aldrin	0.005	<0.005
α BHC	0.005	<0.005
ß BHC	0.010	<0.01
δ BHC	0.005	<0.005
Lindane (γBHC)	0.005	<0.005
Chlordane, trans	0.005	<0.005
Chlordane, cis	0.005	<0.005
Dieldrin	0.005	<0.005
DDD	0.005	<0.005
op-DDD	0.005	<0.005
DDE	0.005	<0.005
pp-DDT	0.010	<0.01
op-DDT	0.010	<0.01
Total DDT	0.020	<0.02
α Endosulfan	0.005	<0.005
ß Endosulfan	0.005	<0.005
Endosulfan Sulfate	0.005	<0.005
Endrin	0.005	<0.005
Endrin Aldehyde	0.005	<0.005
HCB	0.005	<0.005
Heptachlor	0.005	<0.005
Heptachlor Epoxide	0.005	<0.005
Oxychlordane	0.005	<0.005

Synthetic Pyrethroids	LOR	Result
Bifenthrin	0.020	<0.02
Cyhalothrin	0.020	<0.02
Cyfluthrin	0.020	<0.02
ß Cyfluthrin	0.020	<0.02
Cypermethrin	0.020	<0.02
α Cypermethrin	0.020	<0.02
Fenvalerate	0.020	<0.02
Deltamethrin	0.020	<0.02
Permethrin	0.050	<0.05

Triazine/Conazoles[2]	LOR	Result
Atrazine	0.050	0.05
Fenpropathrin	0.10	0.1
Hexaconazole	0.10	0.1
Imazalil	0.10	0.1
Penconazole	0.10	0.1
Prometon	0.10	0.1
Prometryne	0.050	<0.05
Propazine	0.050	<0.05
Propiconazole	0.10	0.1
Simazine	0.050	<0.05
Tebuconazole	0.10	0.1

OP Pesticides	LOR	Result
Bromophos Ethyl	0.025	<0.025
Carbopherothion	0.025	<0.025
Chlorfenvinphos	0.025	<0.025
Chlorpyrifos	0.025	<0.025
Chlorpyrifos Methyl	0.025	<0.025
Coumaphos	0.025	<0.025
Diazinon	0.025	<0.025
Dichlofenthion	0.025	<0.025
Dichlorvos	0.025	<0.025
Disulfoton	0.025	<0.025
EPN	0.025	<0.025
Ethion	0.025	<0.025
Famphur	0.025	<0.025
Ferchlorvos	0.025	<0.025
Fenthion	0.025	<0.025
Forophos	0.025	<0.025
Imidan	0.025	<0.025
Leptophos	0.025	<0.025
Malathion	0.025	<0.025
Merphos	0.025	<0.025
Methacrifos	0.025	<0.025
Methidathion	0.025	<0.025
Parathion	0.025	<0.025
Parathion Methyl	0.025	<0.025
Phenamiphos	0.025	<0.025
Phorate	0.025	<0.025
Phosphamidon	0.025	<0.025
Pirimiphos Methyl	0.025	<0.025
Sulprofos	0.025	<0.025
Terbufos	0.025	<0.025
Tetrachlorvinphos	0.025	<0.025
Tokuthion	0.025	<0.025

OP Pesticides[2]	LOR	Result
Azinon	0.025	<0.025
Dicrotophon	0.10	<0.1
Dimethoate	0.10	<0.1
Dioxathion	0.20	<0.2
Ethoprofos	0.025	<0.025
Fenvalerate/Esfenvalerate	0.050	<0.05
Fenthion	0.025	<0.025
Isofenphos	0.050	<0.05
Methamidophos	0.10	<0.1
Parathion	0.050	<0.05
Profenophos	0.050	<0.05
Ruelene	0.050	<0.05
Sulfotep	0.025	<0.025

Herbicides/Fungicides[2]	LOR	Result
Azoxystrobin	0.10	<0.1
Bendiocarb	0.050	<0.05
Bupirimate	0.050	<0.05
Carbaryl	0.050	<0.05
Carbendazim & Benomyl	0.050	<0.05
Chlorpropham	0.050	<0.05
Dichlofluanid	0.050	<0.05
Diclobutrazol	0.050	<0.05
Diphenylamine	0.050	<0.05
Fenoxaprop-Ethyl	0.10	<0.1
Fluazinop-p-Butyl	0.10	<0.1
Flusilazole	0.050	<0.05
Iprodione	0.10	<0.1
Metalaxyl	0.050	<0.05
Methiocarb	0.050	<0.05
Penconazole	0.050	<0.05
Pirimicarb	0.050	<0.05
Pyriproxyfen	0.050	<0.05
Prochloraz	0.050	<0.05
Procymidone	0.10	<0.1
Propachlor	0.10	<0.1
Propham	0.050	<0.05
Tebufenpyrad	0.050	<0.05
Vinclozolin	0.050	<0.05

Other Compounds[2]	LOR	Result

[2]Not covered by NATA scope of accreditation.

J. Markelas (BSc)
Quality Assurance Manager

ilac-MRA NATA Accreditation No. 3431 Accredited for compliance with ISO/IEC 17025

AMAL Analytical Pty Ltd
27 Shafton Street Huntingdale VIC 3166 Australia
Email: info@amalanalytical.com.au Phone: (03) 9544 4111
Web: www.amalanalytical.com.au Fax: (03) 9544 4122
ABN: 82 575 945 797 ACN: 006 870 186

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AUSTRALIAN MANGO

Positives

- Compliance on arrival
- Extension success
- MRL / residues
- No unapproved growers

Australian Government
Department of Agriculture and Water Resources

[redacted]

Dear [redacted]

Re: Audit of growers/packhouses applying for mango exports to China, Korea and USA.

Thank you for your application to export during the 2016-17 mango export season.
As a result of the audit, your application has been found compliant with the China, Korea and USA mango export protocols.

Your orchard has passed audit and is now registered to pack mango for export to China, Korea and USA under the following number: [redacted]

Approved Lots	Approval Number
[redacted]	

Please note the department may be conducting unannounced follow-up audits during the export season to ensure compliance with the importing country requirements.

I wish you well for the export season.

Yours sincerely,

Victoria Bowen
Assistant Director
Audit Services Group

17 August 2016

T 1800 900 090 | 18 Marcus Clarke Street Canberra City ACT 2601 | GPO Box 858 Canberra ACT 2601 | agriculture.gov.au ABN 24 113 085 695

Horticulture Innovation Australia

AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Positives

- Compliance on arrival
- Extension success
- MRL / residues
- No unapproved growers
- No MSW problems

Horticulture Innovation Australia

AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Positives

- Compliance on arrival
- Extension success
- MRL / residues
- No unapproved growers
- No MSW problems
- No ‘hot’ or overripe shipments

Horticulture Innovation Australia

AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Positives

- Compliance on arrival
- Extension
- MRL / residues
- No unapproved growers
- NO MSW problems
- No ‘hot’ or overripe shipments
- Continued interest by US consumers

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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Room for improvement

- Compliance at export

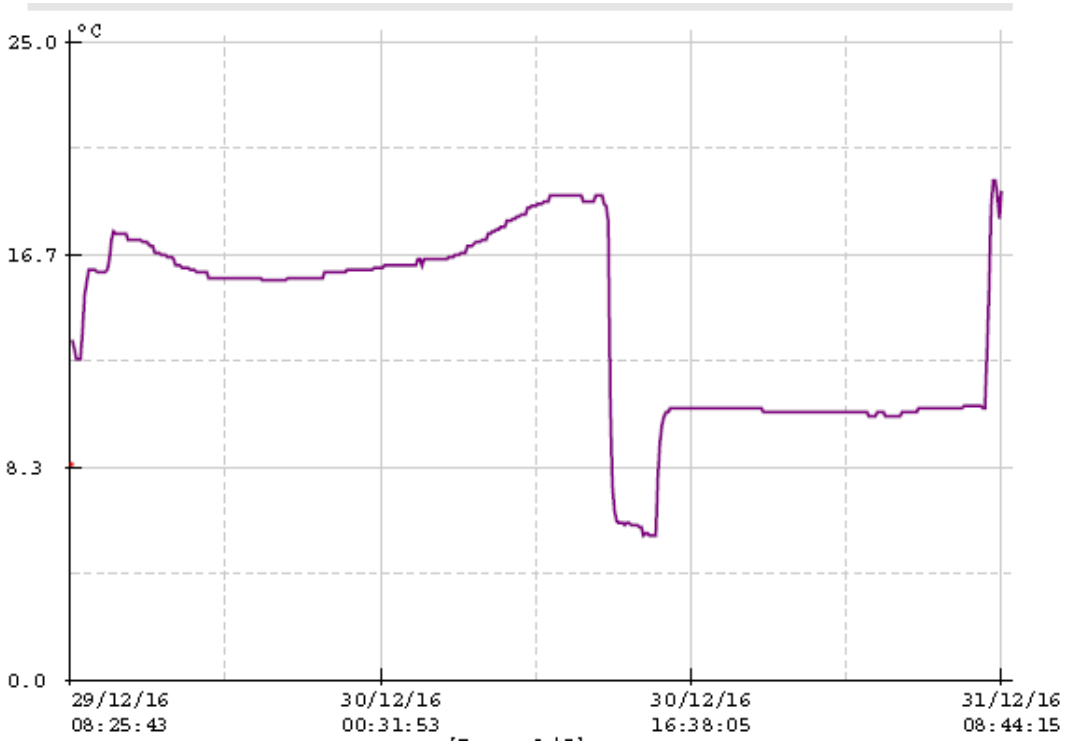
1 grower had document problems with 85% of their shipments

2 growers had live insect problems

3 growers had no problems

Room for improvement

- Compliance at export
- Cool chain



Maintaining correct temperature

Monitoring

Stage of ripeness at treatment

May have been unintended consequences from adopting the Mod12 tray / pallet

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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Room for improvement

- Compliance at export
- Cool chain
- Quality at retail

Image from our major customer, one of their Austin stores, 2 Jan 2017

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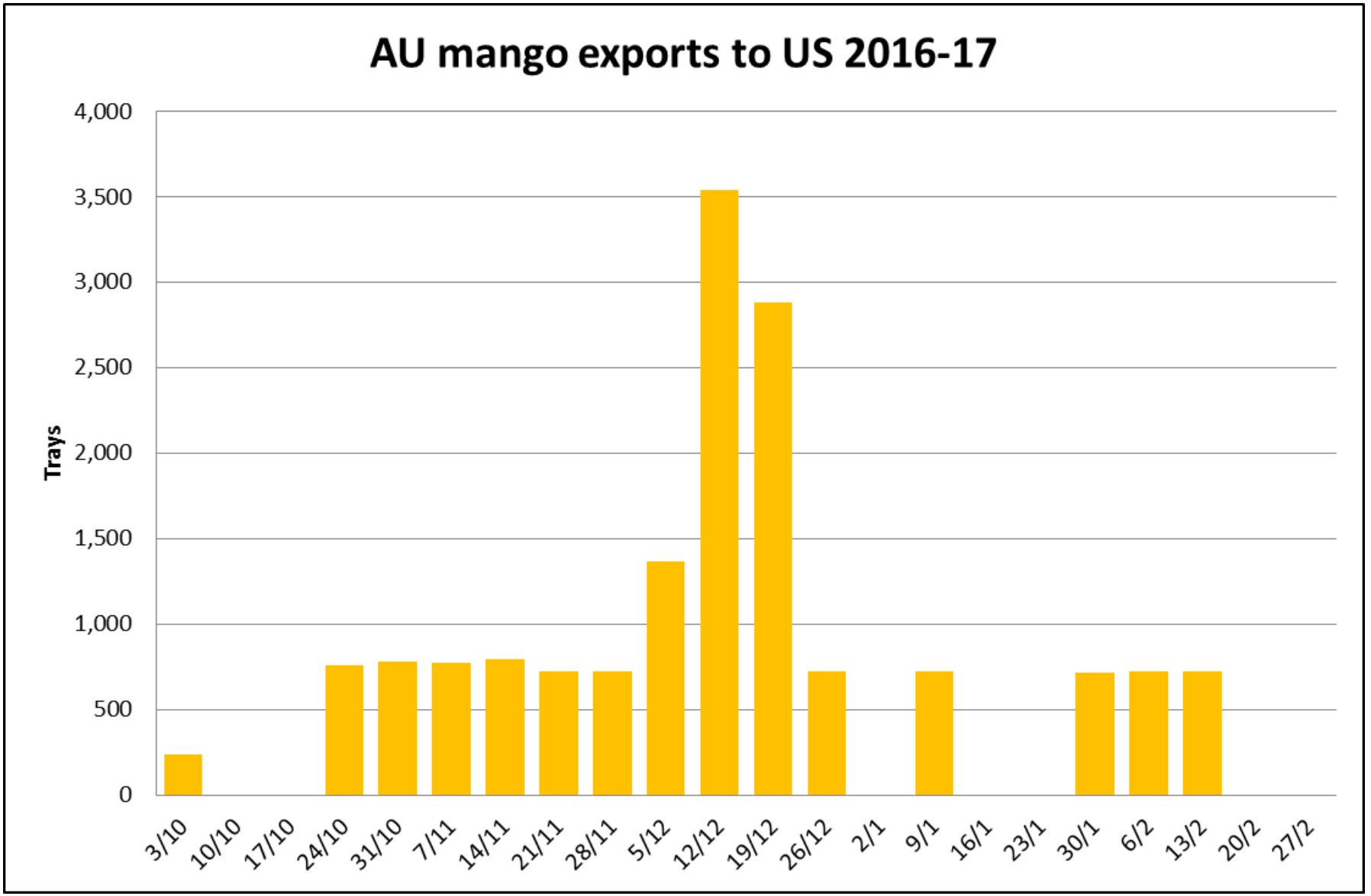
AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT



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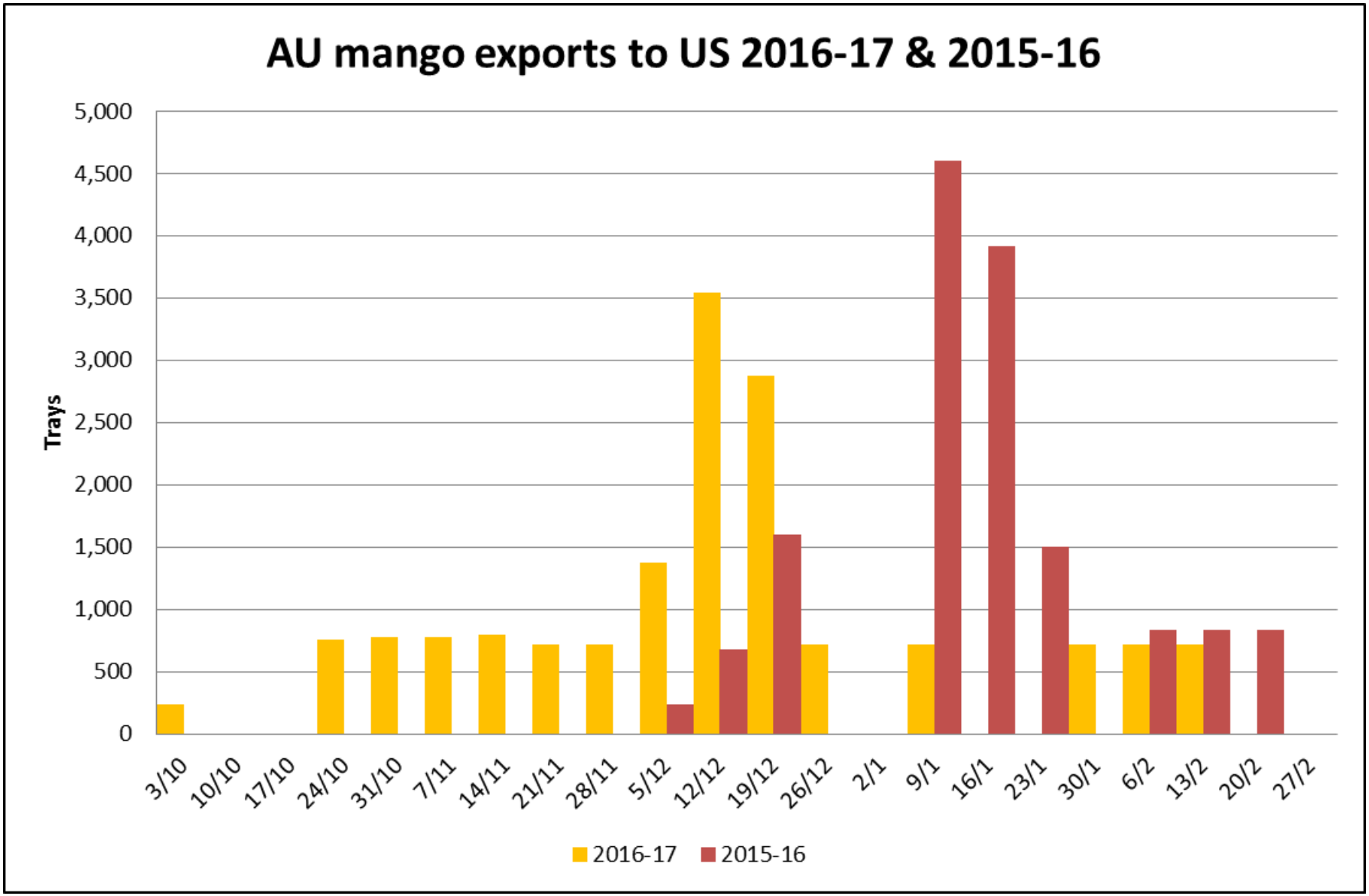
NORTHERN TERRITORY GOVERNMENT



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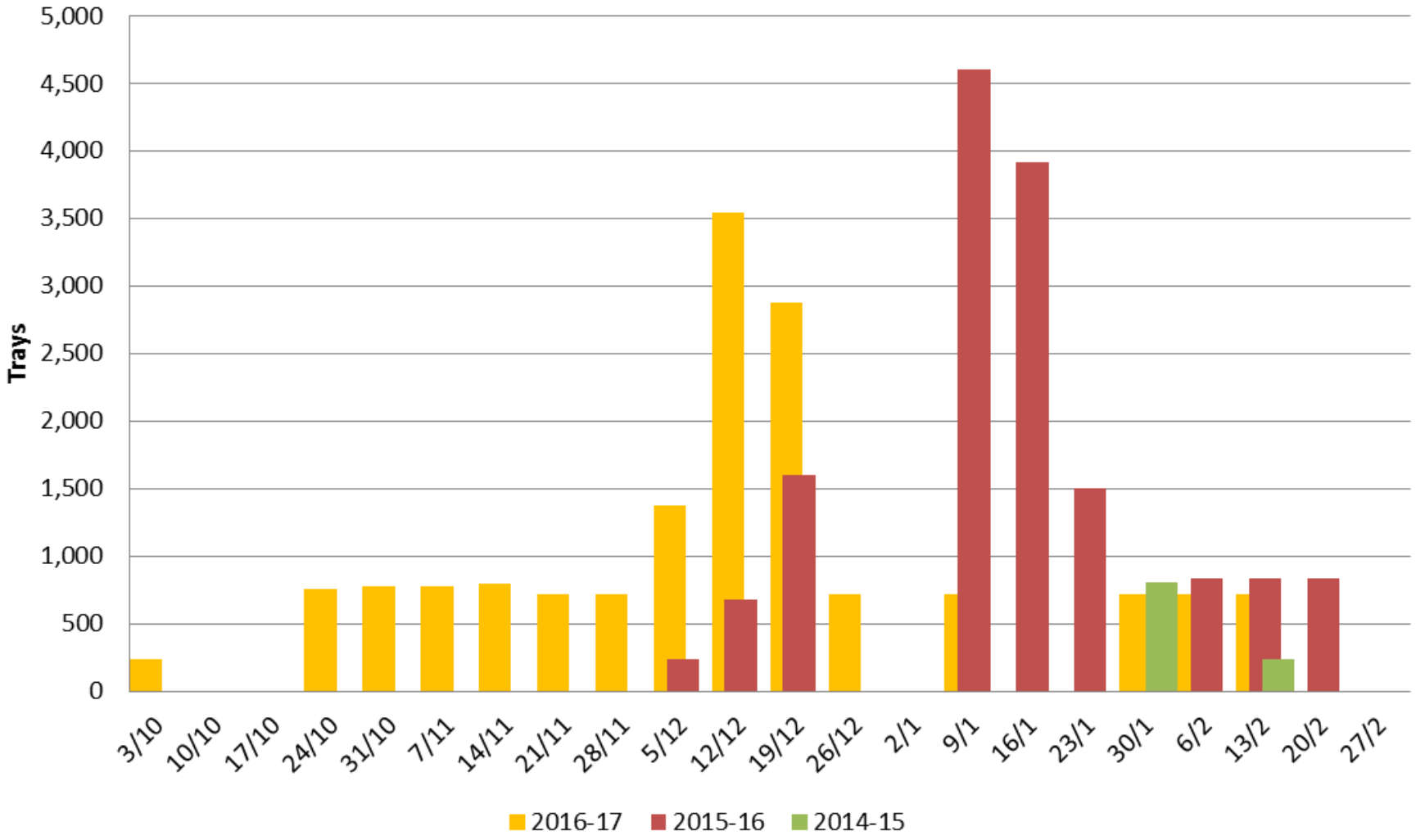
NORTHERN TERRITORY GOVERNMENT

AU mango exports to US 2016-17, 2015-16 & 2014-15



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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

2016/17 metrics

- 16,178 trays and ctns, up 7.6% (1,142 trays) on 2015/16
- 8 growers, 1 up on 2015/16
- 6 exporters, 1 up on 2015/16
- 3 importers, 1 up on 2015/16
- 18 shipments, 3 up on 2015/16
- 17 shipments treated at 300 Gy
- Av 8.78 days from packing to Los Angeles
- Earlier start and peak compared to previous years
- First sales to Los Angeles retailers

Pathway challenges

- Damp cartons

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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Pathway challenges

- Damp cartons

- Damaged pallets

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Pathway challenges

- Damp cartons
- Damaged pallets
- Unwrapped / uninsulated ULDs

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Pathway challenges

Australian export pallet

South American export pallet

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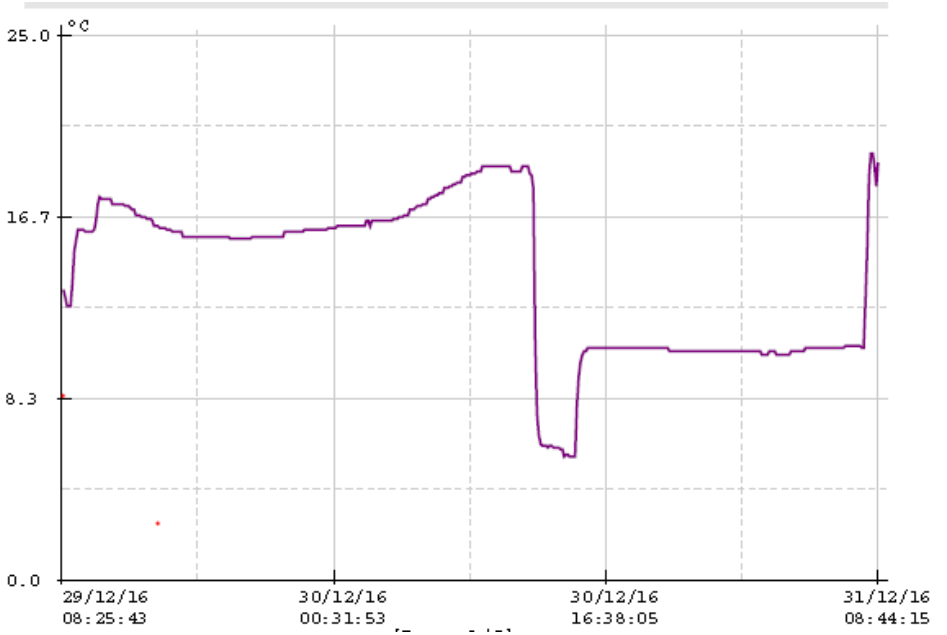
NORTHERN TERRITORY GOVERNMENT

Pathway challenges

- Damp cartons
- Damaged pallets
- Unwrapped / insulated ULDs
- Lack of through-chain temperature monitoring



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Pathway challenges

- Damp cartons
- Damaged pallets
- Unwrapped / insulated ULDs
- Lack of through-chain temperature monitoring

- Time in transit; one shipment took 16 days from packing to LAX

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NORTHERN TERRITORY GOVERNMENT

Importers

- One importer was on consignment with customers 'committed'
- Second importer was 'firm price' but apparently no customers and up to 4 intermediaries
- Third importer was firm C&F price with customers 'committed'
- Importers had different capacities to undertake merchandising and in-store promotions

Retailers

Bristol Farms
An Extraordinary Food Store.®

PAVILIONS

CENTRAL MARKET
H·E·B

PURVEYORS OF FINE FOODS

Clark's MARKET

metropolitanmarket®

Nugget MARKETS

Wegmans

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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Retailers – talk about

GELSON'S
THE Super MARKET

Walmart
Neighborhood Market

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NORTHERN TERRITORY GOVERNMENT

Central Market's share

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Retailers

- We don’t know what the weekly ‘demand’ or fruit ‘velocity’ is

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NORTHERN TERRITORY GOVERNMENT

Retailers

- We don't know what the weekly 'demand' / fruit 'velocity' is

About 34 days from packing

Same display & fruit, 38 days from

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NORTHERN TERRITORY GOVERNMENT

Retailers

- We don't know what the weekly 'demand' / fruit 'velocity' is

- Each chain is unique and different

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NORTHERN TERRITORY GOVERNMENT

Retailers

- We don't know what the weekly 'demand' / fruit 'velocity' is
- Each chain is unique and different
- The store Produce Manager is crucial to success

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NORTHERN TERRITORY GOVERNMENT

Retailers

- We don't know what the weekly 'demand' / fruit 'velocity' is
- Each chain is unique and different
- The store Produce Manager is crucial to success

- Typically only some stores within a chain stocked Australian mangoes

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NORTHERN TERRITORY GOVERNMENT

Example of retail promotions in 2016-17

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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Example of retail promotions in 2016-17

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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Example of retail promotions in 2016-17

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NORTHERN TERRITORY GOVERNMENT

Example of retail promotions in 2016-17

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NORTHERN TERRITORY GOVERNMENT

Example of retail promotions in 2016-17

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Example of retail promotions in 2016-17

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NORTHERN TERRITORY GOVERNMENT

Example of retail promotions in 2016-17

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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Other Australian products in US grocery stores

Other positive Australian associations

australian open

mid – late January, with huge US media coverage and probably the target demographic

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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Consistent quality and fruit life were key issues

- Estimated 22% of fruit substantially failed to meet importer specifications on arrival, had to be repacked and / or discounted

\+ build up of stock/slow sales velocity, leading to old fruit

- This all impacted on retailer confidence;

As you can see it's the same discoloration that we have seen for the most part of the entire AU season. Sales are very slow due to the product on the display. It's an endless battle as the stores try to remove the fruit as it starts showing the issue. We have had to shrink quite a bit of fruit on the last two deliveries.

We will not be able to take anymore fruit until the issue has been corrected. This season has not been a good one (included ALL AU varieties). We have really taken a hit with the sales being behind last year and shrink (costing us money). The stores don't have faith in the program at the moment either. (2/1/2017)

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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Consistent quality and fruit life were key issues

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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Consistent quality and fruit life were key issues

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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Consistent quality and fruit life were key issues

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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Consistent quality and fruit life were key issues

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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

The impact of retailer confidence on shelf space

2016 display

2017 display

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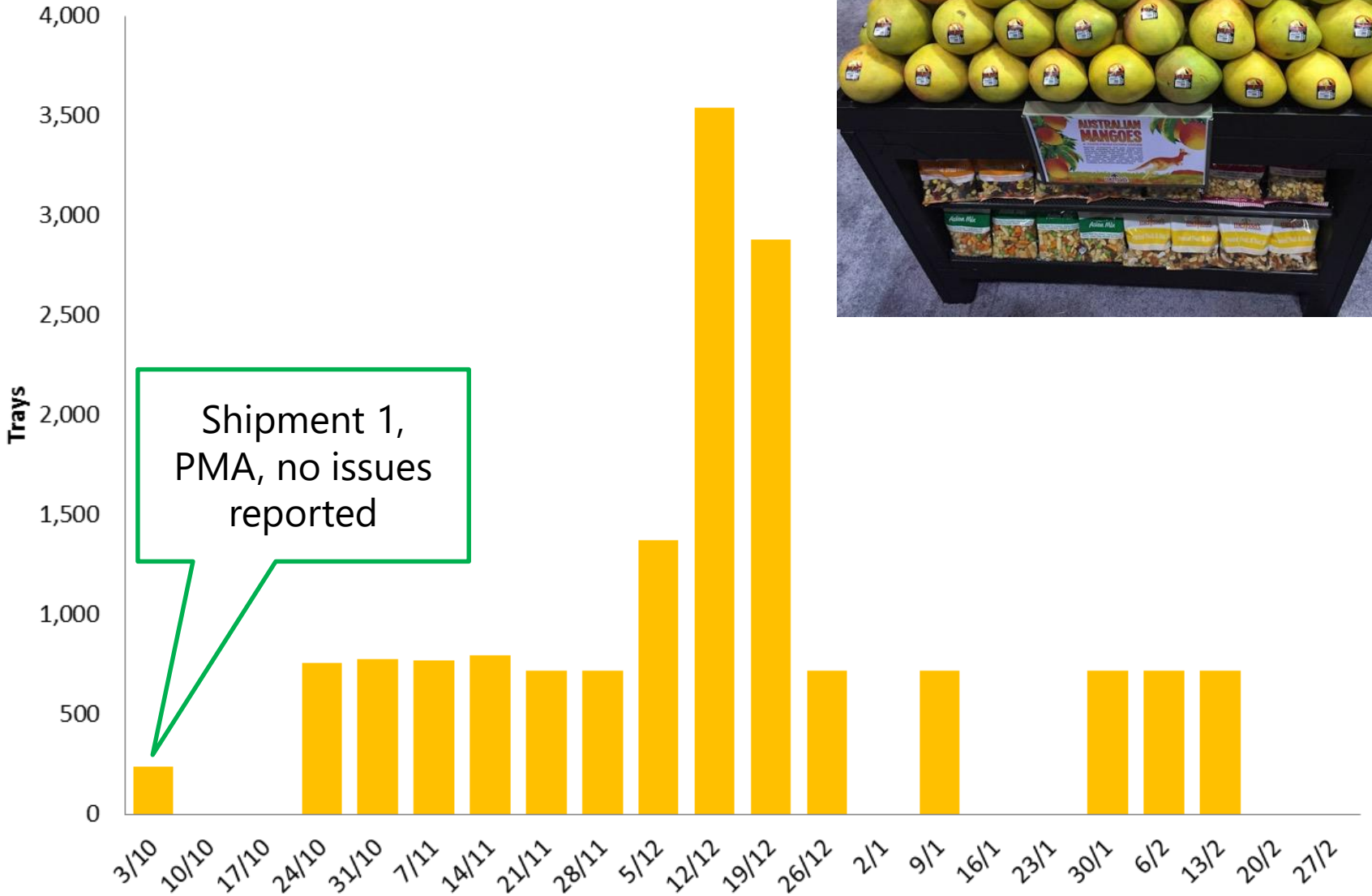
AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT



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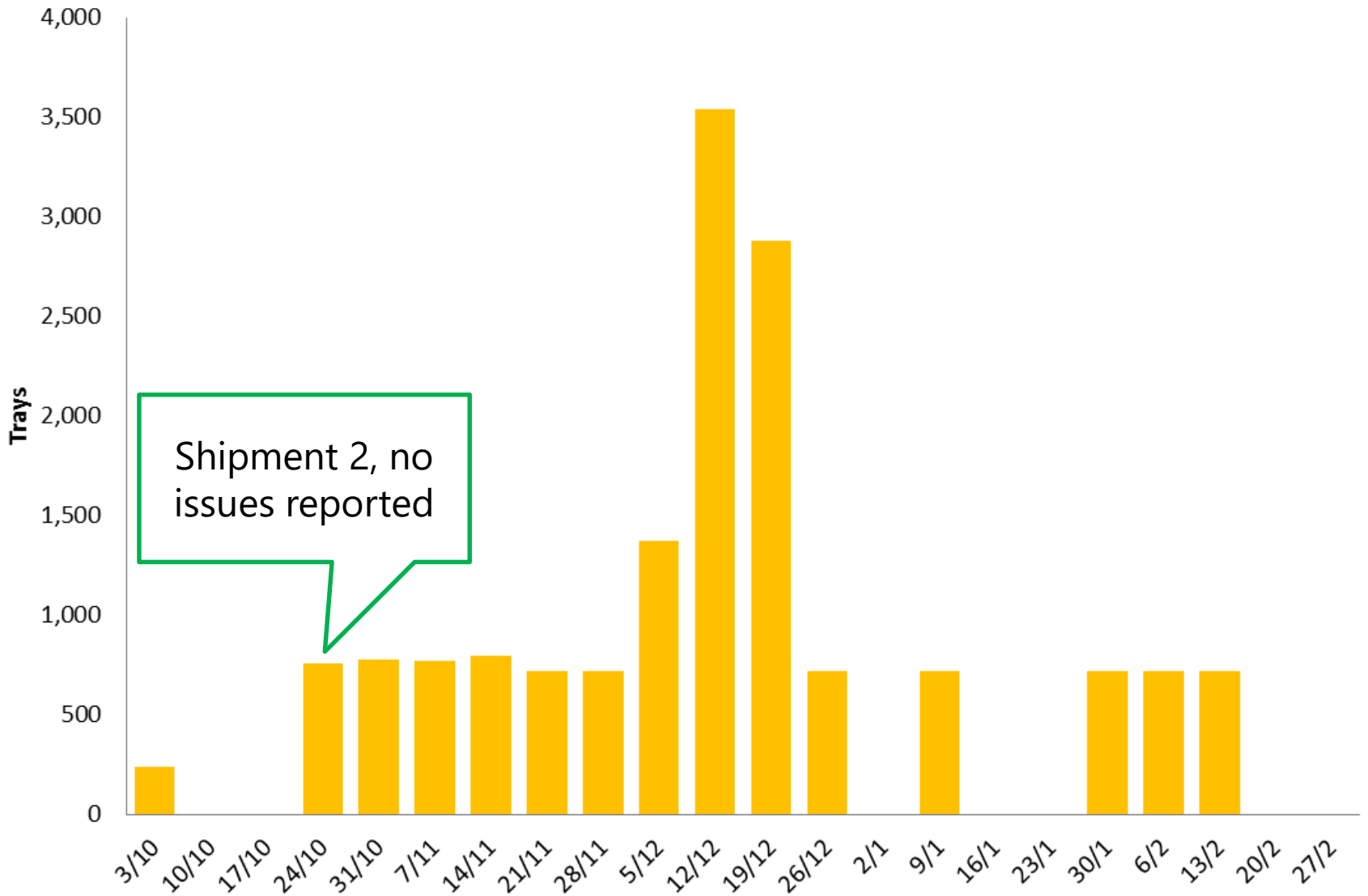
NORTHERN TERRITORY GOVERNMENT



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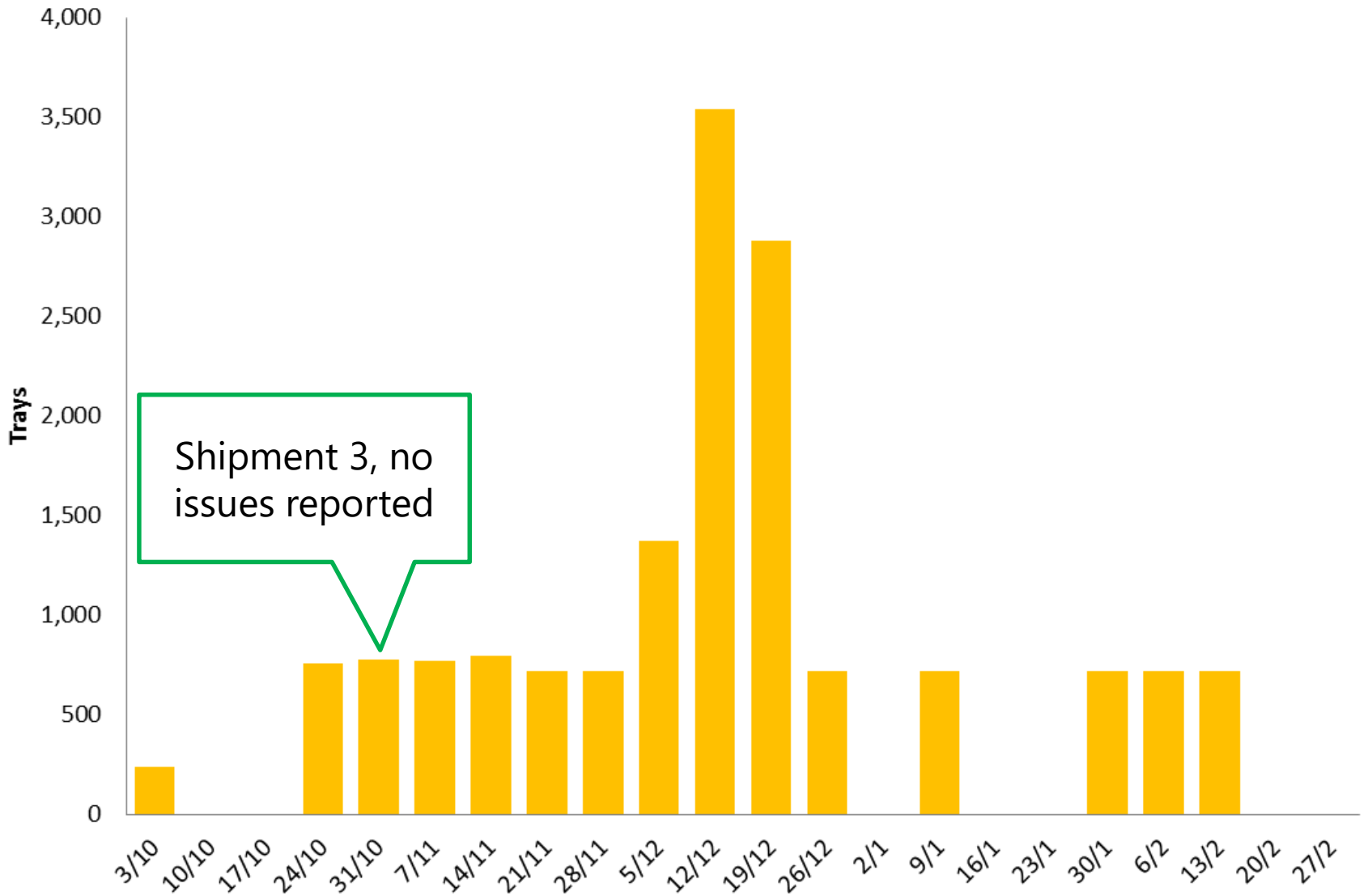
AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT



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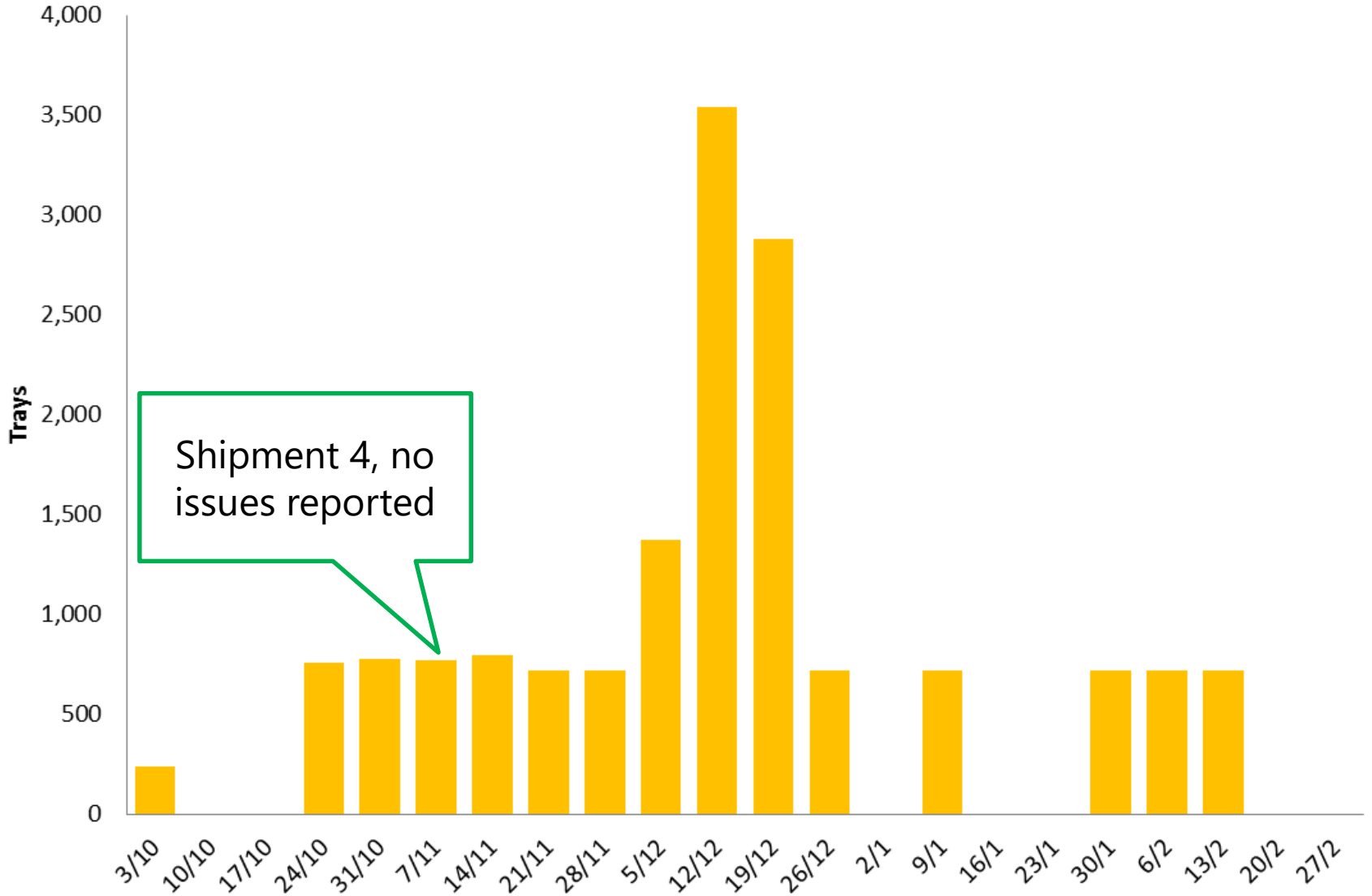
AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT



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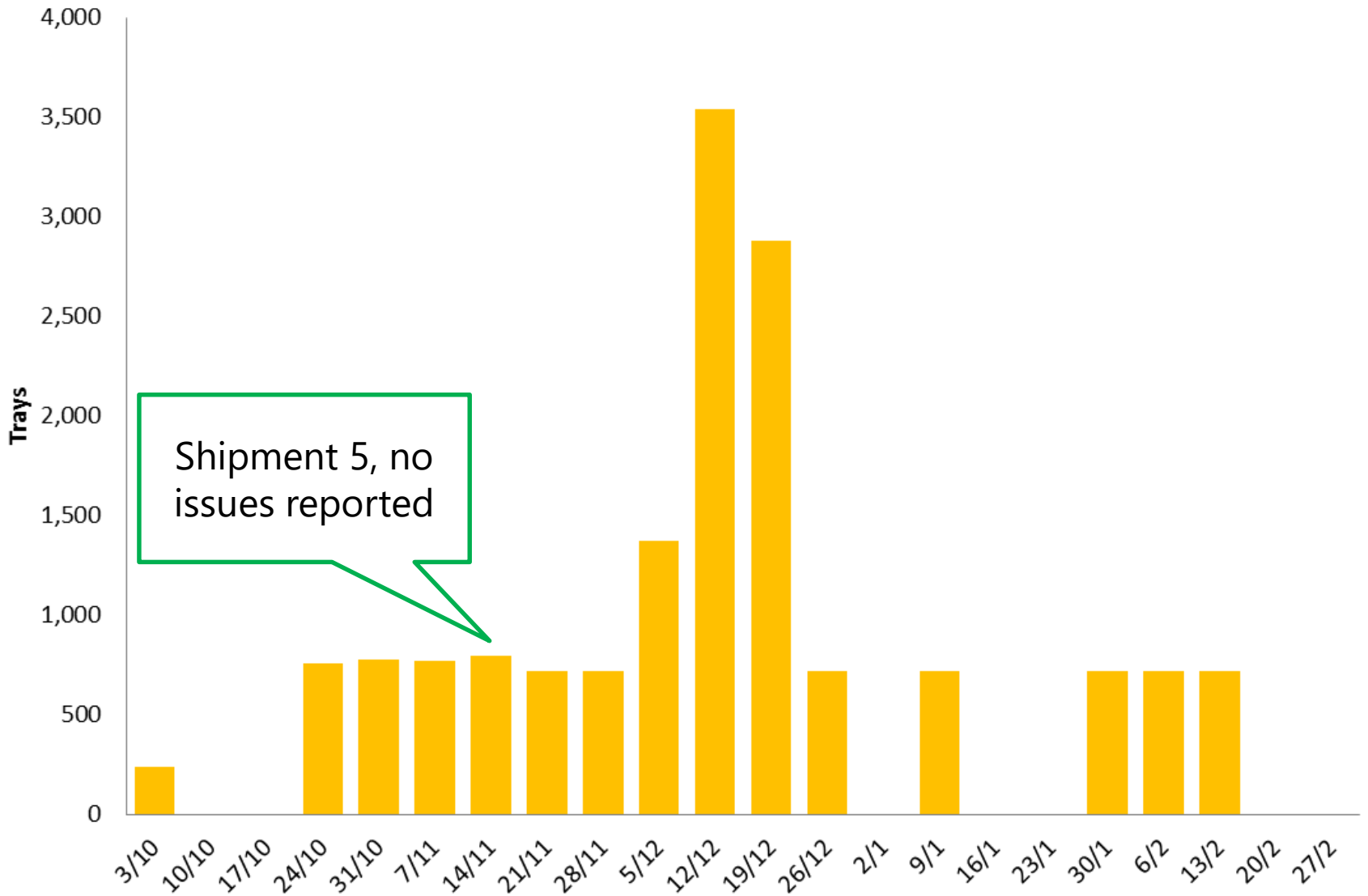
NORTHERN TERRITORY GOVERNMENT



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NORTHERN TERRITORY GOVERNMENT

Trays

Shipment 5 fruit, about 22 days from packing

0
500
1,000
1,500
2,000

3/10
10/10
17/10
24/10
31/10
7/11
14/11
21/11
28/11
5/12
12/12
19/12
26/12
2/1
9/1
16/1
23/1
30/1
6/2
13/2
20/2
27/2

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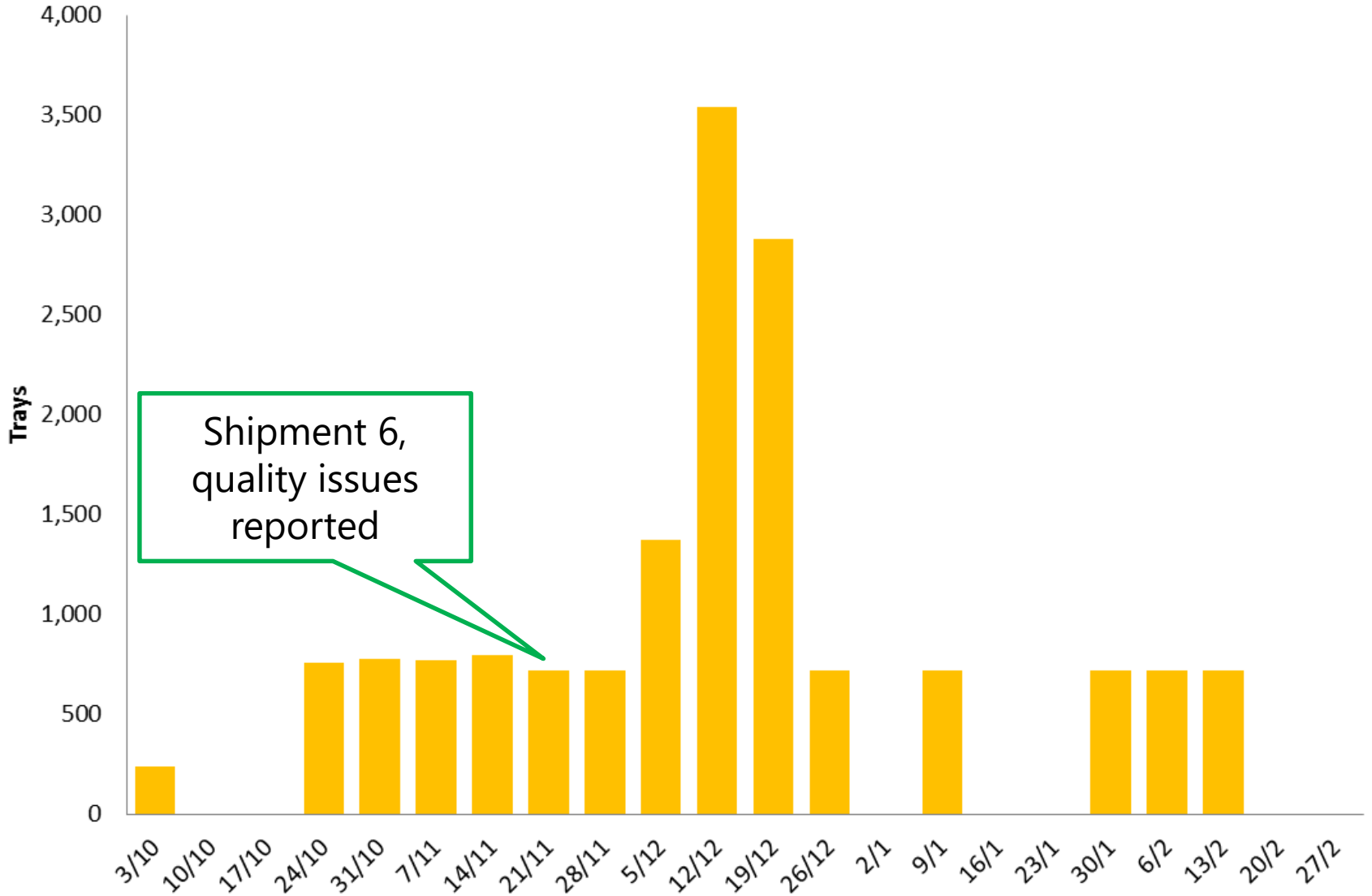

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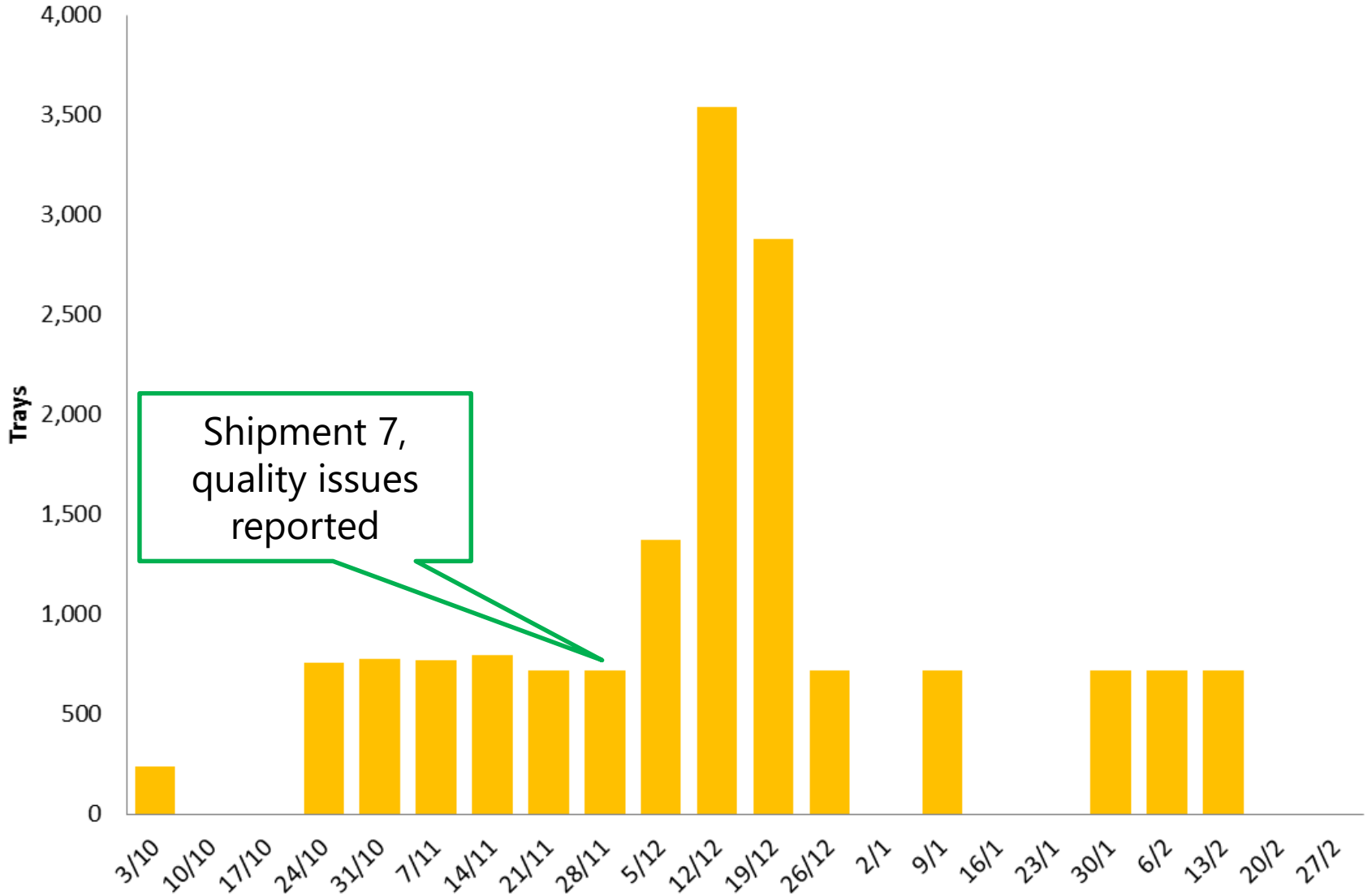

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Shipment 7, at importer, 16 days after packing

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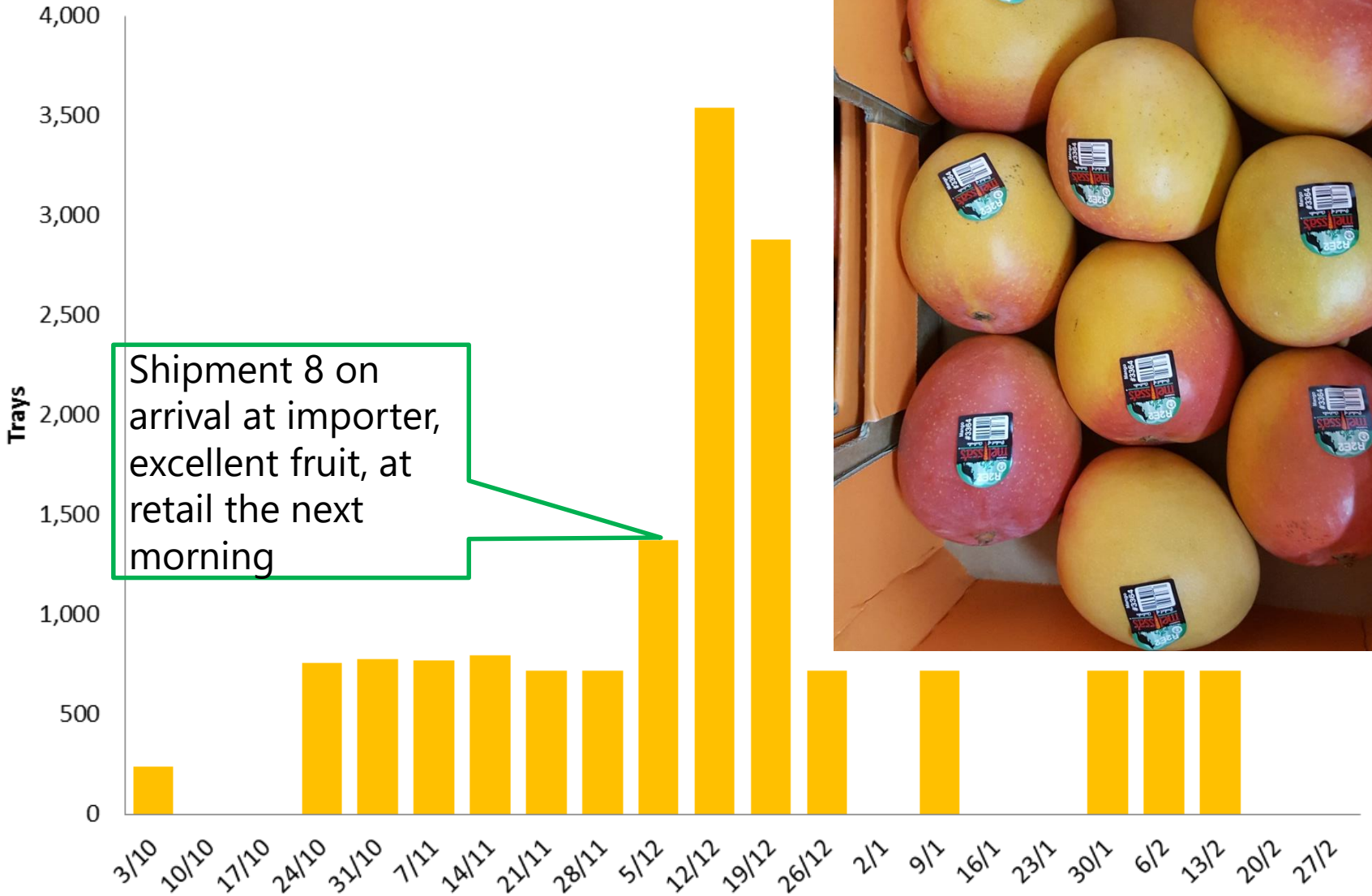

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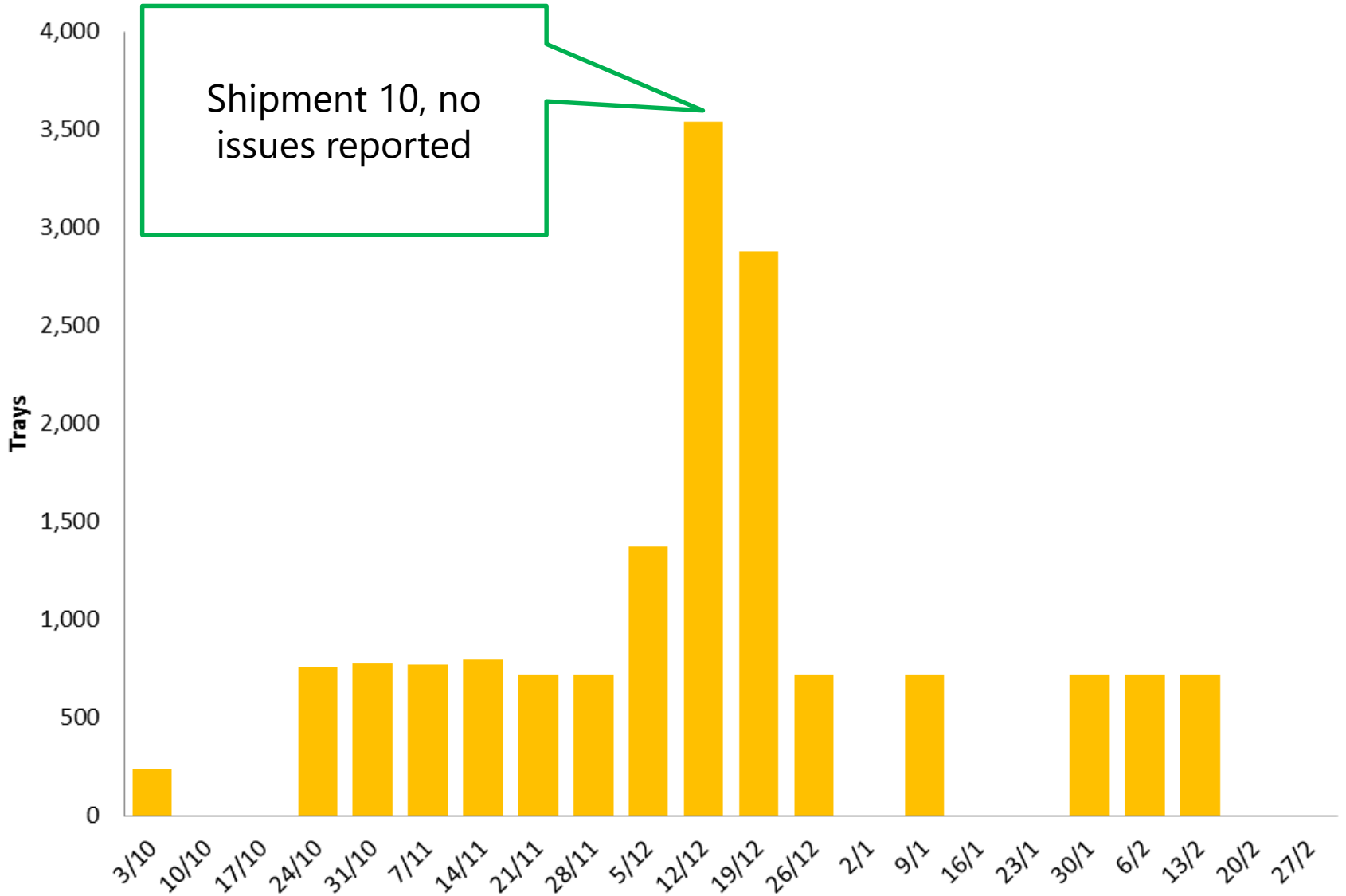

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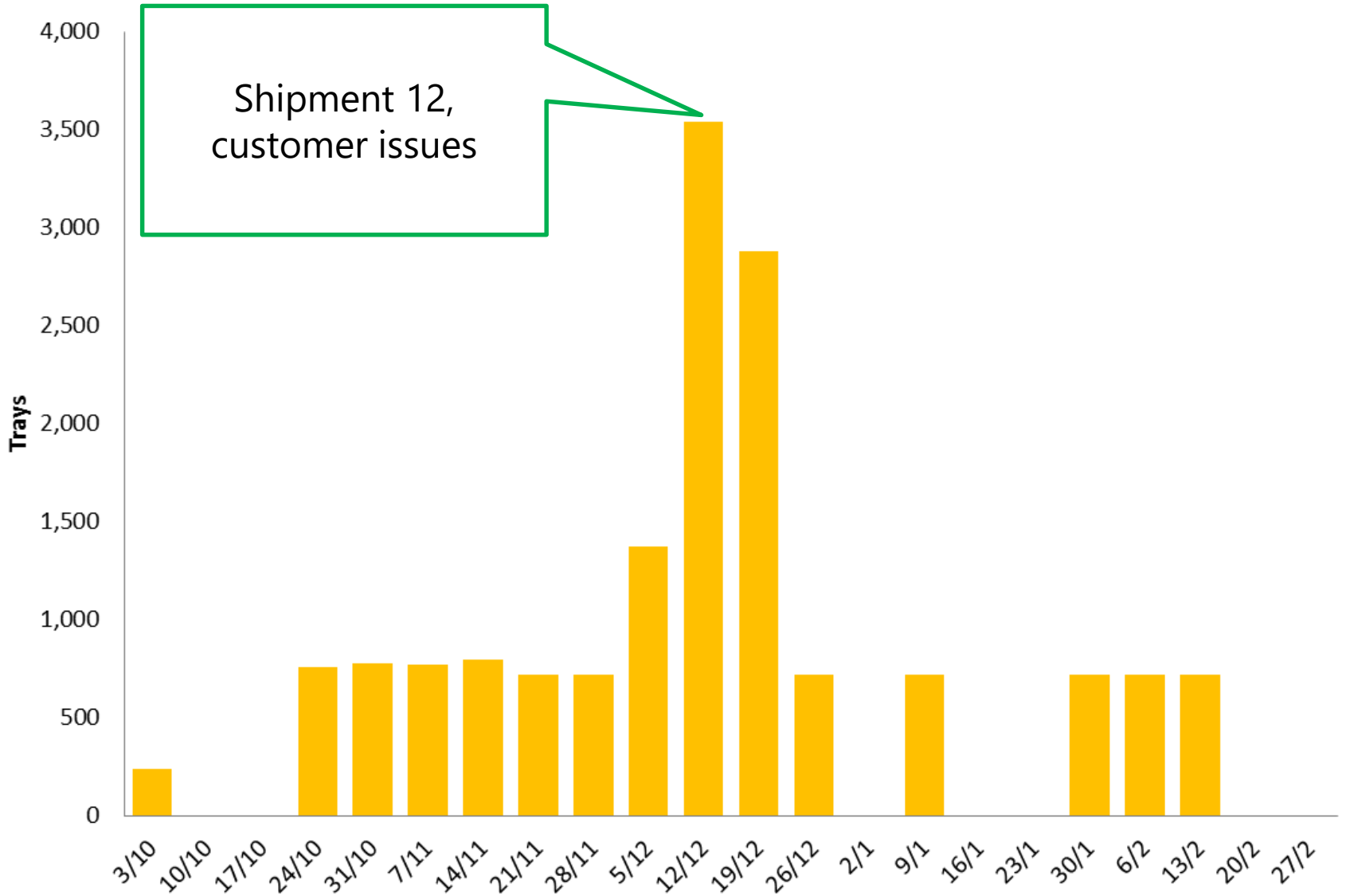

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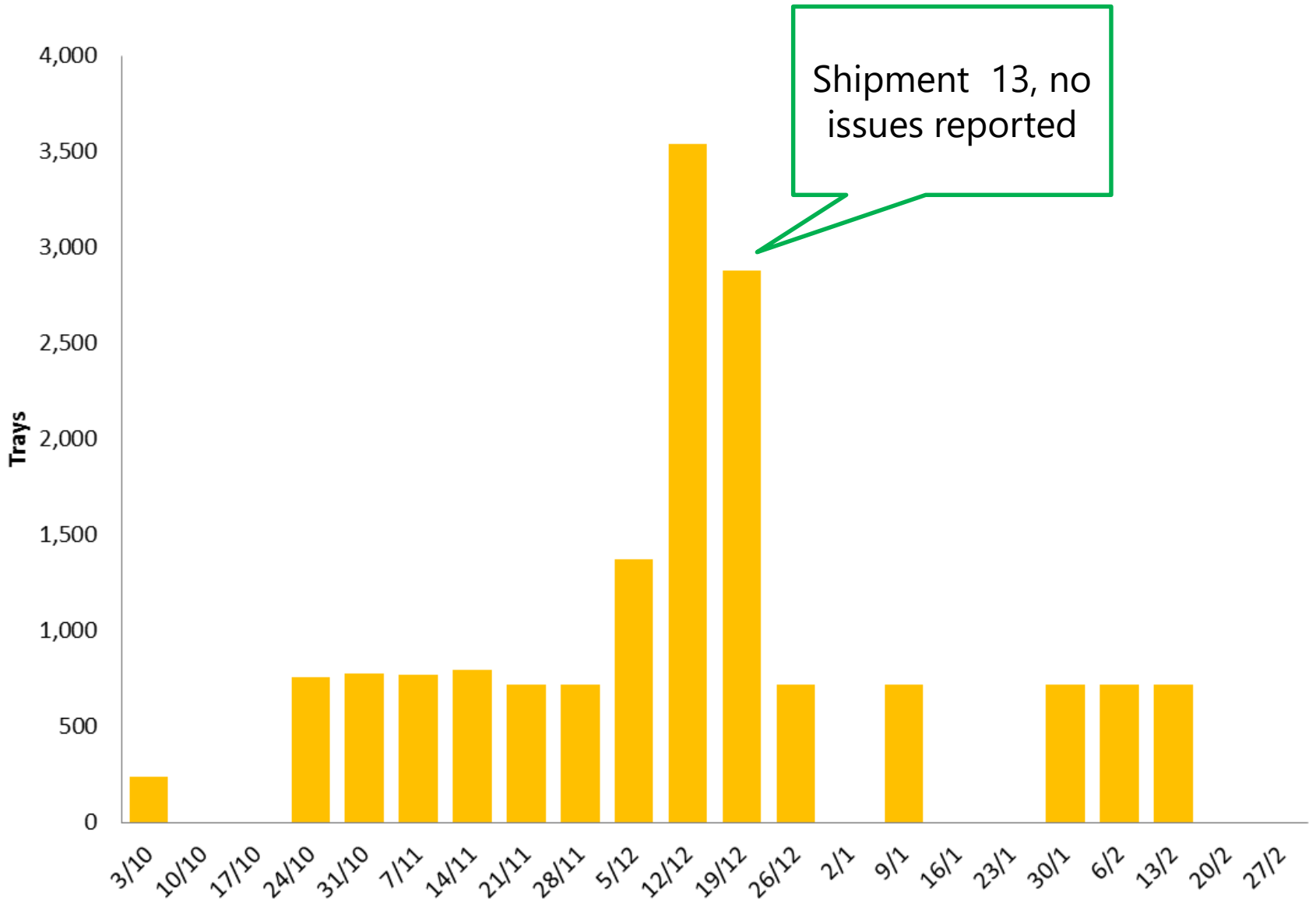

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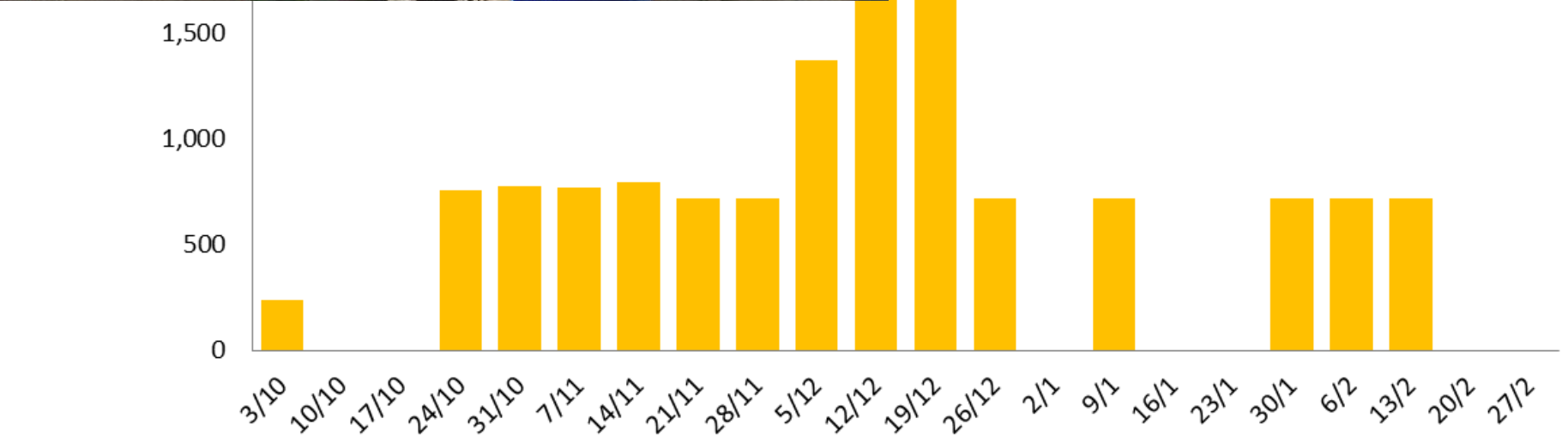
Shipment 14, quality issues reported



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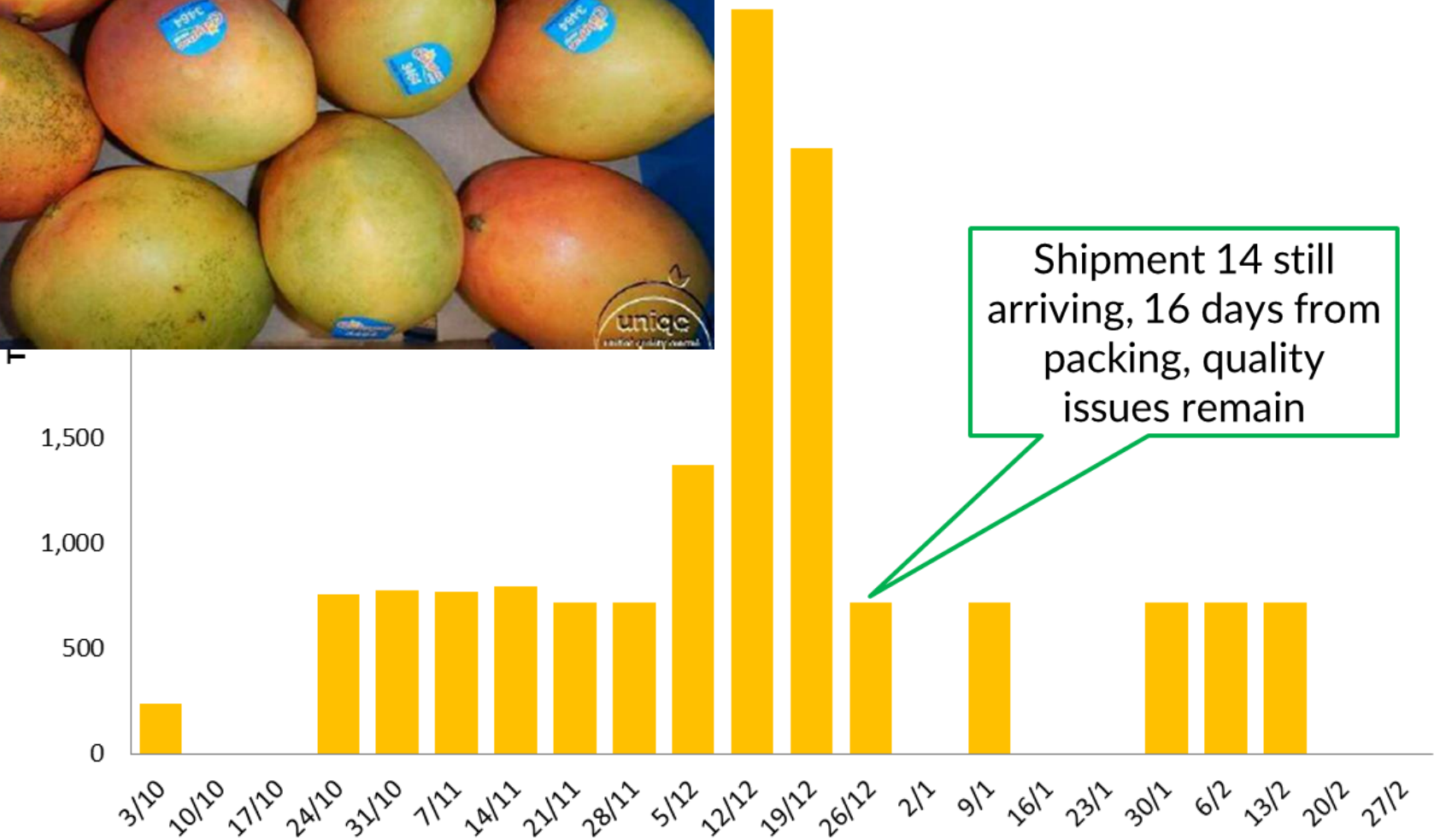

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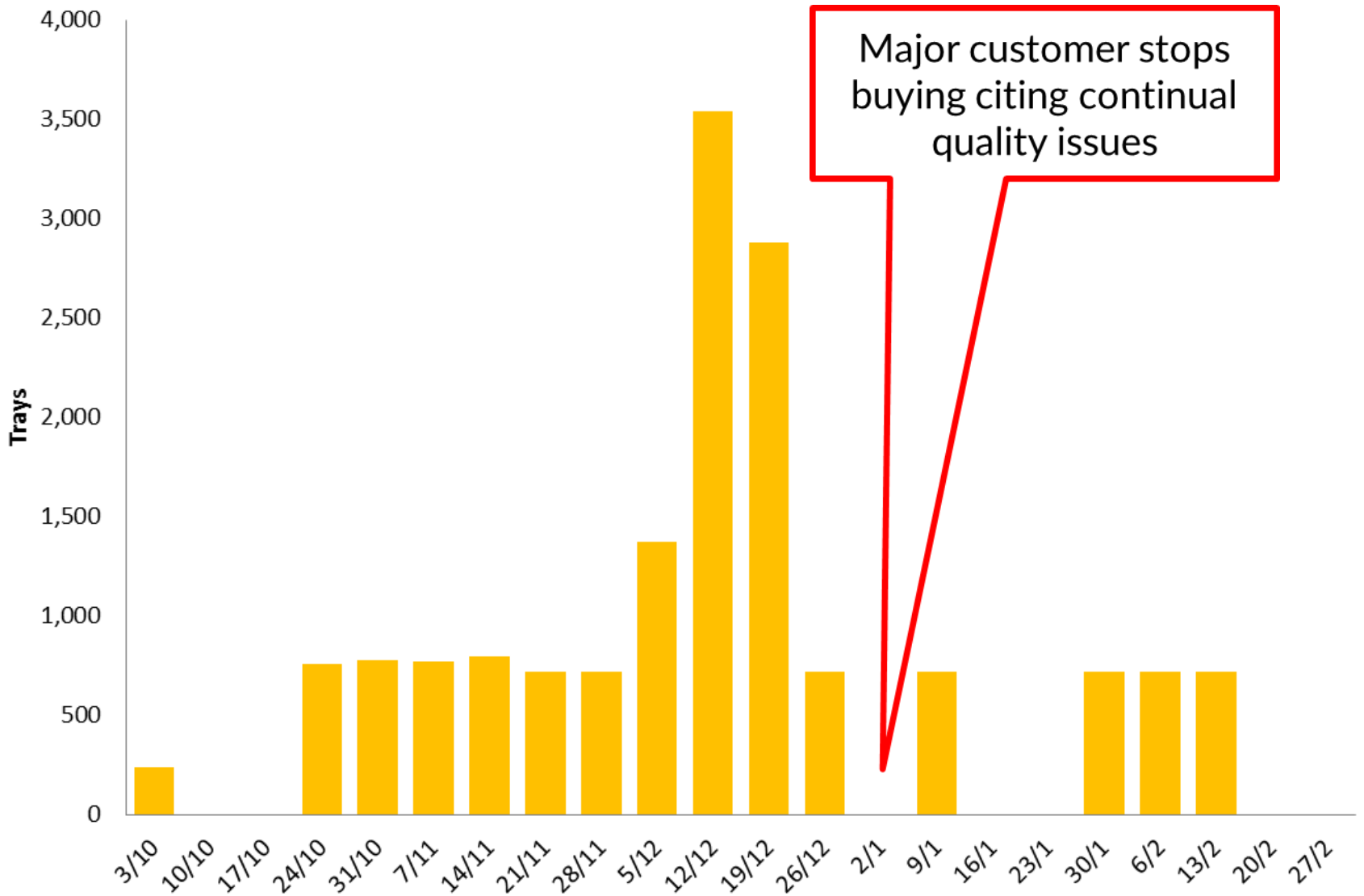

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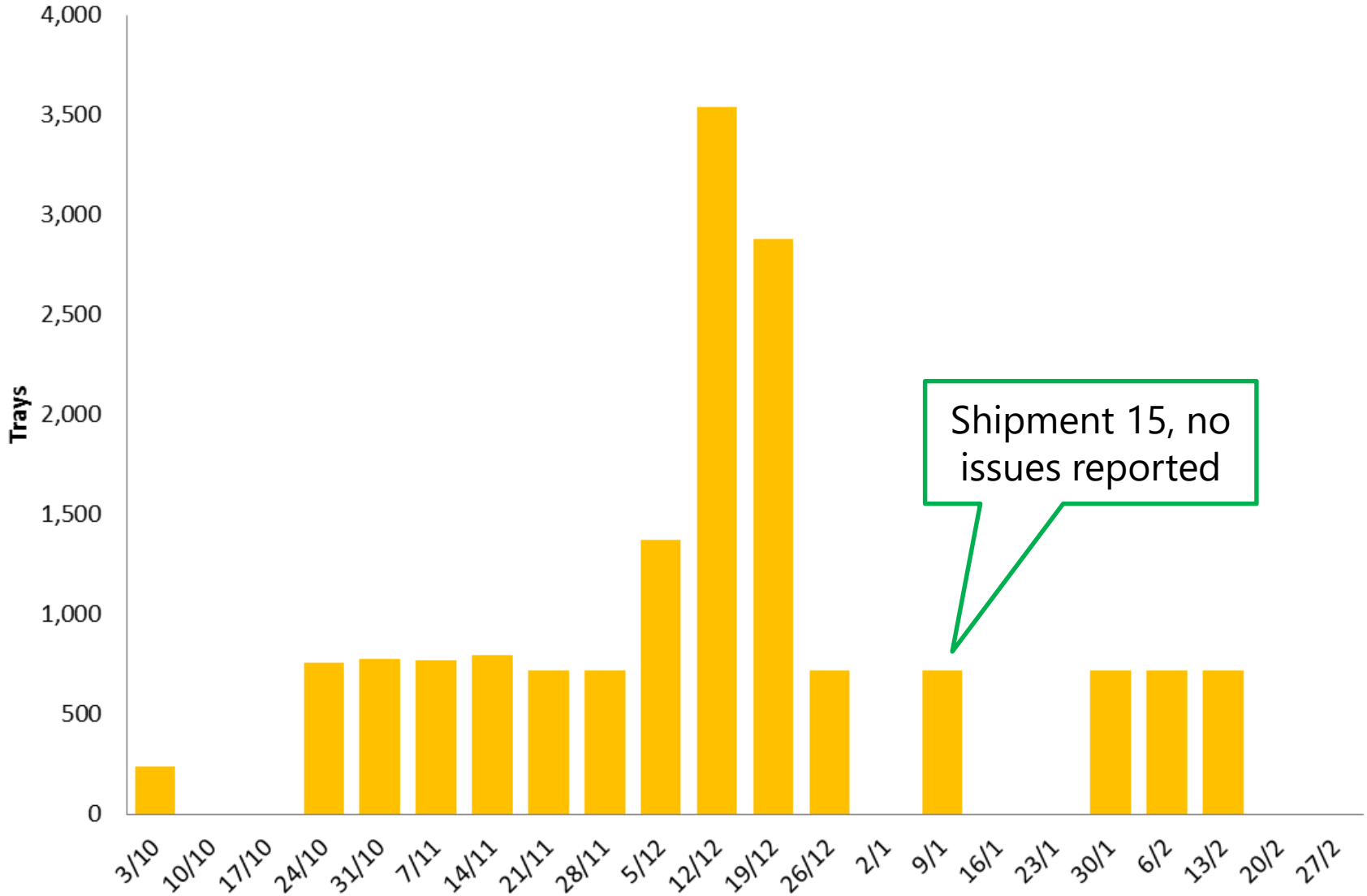

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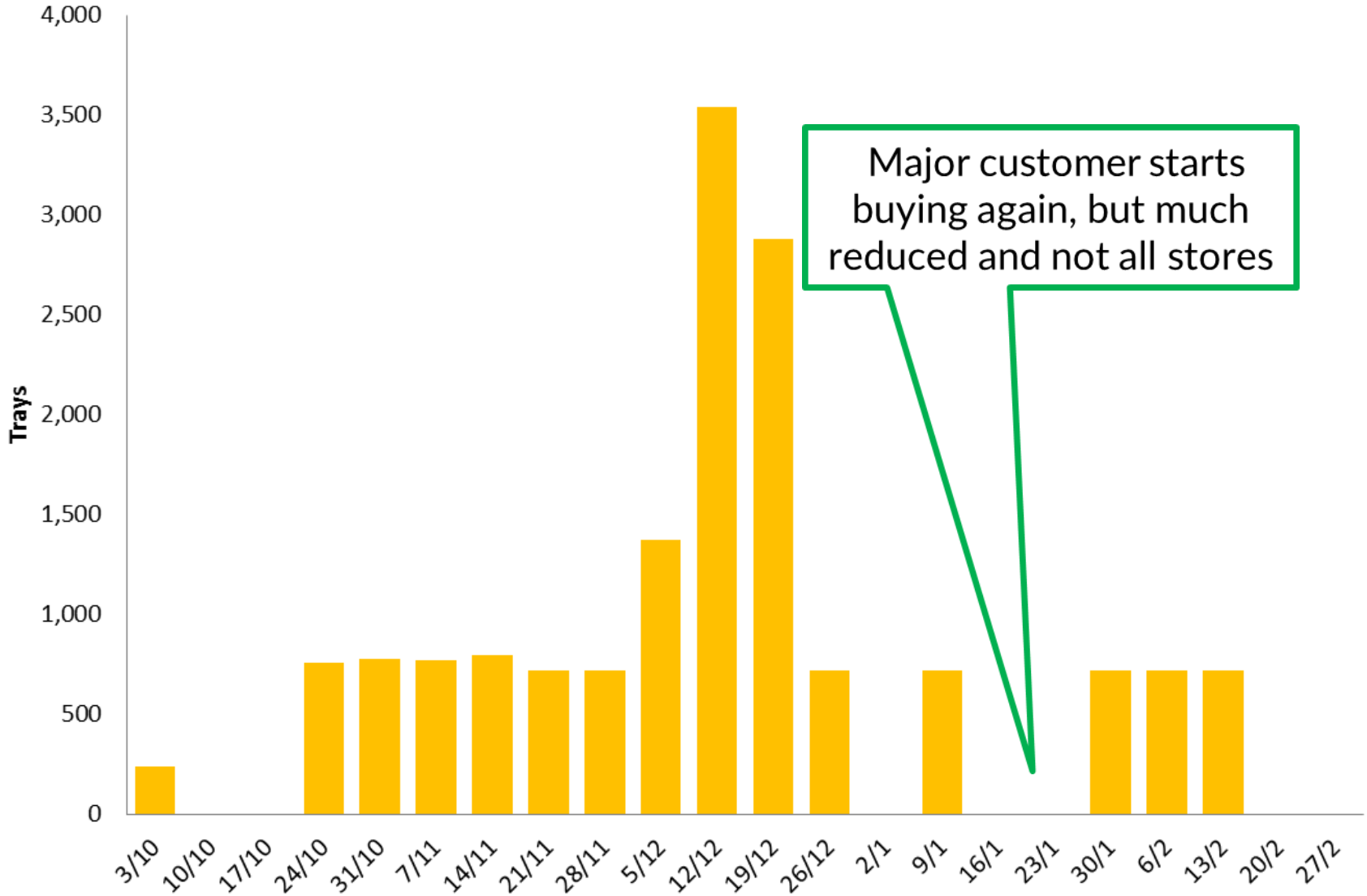

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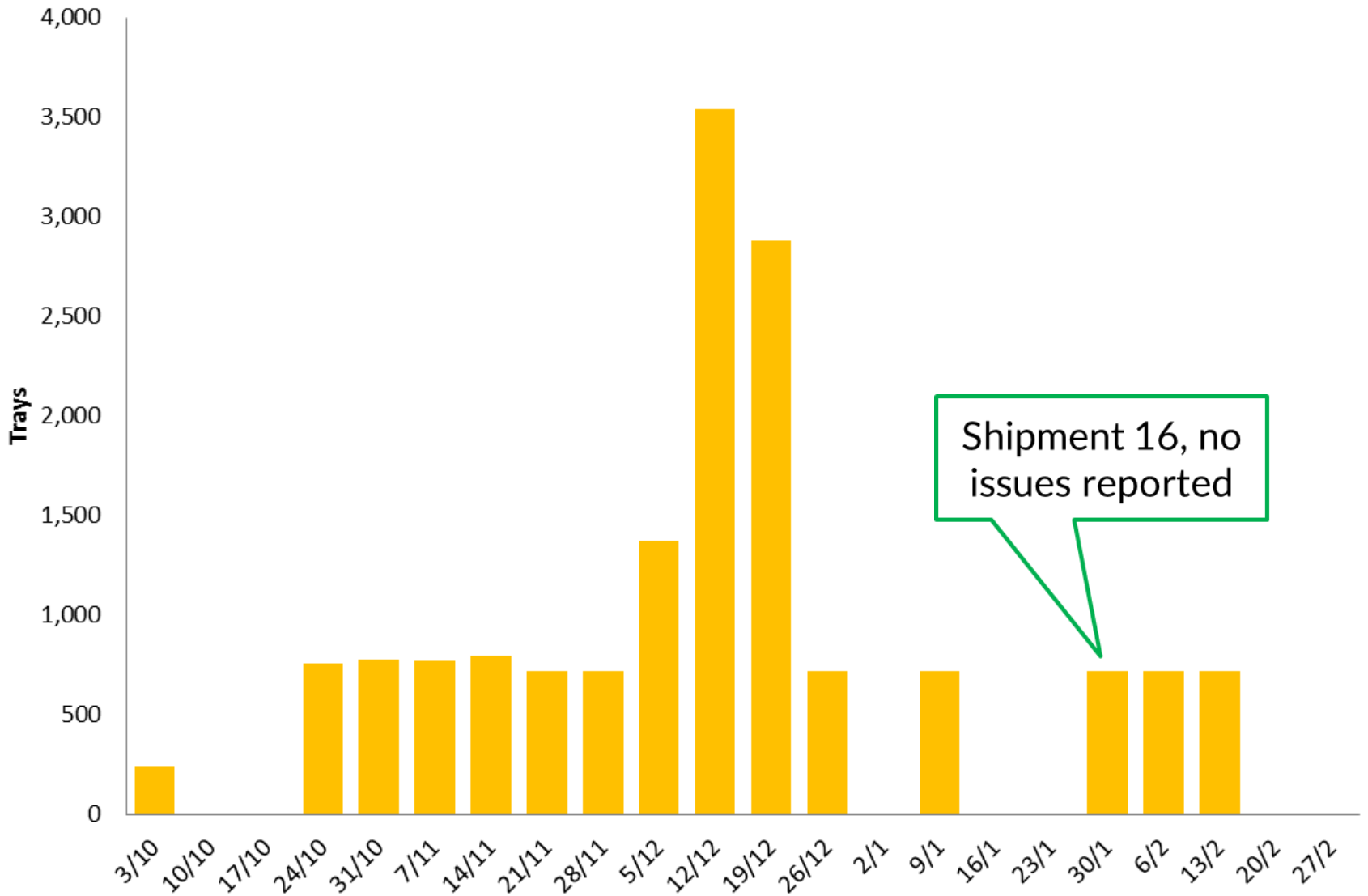

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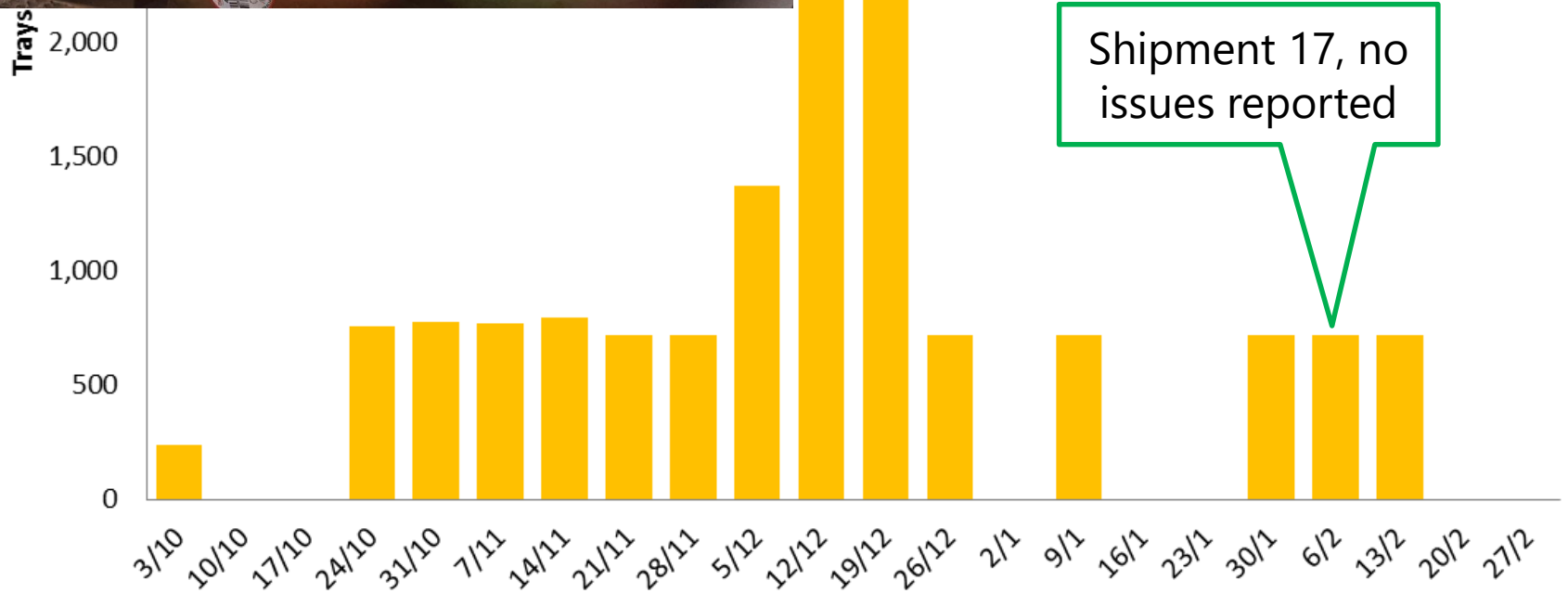

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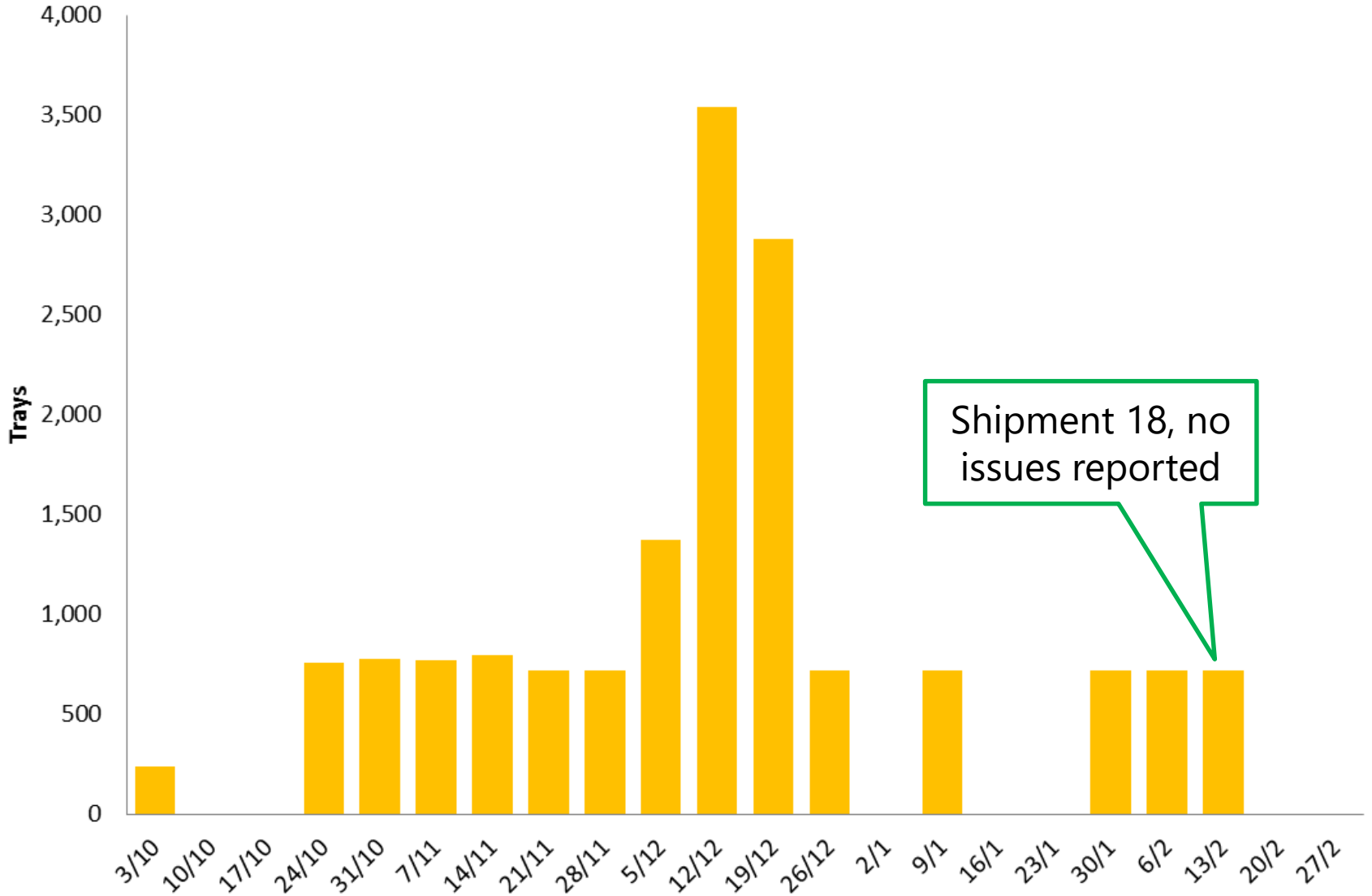

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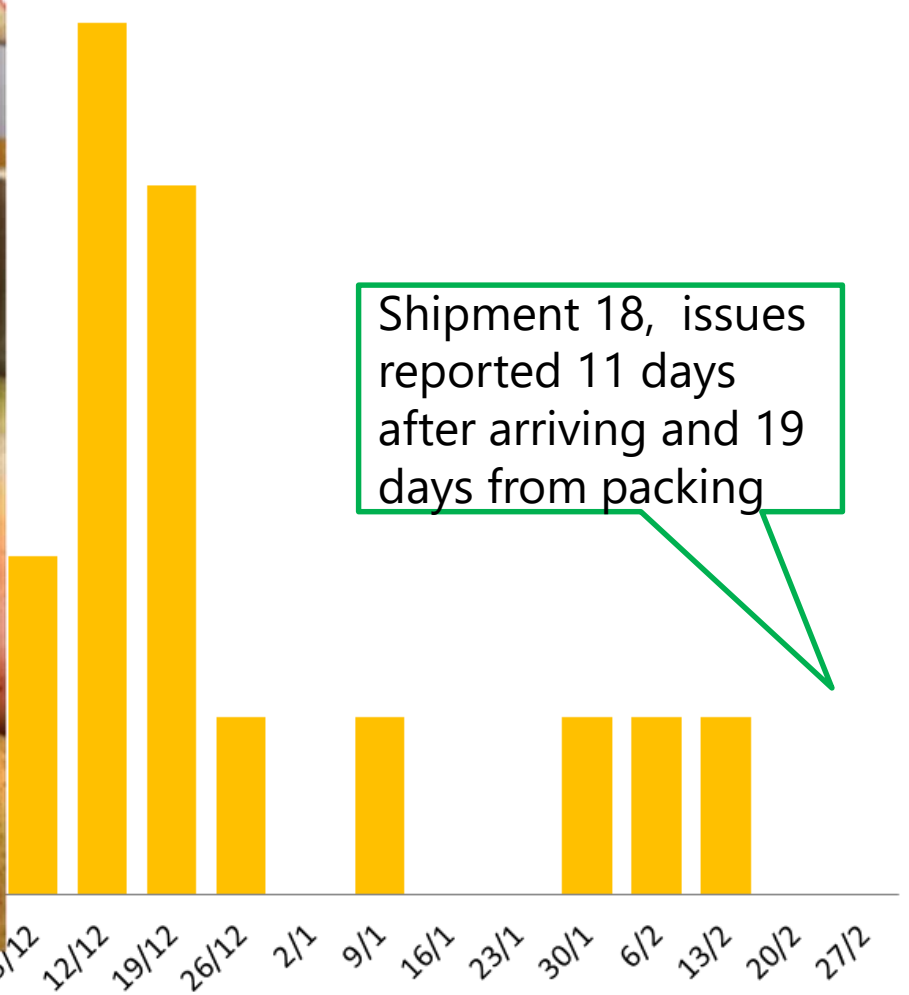

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Quality at Retail challenges

- Matching supply with demand, resulting in less old fruit
- Exporters recognising their interconnectedness
- Monitoring cool chains and managing as appropriate
- Monitoring the supply chain and reducing the time from packing to consumer purchase

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NORTHERN TERRITORY GOVERNMENT

and get back to this…..

Thank you

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AUSTRALIAN MANGOES

NORTHERN TERRITORY GOVERNMENT

Australian mangoes in the US, early December 2016

Snap shot of obervations

R2E2 at retail in Los Angeles, Friday 2 December

Probably arrived in US on Wednesday 30 November, which makes them shipment #7 packed on 21 November and 13 days old (add a day for the dateline). Close to perfect in appearance. 7 count (≈750 grms), retailing for $6.99 / fruit.

This is the display

On the floor and behind another item

Typical Central Market display in Dallas on Saturday 3 December

The display is a mix of Kensington Pride and R2E2. The R2E2 arrived in the store on Friday 2 December and was from shipment #6 packed on 14 November and 21 days old. There was about 10% of fruit with significant visual marks (see below), as opposed to the shipment #7 fruit above in a Los Angeles store. The Central Market store manager reported there were marks on arrival with some fruit. The Kensington Pride had arrived the week prior, probably shipment #5 fruit packed on 9 November and therefore 26 days old. They were uniformly poor in appearance (see below), looking more like lemons or even quince

$4.98 / unit pricing, same as 2015/16 and the same for both varieties even though the R2E2 (1.3 lbs, 590 grams) were almost twice the weight of the KPs (0.79 lbs, 360 gram).

Another Central Market store display

This store had 2 displays and was probably still selling shipments #4 and #5, with the new shipment #6 in their coolroom. You can imagine the potential problem.

Same store, 2nd display, only Kensington Pride

R2E2 apperance of shipment #6

21 days from harvest, extreme example of damage, about 10% of the fruit had some significant marks

Kensington Pride display

The fruit looked more like lemons or quince and would be unattractive to most potential buyers. Fruit was soft and wrinkled (most fruit) on the outside. However the one sampled ate very nicely

with good, slightly acid flavour. This indicates it had been stored at cool temperature to maintain the flesh condition.

Mixed display, all $4.98 / each

A Kensington Pride only display

Note the marked fruit which was ripe and soft

Australian mangoes in the US, early December 2016

Snap shot of obervations #2

R2E2 at retail in Los Angeles, Friday 2 December

Probably arrived in US on Wednesday 30 November, which makes them shipment #7 packed on 21 November and 13 days old. Close to perfect in appearance. 7 count (≈750 grms), retailing for $6.99 / fruit.

Same fruit, 7 days later and now 20 days from harvest

Some marks becoming evident but fruit still firm and attractive

Typical Central Market displays in various Dallas stores on Thursday 8 December


MEXICO
$1.98
EACH
PLU# 4260
AUSTRALIA
$4.98
EACH
PLU 6124


ORGANIC
TROPICAL Fruits
COLD = FRESH
LEMON
manbulloo

The displays were typically is a mix of Kensington Pride and R2E2. The R2E2s arrived in the stores on Friday 2 December and was from shipment #6 packed on 15 November and 26 days old at the time of observation. There was about 10% of fruit with significant visual marks, 10% with no significant marks and 80% with moderate marks. The Kensington Pride had arrived the week prior, probably shipment #5 fruit packed on 9 November and therefore 31 days old. They were uniformly poor in appearance with soft skin. However the taste was attractive and a store manager advised that a customer had brought 20 in one purchase (US$100) the day before.

Appearance issues

Examples of the visual marks and out of specification appearance


naturally ripened


Mango
#3364

The major causes of this poor appearance is being considered. Possible explanations are the old age of the fruit, low temperature/s at some point in the distribution chain, the treatment, other factors or a combination of factors.

8 December 2016

Australian mangoes in the US, early December 2016

Snap shot of observations #3

R2E2 at retail in Los Angeles, Friday 9 December

This fruit arrived in US on Thursday 8 December, shipment #8. It was delivered to the importer's DC at 1.00am on 9 December (there is considerable freight congestion and consequent delays at LAX, this was reported in year 1 and continues) and the fruit was on retail displays by 10am the same day, ready for sampling by the importer's merchandising crew the next day (Saturday) if there was any fruit left!

Consumers were buying off the display, $6.99 each, 9 and 10 count fruit, probably as good quality as commerically achieiveable and on display as fast as possible.

Same display, different angle

Same fruit, different store

Again, attractive looking, great tasting fruit. One consumer we spoke with brought two, having brought one the day before which they greatly enjoyed.

Same display in a Los Angeles store, other angle. It is right next to the checkout,

Appearance issues

While shipment #8 is fresh and looking great, there was still fruit from shipment #7 on the shelves in other Los Angles stores, and some of it didn't look good. Price of $5.99.

As a comparsion, this is #7 at another Los Angeles store on 8 December and it looked acceptable but obviously not as fresh as #8.

This indicates there can be considerable variation in marks and other poor appearance within a shipment.

This is other reject fruit from shipment #7, in the importer's DC on 9 December.

This fruit have never left the importer's DC, was held at 55°F and was 20 days from harvest, not excessively old. Ruling out old age of the fruit and low temperature/s at some point in the Australian distribution chain, the treatment and other stress factors or combinations of factors may be involved.

9 December 2016