Hort Innovation

Final Report

Table Grape Supply Chain

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Project code:

TG17002

Project:

Table Grape Supply Chain TG17002

Disclaimer:

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Content

Summary

The objective of this project was to increase the consumer acceptability, demand and consumption of Australian table grapes.

Table grape consumer purchasing behaviour research carried out in 2017, highlighted the need to improve consumer acceptability of Australian table grapes. The research showed that 25% of table grape buying households delayed their purchasing until the end of the early season (March). In addition, 33% of black table grape buyers stopped purchasing after December. Research has also shown that after a negative eating experience, consumers will:

- Delay purchase for approximately six weeks
- Take another two to three purchases before loyalty is restored to the original level

Because of the short table grape season, negative eating experiences that result in delayed repurchasing have an enormous impact on Table Grape demand, sales and price.

The project methodology was specifically designed to meet the objective of increasing the consumer acceptability of table grapes at retail right from the start of the season. This project focused on the public varieties; Crimson Seedless, Flame Seedless, Menindee Seedless, Red Globe, and Thompson Seedless.

The project was led by Mark Loeffen of Delytics Ltd, who sub-contracted Rudge Produce Systems Pty Ltd to collect and measure the fruit from farms, retailers and exporters. Key project team members included Jeff Scott, CEO of the Australian Table Grape Association (ATGA) who led grower engagement, and Tristan Kitchener of Kitchener Partners who led supermarket engagement. The collective team managed engagement with packers and suppliers.

The methodology included on-vineyard, retail and export monitoring, with results published online within 24 hours of collection for real-time feedback to the entire table grape supply chain.

An industry Stakeholder Working Group (SWG) was formed with participants including grower, supplier and supermarket representatives. The SWG met at Hort Innovation in Sydney and agreed on:

- A minimum consumer acceptability of 80% at retail for the 2019/20 season and beyond
- A minimum maturity standard of 80% of fruit in a sample with a Brix ≥ 16° for Crimson, Flame, Red Globe and Thompson
- A minimum maturity standard of 80% of fruit in a sample with a Brix ≥ 15.5° for Menindee.

The new Minimum Maturity Standards were formally announced by the ATGA on 2 October 2019. The supermarkets requested more time to implement the standards, so it was agreed that the 2019/20 season was to be interim, with the new standards to be fully adopted by all supply chain participants in the 2020/21 season.

Retail monitoring carried out over the 2019/20 season recorded the highest consumer acceptability in five years with an overall consumer acceptability of 79%. This was a 20 percentage point increase from the 2016/17 season, the year before this project started.

This project was strongly aligned to the Table Grape Strategic Investment Plan, notably Outcomes 1 & 2, with Outcome 2 seeking increased demand and price for Australian table grapes supported by improvements in product quality.

Evidence of increased demand and increased price came directly from the latest Nielsen Harvest to Home report, which showed an average 10.1% increase in volume and an associated 5% increase in price prior to Covid-19. After Covid-19, table grape sales volume dropped by only 0.4%, compared to an all fruit volume drop of 3.3%. Over the same period, dollar sales increased by 5.7%, which represented a 10% increase in price.

It is recommended that a follow-on project be set up to ensure full adoption in future, with the aim of further improving consumer acceptability, demand and price.

Public summary

This three-year project achieved its aim to increase the demand and consumption of Australian table grapes by improving consumer acceptability at retail by 10 percentage points and boosting both consumer demand and price.

Retail monitoring carried out over the 2019/20 season recorded the highest consumer acceptability in five years with an overall consumer acceptability of 79%. This was a 20 percentage point increase from the 2016/17 season, the year before this project started.

The retail maturity monitoring data was supported by the March 2020 Nielsen Harvest to Home analysis, which showed strong evidence of increased consumer demand and prices. The Nielsen Harvest to Home report recorded an average 10.1% increase in volume for Australian table grapes and an associated 5% increase in price prior to Covid-19. Following Covid-19, table grape sales volume dropped by only 0.4%, compared to an all fruit volume drop of 3.3%. Over the same post-Covid-19 time period, dollar sales increased by 5.7%, despite a slight drop in sales volume, marking a 10% increase in price.

The key focus of the project was to ensure that consumers have a good eating experience every time they purchase Australian table grapes, right from the start of the season.

The increased consumer demand achieved by this project supports previous research showing that once consumers are confident they will get a good eating experience, they will be encouraged to repeat purchase.

This project delivered on outcomes one and two of the Table Grape Strategic Investment Plan, with outcome two seeking increased demand and price for Australian table grapes supported by improvements in product quality.

Mark Loeffen of Delytics Ltd led this project in collaboration with the Australian Table Grape Association (ATGA), Kitchener Partners, and Rudge Produce Systems Ltd.

The project focused on the public table grape varieties: Crimson Seedless, Flame Seedless, Menindee Seedless, Red Globe, and Thompson Seedless. The methodology included on-vineyard, retail and export maturity monitoring, with results published online within 24 hours of collection for real-time feedback to the entire table grape supply chain including growers, suppliers and supermarkets.

The project team worked with key industry stakeholders to agree on a minimum retail acceptability of 80% and the minimum maturity standards required to deliver that. Analysis of the maturity monitoring data collected during the first two seasons of the project provided science-based evidence to determine the maturity standards needed to ensure the majority of Australian table grapes will be liked by consumers.

The new minimum maturity standards were formally announced by the ATGA on 2 October 2019. The new standards were partially adopted in the 2019/20 season to allow time to implement the standards and will be fully adopted by all supply chain participants in the 2020/21 season.

Keywords

Table Grapes, Minimum Maturity Standards, Maturity Monitoring, Increased Demand and Price, Consumer Acceptability.

Introduction

This project builds on work in previous projects, with the objective of increasing the consumer acceptability of table grapes at retail throughout the season. This is especially important for early season fruit, which has traditionally had quality issues due to the harvest of immature fruit. The practice of marketing immature fruit to take advantage of higher prices early in the season damages the industry. Retailers are torn between the desire to satisfy consumer excitement for new season fruit and the higher short-term prices that normally provides, and the longer-term purchasing damage caused by people having a negative eating experience from immature fruit.

Research into table grape consumer purchasing behaviour in 2017 showed that 25% of table grape buying households delayed their purchasing until the end of the early season (March). In addition, 33% of black table grape buyers stopped purchasing after December. The 2017 results supported previous research showing that after a negative eating experience, consumers will:

- Delay purchase for approximately six weeks
- Take another two to three purchases before loyalty is restored to original level

Because of the short table grape season, negative eating experiences that result in delayed repurchasing have an enormous impact on Table Grape demand, sales and price.

Consistently delivering a quality eating experience is critical for table grapes due to the competition faced during the summer from other seasonal fruits. It is also critical for table grapes to provide an optimum eating experience to ensure it remains competitive against other snacking competitors available in the supermarket or other outlets.

The significance for the industry is the increase in demand, repeat purchases and price that derive from increased consumer acceptability, right from the start of the season. Our models of consumer purchasing behaviour show that a 10% increase in consumer acceptability, can deliver up to a 24% increase in demand. Similar work that Delytics has done with the Australian citrus industry resulted in them reporting that, "*One of the major supermarket chains is of the firm view that strong sales, repeat purchases and category growth are directly linked to the development and implementation of the Australian Citrus Quality Standards*." Their retail acceptability was over 90% in four out of the last five seasons. In the two seasons prior to this project, the average retail acceptability for table grapes was 65%.

Methodology

The project methodology was specifically designed to meet the objective of increasing the consumer acceptability of table grapes at retail right from the start of the season. This project focused on the public varieties; Crimson Seedless, Flame Seedless, Menindee Seedless, Red Globe, and Thompson Seedless.

The project was led by Mark Loeffen of Delytics Ltd, who sub-contracted Rudge Produce Systems Pty Ltd to collect and measure the fruit from farms, retailers and exporters. Associated key project team members were Jeff Scott, CEO of the Australian Table Grape Association (ATGA) who led the engagement with growers, and Tristan Kitchener of Kitchener Partners who led the engagement with the supermarkets. The collective team managed the engagement with packers and suppliers.

A retail sampling and fruit measurement programme was set up to quantify table grape maturity at retail. The Project Reference Group (PRG) proposed to focus on the three largest supermarket chains, namely Woolworth, Coles and ALDI. Sampling started as soon as Australian-grown grapes were available, which was early August in 2019. Mystery shoppers visited a store from each of these retailers each week and purchased a bunch bag of white, red and black table grapes as available. One of the major retailers shared the data they collected at their own cost with the project, which significantly increased the amount of retail data analysed and reported.

Bunch bags were taken to a laboratory where 10 to 20 grapes were sampled. The sampling strategy was finalised after the team had measured the 3D position and maturity of each grape in many bunches in the public varieties.

The Brix, acid, size and consumer liking were measured individually for every grape (Obenland et. al., 2009). The team used conductivity-based acid meters specifically designed for table grapes that allowed the acid of a single berry to be measured. These proved to be much quicker and safer than manual titration and were well correlated with titration. A garlic crusher was used to extract the juice from an individual grape berry, which gave very consistent results. Our experiments showed that when using fingers to extract juice, the Brix reading varied according to the amount of pressure applied to the berry. Using a garlic crusher removed such inconsistencies.

The negative eating experiences consumers have with table grapes are typically caused by the harvest and sale of immature fruit. Fruit maturity on-vineyard was monitored to help the industry understand the timing of harvest. The PRG proposed that only fruit grown in Emerald and Sunraysia should be monitored. In Emerald one block of Flame and one of Menindee were monitored on each of three properties. An additional block of ‘Sugrathirteen’ (MIDNIGHT BEAUTY® Brand grapes) was monitored as these were the first black grapes to enter the market.

Monitoring in Sunraysia typically started in mid-November and continued until mid-March. Weekly samples were collected from two blocks each of Crimson Seedless, Flame Seedless, Menindee Seedless, Red Globe, and Thompson Seedless spread across several properties. A block of ‘Sugrathirteen’ (MIDNIGHT BEAUTY® Brand grapes) was also monitored. The Costa Group also monitored several blocks based on our sampling and measurement protocol and supplied the data to the project at no cost. They monitored two blocks each of ‘Sugrathirtyfour’ (ADORA SEEDLESS® Brand grapes) and ‘Sugrathirtyfive’ (AUTUMN CRISP® Brand grapes) on separate properties, as well as one block of ‘Sugrathirteen’ (MIDNIGHT BEAUTY® Brand grapes).

All monitoring results were made available to all growers, supply chain participants and retailers 24/7 via a link to PowerPoint files containing a graphical analysis of the relevant data, including weekly summaries. This allowed the entire industry to track changes in fruit maturity at retail and on-vineyard, and compare them with the industry minimum maturity standards. Models were also fitted to the on-vineyard data (Jordan & Loeffen, 2013) to allow visualisation of potential earliest harvest dates. These models were included in the data from subsequent seasons so that comparisons could easily be made between seasons and regions.

Export fruit were also monitored. Samples were collected at an export packing facility according to the sampling protocol and sent to the laboratory in Melbourne for measurement. The fruit measurement protocol was identical to that used for the other monitoring work and the results were published online within 24 hours of receipt.

At the end of each season the data was analysed to determine the relationship between consumer liking and fruit maturity measures including Brix, Brix:Acid Ratio and BrimA (Jordan et. al., 2001). After the first season, the results were presented to key members of the ATGA. They requested that the project team collect an additional season of data with the results to be presented to representatives of the entire table grape supply chain including growers, suppliers and supermarkets to decide on new minimum maturity standards. By the end of the second season, over 13,500 grapes had been tested and tasted and their analysis formed the basis for the new minimum maturity standard recommendations.

A Stakeholder Working Group (SWG) was formed and first met on 23 October 2018 at Hort Innovation in Sydney, with a second meeting on 7th June 2019. Participants included grower, supplier and supermarket representatives. The meetings agreed on:

- A minimum consumer acceptability of 80% at retail for the 2019/20 season and beyond,
- A Minimum Maturity Standard of 80% of fruit in a sample with a Brix ≥ 16° for Crimson, Flame, Red Globe and Thompson for the 2019/20 season and beyond
- A Minimum Maturity Standard of 80% of fruit in a sample with a Brix ≥ 15.5° for Menindee for the 2019/20 season and beyond.

The new Minimum Maturity Standards were formally announced by the ATGA on 2 October 2019. The supermarkets requested more time to implement the standards, so it was agreed that the 2019/20 season was to be interim, with the new standards to be fully adopted by all supply chain participants in the 2020/21 season.

Outputs

The key deliverable from this project was a set of updated minimum maturity standards for the public table grape varieties Crimson Seedless, Flame Seedless, Menindee Seedless, Red Globe, and Thompson Seedless; designed to achieve an 80% consumer acceptability at retail.

A table grape Stakeholder Working Group (SWG) was formed to collectively develop minimum maturity standards for the table grape industry. It first met on 23 October 2018 at Hort Innovation in Sydney, with a second meeting on 7th June 2019. Participants included representatives of all three major supermarkets, key Hort Innovation staff associated with this project, representatives of all major suppliers of table grapes in Australia, ATGA CEO and immediate past chair, a representative of the Western Australia Department of Primary Industries and Regional Development, as well as Terry Rudge, Tristan Kitchener and Mark Loeffen.

The SWG agreed in the initial meeting to:

- To distinguish between 'maturity standards' and 'specifications.' The focus was to be on 'maturity standards'
- Communicate the objectives of the project to the broader supply chain, stressing the importance of improving the customer value proposition through eating quality and consistency.

The participants at the second meeting agreed:

- To a minimum consumer acceptability of 80% at retail for the 2019/20 season and beyond
- To meet this through a minimum maturity standard of 80% of fruit in a sample with a Brix ≥ 16° for Crimson, Flame, Red Globe and Thompson for the 2019/20 season and beyond

The adoption of a clearance protocol applying to all public varieties and supply chain participants was broadly agreed, although details were not finalized. (This was later shelved for the 2019/20 season). Subsequent discussions with the ATGA agreed on a minimum maturity standard of 80% of fruit in a sample with a Brix ≥ 15.5° for Menindee for the 2019/20 season and beyond.

The Stakeholder Working Group provided a platform that allowed the industry to come together and agree on a single set of minimum maturity standards that would be applied by all supply chain participants uniformly across the industry. In Western Australia (WA) the minimum maturity standards are set by regulation. However, representatives from WA attended the SWG meeting and as a result of subsequent discussions they are looking to harmonise their standards with those of the ATGA.

The new minimum maturity standards were announced by the ATGA on 2 October 2019 to coincide with the start of the 2019/20 season. Previously, the ATGA and the supermarket chains each had different maturity standards. The updated minimum maturity standards were circulated to all growers, suppliers and supermarkets. Press releases were sent out by the ATGA, Hort Innovation and Delytics after the announcement, and these were picked up by a number of media outlets.

Several articles were written for the industry magazine, *The Vine*, a quarterly publication for the Australian table grape and dried fruits industries, to update growers about the project. These included:

- Table Grape Quality Improvements Underway. *The Vine*, Volume 14, Issue 2, April – June 2018. http://www.australiangrapes.com.au/wp-content/uploads/2018/04/2018.2-April-May-June-1.pdf (pages 32-33 of the magazine and pages 34 and 35 of the pdf file).
- Science-Based Maturity Standards on Track for Australian Table Grapes. *The Vine*, Volume 14, Issue 3, July – September 2018. http://www.australiangrapes.com.au/wp-content/uploads/2018/06/TV-Mag-JULY-SEPT-Web-1.pdf (page 31 of the magazine and page 33 of the pdf file).
- Setting Standards to Ensure Eating Quality. *The Vine,* Volume 15, Issue 1, January – March 2019. http://www.australiangrapes.com.au/wp-content/uploads/2019/01/TV-Mag-JAN-MAR-19-Web-1.pdf (page 14 of the magazine and page 16 of the pdf file).
- Table Grape Minimum Maturity Changes Imminent. *The Vine,* Volume 15, Issue 3, July – September 2019. http://www.australiangrapes.com.au/wp-content/uploads/2019/07/Final-Version-1.pdf (Cover Story: pages 4 and 5 of the magazine and pages 6 and 7 of the pdf file).
- A Win for Consumers & Growers. *The Vine,* Volume 16, Issue 1, February 2020. http://www.australiangrapes.com.au/publications/ (pages 12 and 13 of the magazine).
- Consumer Acceptability at Five-Year High. *The Vine,* Volume 16, Issue 2, May 2020. https://issuu.com/vine-magazine/docs/2_vinemag_vol16iss2_fin_digital2?utm_source=Pick%25252Bof%25252Bthe%25252Bbunch%25252BeNewsletter%25252Blist&utm_campaign=8ae9b776b4-EMAIL_CAMPAIGN_2020_04_15_10_50_COPY_01&utm_medium=email&utm_term=0_937baf5fb4-

8ae9b776b4-102558785

Sampling and measurement protocols were developed for growers to use on-vineyard for pre-harvest and during harvest, and for suppliers and supermarkets to use for assessing pallets of fruit. The protocols described how to collect fruit samples, what measurement equipment to use, how to correctly extract juice from a grape berry, and how to compare the results with the minimum maturity standards. These protocols were circulated to the all supply chain participants with industry feedback requested and incorporated into an updated version of the protocols.

Delytics provided weekly updates to the ATGA during the season covering on-vineyard maturity progress, plus a summary of the previous week's supermarket and export maturity results. The ATGA CEO circulated these reports to the entire industry. These reports also included links to online PowerPoint presentations that were updated weekly with detailed graphs showing the results and weekly trends in on-vineyard, supermarket and export maturity. Links to the 2019/20 season files are listed below.

Emerald On-Vineyard data

https://delytics-my.sharepoint.com/:p:/p/mark_loeffen/EYLFVhkM3MhMlf3t_Ap7dNEBqRq8RZJapADp6yKfAVflog?e=HZjzXM

Emerald All fruit data

https://delytics-my.sharepoint.com/:p:/p/mark_loeffen/Ed2CG6jEFZ1CsTUM6Z6Ou5EByGwue4QekY_v56DtH7dDbA?e=s8dla2

Sunraysia On-Vineyard data

https://delytics-my.sharepoint.com/:p:/p/mark_loeffen/EbUwc83DJodJmZewahAUeQEBgouWXel0Zgqww4mGKfeURw?e=IggHSg

Sunraysia All fruit data

https://delytics-my.sharepoint.com/:p:/p/mark_loeffen/EYgWMuSyT1RKrk114Z7o02sBjBVgGMgc-r81pZ1vZoxysg?e=kVtPhp

Supermarket Overview

https://delytics-my.sharepoint.com/:p:/p/mark_loeffen/EXPAeQIib2NEvQnqWWIa4LoBT6nf_sUIQIVQxdwdZK_4Sg

Export Overview

https://delytics-my.sharepoint.com/:p:/p/mark_loeffen/EZio0xx81lRDi2nyh8YQ9SUBoQgNFRXAhYG9nPDuvgsGLA

Weekly updates were also sent to the table grape quality specialist at each of the three major supermarket chains. These updates included links to confidential data from their stores and comparisons of their consumer acceptability performance with the overall supermarket average. These reports were typically acknowledged each week, and often elicited requests for more information so that issues could be quickly identified and rectified.

Annual review meetings were held with the table grape quality specialist and buyer of each of the three major supermarket chains. These meetings were used to review their supermarket's performance in relation to their adoption of the minimum maturity standards and to update them on progress with the project and the minimum maturity standards. Overall, the team formed strong relations with the quality specialist staff at each of the supermarkets. This resulted in many discussions about standards and protocols, with feedback given.

Grower roadshows were held to discuss the proposed minimum maturity standards and to give growers the opportunity to provide feedback. These were held in Mildura on 31 July 2019, Euston on 1 August 2019, Brisbane on 19 August 2019 and Perth (Swan Valley) on 17 October 2019.

Outcomes

This project was designed to deliver outcomes strongly aligned to the Table Grape Strategic Investment Plan:

- Outcome 1: Increased demand for Australian table grapes by strengthening and developing domestic and export market opportunities that will improve industry viability and sustainability
- Outcome 2: Demand-building strategies and increased prices for Australian table grapes supported by improvements in product quality.

Evidence of increased demand and increased price came directly from the Nielsen Harvest to Home report for the 52 Weeks ending 3 November 2020 which showed an 11.7% increase in volume and a 16.2% increase in dollars (a 4% increase in price). In the 52 weeks ending 1 December 2020, the programme showed a 10.1% increase in volume and a 15.5% increase in dollars (a 5% increase in price). To 22 March 2020, despite the impact of Covid-19, table grape sales volume dropped by only 0.4%, compared to an all fruit volume drop of 3.3%. However, dollar sales still increased by 5.7% (a 10% increase in price) (Figure 1).

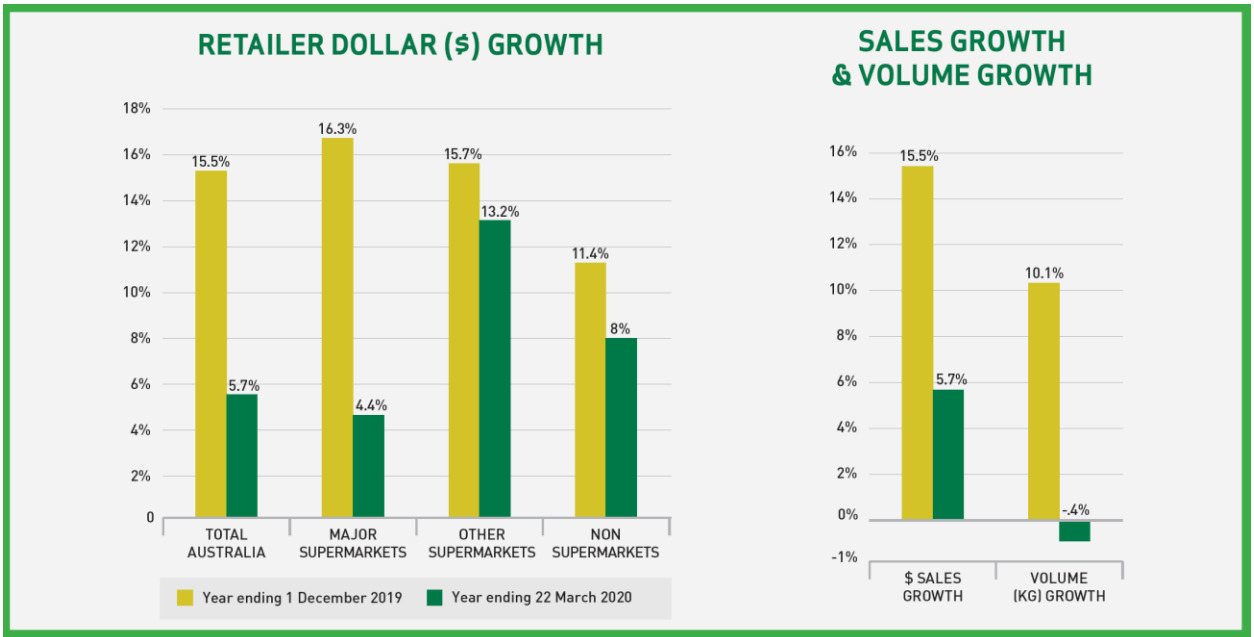

Figure 1 Nielsen data showing volume and dollar growth in table grapes this season.

From the Monitoring and Evaluation (M&E) plan, the intermediate outcome focused on the adoption of the new minimum maturity standards by growers, suppliers and supermarkets. The evidence of the adoption by table grape supply chain participants can be found in the supermarket monitoring data which provides a direct measure of the compliance of fruit sampled at retail with the relevant minimum maturity standards. In July 2019, the industry agreed to set a minimum retail acceptability of 80% and the minimum maturity standards were set to assist the industry to achieve that target.

Figure 2 shows the compliance of the fruit sampled at retail (called acceptability) with the relevant minimum maturity standards. Historical data to 30 June 2019 showed that over the previous four seasons, the average compliance was 69.5%, ranging from 61.5% to 77.6%, depending on the season. In the two seasons prior to the start of the project, average retail acceptability was 65%. Seasonal variations in maturity can be seen in the 2018/19 season where fruit matured approximately two weeks later than in the previous season. This partly explained the acceptability drop that season, because if fruit were harvested at the same calendar date as the previous season, fruit maturity (and thereby acceptability) will have been lower, which was reflected in the supermarket results. In July 2019, the industry agreed to set a minimum retail acceptability of 80% and the minimum maturity standards were set to assist the industry to achieve that target. The average acceptability of all 554 retail samples (>10,000 fruit) individually measured in the 2019/20 season was 79%, very close to the industry agreed minimum retail acceptability of 80%.

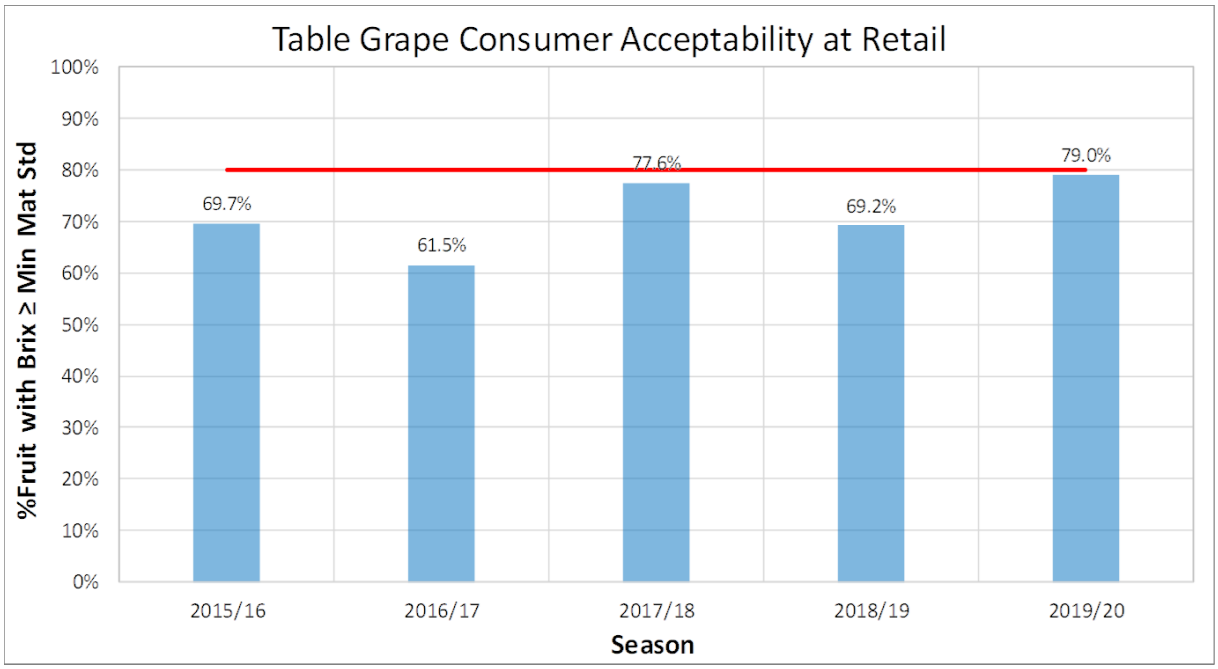

Figure 2 Retail sample compliance with relevant minimum maturity standards.

Monitoring and evaluation

Key Evaluation Questions (KEQs).

Effectiveness

To what extent has the project increased the percent of table grapes meeting minimum maturity standards?

The average percent of table grapes meeting minimum maturity standards in the four seasons preceding the announcement of new minimum maturity standards was 69.5% and in the two seasons preceding this project, 65%. This season (2019/20), following the announcement of new minimum maturity standards, the average percent of table grapes meeting minimum maturity standards was 79%. This was very close to the industry agreed minimum retail acceptability of 80% and a 10-percentage point increase over the previous four-year average.

Relevance

To what extent has the project met the needs of industry levy payers?

The needs of the industry levy payers are documented in the Table Grape Strategic Investment Plan, Outcome 2 which seeks increased demand and prices for Australian table grapes supported by improvements in product quality. Evidence of increased product quality is given above. Evidence of increased demand comes directly from the Nielsen Harvest to Home table grape report for the 52 Weeks ending 3 November 2020 which showed an 11.7% increase in volume and a 16.2% increase in dollars (a 4% increase in price). In the 52 weeks ending 1 December 2020, there was a 10.1% increase in volume and a 15.5% increase in dollars (a 5% increase in price). To 22 March 2020, despite the impact of Covid-19, table grape sales volume dropped by only 0.4%, compared to an all fruit volume drop of 3.3%. However, dollar sales still increased by 5.7% (a 10% increase in price). Overall, this is a very good outcome for industry levy payers.

Process appropriateness

How well have intended beneficiaries been engaged in the project?

Representatives of all supply chain participants were involved in this project. A number of growers allowed our samplers to take weekly samples from their properties for the on-vineyard monitoring. One of the supplier companies monitored fruit on their growers' properties and supplied us with the data at no cost. One of the supermarkets provided us with their monitoring data at no cost. The top three supermarket chains were actively involved and provided regular feedback to the team. All companies involved in the Stakeholder Working Group (SWG) paid for their own attendance at the meetings and actively participated in the setting of the minimum maturity standards.

Have regular project updates been provided?

Articles were written to update growers about the project approximately every six months. These were published in *The Vine* magazine, a quarterly publication for the Australian table grape and dried fruits industries. Weekly maturity updates were also provided to all growers and supermarkets during the season, and grower roadshows were held leading up to the announcement of the new minimum maturity standards. Weekly updates were provided to supermarkets as well as an annual debrief.

To what extent were engagement processes appropriate to the target audience/s of the project? Did the project engage with industry levy payers using standard industry communication channels?

The project engaged with the industry levy payers through the industry magazine, *The Vine*, a quarterly publication for the Australian table grape and dried fruits industries. Grower roadshows were held in conjunction with export registration meetings and were well attended. Weekly maturity updates were provided to all growers and supermarkets during the season by the ATGA CEO, using standard industry communication channels.

Efficiency

What efforts did the project make to improve efficiency?

Because a large volume of data was being collected, the manual processing of that data took considerable time early in the project. As the project progressed, the data processing tasks were progressively automated which significantly decreased data processing time and increased efficiency. Weekly updates

were circulated by the ATGA CEO using existing databases of table grape growers. The SWG meetings enhanced efficiency by allowing all parties to meet in one place and make decisions on behalf of the entire industry. Grower roadshows were held in conjunction with export registration meetings that were already scheduled to be held and were well attended.

Innovation

What were the keys to the success of this project?

The main key to the success of this project was the cohesiveness of the team, with each member having proven specialist skills across the entire supply chain. Delytics has proven success leading projects and developing maturity standards to improve consumer acceptability across multiple fruit industries. Rudge are well connected with table grape growers, suppliers and supermarkets and have solid experience and expertise in fruit testing and measurement. Kitchener Partners have proven experience in supermarket operation are well connected with all Australian supermarkets. The ATGA are the peak industry body for table grapes and have excellent relations with table grape growers.

How can Hort Innovation apply these to other projects?

This project team has proven they can develop systems that deliver increased consumer acceptability, increased demand with higher prices across a range of fruit industries. Examples include table grapes, Australian citrus (with acceptability above 90% for four out of the last five years), and New Zealand Citrus (with acceptability between 82% and 96% over the last four years) as well as kiwifruit. The proven expertise of this team would add significant value to other projects aimed at improving consumer acceptability and demand.

Recommendations

Increased adoption of the new standards

The minimum maturity standards were introduced in the 2019/20 season. Major supermarkets treated the 2019/20 season as an interim, with the new standards to be fully adopted in the 2020/21 season. However, more time and support are needed to ensure full adoption, with the aim of ensuring this step change will be fully adopted resulting in further improved table grape quality and increased consumer acceptability at retail and as a result, higher demand and price.

It is pleasing to see the industry's commitment to this with the release of a request for proposal for a follow up project: *Minimum maturity standards adoption across the table grape supply chain (TG19004*). The current project has already demonstrated increased demand and prices with improved consumer acceptability. It is important to consolidate this work to ensure that long-term gains are captured and continued by developing and implementing a whole of supply chain education, engagement and adoption strategy with growers, wholesalers and retailers.

To further increase consumer acceptability at retail it will be important to identify the constraints in the current supply chain and to focus on those supply chain participants in the first instance, as their increased performance will provide an across the board increase.

Increased consumer acceptability

A consumer acceptability target of 80% has been set by the Stakeholder Working Group (SWG). The Australian Citrus industry has demonstrated that even higher levels of consumer acceptability can be achieved once new maturity standards are set. Delytics assisted their industry to set new minimum maturity standards in late 2013. In a report to Hort Innovation for project CT15013, Australian Citrus Quality Standards – Stage 3, the author states: "One of the major supermarket chains is of the firm view that **strong sales, repeat purchases and category growth** are directly linked to the development and implementation of the Australian Citrus Quality Standards." Their consumer acceptability was over 90% for four of the last five years, so there is still significant room for improvement in table grapes.

It is therefore pleasing to see the industry's interest in gaining a better understanding of consumer acceptability with the release of a request for proposal for the project: *Table grape quality and consumer attitudes (TG19003*).

On-farm and retail monitoring

On-farm and retail monitoring are key activities that form an ongoing resource of data for every fruit industry including table grapes. As such, we recommend that the retail and on-farm maturity monitoring program developed in this project, by variety and by region, be continued indefinitely.

On-farm monitoring provides information on how maturity progresses each season which can be used to better understand the reasons behind changes in retail maturity. For example, a late maturity season could be a potential cause for lower retail maturity.

Retail monitoring provides direct feedback on the maturity of fruit that consumers are purchasing, which directly impacts demand and price. It also provides a direct measure of the adoption of the minimum maturity standards by Australian table grape growers and value chain partners, adding rigour to the new standards that can demonstrate improvements over time.

Including consumer liking data in the monitoring measurements provides the data that, when analysed, will provide a better understanding of the influence of seasonal variation on consumer acceptance at retail.

There would also be considerable merit in measuring the key sugars that make up the total sugar (currently measured using Brix) and the key acids that make up the total acid. This will allow a more in-depth understanding of the causes of seasonal variation and its influence on consumer liking.

Consumer purchasing behaviour

It would be very helpful to have updated information on consumer purchasing behaviour after a negative eating experience (and positive as well) for table grapes. Anecdotal evidence suggests that after a negative eating experience, consumers are out of the market for an average of six weeks. This needs to be validated. Thereafter, anecdotal evidence suggests that it takes two or three positive eating experiences to regain confidence. Gaining a better understanding of this behavior allows us to model changes in demand based on retail acceptability. Our

models of consumer buying behaviour show that a 10% increase in consumer acceptability can result in a potential 25% increase in demand.

Research on citrus showed a very strong correlation between consumer liking and purchase intent. This research should also be extended to table grapes, to support the benefits of increase consumer acceptability at retail. It is unclear whether the project: *Table grape quality and consumer attitudes (TG19003*) will address this.

Refereed scientific publications

None to report.

References

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Intellectual property, commercialisation and confidentiality

No project IP, project outputs, commercialisation or confidentiality issues to report.

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