Hort Innovation

Final Report

Banana Enterprise Comparison 2016/17

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Banana Enterprise Comparison 2016/17 – BA16009

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Content

Summary

Production Economics and On-farm Practices

This project (BA16009) and preceding projects (BA11026, BA10026, BA09037) are collectively referred to as the banana benchmarking program in industry. The most recent round of data collection covered financial years 2015/16 and 2016/17 and also included, for the first time, detailed sections on farm biosecurity and environmental management in the banana industry. Over six (6) financial years of benchmarking data collection between July 1 2008 and June 30th 2017 over 300 participants have received personalised confidential reports that they have been able to use to assist them improve their business' performance. The participant group has produced over 30% of the total Australian production of bananas in the collection years across BA16009 and preceding projects.

> ***In this report analytical focus is applied to the eight elapsed years from 2009/10 in numerous sections. This is done as industry production data began being collected, through the mandatory levy system,IN 2009/10. Focusing on these years enables more comprehensive analysis incorporating analysis of national production levels and per capita consumption of bananas in Australia. Attributes such as returns to growers are more meaningful if considered in light of the balance between supply and demand (i.e. population and per capita consumption)***

Benchmarking data has demonstrated that in the eight-year period since 2009/10, when industry production volumes began to be collated via the industry levy system, participants have on average experienced a (-56%) decline in cash profits from growing bananas, with a larger decline of (-63%) for tropical cavendish only growers. Cash profit is defined as Earnings Before Interest, Tax, Depreciation and Amortisation (EBITDA)

On a CPI[1] adjusted basis (with data reported in 2016/17 dollar values) this converts to an average change in cash profit of (-62%) for all participants and (-68%) for participants growing tropical cavendish only since 2009/10. In this period total banana production in Australia had increased by 34% and consumption had (mathematically) increased 31% (21% increased per capita consumption and 10% population growth). Technically speaking, this suggests an over-supply in 2016/17.

Concurrently, operating costs for participants have been well contained and key components of on-farm productivity have significantly increased (yield increase of 41% (36% for tropical cavendish growers) and labour use efficiency increase of 21% (26% for tropical cavendish growers). The major driver of declining cash profits for participants is the decline in gross price (return prior to marketing and ripening costs) achieved by participants (-12% CPI adjusted) compared to operating costs (-7% CPI adjusted).

The top 10 most profitable businesses amongst participants continue to demonstrate consistent differences in their production economics and management practices compared to the remainder of the participants. In summary, the top 10 businesses in the most recent round have demonstrated higher yields (6%), marginally higher gross price (1%), lower operating costs (-7%) and higher Cash Profit (500%). Their labour productivity is also significantly higher (16%). More of these businesses irrigate more frequently, use irrigation monitoring technologies, utilize nurse suckering / crop scheduling, and use more Phosphorous(P), more Potassium (K) and less Nitrogen (N) in their plant nutrition programs.

There has been a material change to the nature of businesses in the Top 10 group between 2012/13 and 2016/17. In 2012/13, and in prior years, this group was dominated by tropical cavendish growers, were mainly

[1] http://www.qgso.qld.gov.au/products/tables/cpi-all-groups-bris-wt-avg-eight-qtr/index.php

mid to larger growers and, consequently, also mostly located in Far North Queensland. These differences appear to further highlight that participants growing tropical cavendish bananas have been impacted, more than others, by the declining profitability seen amongst participants. Key differences in the Top 10 between 2012/13 and 2016/17 are summarized as:

	2012/13	2016/17
Top 10 Businesses in Far North Qld	9	5
Tropical Cavendish Growers in Top 10	8	4
% of Top 10 Producing Area in Far North Qld	98%	74%
Total Producing Area for Top 10	994	383
Average Producing Area of Top 10	100	38

Trends in on-farm practices employed by participants, over time, include increasing trends in:

1. Employment of Pacific Islander workers,
2. % of growers irrigating at least daily in peak demand period and using irrigation monitoring technology,
3. Engagement of external advisors for nutrition and / or pest monitoring,
4. Use of nurse suckering /crop scheduling, and
5. Awareness of marketing and ripening costs.

Differences Between Regions

There continue to be significant differences in on-farm practices, production economics and the nature and effectiveness of channels to market between the major growing regions.

The average gross prices and operating costs of participants in New South Wales have shown consistently to be lower than those of far North Queensland whilst their average cash profits are similar. However, cavendish growers in New South Wales continue to be unable to compete with their Far North Queensland counterparts. Participants growing Lady Finger in New South Wales (and in Far North Queensland) demonstrate consistently, and significantly, better cash profits than those growing cavendish bananas.

Western Australian participants (Carnarvon WA) are achieving higher gross prices / returns, investing in higher operating costs, value adding their products through differentiation on fruit size and pre-packing and by so doing enjoying significantly better average cash profits. Some costs including labour and contracting (including contract packing), water charges and power costs are higher for Carnarvon based participants, however pest management costs are negligible.

Biosecurity and Environmental Management

Biosecurity and environmental management are topics that have been included in the benchmarking process for the first time in BA16009 project. Whilst important to all participants, these areas of paramount importance to Far North Queensland participants and growers due to the presence of TR4 and the pending impact of steps to regulate aspects of banana production practices in order to protect the Great Barrier Reef.

Since TR4 was discovered in Far North Queensland participants have invested an average of $1,600 of capital per producing hectare on structures and equipment to enhance farm biosecurity to contain the spread of Panama Disease Tropical Race 4 (TR4). There is a significant body of data herein regarding biosecurity and environmental practices that readers are encouraged to review. This includes coverage of adoption and uptake of practices and

processes to enhance biosecurity and data defining aspects of the 'state of readiness' of participants for the expected changes to legislation regarding environmental management / reef protection.

Recommendations

The following recommendations are provided in considerable detail in the recommendations section and are further discussed in the Appendices of this report.

Investment in the banana category: Investment is needed to strengthen the category so as to offer a range of product lines, at a range of price-points, targeted at differentiated motivations for purchase (differentiated consumer market segments).

Value of bananas in the domestic market: The causal factors in the decline in average prices received by participants is worth further investigation. In a similar manner to the past actions of other produce sectors / supply chains, the industry can benefit from a proactive strategy of negotiation with marketers, end users (and of course ultimately consumers) to reposition the value of bananas in the domestic market. This would require collective action by industry leaders, the peak industry body and major marketers.

Labour Use Efficiency and Labour Management Skills: Investment is needed in process re-engineering and labour management skills and methods for banana growers. Labour use efficiency, and maintenance of sound yields and associated work flows (to enable efficient labour use) are the two areas of on-farm production most readily influenced by grower skill and expertise.

Industry Driven Biosecurity as an Asset: Investment in new initiatives / approaches to establishing effective farm biosecurity, on all farms, will maximize the life span of viable cavendish production in Far North Queensland. Government (i.e. Biosecurity Queensland) has a role focused on infected and high-risk sites and surveillance. It is in the industry's best interests to invest in mechanisms / initiatives to make biosecurity an effective tool for industry sustainability. If addressed head-on, farm biosecurity can be an asset.

Transparency and Commercial Awareness: The initiative of at least one large banana marketer to operate effectively as an agent not a merchant, hence providing full transparency to growers (of their post-farm gate marketing and ripening costs) is of huge benefit to the industry. More focus and effort employed to increase grower awareness of, and ability to negotiate, post farm-gate marketing and ripening costs and achieving increased transparency in this area can only enhance grower viability.

Yield Improvement in New South Wales Banana Production: Even a small improvement in average yields in New South Wales is capable of having significant impact on average cash profits in new South Wales. Re-visiting nutrition and process design related to harvesting / handling of bunches on farm is recommended as one step to improving the viability of growers in New South Wales

Alternative Markets Focus for New South Wales Cavendish: Collaborating groups of growers and / or local marketers in conjunction with growers, may benefit from investigating, and defining new market segments that have specific requirements (e.g. different sized fruit, 'tasty' bananas, and / or other attributes (physical and augmented)) that could be produced, packed, communicated / promoted, and delivered with changes to the production, packaging and marketing of NSW cavendish bananas)

Throughput Can Drive Benefits from SBC Coop, Carnarvon W A: The Carnarvon WA based industry and its participants may benefit from increasing the volumes of product handled by the local Cooperative, continuing to focus on consistently sound yields (possibly requiring tuning to nutrition, pest control, water use efficiency), and negotiating with operators of the irrigation scheme to put a case for cost relief based on well researched costing data (per 15 Kg / kilogram or tonne of produce produced).

Communication to Industry

The outcomes of this most recent round of benchmarking has been communicated to growers, researchers, advisors, government personnel, and supply chain partners via presentations at meetings in each of the growing regions and via articles and media content in industry magazines and E-bulletins. Outputs from this project, as used project tasks and in communication activities are provided in the appendices and / or via links for digital content.

Banana Industry Economic Contribution

Pinnacle Agribusiness completed Project BA 11013, Value of the Australian Banana Industry to Local and National Economies[2] in April 2013. Data collected in this and predecessor projects has enabled an update of conclusions reported in BA11013.

The economic and employment multipliers established in BA11013 and production and labour use efficiency data provided in Appendices 1 and 2 herein have been used to provide updated economic contribution data, summarized in Table 1.

Table 1: Estimated Banana Industry Employment and Economic Contribution in F2017

	National	Far North QLD	N.S.W.	W.A. (Carnarvon)
	2016/17	2016/17	2016/17	2016/17
Employment Across Australian Banana Industry				
Production	414,000	397,440	16,560	3,667
FTEs Employed (On Farm) Industry Wide (Using Labour Productivity Figures)	5,325	4,788	255	50
FTEs Employed in Banana Supply Chain (Using Employment Multiplier of 2.52, from BA11013) (1)	13,418	12,065	642	127
Estimated Banana Industry Economic Output				
Gross Price Received by Growers per Tonne (1) $	1,640	1,642	1,515	2,067
Gross Value Ex Farm Gate $	678,960,000	652,596,480	25,082,880	7,578,467
Output Multiplier (From Project BA 11013) (2) $	1.88	1.88	1.88	1.88
Total Industry Output $	1,276,444,800	1,226,881,382	47,155,814	14,247,517

(1) See Appendix 1, Table 11, (2) Sourced from Project BA11013

The Australian banana industry employed 13,418 full time employee equivalents (FTEs) of which 5,325 were employed in on-farm roles, in F2017 and the industry contributed A$1.276b to the Australian economy in the same year.

Keywords

Australian banana industry; banana benchmarking; benchmarking; banana enterprise comparison; banana production economics; bet practices; panama disease TR4; environmental management; reef protection; tropical cavendish; banana category; labour use efficiency;

[2] Pinnacle Agribusiness (Formerly CDI pinnacle Management), Value of the Austraian Banana industry to Local and National Economies, Horticulture Australia Limited, 2013

Introduction

This project BA16009 is a further continuation of previously completed Banana Enterprise Comparison Projects as reported in Projects BA09037 (May 2011), BA10026 (February 2012) and BA11026 (July 2014). In the period between the 2008/09 financial year (F2009) and 2016/17 (F2017), a period of nine (9) elapsed financial years, six (6) non-consecutive years of data (also referred to herein as 'benchmarking data') has been collected from banana growers and reported upon. Participants have accounted for more than 30% of the total production of the Australian banana industry over the six (6) years of data collected. These projects have commonly become known as the Banana Benchmarking Program amongst industry participants.

> ***In this report analytical focus is applied to the eight elapsed years from 2009/10 in numerous sections. This is done as industry production data began being collected, through the mandatory levy system, 2009/10. Focusing on these years enables more comprehensive analysis incorporating analysis of national production levels and per capita consumption of bananas in Australia. Attributes such as returns to growers are more meaningful if considered in light of the balance between supply and demand (i.e. population and per capita consumption)***

In each year for which participating growers have contributed data they have received personalised confidential individual comparative analysis reports that compare their businesses to those of their peers using a range of approximately ninety (90) Key Performance Measures (also called Key Performance Indicators, KPIs). Over three hundred (300) such reports have been delivered to participants since 2008/09 (F2009).

In the last two (2) years of data collection (2015/16 (F2016) and 2016/17 (F2017)) the number of comparative measures was increased to over 110, as sections of analysis covering Biosecurity and Environmental Management were reported on.

Detailed Project Reports, informing industry about high level industry data, trends, issues and opportunities have been delivered in May 2011, February 2012, July 2014 and in September 2018 (this report). Key results and recommendations have been disseminated to the industry in each of the growing regions via grower association meetings, industry congresses, board meetings of the Peak Industry Body (Australian Banana Growers council (ABGC)), Banana Roadshows and other gatherings. Articles on key results, trends and recommendations have been distributed via industry magazines and grower E-bulletins.

This project and its predecessor projects have been undertaken to provide participants, and the broader growing community, information enabling them to identify and implement changes that can improve their business' performance.

This project contributes directly to Outcome 4 of the Banana Strategic Investment Plan 2017-2021. Whilst at no time has the Banana Enterprise Comparison program been defined as such, this process very closely resembles the practice of Best Practice Benchmarking as adopted and used widely in general commerce, globally (refer Figure 1).

Figure 1: Definition: Best Practice and Best Practice Benchmarking

Best Practice; Best practices are "those practices that have been shown to produce superior results; selected by a systematic process; and judged as exemplary, good, or successfully demonstrated"; these practices are then adapted to fit a particular organization. Benchmarking is a systematic process used for identifying and implementing best or better practices.

Best Practice Benchmarking; Is where organizations search for and study organizations that are high performers in particular areas of interest. The processes themselves of these organizations are studied rather than just the associated performance levels, normally through some mutually beneficial agreement that follows a benchmarking code of conduct. Knowledge gained through the study is taken back to the organization and where feasible and appropriate, these high performing or best practices are adapted and incorporated into the organization's own processes. Therefore, best practice benchmarking involves the whole process of identifying, capturing, analyzing, and implementing best practices . There are a number of best practice benchmarking methodologies. One of which is the TRADE Best Practice Benchmarking Methodology.

Source : http://www.bpir.com/all-about-bpir-bpir.com.html

Participating growers have used information provided in their personalised reports in many ways. These include and are not limited to specific changes to on-farm practices to address productivity and efficiency issues (e.g. inadequate irrigation / irrigation frequency, nutrition or labour cost management processes leading to sub-optimal yield and unacceptably high labour costs), the need to adopt new technologies and engage professional, external advice, and changes to practices such as crop scheduling.

Data has also been collected and analysed about how, and how frequently, participants perform key components of their on-farm operations. Participants use this information for their own 'best practice' or 'continuous improvement' purposes. This information has also enabled the tracking of trends at the whole of industry level. Some examples of how this information informs industry are provided in Table 2

Table 2: Some Examples of How Project BA16009 Informs Industry

	2012/13	2016/17
Percent (%) of participants that irrigate at least daily in peak demand periods	40%	57%
Participants that engaged professional external advisors on crop nutrition	29%	43%
Percent (%) of total labour employed on farms that were Pacific Islanders	insignificant	15%
Average capital invested per harvested by Far North Queensland participants since the discovery of Panama Disease Tropical Race 4 (TR4)		1,600
Percent (%) of farm area managed by participants in Far North Queensland enclosed by a complete fence barrier since discovery of TR4		28%
Percent (%) of farm area managed by participants in Far North Queensland that has at least 560% ground cover (living or dead)		60%
Percent (%) of participants, nationally, that consider they are using the industry funded Environmental Best Management Guidelines (Environmental BMP)		45%

These examples, and many more, have been identified by this project and its predecessor projects and reported to industry for consideration in future investment in research and development and in issues management.

Methodology

Methodology adopted for this project is consistent with the methodology used for the predecessor projects BA09037, BA10026 and BA11026. Key to this round of activity has been a very targeted re-engagement with the industry, following a four-year gap since the last round of activity.

Much has changed in the Australian banana industry since 2012/13 (F2013) when the last round of data collection was undertaken. In particular, the discovery of Panama Disease Tropical Race 4 (TR4), an increased focus on protecting the Great Barrier Reef (and anticipated impacts on banana producers in far North Queensland) (i.e. 'Reef Protection') and the introduction of the 15 kilogram (mixed size) International Pack as the predominant packaging configuration for fresh banana supply to domestic markets. With these influences in mind, and the significant diversity of this industry between major growing regions, the project methodology is summarised as follows:

1. Contracting: Agreement signed, commencement and Required Elements completed,
2. Industry and Technical Engagement,
    a. Interaction, engagement and consultation with a representative group of growers to act as a Project Reference Group,
    b. Interaction and lengthy consultation with a group of researchers, professionals, advisors and state government personnel (Technical Advisory Group) (e.g. Biosecurity Queensland, Queensland Department of Agriculture and Fisheries, NSW Department of Primary Industries, WA Department of Primary Industries and Regional Development, and Australian Banana Growers Council) for advice, direction and input re Biosecurity and Environmental Management,
3. Consultation (Concurrent Activities),
    a. Re-engage with industry and (in particular) consult and seek input from industry, researchers, peak industry body, and other service providers to industry about new biosecurity environment and measures following TR4 discovery, current and likely future issues and impacts of Reef Protection on the industry, and on-farm and off-farm perspectives on the introduction of the 15 kg International Pack,
    b. Recruiting of participants for this round of data collection: Attend local grower meetings and forums, telephone, email and social media interaction, personal one-on-one meetings, communications to industry via newsletters /grower E-Bulletins, email broadcast campaigns to inform and recruit, and networking amongst those previously engaged in past rounds, and
    c. Modify data collection instruments (Data Sheets), processes and software to capture changes / issues / refinements as informed via consultation and new elements. Biosecurity and Environmental Management,
4. Field Work,
    a. Provision of multiple avenues for data contribution including on-line data return, direct email fillable-form and one-on-one meetings and survey data collection,
    b. Extended visits to growing regions (multiple visits to Queensland and New South Wales growing regions, single visit Carnarvon W.A.) and one-on-one meetings with most participants,
    c. Follow up telephone and email communications including provision and review of completed Data Sheets for correctness and completeness,
5. Data Quality Checking, Cleaning, Normalising, Data Entry and Delivery of Participant Reports,
    a. Involving further interaction and gap filling with most participants,
    b. Reviewing and assuring that data for entry is consistent and supports accurate comparison and data set integrity,
    c. Reports delivered to each participant including Comparative Analysis Reports, Dashboard Reports, Management Practices Reports, and Multi Year Reports (also combined year reports where requested and special purpose reports where requested),

6. Industry Communication,
    a. PowerPoint presentations delivered in each region, tailored to the region, followed by discussion session and questions,
        i. Murwillumbah July 24th, 2018,
        ii. Coffs Harbour July 26th, 2018,
        iii. Tully August 9th, 2018,
        iv. Innisfail August 10th, 2018,
        v. Mareeba August 17th, 2018,
        vi. Carnarvon WA August 30th, 2018 (video prepared and delivered),
    b. Article published in Australian Bananas Magazine issue 53, August 2018, and Chairman's Comment in the same edition,
7. Data Set De-Identification: data set is ready for delivery in de-identified configuration
8. Deliver Draft Final Report, Data Set and Project Completion,
    a. Draft Report,
    b. Feedback and Interaction (as needed),
    c. Final Report and Data Set,
    d. Final Statement of Receipts and Expenditure,
    e. Completion.

Grower Participation

The participant group in the current round of data collection (F2016 and F2017) is a representative sample of the population of banana growers in the Australian industry, as illustrated inTable 2.

Participants for the entire period from the commencement of the program (since 2008/09 viz. F2009) have been responsible for producing greater than 30% of the total production if the industry, as outlined in Table 3.

Table 3: Participants in 2015/16 (F2016) and 2016/17 (F2017)

	Up to 25 Ha	26 to 50 Ha	51 to 100 ha	Over 101 ha	TOTAL
No. of Participants	***22***	***5***	***12***	***7***	***46***
% of Participants	***48%***	***11%***	***26%***	***15%***	***100%***
Total Producing Ha	226	203	833	1,861	3123
Average Producing Ha	13	41	69	266	
median Producing Ha	9.8	36	66	160	
% of Producing Area	7%	7%	27%	60%	100%
Total 15 kg Equiv. Sold	466,484	624,809	2,150,713	5,075,040	8,317,046
Average 15 kg equiv. Sold	25,916	124,962	179,226	725,006	
Median 15 Kg equiv. Sold	23,242	96,394	181,204	404,825	
% of 15 kg Equiv. Sold	6%	8%	26%	61%	100%

Table 4: Participants for Six (6) Non-consecutive Years of Benchmarking

	Unit	Group Average	Group Average	Group Average	Group Average	Group Average	Group Average
		2008/09	2009/10	2011/12	2012/13	2015/16	2016/17
Industry Production (Total, All Varieties)	Tonnes		310,000	202,000	340,000	396,000	414,000
Total Production in Benchmarking group	Tonnes	62,000	88,000	90,000	104,000	121,000	125,000
% of Industry Production in Benchmarking	%		28%	44%	30%	31%	30%
Number of Benchmarking Participants	No.	52	59	57	49	46	46
Annual Cost of 1 Full Time Employee Equivalent (FTE)	$ / FTE	34,406	38,287	40,743	41,818	45,195	46,686
Total Producing Hectares	Ha	2,083	3,097	3,188	2,862	3,069	3,123

Outputs

Examples are provided in Appendix 5, links are provided where digital.

1. Tropical Banana Data Checklist

   Final Data Checklist used in Far North Queensland following extensive consultation with Project Reference Group, Technical Advisory Group, previous, and new, participants

2. Sub-Tropical Banana Checklist

   Final Data Checklist used in Far North Queensland following extensive consultation with Project Reference Group, Technical Advisory Group, previous, and new, participants

3. Participant Reports:
   a. Comparative Analysis Report incorporating Dashboard Report, Biosecurity and Environmental Management
   b. Multi-Year Benchmarking Report, incorporating Dashboard Report, Biosecurity and Environmental Management
   c. Practices Summary Report, provided to reflect survey results from each growing region in which each participant is operating
   d. Special Purpose Reports (as requested by some participants, e.g. group comparative reports where participants mutually agree to share data in more detail, or where growers have more than one separately operated enterprises participating)
4. PowerPoint Presentations
   a. Murwillumbah and Coffs Harbour
   b. Tully and Innisfail
   c. Mareeba
   d. Carnarvon (https://youtu.be/mSBqnAhcfrs)
5. Articles, News Content
   a. Chairman's Report: Australian Bananas Issue 53, August 2018 "Industry Insight from Benchmarking"

      https://abgc.org.au/wp-content/themes/abgc/assets/lib/magazine/magazine.html?file=https://abgc.org.au/wp-content/uploads/2018/08/ABG6837_Magazine_FINAL_WEB_SPREADS.pdf
   b. Article in Australian Bananas Issue 53, August 2018 "Here's looking at you Growers"

      https://abgc.org.au/wp-content/themes/abgc/assets/lib/magazine/magazine.html?file=https://abgc.org.au/wp-content/uploads/2018/08/ABG6837_Magazine_FINAL_WEB_SPREADS.pdf
6. Final report (this report), including aggregate industry data (refer appendices 1-4).

Outcomes

Content in this section is focused on the major learnings / key information generated from the project and provided to industry in the dissemination activities described in the Methodology.

Readers are encouraged to review and consider the content of the appendices, in full, to access all of the data, trends and outcomes delivered by the project.

Appendices 1 through 4 provide key data sets along with some discussion and recommendations of direct relevance to key sectors of the industry. There are three key foci of the outcomes and results presented in the appendices and discussed herein:

1. **Key Trends identified over the eight (8) elapsed years across which benchmarking data has been collected, analysed and reported upon, to participants and industry,**
2. **Key differences between growing regions as identified in data collected in the most recent round of data collection (F2016 and F2017), and**
3. **Biosecurity and environmental management information gathered and analyzed in the most recent round of data collection (F2016 and F2017)**

Key Trends Over Eight (8) Elapsed Years

PRODUCTIVITY, COSTS, RETURNS AND CASH PROFITS

It is informative to consider the benchmarking data collected since the commencement of the program in conjunction with the industry production data collected via the banana industry levy. Banana levy data commenced being collected in 2009/19 (F2010), and for that reason this period, 2009/10 (F2010) to 2016/17 (F2017) is the focus for this analysis.

In the eight-year period between July 1st, 2009 and June 30th, 2017 the Australian production of bananas increased by 34%. In the same period the Australian population increased by 10% and per capita consumption of bananas in Australia increased by 21%[3]. In simple terms, over the eight years to 2016/17 banana production increased more than total domestic consumption, resulting in over-supply.

Over the same period, benchmarking data demonstrated that participants increased their average yields per hectare by 41% to 39.9 tonnes (36% [to 41 tonnes] for tropical cavendish growers) and labour use efficiency for participants (measured in tonnes of produce produced picked, packed and shipped per FTE per annum) increased by 21% to 78 t / FTE / annum (26% [to 84 t / FTE / annum] for tropical cavendish growers). Therefore two prominent components of productivity on participants' banana farms have increased significantly.

Benchmarking data also illustrates the effect this has had on the profitability of participants. Despite solid improvements in productivity, Cash Profit per 15 Kg for participants declined (-56%), and(-63%) for tropical cavendish growers only).

The data behind these key conclusions is provided in Table 4.

[3] Australian Banana Growers Council data, https://tradingeconomics.com/australia/population

Table 5: Key Change Factors 2009/10 (F2010) to 2016/17 (F2017) For Participants

	For All Participants	For Tropical Cavendish Growing Participants Only
Increase in Australian Banana Production per annum	***34%***	***34%***
Increase in Australian Population	***10%***	***10%***
Increase in Consumption of Bananas in Australia (per capita[4])	***21%***	***21%***
Increase in the Cost of 1 Full Time Employee Equivalent per annum	***22%***	***22%***
Change in Banana Yield per Hectare	41%	32%
Change in Labour Use Efficiency (tonnes/ FTE /annum)	21%	26%
Change in the Average Gross Price Received by Participants	2%	3%
Change in the Average Operating Costs for Participants	7%	10%
Change in the Average Cash Profit (EBITDA) for Participants	(-56%)	(-63%)

Further analysis of operating costs as reported by all participants shows that in this eight (8) year period the average for the five (5) largest cost categories, representing 87% of total operating costs (2016/17) for participants collectively increased by just 4.6%, as in Table 4.

Table 6: Changes in Largest Cost Categories 2009/19 (F2010) to 2016/17 (F2017) for All Participants

	Unit	2009/10	2012/13	2016/17
Labour + Contracting + Contract Packing	$ / 15 Kg	9.51	8.25	8.81
Change % Compared to 2009/10	***%***		***(-13%)***	***(-7.4%)***
Freight Costs	$ / 15 Kg	3.57	3.71	3.88
Marketing and Ripening Costs	$ / 15 Kg	1.92	2.07	2.75
Packaging Costs	$ / 15 Kg	2.17	2.36	2.76
Chemical and Fertiliser Costs	$ / 15 Kg	2.45	1.82	2.33
Total Above	**$ / 15 Kg**	**19.62**	**18.21**	**20.53**
% of Total Operating Costs	**%**	**89%**	**84%**	**87%**
Change in The Above Costs Compared to 2009/10	***%***		***(-7.2%)***	***+4.6%***

The average cost of labour, contracting and contract packing, the largest and most manager controllable cost, declined by 7.4% in the period.

Corresponding figures for tropical cavendish growers amongst the participants show very similar trends, being:

1. % Change in Top 5 Costs between F2010 and F2017 (tropical cavendish) +5.6%
2. % Change in Labour, contracting and contract packing F2010 to F2017 (tropical cavendish) (-5.75%)

Through productivity gains and effective cost management, participants' cost management appears sound, particularly in light of recent adverse industry events (Cyclone Yasi in 2011 and TR4 in 2015).

Assuming costs have been well managed by participants during this period the primary factor of declining cash profits appears to be the price achieved by participants.

[4] Australian Banana Growers Council data, https://tradingeconomics.com/australia/population

In Table 6 the gross price, operating costs and cash profit of participants has been adjusted for the impact of the Consumer Price Index (CPI All Groups Brisbane) for the same period. On a **CPI Adjusted** basis data from all participants indicates that:

1. While average operating costs effectively decreased by (-6%) in CPI adjusted / real value terms,
2. The average gross price achieved by participants decline by (-12%) in CPI Adjusted / real value terms

(Corresponding data for tropical cavendish only are also provided in Table 6.)

Table 7: Trends in Production Economics 2009/10 (F2010) to 2016/17 (F2017) CPI (*) Adjusted [5]

	All Participants	For Tropical Cavendish Growing Participants Only
Change in the Average Gross Price Received by Participants F2010 – F2017	(-12%)	(-12%)
Change in the Average Operating Costs for Participants F2010 – F2017	(-7%)	(-6%)
Change in the Average Cash Profit (EBITDA) for Participants F2010 – F2017	(-62%)	(-68%)

(*) Based on data presented in 2016/17, dollar values)

Fresh bananas have declined in value by (-12%, CPI adjusted) in the domestic Australian market between 2009/10 and 2016/17, when measured in terms of gross returns (before paying for marketing and ripening costs) received by benchmarking participants in the same period.

In follow-up to this the retail offers of the banana industry and other, competing fresh produce categories including apples, citrus, leaf vegetables, tomatoes and potatoes were reviewed in city supermarkets during busy trading periods. The outcomes of this very preliminary market-based research were used as part of the disseminated message to industry. Recommendations in a later section also include reference to these comparative observations.

'TOP 10' GROUP ATTRIBUTES AND KEY OUTCOMES

A very notable outcome from this round of benchmarking is the changed nature and attributes of the 'Top 10' group, industry wide. The Top 10 group are the ten most profitable businesses in the benchmarking group based on cash profit per standard carton / unit of sale (15 kg carton).

The composition and attributes of businesses ranking in the Top 10 in F2015/16 (F2016) and 2016/17 (F2017) differ significantly from those that ranked in the Top 10 in 2012/13 (F2013). Key differences are summarised as:

1. A marked reduction in total area produced by the Top 10 (62% less producing area in Top 10), and concurrent marked decrease in the average size of Top 10 businesses (also true for total cartons / tonnes produced by the Top 10)
2. A major shift from the previous dominance of Far North Qld cavendish growers in the Top 10:
    a. From 9 out of 10 and 98% of Top 10 producing area in 2012/13,
    b. To 4 out of 10 and 74% of producing are in 2016/17.

Other attributes, and some practices, of the Top 10 group that reflect changes include:

- Yields not materially different (Variance **-2%**)

[5] http://www.qgso.qld.gov.au/products/tables/cpi-all-groups-bris-wt-avg-eight-qtr/index.php

- Gross Prices up 8% (**-1%** CPI adjusted)
- Operating Costs 16% up (**-8%** CPI Adjusted)
- Cash Profit down **-28%** (**-37%** CPI Adjusted)
- Rapid domination of 15 Kg International Pack (from a minimal % in F2013 to 61% in F2017)
- Top 10 businesses used more Pacific Islands workers as a percentage of the labour force,
- More of the Top 10 used technology to determine irrigation frequency,
- Little difference in frequency of irrigation in peak demand periods (notable difference in earlier years)
- More of the Top 10 used Nurse Suckering /Crop Scheduling,
- More of the Top 10 were aware of the marketing and ripening costs they were paying,
- The Top 10 group sold more via wholesalers and less direct to supermarkets (The reverse was true in earlier years)
- More of the Top 10's hectares were fertilised by Fertigation
- More Top 10 hectares were fully fenced for biosecurity purposes (64% Top 10, compared to 23% or Remainder).

(Ongoing Operating Costs incurred due to the discovery of Panama TR4 are not recorded separately by the majority of growers / participants. It is not possible to define how much of the operating cost increase is directly related to measures aimed at containment of TR4.)

TRENDS IN MANAGEMENT PRACTICES

The key trends observed in management practices between F2013 and F2017 include, and are not limited to:

1. **Sources of labour:**

   By 2016/17, 14% of the total labour employed by benchmarking participants has converted primarily from international / backpacker labour to Pacific Islands labour(zero in 2012/13 and increased from 6% the prior year).

2. **Irrigation Practices**

   In 2016/17 60% of benchmarking participants were using some form of technology (e.g. Tensiometers, Enviroscan, other forms including the Wiser System) to determine irrigation frequency, up from 46% in 2012/13.

   The number of benchmarking participants that irrigate daily or more frequently than daily in 2016/17 was 57%, up from 38% identified in 2012/13.

3. **Use of External Expertise for Nutrition Advice and Pest Monitoring**

   The percentage of participants that engage paid external advisors for nutrition advise and pest monitoring in 2016/17 was 48% and 43% respectively, both approximately double the level identified in the 2012/13 survey.

4. **Practice Nurse Suckering**

   50% (24% up to 20% of plantation and 24% between 20% and 40% of plantation) of participants were nurse suckering some proportion of their plantation area in 2016/17, up from 38% identified in 2012/13.

5. **Awareness of Ripening and Marketing Costs**

In 2016/17 50% of participants were aware of and able to list the costs they are incurring for ripening and for marketing. Whilst this information was not collected in 2012/13, researchers believe that this is a substantially higher proportion of participants than in previous years.

6. **Operating Key Performance Indicators (KPI's)**

   This area of the survey was supported by a sub-set of the participants. This section was included at the request of a group of progressive growers that are focused on measuring labour use efficiency in key farm operating tasks.

   Labour continues to be by far the largest single cost item for banana growers. The cost of labour (per hour, per FTE/annum) has increased 36% since 2008/09 and 12% since 2012/13. This is an area of increasing importance for growers to investigate and more use of objective labour use efficiency measures is recommended, given declining profitability by participants.

Readers are encouraged to review Appendix 1 and Appendix 2 to access further detail regards the changes recorded in management practices during this period.

Key Differences Between Regions

Appendix 3 contains detailed information in the form of data sets outlining key differences and similarities between participants in different regions including data regarding:

1. Production economics (benchmarking data on costs, returns, productivity, associated)
2. Management practices
3. Biosecurity and Environmental Management

Some of the key data that defines differences and similarities between regions is provided in Table 7.

Readers are encouraged to review Appendix 3 for access to all of the information collated about differences between regions.

Table 8: Some Key Parameters of Difference / Similarity Between Regions

	ALL PARTICIPANTS	Far North QLD	N.S.W.	W.A. (Carnarvon)
	2016/17	2016/17 (*)	2016/17	2016/17
Industry Production (Total, All varieties, Annual)	414,000	397,440	16,560	3,667
Average Gross Price Achieved $ / 15 KG Equivalent	$24.60	$24.63	$22.72	$31.00
Average Net Return to Grower $ / 15 KG Equivalent (After Marketing & Ripening Costs)	$21.85	$21.85	$19.87	$28.08
Total Operating Costs (Excluding Interest and Depreciation)	$23.71	$23.77	$21.74	$28.13
Average EBITDA per 15 KG Carton Equivalent Sold	$0.89	$0.88	$0.98	$2.87
Employment / Labour + Contracting & Consulting + Contract Packing	$8.81	$8.72	$10.85	$11.48
Freight Costs	3.88	$3.95	$1.41	$2.47
Packaging Costs	$2.76	$2.80	$1.81	$4.56
Marketing and Ripening Costs	$2.75	$2.78	$2.85	$2.92
Chemical and Fertilizer Costs	$2.33	$2.35	$2.03	$0.86
Top 5 Cost Lines (From Below)	$20.53	$20.60	$18.95	$22.29
Top 5 % of Total Operating Costs	87%	87%	87%	79%
Labour Productivity - Tonnes Produced and Sold Per FTE per Annum	78	83	65	73
FTEs Employed On-Farm Across Benchmarking Group	1600	1470	17	17
% of Market Fruit Sold in 15 KG International Packs	74.99%	77.00%		
% of Market Fruit Sold as XLarge (as single size pack) %	16.69%	16.00%	76.00%	
% of Market Fruit Sold as Large (as 750 G PREPACKS) %				96.00%
FTEs Employed (On Farm) Industry Wide (Using Labour Productivity Figures above)	5,325	4,788	255	50
FTEs Employed in Banana Supply Chain (Using Employment Multiplier of 2.52)	13,418	12,065	642	127
Gross Price per Tonne	1,640	1,642	1,515	2,067
Gross Value Ex Farm Gate	678,960,000	652,596,480	25,082,880	7,578,467
Output Multiplier (From Project BA 11013)	1.88	1.88	1.88	1.88
Total Industry Output	1,276,444,800	1,226,881,382	47,155,814	14,247,517
(*) NSW is assumed to be 4% of the national industry for these statistics.				

Biosecurity and Environmental Management

BIOSECURITY

Biosecurity was included in the benchmarking process for the first time in 2015/16 and 2016/17.

This information is of primary interest to researchers and industry officers charged with responsibilities associated with determining and implementing regional and industry wide policies and procedures to optimise biosecurity outcomes for industry.

Appendix 4 contains complete data sets outlining the information collated and generated from the recent benchmarking round.

Readers are encouraged to review Appendix 4 and access all of the information collated from the benchmarking program regarding on-farm biosecurity.

Highlights of the data collected on biosecurity, as summarized in Table 8, for Far North Queensland participants include:

1. Participants have implemented biosecurity measures in order to protect a total Protected Farm Area of 4,725 hectares, of which 45% floods either annually or less than annually,
2. Participants have invested an average of $1,160 per Protected Hectare and $1,640 per harvested or producing hectare since discovery of TR4,
3. Tissue culture is currently used as planting material on 85% of the hectares operated by participants with 15% of hectares continuing to be being planted using bits / pieces from their own farms, no hectares reported as planted currently with bits / pieces from other sources,
4. The majority of participants (61%) consider that they have adopted some, but not all measures for the purposes of containing TR4 / biosecurity, 34% consider that they have adopted all measures possible for this purpose,
5. Participants are predominantly (87%) using contractors at the same level as they were prior to TR4 and 90% are now requiring contractors to use farm-owned machinery, not allowing any third-party machinery to enter their farm.

Table 9: Responses to Key Biosecurity Questions – All Participants by Region

	Measure	Far Nth QLD	NSW	W.A. (Carnarvon)
Total Protected Farm Area reported by all respondents	Hectares	4,725	455	144
% of Protected Farm Area that floods		45%	20%	50%
Average Capital Invested per Protected Hectare for Biosecurity	$ / Prot. Ha	$1,161.67		
Average Capital Invested per Harvested / producing Hectare for Biosecurity	$ / Harvested Ha	$1,639.41		
% of Protected Farm Area now using Tissue Culture	% of Hectares	85.31%	1.68%	0.00%
% of Protected Farm Area now using Bits / Pieces from their own farm	% of Hectares	14.69%	98.32%	96.88%
% of Protected Farm Area now using Bits / Pieces from other farms / sources	% of Hectares	0.00%	0.00%	3.12%
% of respondents attempting to adopt Maximum Possible Biosecurity Measures	% of Respondents	35.48%	0.00%	0.00%
% of respondents Adopting some, not all Biosecurity Measures	% of Respondents	61.29%	28.57%	83.33%
% of respondents that have taken no action on Biosecurity	% of Respondents	3.23%	71.43%	16.67%
% of respondents now using Contractors at the same level as before TR4	% of Respondents	87.10%	100.00%	100.00%
% of Respondents now allowing Contractors to only use the farm's (not allowing external machinery onto farm)	% of Respondents	90.32%	100.00%	100.00%

A specific area of data collection addressed the level to which participants had taken up, or adopted, recommended farm biosecurity measures to maximize containment of TR4. Recommendations were initially communicated to growers in far North Queensland by numerous government and other agencies in the period following the discovery of TR4. The most current version of these recommendations is now contained in the publication Banana Best Management Practices On-farm Biosecurity[6], published in May 2017 (Horticulture Innovation Australia and Queensland Government).

Table 9 provides collated responses from benchmarking participants regarding the level of adoption of the recommended physical and record keeping elements.

The level of adoption in Table 9 is generally quite high for the majority of the physical elements. It was however noted by researchers that the level of effectiveness of some of the physical installations, such as structures and equipment, appear to vary from site to site. Some examples observed are: footbaths installed without roof protection (in the wet tropics), vehicle wash down / shuttle facilities that appeared to be to some degree ineffective, zoning systems that did not appear to be being fully adhered to (due to lack of awareness / diligence, or staff buy-in) and fences that are not necessarily pig-proof.

Members of the benchmarking group self -select themselves for participation in the program. In general growers who decide to participate in benchmarking tend to be amongst the more progressive and forward thinking in the grower population and are more likely to be aware and responsive to key issues management, i.e. early adopters. It is likely that the level of adoption of these recommended measures amongst the broader grower population may be lower than that identified for benchmarking participants.

[6] Horticulture Innovation Australia, Queensland Government, Banana best management practices On-farm Biosecurity, May 2017

It must also be noted that the suggested / recommended measures are not required by law for growers who have not had TR4 found on their properties. These measures, or similar measures are mandatory by law for growers on whose farms TR4 has been found.

Of note are the average responses regarding fencing and earthworks installed for the purpose of biosecurity. It has become clearly apparent that the containment of feral pigs, whilst a difficult task to achieve, is of high importance for the containment of TR4. Only 27% of participants in Far North Queensland report that they have fully fenced their banana production areas (and 65% have partially fenced these areas). This may be one area that deserves further education and extension effort.

Similarly, to contain TR4 by numerous other means and not invest accordingly in containing water run-off from a farm may also prove to be false economy in the fullness of time.

Table 10 Responses on Adoption of Suggested Biosecurity Measures – All Participants by Region

	Measure	Far Nth QLD	NSW	W.A. (Carnarvon)
Adoption of Physical Biosecurity Measures / Elements				
% of (Protected) Farm Area Now With:				
1. Biosecurity Signage	% of Hectares	98.29%	30.13%	96.54%
2. Minimized Access Points to Farm	% of Hectares	94.98%	52.82%	0.00%
3. Defined Movement Processes Between Non-Contiguous Portions	% of Hectares	51.92%	0.00%	0.00%
4. Point-to-Point or RORO Systems for Produce Transport	% of Hectares	26.96%	0.00%	0.00%
5. Specific Earthworks for Biosecurity	% of Hectares	50.20%	0.00%	0.00%
6. Trained Biosecurity Officers Employed / Engaged (including owners)	% of Hectares	72.57%	0.00%	0.00%
7. Fenced All of Farm Protected Area	% of Hectares	27.34%	0.00%	0.00%
8. Fenced Some of Farm Protected Area	% of Hectares	64.53%	0.00%	0.00%
9. Defined Zoning System in Operation within Farm	% of Hectares	80.08%	7.69%	0.00%
10. Footbaths or Footwear Exchanges Used for all farm entry / exits	% of Hectares	97.95%	0.00%	0.00%
Average elements adopted (out of 10)	***Number / 10***	***7.1***	***1.25***	***1***
Adoption of Biosecurity Record Keeping Systems				
% of (Protected) Farm Area Now With …. In Place				
1. Visitors Register	% of Hectares	52.99%	0.00%	0.00%
2. Vehicle Movement Register	% of Hectares	13.54%	0.00%	0.00%
3. Decontamination Register	% of Hectares	0.00%	0.00%	0.00%
4. Biosecurity Training Register	% of Hectares	45.50%	0.00%	0.00%
5. Banana Planting Register	% of Hectares	26.37%	0.00%	0.00%
6. Waste Disposal Register	% of Hectares	1.54%	0.00%	0.00%
7. Continuous Disease Surveillance Testing & Recording	% of Hectares	5.29%	0.00%	0.00%
8. Active Checking of Past Exposure / Work Locations for New Employees	% of Hectares	73.90%	35.26%	80.33%
Average elements adopted out of 8	***Number / 8***	***2.3***	***1***	***1***

ENVIRONMENTAL MANAGEMENT

Environmental management topics were included in the benchmarking process for the first time in 2015/16 and 2016/17.

This information is currently of primary interest to researchers and industry officers charged with responsibilities associated with determining and implementing regional and industry wide policies and procedures to optimise environmental management outcomes for industry. However, changes to legislation are expected in the near future. As a result, from this growers will be required to comply to new measures aimed at closer management of the these and similar on-farm environmental management issues (reference).

Table 10 highlights some of the key areas of participant responses about on-farm environmental management.

Readers are encouraged to review Appendix 4 and access all of the information collated from the benchmarking program regarding environmental management

Table 11: Key Environmental Data Collected from All Participants by Region

	Measure	Far Nth QLD	NSW	W.A. (Carnarvon)
Total Protected Farm Area reported by all respondents	Hectares	4,725	455	144
% of Protected Farm Area with Minimum 60% Ground Cover (Living or Dead) in Inter Rows	% of Hectares	59%	80%	0%
% of Protected Farm Area with at least 3% gradient	% of Hectares	20%	84%	0%
% of area > 3% gradient with Diversion Drains in place	% of Hectares (3% PLUS)	79%	40%	0%
% of Area with Spoon Drains to collect run-off and slow down flow	% of Hectares (3% PLUS)	83%	27%	0%
% of area > 3% gradient with all drainage water leaving farm by way of a Silt Trap or similar structure	% of Hectares (3% PLUS)	55%	13%	0%
% of area > 3% gradient with uniformly dense Vegetation Buffers / Contour Banks or other means of (future) compliance	% of Hectares (3% PLUS)	76%	20%	0%
% Nutrition applied by Fertigation	% of Hectares	66%	5%	97%
% Nutrition applied by Ground Application	% of Hectares	34%	96%	3%
Average Kg of N / Hectare / annum on PLANT CROPS	Kg N / Hectare	307	191	307
Average Kg of N / Hectare / annum on RATOON CROPS	Kg N / Hectare	325	192	392
Average Kg of P / Hectare / annum on banana crops	Kg P / Hectare	61	35	70
Average Kg of K / Hectare / annum on banana crops	Kg K / Hectare	893	282	598
% of Respondents Using Banana BMP	% of Respondents	45%	0%	0%
% of Respondents Using Better Bunch App	% of Respondents	6%	0%	0%

Monitoring and evaluation

1. **To what extent has the project increased the knowledge and use of business performance metrics (benchmarking) in Australian banana growing businesses?**

Many of the continuing participants from previous rounds (70%) re-committed to the program.

Whilst acknowledging that impacting events that have occurred since the last round of benchmarking data collection, the level of interaction with participants once they received their personalised reports is the highest that has been experienced since the program began in 2008/09.

Including those delivered to participants from this round of benchmarking there have been 309 sets of participant reports delivered over six years of operations. None of these participants had been exposed to, or participated in a benchmarking program prior to this involvement. Even after six separate years of participation, 70% of the participants in this recent round were involved in prior rounds.

2. **To what extent has the project provided the Australian banana industry with**
    a. **business performance benchmarks and**
    b. **trends at the regional**
    c. **and national level?**

This project and its predecessor projects have, at the end of each round of data collection and reporting delivered detailed end of project reports.

All prior reports focused on delivering information about the benchmarks used for analysis. Trends, at individual participant, regional and national levels have been reported upon on each communication cycle (2011, 2012, 2014 and 2018).

With a total of six years of data analysed covering an elapsed period of nine (9) years, the current communication sessions and project final report has been able to draw the most meaningful conclusion and make more, and more incisive recommendations.

3. **To what extent has the project met the needs of industry levy payers to**
    a. **provide updated benchmarking data, and**
    b. **an accurate depiction of industry performance drivers?**

Based on the feedback, comments and appreciation that has been provided from levy payers, researchers, peak industry body personnel and supply chain partners, levy payers and stakeholders have expressed unanimous satisfaction that it has met their needs.

4. **To what extent were targeted participation levels achieved, in terms of**
    a. **number of participating growers and**
    b. **the proportion of industry captured in data?**

The targeted participation levels for this round of activity were agreed as a minimum of 40 participants, representing no less than 25% of industry production volume.

Forty-six (46) participants were successfully recruited, accounting for 31% of production in 2015/16 and 30% of production in 2016/17.

5. T**o what extent were key stakeholders satisfied with project outputs and communication materials (e.g.**
    a. **one-on-one engagement with participants,**
    b. **articles,**
    c. **presentations and**

d. **reports for wider industry audience)?**

Project outputs and analysis was presented at six separate communication meetings held in the growing regions. Approximately forty (40) people attended each of these events.

Numerous attendees at the six communication events held between July and August took the time to personally thank the researchers for their presentation. Numerous individuals also advised that the benchmarking information was, in their opinion, amongst the most informative and useful of all of the topics delivered at the same events.

The Team Leader from the Queensland Department of Agriculture and Fisheries, Banana Production Systems personally thanked the researchers for the presentations delivered at industry meetings in July and August 2018.

The Chairman of the Peak Industry Body elected to use the results from this round of benchmarking as the topic for his Chairman's report in the August 2018 edition of Australian Bananas magazine

Specialist agronomists that are focused on the banana industry in New South Wales and Western Australia have requested and been provided copies of the communications materials (PowerPoint presentations) relevant their regions. A total of two copies of materials have been provided.

6. What efforts did the project make to improve efficiency (in methodology – collection of data)?

Electronic submission of completed data sheets from participants and contribution via one-on-one meetings were both available to participants.

With little interest expressed in submitting entirely by electronic channels a sub-set of the survey questions, predominantly the 'hard data ' required for benchmarking such as financials, harvest data and production areas was created and distributed to all participants as a pre-cursor to one-on-one meetings.

This initiative did assist with approximately 30% of participants, who had taken the time to collate and, in some instances enter, this data prior to one-on-one meetings.

For first-time participants it once again proved important to meet participants and enable them to be comfortable about the personnel and organisation they were planning to share sensitive personal and confidential business information with.

Recommendations

Value of Bananas and The Banana Category

Despite evidence that productivity and operating costs are well managed by banana growers, average Cash Profits for growers have declined by (-62%) in CPI adjusted terms in the eight years ending June 2017. If measured from 2013 (the first relatively normal year following Cyclone Yasi) to 2017 the decline is even greater. In CPI adjusted terms the average price has declined by (-12%), in this period, almost double the decline in operating costs (-7%).

The banana category is one of the largest fresh produce categories, however sales are dominated by a single product line and price-point, with limited alternative product lines (e.g. lady finger, red tip eco banana). In many retail stores the category is displayed in different areas of the fresh food section, often several aisles apart. Concurrently, competing categories are offering multiple product lines and price points, each with similar shelf space, displayed adjacent to each other as a single diversified category.

Investment is needed to strengthen the category through expanding the range of product lines, at a range of price-points, targeted at differentiated motivations for purchase (differentiated consumer market segments). The banana category may benefit from the allocation of marketing funds to build and reposition lines (existing and future) other than the currently dominant line (XL and L cavendish as a single facing) and consumer research and testing to further understand consumer preferences and identify opportunities for product diversification.

In season two of the TV program War on Waste, Coles referred to a recent relaxation of their specifications for bananas, imputing that this was, at least in part, for reasons of improved waste management in that industry. This related to the change to the 15 Kg mixed size pack.

The introduction of the 15 Kg (mixed size) international pack since 2012/13 has meant 13% more produce is delivered to market per standard unit of sale. By 2016/17 seventy four percent (74%) of all produce sold by participants was sold in this pack (78% of tropical cavendish sold). Between 2012/13 and 2016/17 the average gross price achieved by participants, for all packs and sizes had increased by 3.3% (-5.2% CPI adjusted).

Do supermarkets and/or marketers maintain that the new pack represents a relaxing of specifications, therefore justifying a decline in value per kilogram?

Alternatively, this change may be facilitating the shift towards supplying a product that more closely meets consumers expectations. Anecdotal information provided to the researchers by consumers [7] has suggested there may be significant numbers of consumers that would prefer to be able to buy smaller bananas for at least some of their purchases (e.g. for school lunches, consumption in the home). **If this feedback is further investigated and found supported by consumer research it may suggest that the International Pack justifies a higher value per kilogram than the previous offer, which was 76% XL (single size packs) in F2013.**

The causal factors in the decline in average prices received by growers is worth further investigation. In a similar vein to the past actions of other produce sectors / supply chains, the industry can benefit from a proactive strategy of negotiation with marketers, end users (and of course ultimately consumers) to reposition the value of bananas in the domestic market. This would require collective action by Industry leaders, peak industry body and major marketers.

[7] Pers. comms, Pinnacle Agribusiness during the data collection periods for the 2011/12, 2012/13, 2015/16 and 2016/17 benchmarking years.

Labour Use Efficiency and Labour Management Skills

Labour and contracting is the largest, and most manager controllable cost category for banana growers. Uniquely bananas are harvested all year around, in every growing region. Mid-sized and larger growers employ many people, every week of the year. However, the range of costs incurred for labour and contracting varies greatly from grower to grower (in 2016/17 benchmarking data, labour costs ranged from $6 per 15 kg to $13 per 15 kg, average $8.55)

Investment is needed in process re-engineering and labour management skills and methods for banana growers. Labour use efficiency, and maintenance of sound yields and associated work flows (to enable efficient labour use) are the two areas of on-farm production most readily influenced by grower skill and expertise.

Traditionally industry R & D funds are seldom allocated to non-scientific areas of research. However, in the banana industry the most impactful aspects of grower viability is the management of labour and process re-engineering in key areas of on-farm practices, such as crop scheduling, picking and packing.

Industry Driven Biosecurity as an Asset

Most progressive and committed banana growers in far North Queensland have invested substantial capital in introducing and upgrading physical biosecurity systems to contain TR4 (average $1,600 per producing hectare by benchmarking participants since discovery of TR4). Not all investments / installations / structures appear to be operating as effectively as intended.

Investment in new initiatives / approaches to establishing effective farm biosecurity, on all farms, will maximize the life span of viable cavendish production in Far North Queensland.

Government (i.e. Biosecurity Queensland) has a role focused on infected and high-risk sites and surveillance. It is in the industry's best interests to invest in mechanisms / initiatives to make biosecurity an effective tool for industry sustainability. Attacked head-on farm biosecurity can be an asset.

Transparency and Commercial Awareness

Grower awareness of the commercial arrangements that exist between growers and their marketers varies greatly in most horticultural sectors, including bananas. Fifty percent (50%) of benchmarking participants in 2016/17 were aware of the charges they incur for marketing and ripening, compared to eighty percent (80%) of the Top 10.

Freight ($3.88 / 15 Kg, 2016/17), packaging ($2.76 / 15 Kg, 2016/17) and marketing and ripening costs ($2.75 / 15 kg, 2016/17) are the second, third and fourth largest cost categories respectively. All growers know, or can readily access, what they are paying for freight and packaging. This is not the case with marketing and ripening costs

The initiative of at least one large banana marketer to operate effectively as an agent not a merchant, hence providing full transparency to growers (of their post-farm gate marketing and ripening costs) is of huge benefit to the industry. More focus and effort employed to increase grower awareness of, and ability to negotiate, post farm-gate marketing and ripening costs and achieving increased transparency in this area can only enhance grower viability.

Yield Improvement in New South Wales Banana Production

Multiple years of benchmarking data has highlighted that yields, particularly for cavendish bananas, are significantly lower in New South Wales than in Far North Queensland. Historically this has been seen as a direct result of changed growing conditions, slower cycle times, and possibly smaller bunches.

The most recent benchmarking data also highlighted that nutrient levels applied in New South Wales differ significantly to those applied in Far North Queensland. Feedback from some New South Wales growers also suggests that they restrict nutrient applications, so as bunches do not get 'too heavy' to handle on hilly production land. Time and circumstances may have created a 'low-input, low-output' approach by some New South Wales growers.

Even a small improvement in average yields in New South Wales is capable of having significant impact on their average cash profits. Re-visiting nutrition and process design related to harvesting / handling of bunches on farm is recommended as one step to improving the viability of growers in New South Wales

Alternative Markets Focus for New South Wales Cavendish

New South Wales cavendish growers commonly sell some of their produce to markets other than the central wholesale markets. This is predominantly sold in re—usable crates to local greengrocers, weekend markets and similar. There is no evidence of any coordinated and well researched initiatives to reconfigure product offerings targeted at specialty and niche markets outside of the growing regions.

Collaborating groups of growers and / or local marketers in conjunction with growers, may benefit from investigating and defining new market segments that have specific requirements (e.g. different sized fruit, 'tasty' bananas, and / or other attributes (physical and augmented)) that could be produced, packed, communicated / promoted, and delivered with changes to the production, packaging and marketing of NSW cavendish bananas.

New South Wales cavendish growers believe that their produce is tastier than that produced in North Queensland. However, there is little evidence that this hypothesis has been tested and used as the basis for product differentiation to niche markets.

Throughput Can Drive Benefits from SBC Coop, Carnarvon W A

The banana industry based at Carnarvon in Western Australia is notably different from that found on the eastern seaboard. High density planting, focus on producing smaller fruit, pre-packing and direct marketing to supermarkets in Perth are just some of the differentiators. Through these actions, growers are getting a premium price for their product and spending considerably more to do so. Carnarvon growers that are achieving sound yields are enjoying better average cash profits than their eastern seaboard equivalents.

The local Sweeter Banana Cooperative (SBC) is responsible for circa 60% of the volume being marketed out of Carnarvon. The Coop is currently operating at significantly less throughput than its capacity. Despite mixed opinions expressed about it, benchmarking data suggests that the Coop business model is delivering good outcomes for members and these benefits could be notably improved and enjoyed by more growers, if throughput volumes increased.

In Carnarvon the industry and its participants may benefit from increasing the volumes of product handled by the local Cooperative, continuing to focus on consistently sound yields (possibly requiring tuning to nutrition, pest control, water use efficiency), and negotiating with operators of the irrigation scheme to put a case for cost relief based on well researched costing data (per 15 Kg / kilogram or tonne of produce produced).

References

Intellectual property, commercialization and confidentiality

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

Acknowledgements

1. Project Reference Group:

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Appendices

Appendix 1: All Industry Report

APPENDIX 1 – ALL INDUSTRY

TABLE OF CONTENTS

(Biosecurity and Environmental Management are reported on separately in Appendix 4)

1. BENCHMARKING GROUP

During the six years of data collection for this benchmarking program more than 300 separate, annual, data sets from Australian banana growers and the resulting annual business performance profiles have been analysed and reported on. Further, more than 300 personalised annual benchmarking reports have been delivered to the participants in the same period. Benchmarking participation information is provided in Table 1.

Six (6) non-consecutive years of benchmarking data collected during a nine-year period between 2008/09 (F2009) and 2016/17 (F2017)

Table 1: All Participants in Benchmarking Program Since F2009

B	Unit	Group Average 2008/09	Group Average 2009/10	Group Average 2011/12	Group Average 2012/13	Group Average 2015/16	Group Average 2016/17
Industry Production (Total, All Varieties)	Tonnes		310,000	202,000	340,000	396,000	414,000
Total Production in Benchmarking group	Tonnes	62,000	88,000	90,000	104,000	121,000	125,000
% of Industry Production in Benchmarking	%		28%	44%	30%	31%	30%
Number of Benchmarking Participants	No.	52	59	57	49	46	46
Annual Cost of 1 Full Time Employee Equivalent (FTE)	$ / FTE	34,406	38,287	40,743	41,818	45,195	46,686
Total Producing Hectares	Ha	2,083	3,097	3,188	2,862	3,069	3,123

In the most recent round of data collection, data was collected for the financial years ending June 30th, 2016 and June 30th, 2017. The composition of the benchmarking group in this round is as provided in Table 2.

During these two financial years the Australian banana industry produced an average of 405,000 tonnes per annum, indicating that the benchmarking group accounted for 31% of the total production of the industry in the same two-year period.

Table 2: Industry Wide Benchmarking Group (All Regions, All Varieties) F2016 & F2017

	Up to 25 Ha	26 to 50 Ha	51 to 100 ha	Over 101 ha	TOTAL
No. of Participants	*22*	*5*	*12*	*7*	*46*
% of Participants	*48%*	*11%*	*26%*	*15%*	*100%*
Total Producing Ha	226	203	833	1,861	3123
Average Producing Ha	13	41	69	266	
median Producing Ha	9.8	36	66	160	
% of Producing Area	7%	7%	27%	60%	100%
Total 15 kg Equiv. Sold	466,484	624,809	2,150,713	5,075,040	8,317,046
Average 15 kg equiv. Sold	25,916	124,962	179,226	725,006	
Median 15 Kg equiv. Sold	23,242	96,394	181,204	404,825	
% of 15 kg Equiv. Sold	6%	8%	26%	61%	100%

Australian Banana Producing Area

According to the Australian Banana Growers Council (ABGC) there was 12,790 hectares of producing banana plantations in Australia in 2016/17. However according to data collected on farm, annually, by the Carnarvon Banana Producers Committee of the Agricultural Produce Commission of Western Australia, the producing area in Carnarvon WA was 140 hectares (44 growers), and not 240 hectares as per ABGC data, in the year ended December 2017. Taking both these sources into account, there appears to have been approximately 12,690 hectares of bananas in that year.

2. ECONOMICS AND PRODUCTIVITY

2.1 Costs, Returns and Productivity

Two material changes have occurred in the industry since the last year in which benchmarking data was collected (2012/13) being:

Discovery of Panama Disease Tropical Race 4 (TR4) in Far North Queensland in March 2015 (impacting cavendish banana varieties), and

The introduction of the 15 Kilogram International Pack (specifications differ between major supermarket chains, however in the main the specification requires 70% Extra Large and 30% Large fruit). This has predominantly applied to the packing and shipment of tropical cavendish bananas from Far North Queensland.

Despite these changes, tropical cavendish bananas remain the predominant product variety produced and sold in the Australian domestic market, accounting for more than 95% of total product delivered to market, nationally. Changes to product specifications, productivity, costs and returns tropical cavendish bananas therefore has a direct impact on the trends and issues in the Australian industry.

Whilst benchmarking has been occurring in the Australian banana industry since 2008/09 (F2009) the mandatory levy system has been in place since 2009/10 (F2010). The levy system also enables the collection of industry annual production data for the industry. Since both benchmarking data and industry production data have both been operating since 2009/10 (F2010) this analysis has focused on the period from 2009/10 (F2010) to 2016/17 (F2017), a period of eight (8) years commencing July 1st, 2009.

Major trends demonstrated for benchmarking participants between 2009/10 (F2010) and 2016/17 (F2017) and provided in Table 3, are:

1. **2% Increase in average gross return per 15 Kg equivalent,**
2. **7% Increase in average Operating Costs per 15 Kg equivalent, and**
3. **(-56%) Decrease in average Cash Profit reported (EBITDA) per 15 kg equivalent**

And concurrently:

4. **41% average yield increase (Tonnes or 15 Kg cartons / ha), and**
5. **21% increase in average labour productivity (measured in tonnes / FTE / annum)**

Table 3: Changes to Costs and Returns F2010 to F2017

	Unit	2009/10	2016/17	Change % 09/10 to 16/17	Change (Q or $) 09/10 to 16/17
Yield	Kgs / Ha	28,321	39,945	41%	11,623
Yield	15 Kg / Ha	1,888	2,663	41%	775
Average Gross Price	$ / 15 Kg	24.18	24.60	2%	0.4
Average Net Return to Grower (After Paying Marketing and Ripening Costs)	$ / 15 Kg	22.96	21.85	(5%)	(1.1)
Total Operating Costs (Excluding Interest and Depreciation)	$ / 15 Kg	22.16	23.71	7%	1.6
Average EBITDA (Cash Profit)	$ / 15 Kg	2.01	0.88	(56%)	(1.1)
Labour Productivity	Tonne / FTE / annum	65	78	21%	13

Table 4 also provides trends in the five (5) largest cost line items for benchmarking participants. These five cost line items consistently account for between 85% and 90% of all costs for participants, across different years and different sub-groups / regions / types of production of bananas. Labour, contracting and contract packing fees alone (first line item in Table 4) consistently account for between 36% and 40% of total costs.

Table 4: Changes in Key Cost Categories F2009 to F2017

Cost Category	Unit	2009/10	2016/17	Change % 09/10 to 16/17	Change (Q or $) 09/10 to 16/17
Employment / Labour + Contracting & Consulting + Contract Packing	$ / 15 Kg	9.51	$8.81	(7%)	(0.70)
Freight Costs	$ / 15 Kg	3.57	$3.88	8%	0.30
Packaging Costs	$ / 15 Kg	2.17	$2.76	27%	0.58
Marketing and Ripening Costs	$ / 15 Kg	0.90	$2.75	205%	1.85
Chemical and Fertiliser Costs	$ / 15 Kg	2.45	$2.33	(5%)	(0.11)
Other Operating Costs		3.56	3.19	(10%)	(0.36)
TOTAL COST					

In Figure 1 the annual production volumes of the Australian banana industry and the major events that have impacted the industry since 2009/10 (F2010) are plotted against the Cash Profit per 15 Kg reported by benchmarking participants.

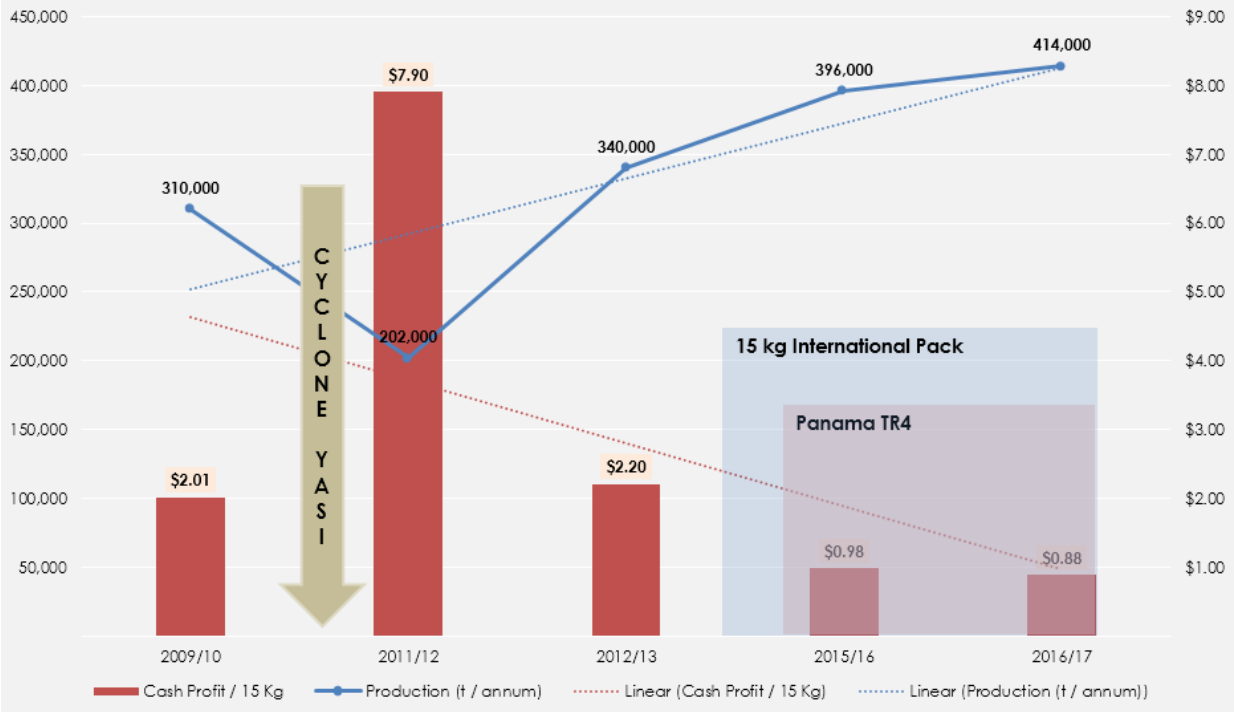
Further to information in Figure 1, key trends between 2009/10 (F2010) and 2016/17 (F2017) include:

1. **Australian banana production had increased 34%**
2. **The Australian population had increased by 10%**

3. **The per capita consumption of bananas had in Australia increased by 21%, and**

4. **The cost of employing one Full Time Employee (FTE) on Australian banana farms had increased 22% (refer Table 5).**

Figure 1: Banana Production, Cash Profits and Major Events F2009 to F2017



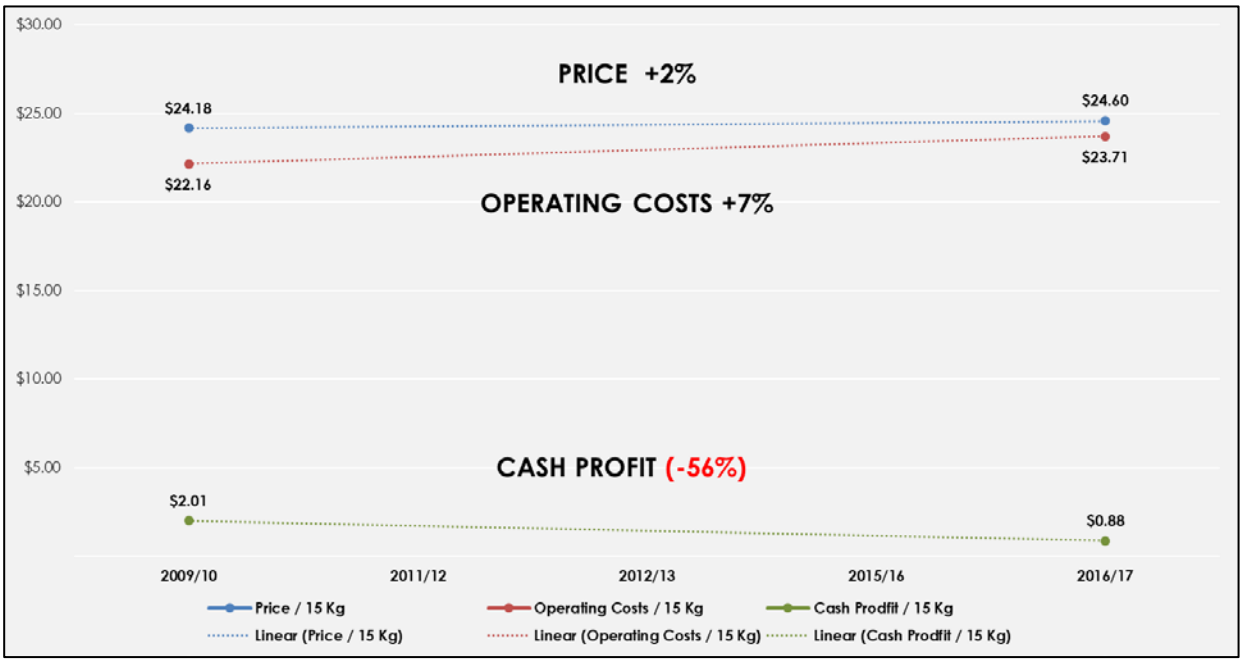
The Cash Profit figures (EBITDA figures) in Figure 1 are calculated as:

Gross Price Achieved – Operating Costs = Cash Profit (EBITDA)

The average gross price (per 15 Kg) and average operating costs (per 5 Kg) for benchmarking participants in 2009/10 (F2010) and in 2016/17 (F2017) are also provided in Figure 2, and the resulting Cash Profit per 15 kg.

(Refer Figure 2) During this period the gross price received by benchmarking participants (price before paying for marketing commissions and ripening costs) increased by 2%, while operating costs increased by 7%, resulting in a (-56%) decline in Cash Profit (not adjusted for CPI changes in the period).

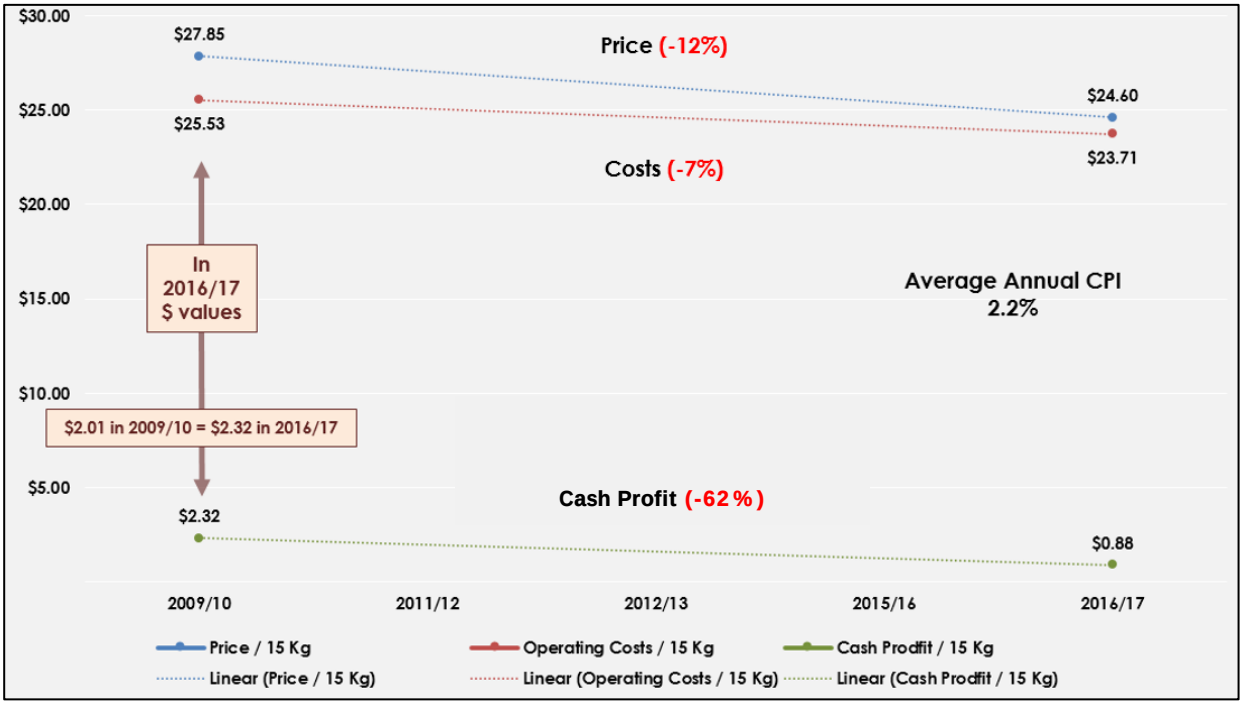
Figure 2: Trends (Price, Costs and Cash Profit) F2009 to F2017



In this eight (8) year period the Consumer Price Index 'All Groups Brisbane' increased by 15.2%.

The data (in Figure 2) is **adjusted for CPI [1]in Figure 3**, below, accounting for the change in the time-value of money in the same period.

Figure 3 Trends (Price, Costs and Cash Profit) - CPI (*) Adjusted - F2009 to F2017



(*) Data is presented in 2016/17 dollar values

[1] http://www.qgso.qld.gov.au/products/tables/cpi-all-groups-bris-wt-avg-eight-qtr/index.php

When adjusted for CPI:

1. Average Goss Price decreased by **-12%** in eight (8) years [average **-1.5%** p.a.]
2. Average Operating Costs decreased by **-7%** in eight (8) years [average **-1.15%** p.a.], and
3. Average EBITDA (Cash Profit) decreased by **-62%** in eight (8) years [average of **-7.75%** p.a.]

When this analysis is carried out for the period between 2011/12 (F2012) and 2016/17 (F2017) the same trends are evident, however more accentuated. This is because in both 2011/12 (F2012) (and in 2012/13 (F2013)) cash profits for benchmarking participants were higher than they were prior to the impact of Cyclone Yasi (February 2011). Using either F2012 or F2013 as the base line / starting point for an analysis of trends over time is therefore not considered to be representative of true long-term trends.

Table 5: Award Rates (Horticulture) F2009 to F2017[2]

Year Ended June 30,	$ / Hour	Annual $ / FTE	Variance + / -
2009	15.69	34,406	
2010	17.46	38,287	11%
2011	18.06	39,603	3%
2012	18.58	40,743	3%
2013	19.07	41,818	3%
2014	19.64	43,068	3%
2015	20.13	44,142	2%
2016	20.61	45,195	2%
2017	21.29	46,686	3%
% Increase 2008/09 to 2016/17		12,280	36%
% Increase 2009/10 to 2016/17		8,399	22%

2.2 'Top 10' Groups in F2013 and F2017

Data for the 'Top 10' (the ten (10) most profitable benchmarking marking participants per standard carton sold) was not collected and separately analysed in the first two years of benchmarking (2008/09 and 2009/10). In 2011/12 and 2012/13 the 'Top 10' group, was heavily dominated by producers in Far North Queensland that produced conventional tropical cavendish bananas.

This pattern demonstrated in 2012/13 (F2013) as shown in Table 6.

[2] https://www.fwc.gov.au/documents/documents/modern_awards/award/ma000028/default.htm

It is of note that in the most recent year of data collected, 2016/17 (F2017) the composition of the 'Top 10' group is dramatically different to that in F2013. This is also the case for 2015/16 (F2016).

The key changes as shown in Table 6, include:

1. A marked reduction in total area produced by the Top 10 (62% less producing area in Top 10), and concurrent marked decrease in the average size of Top 10 businesses (also true for total cartons / tonnes produced by the Top 10)

2. A major shift from the previous dominance of Far North Qld cavendish growers in the Top 10:

    a. From 9 out of 10 and 98% of Top 10 producing area in 2012/13,

    b. To 4 out of 10 and 74% of producing are in 2016/17.

Table 6: Composition of 'Top 10' Group F2013 and F2017

	Far North QLD Cavendish	Far North QLD Lady finger	New South Wales	Western Australia	Total
In 20012/13 (F2013)					
Number of 'Top 10' Businesses	9			1	10
Top 10' Producing Hectares	976			19	994
% of 'Top 10' Producing Hectares	98%	0%	0%	2%	100%
In 2016/17 (F2017)					
Number of 'Top 10' Businesses	4	2	1	3	10.00
Top 10' Producing Hectares	283.70	73.38	10.50	15.27	382.85
% of 'Top 10' Producing Hectares	74%	19%	3%	4%	100%

Considerable detail is provided in Table 7 and Table 8 about changes to the physical and financial performance of Top 10 businesses between 2012/13 (F2013) and 2016/17 (F2017)[3]. The following points summarise some of the key areas of difference /change.

For Top 10 Businesses - changes F2013 to F2017

1. Yields not materially different (Variance **-2%**)

3. Gross Prices up 8% (**-1%** CPI adjusted)

4. Operating Costs 16% up (**-8%** CPI Adjusted)

5. Cash Profit down **-28%** (**-37%** CPI Adjusted)

6. Rapid domination of 15 Kg International Pack (from a minimal % in F2013 to 61% in F2017)

[3] F2013 to F2017 data is used in this level of analysis /discussion. The benchmarking data demonstrates some notable differences for the period before and after Cyclone Yasi, amongst them what appears to be a permanent increase in average yield for participants which, which directly impacts direct and indirect costs per 15 kg produced and sold. F2013 to F2017 is also more recent and considered therefore to be more salient for analysis purposes, at this level.

7. Ongoing Operating Costs incurred due to the discovery of Panama TR4 are not recorded separately by most growers / participants. It is not possible to define how much of the operating cost increase is directly related to measures aimed at containment of TR4.

8. Capital invested in new structures and equipment for the containment of TR4 (biosecurity) has been $1,600 per producing hectare on average for benchmarking participants.

Table 7: Key Changes to Top 10 Business Performance F2013 to F2017 (Incl CPI Adjusted)

		ALL INDUSTRY TOP 10 F2013	ALL INDUSTRY TOP 10 F2017	Variance Q or $	Variance %	Variance % CPI Adjusted
ENTERPRISE INFORMATION						
Total KGS Harvested per Producing Hectare	Kgs / Ha	42,634	41,874	-760	-2%	
Total 15 KG Cartons (Equiv.) Harvested / Ha	15 Kg / Ha	2,842	2,792	-51	-2%	
Average Gross Price $ / 15 KG Equivalent	$ / 15 Kg	$26.19	$28.15	$1.97	8%	-1%
Average Net Return to Grower $ / 15 KG (After Marketing and Ripening Costs)	$ / 15 Kg	$24.23	$24.98	$0.74	3%	-6%
Total Operating Costs (Excl. Int. & Dep.)	$ / 15 Kg	$19.96	$23.08	$3.12	16%	8%
Average EBITDA per 15 KG Carton Equiv.	$ / 15 Kg	$7.10	$5.13	($1.97)	-28%	-37%

(Please note: F2013 benchmarking results demonstrated some ongoing positive impact from the industry recovery following Cyclone Yasi. For example, Cash Profit for the benchmarking group in F2013 averaged $2.20 per 15 kg, compared to $2.01 in F2010, prior to Cyclone Yasi. The major factor noted as impacting F2013 results for participants were elevated yields compared to previous years. Prices and costs in F2013 were not materially different from F2010 or F2017. For more detail refer to 2009/10 and 2012/13 columns in Table 12*)*

Table 8: Detail of Trends for Top 10 Businesses F2013 to F2017

		ALL INDUSTRY TOP 10 F2013	ALL INDUSTRY TOP 10 F2017	Variance Q or $	Variance %
ENTERPRISE INFORMATION					
Total KGS Harvested per Producing Hectare	Kgs / Ha	42,634	41,874	-760	(2%)
Total 15 KG Cartons (Equiv.) Harvested / Ha	15 Kg Cartons / Ha	2,842	2,792	-51	(2%)
Average Gross Price $ / 15 KG Equivalent	$ / 15 Kg	$26.19	$28.15	$1.97	8%
Average Net Return to Grower $ / 15 KG (After Paying Marketing and Ripening Costs)	$ / 15 Kg	$24.23	$24.98	$0.74	3%
Total Operating Costs (Excl. Int. & Dep.)	$ / 15 Kg	$19.96	$23.08	$3.12	16%
Average EBITDA per 15 KG Carton Equiv.	$ / 15 Kg	$7.10	$5.13	-$1.97	(28%)
Tonnes Produced and Sold Per FTE per Annum	Tonne / FTE / annum	89.63	83.48	-6.16	(7%)
% of Market Fruit Sold in 15 KG Intern. Packs	%		60.64%	60.64%	
% of Market Fruit Sold as XL (single size) %	%	85.91%	25.37%	-60.54%	(70%)
PACK OUT, PRODUCTIVITY, BIOSECURITY, ENVIRONMENTAL					
% of Market Fruit Sold as International Pack	%		60.64%	60.64%	
% of Market Fruit Sold as Single Size	%	100.00%	39.36%	-60.64%	(61%)
% of Market Fruit Sold as Jumbo %	%	1.18%	3.05%	1.87%	159%
% of Market Fruit Sold as XLarge %	%	85.91%	25.37%	-60.54%	(70%)

		ALL INDUSTRY TOP 10 F2013	ALL INDUSTRY TOP 10 F2017	Variance Q or $	Variance %
% of Market Fruit Sold as Large %	%	9.77%	7.5%	-2.27%	-23%
% of Market Fruit Sold as Medium %	%	2.66%	3.12%	-1.54%	17%
% of Market Fruit Sold as Small %	%				
% of Market Fruit Sold as Other 1 %	%	0.24%	0.25%	0.00%	2%
% of Market Fruit Sold as Other 2 %	%	0.23%	0.08%	-0.15%	(65%)
PROFITABILITY PER PRODUCING HA					
Total Sales Revenue	$ / Ha	$76,911	$78,749	$1,838	2%
Total Costs	$ / Ha	$58,013	$65,333	$7,320	13%
Net Profit (Before Tax)	$ / Ha	$18,898	$13,416	-$5,482	(29%)
EBIT	$ / Ha	$19,644	$14,074	-$5,570	(28%)
Total Operating Costs (Excluding Interest and Depreciation)	$ / Ha	$56,725	$64,425	$7,700	14%
EBITDA	$ / Ha	$20,186	$14,324	-$5,862	(29%)
COSTS PER PRODUCING HA					
Chemical and Fertilizer Costs	$ / Ha	$5,126	$6,258	$1,132	22%
Consultants and Contractor Fees	$ / Ha	$1,631	$1,744	$113	7%
Contract Packing Fees	$ / Ha	$29	$1,521	$1,492	5,214%
Depreciation and Amortization Costs	$ / Ha	$542	$250	-$292	(54%)
Employment / Labour Costs	$ / Ha	$18,519	$20,901	$2,382	13%
Finance Costs	$ / Ha	$747	$658	-$88	(12%)
Freight Costs	$ / Ha	$12,043	$8,615	-$3,428	(28%)
Fuel & Oil Costs	$ / Ha	$1,022	$583	-$439	(43%)
General Expenses	$ / Ha	$2,387	$3,511	$1,124	47%
Insurance Costs	$ / Ha	$258	$175	-$83	(32%)
Marketing & Ripening Costs	$ / Ha	$5,553	$8,870	$3,317	60%
Motor Vehicles	$ / Ha	$100	$173	$72	72%
Packaging and Pallet Costs	$ / Ha	$5,937	$7,373	$1,436	24%
Power & Gas Costs	$ / Ha	$614	$539	-$75	(12%)
Rates Levies, Licenses, Fees, Registrations	$ / Ha	$889	$1,583	$694	78%
Repairs & Replacements	$ / Ha	$2,351	$2,207	-$144	(6%)
Royalties & PVR Costs	$ / Ha				
Water Costs	$ / Ha	$266	$374	$108	41%
PROFITABILITY PER 15 Kg CARTON EQUIVALENT					
Total Sales Revenue	$ / 15 Kg	$27.06	$28.21	$1.15	4%
Total Costs	$ / 15 Kg	$20.41	$23.40	$2.99	15%
Net Profit Before Tax	$ / 15 Kg	$6.65	$4.81	-$1.84	(28%)
EBIT	$ / 15 Kg	$6.91	$5.04	-$1.87	(27%)
Total Operating Costs (Excluding Interest and Depreciation)	$ / 15 Kg	$19.96	$23.08	$3.12	16%
EBITDA	$ / 15 Kg	$7.10	$5.13	-$1.97	(28%)
Total Operating Costs as % of Gross Sales Revenue	%	73.75%	81.81%	8.06%	11%
EBITDA as % of Gross Sales Revenue	%	26.25%	18.19%	-8.06%	(31%)
OPERATING COSTS PER 15 KG EQUIVALENT					
Employment / Labour Costs	$ / 15 Kg	$6.52	$7.49	$0.97	15%
Marketing and Ripening Costs	$ / 15 Kg	$1.95	$3.18	$1.22	63%
Freight Costs	$ / 15 Kg	$4.24	$3.09	-$1.15	(27%)

		ALL INDUSTRY TOP 10 F2013	ALL INDUSTRY TOP 10 F2017	Variance Q or $	Variance %
Packaging Costs	$ / 15 Kg	$2.09	$2.64	$0.55	26%
Chemical and Fertilizer Costs	$ / 15 Kg	$1.80	$2.24	$0.44	24%
General Expenses	$ / 15 Kg	$0.84	$1.26	$0.42	50%
Repairs & Replacements	$ / 15 Kg	$0.83	$0.79	-$0.04	(4%)
Consultants and Contractor Fees	$ / 15 Kg	$0.57	$0.62	$0.05	9%
Rates, Levies, Licenses, Fees, Registrations	$ / 15 Kg	$0.31	$0.57	$0.25	81%
Contract Packing Costs	$ / 15 Kg	$0.01	$0.54	$0.53	5,311%
Fuel & Oil Costs	$ / 15 Kg	$0.36	$0.21	-$0.15	(42%)
Power and Gas Costs	$ / 15 Kg	$0.22	$0.19	-$0.02	(11%)
Water Costs	$ / 15 Kg	$0.09	$0.13	$0.04	43%
Insurance Costs	$ / 15 Kg	$0.09	$0.06	-$0.03	(31%)
Motor Vehicles	$ / 15 Kg	$0.04	$0.06	$0.03	75%
Royalties & PVR Costs	$ / 15 Kg				
Employment / Labour + Contracting & Consulting + Contract Packing	$ / 15 Kg	$7.10	$8.66	$1.56	22%
PROFITABILITY PER KG PRODUCED AND SOLD					
Total Sales Revenue	$ / Kg	$1.80	$1.88	$0.08	4%
Total Costs	$ / Kg	$1.36	$1.56	$0.20	15%
Net Profit (Before Tax)	$ / Kg	$0.44	$0.32	-$0.12	(28%)
EBIT	$ / Kg	$0.46	$0.34	-$0.12	(27%)
Total Operating Costs (Excluding Interest and Depreciation)	$ / Kg	$1.33	$1.54	$0.21	16%
EBITDA	$ / Kg	$0.47	$0.34	-$0.13	(28%)

Table 9 provides detailed information regarding the differences between the total benchmarking group, the Top 10, and te remainder for F2017

Table 9: Comparison Between All Participants, Top 10 and Remainder F2017

			F2017	
	Unit	Total Group	Top 10 F2017	Remainder F2018
1. ENTERPRISE INFORMATION				
Total Producing Hectares	Ha	3,124	383	2,741
Total Producing Plants (Stools)	Plants	4,813,784	619,637	4,194,147
Total Hectares Planted (Producing and Immature)	Ha	3,173	383	2,790
Total KGS Harvested, Packed and Sold	Kgs	124,969,470	15,887,475	108,779,730
Total KGS Sold as Juice, Oil, Processing	Kgs			
Total KGS Harvested	Kgs	124,969,470	15,887,475	108,779,730
			0	0
Total Cartons (15 Kg Carton Equivalent) Harvested Packed and Sold	15 Kg Cartons	8,331,298	1,059,165	7,251,982
Total KGS Harvested per Producing Hectare	Kgs / Ha	40,003	41,498	39,684
Total 15 KG Cartons(Equivalent) Harvested per Producing Hectare	15 Kg Cartons / Ha	2,667	2,767	2,646
Average Gross Price Achieved $ / 15 KG Equivalent of Market Fruit	$ / 15 Kg	$24.58	$28.51	$24.09
Average Net Return to Grower $ / 15 KG Equivalent of Market Fruit (After Paying Marketing and Ripening Costs)	$ / 15 Kg	$21.83	$25.18	$21.40
Total Costs per 15 KG Carton Equivalent Sold	$ / 15 Kg Carton Sold	$24.43	$23.77	$24.63
Average EBITDA per 15 KG Carton Equivalent Sold	$ / 15 Kg Carton Sold	$0.90	$5.11	$0.28
% of Market Fruit Sold in 15 KG International Packs	%	74.89%	61.19%	77.10%
% of Market Fruit Sold as XLarge (as single size pack) %	%	16.76%	25.60%	15.51%
2. BUSINESS SCALE AND OUTCOMES				
Gross Sales Revenue (Before Marketing & Ripening Costs) $	$	$4,765,433	$3,025,125	$5,297,925
Total Costs	$	$4,733,491	$2,518,146	$5,411,895
NET PROFIT BEFORE TAX	$	$31,943	$506,979	-$113,971
EBIT $	$	$83,699	$532,188	-$54,170
Total Operating Costs (Excluding Interest and Depreciation)	$	$4,591,386	$2,483,377	$5,237,264
EBITDA $	$	$174,048	$541,748	$60,661
Operating Costs as % of Gross Sales Revenue	%	96.35%	82.09%	98.86%
3. PACK OUT, PRODUCTIVITY, BIOSECURITY, ENVIRONMENTAL				
% of Market Fruit Sold as International Pack	%	74.89%	61.19%	77.10%
% of Market Fruit Sold as Single Size	%	25.11%	38.81%	22.90%

			F2017	
	Unit	Total Group	Top 10 F2017	Remainder F2018
% of Market Fruit Sold as Jumbo %	%	0.50%	3.08%	0.12%
% of Market Fruit Sold as XLarge %	%	16.76%	25.60%	15.51%
% of Market Fruit Sold as Large %	%	5.46%	2.25%	5.96%
% of Market Fruit Sold as Medium %	%	2.23%	1.13%	2.39%
% of Market Fruit Sold as Small %	%			
% of Market Fruit Sold as Other 1 %	%	0.83%	0.25%	0.92%
% of Market Fruit Sold as Other 2 %	%	0.15%	0.08%	0.16%
PRODUCTIVITY				
Carton to Bunch Ratio	Cartons / Bunch	1.74	1.58	1.78
Bags Applied per Labour Hour	Bags / Lab Hr	30.29	35.75	28.83
Bells Injected per Labour Hour	Bells / Lab Hr	37.21	64.00	32.75
Line Metres De-Suckered per Labour Hour (Spade)	Line Metres / Lab Hr	267.56	320.00	261.00
Line Metres De-Suckered per Labour Hour (Spray / Diesel)	Line Metres / Lab Hr			
Bunches Picked per Labour Hour	Bunches / Lab Hr	41.59	46.50	39.41
Cartons Packed per Pack House Labour Day	Cartons / Lab Day	140.38	145.25	138.22
BIOSECURITY				
Protected Farm Hectares Being Protected by Current Farm Biosecurity	Ha	126.71	63.33	145.11
Number of Non-Contiguous Areas / Blocks in Protected Farm Area	Number	1.38	1.00	1.48
Number of Physical Biosecurity Elements Employed (Maximum 10)	Number	5.53	5.56	5.52
Number of Biosecurity Recording Elements Employed (Maximum 8)	Number	1.97	2.25	1.88
Average Capital Invested per Protected Hectare for Biosecurity (Since Discovery of TR4)	$ / Prot. Ha	$1,161.67	$3,176.97	$811.18
Average Capital Invested per Harvested Hectare for Biosecurity (Since Discovery of TR4)	$ / Harvested Ha	$1,639.41	$3,309.80	$1,348.91
ENVIRONMENTAL				
Proportion of Current Banana Growing Area with More than 3% Gradient	%	32.56%	32.80%	32.52%
% of Nutrition Applied by Fertigation	%	68.43%	71.59%	67.88%
% of Nutrition Applied by Ground Application	%	31.57%	28.41%	32.12%
KG N / Ha / annum Applied in Plant Crops	KG / Ha	295.00	295.86	294.79
KG of N / Ha / annum Applied in Ratoon Crops	KG / Ha	305.61	307.67	304.97
KG of P / Ha / annum Applied	KG / Ha	57.52	70.50	53.19
KG of K / Ha / annum Applied	KG / Ha	797.08	816.78	790.97
4. SELECTED LABOUR USE MEASURES				
Total FTEs Employed / Producing Ha	FTE / Ha	0.39	0.38	0.39
Total Producing Hectares Managed per FTE	Ha / FTE	2.56	2.63	2.56
Gross Sales Revenue Achieved Per Total FTE	$ / FTE	$169,567	$208,917	$164,369
EBITDA Achieved Per Total FTE	$ / FTE	$6,193	$37,414	$1,882
Tonnes Produced and Sold Per FTE per Annum	Tonne / FTE	103.41	109.72	102.27
5. PROFITABILITY PER PRODUCING HA				
Total Sales Revenue	$ / Producing Ha	$65,594	$79,016	$63,781

			F2017	
	Unit	Total Group	Top 10 F2017	Remainder F2018
Total Costs	$ / Producing Ha	$65,154	$65,774	$65,153
Net Profit (Before Tax)	$ / Producing Ha	$440	$13,242	-$1,372
EBIT	$ / Producing Ha	$1,152	$13,901	-$652
Total Operating Costs (Excluding Interest and Depreciation)	$ / Producing Ha	$63,198	$64,866	$63,051
EBITDA	$ / Producing Ha	$2,396	$14,150	$730
6. COSTS PER PRODUCING HA				
Chemical and Fertiliser Costs	$ / Producing Ha	$6,191	$6,258	$6,182
Consultants And Contractor Fees	$ / Producing Ha	$2,678	$1,744	$2,809
Contract Packing Fees	$ / Producing Ha	$903	$784	$710
Depreciation and Amortisation Costs	$ / Producing Ha	$1,244	$250	$1,382
Employment / Labour Costs	$ / Producing Ha	$19,933	$20,943	$19,798
Finance Costs	$ / Producing Ha	$712	$658	$720
Freight Costs	$ / Producing Ha	$10,326	$8,838	$10,595
Fuel & Oil Costs	$ / Producing Ha	$662	$583	$673
General Expenses	$ / Producing Ha	$2,652	$3,511	$2,532
Insurance Costs	$ / Producing Ha	$296	$175	$313
Marketing & Ripening Costs	$ / Producing Ha	$7,318	$9,188	$7,133
Motor Vehicles	$ / Producing Ha	$180	$173	$181
Packaging and Pallet Costs	$ / Producing Ha	$7,335	$7,885	$7,386
Power & Gas Costs	$ / Producing Ha	$915	$539	$967
Rates Levies, Licenses, Memberships, Registrations	$ / Producing Ha	$1,070	$1,666	$1,012
Repairs & Replacements	$ / Producing Ha	$2,420	$2,207	$2,450
Royalties & PVR Costs	$ / Producing Ha			
Water Costs	$ / Producing Ha	$320	$374	$312
7. PROFITABILITY PER 15 Kg CARTON EQUIVALENT				
Total Sales Revenue	$ / 15 Kg Carton Sold	$24.60	$28.56	$24.11
Total Costs	$ / 15 Kg Carton Sold	$24.43	$23.77	$24.63
Net Profit Before Tax	$ / 15 Kg Carton Sold	$0.16	$4.79	-$0.52
EBIT	$ / 15 Kg Carton Sold	$0.43	$5.02	-$0.25
Total Operating Costs (Excluding Interest and Depreciation)	$ / 15 Kg Carton Sold	$23.70	$23.45	$23.83
EBITDA	$ / 15 Kg Carton Sold	$0.90	$5.11	$0.28
Total Operating Costs as % of Gross Sales Revenue	%	96.35%	82.09%	98.86%
EBITDA as % of Gross Sales Revenue	%	3.65%	17.91%	1.14%
8. COSTS PER 15 KG EQUIVALENT				
Chemical and Fertiliser Costs	$ / 15 Kg Carton Sold	$2.32	$2.26	$2.34
Consultants And Contractor Fees	$ / 15 Kg Carton Sold	$1.00	$0.63	$1.06
Contract Packing Costs	$ / 15 Kg Carton Sold	$0.34	$0.28	$0.27
Depreciation and Amortisation Costs	$ / 15 Kg Carton Sold	$0.47	$0.09	$0.52

			F2017	
	Unit	Total Group	Top 10 F2017	Remainder F2018
Employment / Labour Costs	$ / 15 Kg Carton Sold	$7.47	$7.57	$7.48
Finance Costs	$ / 15 Kg Carton Sold	$0.27	$0.24	$0.27
Freight Costs	$ / 15 Kg Carton Sold	$3.87	$3.19	$4.00
Fuel & Oil Costs	$ / 15 Kg Carton Sold	$0.25	$0.21	$0.25
General Expenses	$ / 15 Kg Carton Sold	$0.99	$1.27	$0.96
Insurance Costs	$ / 15 Kg Carton Sold	$0.11	$0.06	$0.12
Marketing and Ripening Costs	$ / 15 Kg Carton Sold	$2.74	$3.32	$2.70
Motor Vehicles	$ / 15 Kg Carton Sold	$0.07	$0.06	$0.07
Packaging Costs	$ / 15 Kg Carton Sold	$2.75	$2.85	$2.79
Power and Gas Costs	$ / 15 Kg Carton Sold	$0.34	$0.19	$0.37
Rates, Levies, Licenses, Memberships, Registrations	$ / 15 Kg Carton Sold	$0.40	$0.60	$0.38
Repairs & Replacements	$ / 15 Kg Carton Sold	$0.91	$0.80	$0.93
Royalties & PVR Costs	$ / 15 Kg Carton Sold			
Water Costs	$ / 15 Kg Carton Sold	$0.12	$0.14	$0.12
Employment / Labour + Contracting & Consulting + Contract Packing	$ / 15 Kg Carton Sold	$8.82	$8.48	$8.81
9. PROFITABILITY PER KG PRODUCED AND SOLD				
Total Sales Revenue	$ / Kg	$1.64	$1.90	$1.61
Total Costs	$ / Kg	$1.63	$1.58	$1.64
Net Profit (Before Tax)	$ / Kg	$0.01	$0.32	-$0.03
EBIT	$ / Kg	$0.03	$0.33	-$0.02
Total Operating Costs (Excluding Interest and Depreciation)	$ / Kg	$1.58	$1.56	$1.59
EBITDA	$ / Kg	$0.06	$0.34	$0.02

2.3 Practices: Top 10 Compared to the Remainder in F2017

As for previous years, the management practices of the Top 10 group were compared to the management practices of the remainder of the group in 2016/17 (F2017).

The Top 10 in F2017 differed in areas of management practices compared to the remainder (refer to Table 10) including:

2. Top 10 businesses used more Pacific Islands workers as a percentage of the labour force,
3. More of the Top 10 used technology to determine irrigation frequency,
4. Little difference in frequency of irrigation in peak demand periods (notable difference in earlier years)
5. More of the Top 10 used Nurse Suckering /Crop Scheduling,
6. More of the Top 10 were aware of the marketing and ripening costs they were paying,

7. The Top 10 group sold more via wholesalers and less direct to supermarkets (The reverse was true in earlier years)

8. More of the Top 10's hectares were fertilized by Fertigation

9. More Top 10 hectares were fully fenced for biosecurity purposes (64% Top 10, compared to 23% or Remainder)

10. Top 10 businesses on average used more P, more K and less N

Table 10:Areas of Different Management Practices – Top 10 Compared to Remainder F20217

	Measure	REMAINDER F2017	TOP 10 F2017
Use of Pacific Islands Contracting Teams (e.g. Maydec, similar)	% of Total Labour	2.98%	15.26%
Use technology to Determine Irrigation Frequency	% of Respondents	56.25%	70.00%
Irrigate Daily or More Frequently	% of Respondents	62.50%	60.00%
Use some Nurse suckering (Crop Scheduling)	% of Respondents	56.25%	80.00%
% of Respondents That Provided Their Current Ripening Costs ($ / Carton)	% of Respondents	71.43%	80.00%
% of Respondents That Provided Current Marketing Costs / Fees Paid	% of Respondents	73.33%	80.00%
Sell Produce Direct to Supermarkets	% of Respondents	81.19%	68.00%
Sell Produce Through Wholesalers	% of Respondents	18.81%	32.00%
% of Nutrition Applied by Fertigation	% of Hectares	65.86%	84.88%
Have Fenced All of Farm (Protected) Area (For Biosecurity Purposes)	% of Hectares	23.10%	64.34%
Average Kg of N Applied per Hectare per annum ON PLANT CROPS	Kg N / Hectare	324.19	294.00
Average Kg of N Applied per Hectare per annum ON RATOON CROPS	Kg N / Hectare	334.31	311.40
Average Kg of P Applied per Hectare per annum on Banana Crops	Kg P / Hectare	55.00	61.29
Average Kg of K Applied per Hectare per annum Banana Crops	Kg K / Hectare	868.56	917.10

3. TRENDS IN MARKETING AND MANAGEMENT PRACTICES

A detailed survey of marketing and management practices was undertaken as part of the recent benchmarking data collection round (2015/16 and 2016/17).

Table 11 summarises the areas that have continued to be of note and are worthy of consideration by growers wishing to identify ways to improve their businesses. Some commentary regarding selected areas of the survey findings are as follows:

1. Sources of labour:

By 2016/17, 14% of the total labour employed by benchmarking participants had converted primarily from international / backpacker labour to Pacific Islands labour (zero in 2012/13 and increased from 6% the prior year).

2. Irrigation Practices

In 2016/17 60% of benchmarking participants were using some form of technology (e.g. Tensiometers, Enviroscan, other forms including the Wiser System) to determine irrigation frequency, up from 46% in 2012/13.

The number of benchmarking participants that irrigate daily or more frequently than daily in 2016/17 was 57%, up from 38% identified in 2012/13.

3. Use of External Expertise for Nutrition Advice and Pest Monitoring

The percentage of participants that engage paid external advisors for nutrition advise and pest monitoring in 2016/17 was 48% and 43% respectively, both approximately double the level identified in the 2012/13 survey.

4. Practice Nurse Suckering

50% (24% up to 20% of plantation and 26% between 20% and 40% of plantation) of participants were nurse suckering some proportion of their plantation area in 2016/17, up from 38% identified in 2012/13.

5. Awareness of Ripening and Marketing Costs Incurred

In 2016/17 50% of participants were aware of and able to list the costs they are incurring for ripening and for marketing. Whilst this information was not collected in 2012/13, researchers believe that this is a substantially higher proportion of participants than it was in previous years.

6. Operating Key Performance Indicators (KPI's)

This area of the survey was supported by a sub-set of the participants. This section was included at the request of a group of progressive growers that are focused on measuring labour use efficiency in key farm operating tasks.

Labour, ranging from 35% to 41% of total costs, continues to be by far the largest single cost item for banana growers. The cost of labour (per hour, per FTE/annum) has increased 36% since 2008/09 and 12% since 2012/13. This is an area of increasing importance for growers to investigate and more use of objective labour use efficiency measures is recommended, given declining profitability by participants.

Table 11: Trends in Some Marketing and Management Practices

	Measure	ALL INDUSTRY F2013	AL INDUSTRY F2017
A: FARM PRACTICES			
Farm Labour			
Local / Australian Workers	% of Total Labour	53.41%	54.31%
International Workers / Backpackers	% of Total Labour	46.59%	30.57%
Pacific Islands Contracting Teams (e.g. Maydec, similar)	% of Total Labour	0.00%	15.12%
Method of Irrigation Monitoring (Scheduling)			
Visual / Judgement	% of Respondents	54.29%	40.00%
Tensiometers	% of Respondents	17.14%	34.29%
Neutron Probes	% of Respondents	0.00%	2.86%

	Measure	ALL INDUSTRY F2013	AL INDUSTRY F2017
Enviroscan	% of Respondents	17.14%	5.71%
Fixed Scheduling	% of Respondents	11.43%	11.43%
Other	% of Respondents	0.00%	5.71%
Use Technology to Determine Irrigation Frequency	% of Respondents	45.71%	60.00%
Irrigation Intervals (When Irrigating)			
More than Once per Day	% of Respondents	23.53%	14.29%
Daily	% of Respondents	14.71%	42.85%
Irrigate Daily or More Frequently	% of Respondents	38.24%	57.14%
Every 2 Days	% of Respondents	17.65%	22.86%
Twice Weekly	% of Respondents	23.52%	8.57%
Weekly	% of Respondents	20.59%	11.43%
Less Frequently Than Once Per Week	% of Respondents	0.00%	0.00%
Use of External Advice			
Engaged Pest Scouts / Monitors / Pest Agronomist	% of Respondents	23.68%	47.50%
Engaged external Nutritional Advisor / Agronomist	% of Respondents	28.95%	42.50%
Principal Method of Applying Fungicides			
Fixed Wing Aircraft	% of Respondents	0.00%	58.33%
Helicopter	% of Respondents	0.00%	16.67%
Ground Application	% of Respondents	0.00%	25.00%
Other Methods	% of Respondents	0.00%	0.00%
Practice and Scale of Nurse Suckering			
No Nurse Suckering Practiced	% of Respondents	62.16%	50.00%
Up to 20% of Producing Area	% of Respondents	29.73%	23.53%
21% to 40% of Producing Area	% of Respondents	5.41%	23.53%
41% to 50% of Producing Area	% of Respondents	0.00%	2.94%
51% to 75% of Producing Area	% of Respondents	0.00%	0.00%
76% to 100% of Producing Area	% of Respondents	2.70%	0.00%
Use Some level of Nurse Suckering (Crop Scheduling)		37.84%	50.00%
Ripening and Marketing Costs			
% of Respondents That Provided Their Current Ripening Costs ($ / Carton)	% of Respondents	0.00%	50.00%
Average Ripening Cost Reported by Respondents	$ / Carton	$0.00	$1.82
% of Respondents That Provided Current Marketing Costs / Fees Paid	% of Respondents	0.00%	50.00%
Produce Marketing Channel Used			
Direct to Supermarkets	% of Respondents	27.46%	53.61%
Via Brokers	% of Respondents	21.50%	0.12%
Through Wholesalers	% of Respondents	27.58%	33.59%
Through Exporters or Direct to Export	% of Respondents	0.00%	0.00%
Through PBR Marketers	% of Respondents	3.41%	0.00%
To Processors, Value Adders, Oil etc.	% of Respondents	0.03%	0.00%
Other	% of Respondents	5.02%	2.93%
C: OPERATING KPI's			
BAGGING: Average Bags Applied per labour Hour	Bags / Hour	0.00	30.29
BELL INJECTION: Average Bells Injected per Labour Hour	Bells / Hour	0.00	37.21

	Measure	ALL INDUSTRY F2013	AL INDUSTRY F2017
DE-SUCKERING (SPADE): Metres of Banana Line Spaded Per Labour Hour	Metres / Hour	0.00	267.56
DE-SUCKERING (SPRAY / DIESEL / OTHER): Metres Banana line Sprayed / Dieseled per Labour Hour	Metres / Hour	0.00	0.00
HARVESTING: Average Bunches Picked and Delivered to Shed or Tranship point per Labour Hour	Bunches / Hour	0.00	41.59
PACKING: Cartons Packed per Packhouse Labour Day (8 Hour Day) (counts all labour in Shed)	Cartons / Labour Day	0.00	140.38

4. KEY DATA SUMMARY FOR ALL INDUSTRY F2009 TO F2017

Table 12: Key Data Summary – All Industry F2009 to F2017

	Unit	Group Average 2008/09	Group Average 2009/10	Group Average 2011/12	Group Average 2012/13	Group Average 2015/16	Group Average 2016/17	Change % 09/10 to 16/17	Change (Q or $) 09/10 to 16/17	Change % 12/13 to 16/17
Industry / Background										
Industry Production (Total, All varieties, Annual)	Tonnes		310,000	202,000	340,000	396,000	414,000	34%	104,000	22%
% of Industry Production in Benchmarking	%		28%	44%	30%	31%	30%			
Number of Benchmarking Participants	No.	52	59	57	49	46	46			
Annual Cost of 1 Full Time Employee Equivalent (FTE)	$ / FTE	34,406	38,287	40,743	41,818	45,195	46,686	22%	8,399	12%
Benchmarking Group										
Total Producing Hectares	Ha	2,083	3,097	3,188	2,862	3,069	3,123	1%	26	9%
Total Producing Plants (Stools)	Plants					4,560,482	4,813,784			
Average Plant Density	Plants / Ha					1,486	1,541			
Average Cartons per Stool per Annum	15 Kg / Stool / annum					1.78	1.73			
Benchmarking Group										
Total KGS Harvested, Packed and Sold	Kgs	62,166,122	87,711,013	89,777,145	103,613,820	121,476,195	124,755,690	42%		20%
Total Cartons (15 Kg Carton Equivalent) Harvested Packed and Sold	15 Kg Cartons	4,144,408	5,847,401	5,985,143	6,907,588	8,098,413	8,317,046	42%		20%
Total KGS Harvested per Producing Hectare	Kgs / Ha	29,841	28,321	28,158	36,200	39,587	39,945	41%	11,623	10%
Total 15 KG Cartons(Equivalent) Harvested per Producing Hectare	15 Kg Cartons / Ha	1,989	1,888	1,877	2,413	2,639	2,663	41%	775	10%
Benchmarking Group										
Average Gross Price Achieved $ / 15 KG Equivalent of Market Fruit	$ / 15 Kg	23.91	24.18	34.30	23.79	24.66	24.60	2%	0.42	3%
Average Net Return to Grower $ / 15 KG Equivalent of Market Fruit (After Paying Marketing and Ripening Costs)	$ / 15 Kg	22.78	22.96	30.88	21.71	21.97	21.85	(5%)	(1.11)	1%
Total Operating Costs (Excluding Interest and Depreciation)	$ / 15 Kg Carton Sold	22.44	22.16	26.40	21.58	23.68	23.71	7%	1.55	10%
Average EBITDA per 15 KG Carton Equivalent Sold	$ / 15 Kg Carton Sold	1.47	2.01	7.90	2.20	0.98	0.89	(56%)	(1.13)	(60%)
Benchmarking Group										
Employment / Labour + Contracting & Consulting + Contract Packing	$ / 15 Kg Carton Sold	9.91	9.51	9.65	8.25	8.94	8.81	(7%)	(0.70)	7%
Top 5 Cost Lines (From Below)	$ / 15 Kg Carton Sold	19.45	18.92	21.75	18.21	20.42	20.52	8%	1.60	13%
Top 5 % of Total Operating Costs	$ / 15 Kg Carton Sold	87%	85%	82%	84%	86%	87%			
Benchmarking Group										
Labour Productivity - Tonnes Produced and Sold Per FTE per Annum	Tonne / FTE	56	65	60	73	73	78	21%	13	7%
% of Market Fruit Sold in 15 KG International Packs	%					65.49%	74.99%			
% of Market Fruit Sold as XLarge (as single size pack) %	%	73.00%	78.00%	62.56%	74.47%	24.89%	16.69%	(79%)		(78%)

BA 16009 BANANA BENCHMARKING - INDUSTRY WIDE

	Unit	Group Average 2008/09	Group Average 2009/10	Group Average 2011/12	Group Average 2012/13	Group Average 2015/16	Group Average 2016/17	Change % 09/10 to 16/17	Change (Q or $) 09/10 to 16/17	Change % 12/13 to 16/17
Bechmarking Group -5 Largest Cost Lines										
Employment / Labour + Contracting & Consulting + Contract Packing	$ / 15 Kg Carton Sold	9.91	9.51	$9.65	$8.25	$8.94	$8.81	(7%)	(0.70)	7%
Freight Costs	$ / 15 Kg Carton Sold	3.77	3.57	$3.35	$3.71	$3.96	$3.88	8%	0.30	4%
Packaging Costs	$ / 15 Kg Carton Sold	2.55	2.17	$2.60	$2.36	$2.60	$2.76	27%	0.58	17%
Marketing and Ripening Costs	$ / 15 Kg Carton Sold	1.13	1.22	$3.42	$2.07	$2.69	$2.75	126%	1.53	33%
Chemical and Fertiliser Costs	$ / 15 Kg Carton Sold	2.10	2.45	$2.72	$1.82	$2.22	$2.33	(5%)	(0.11)	28%
Employment Across Australian Industry									0.00	
Production Australia	Tonnes / annum		310,000	202,000	340,000	396,000	414,000	34%	104,000	22%
FTEs Employed (On Farm) Industry Wide (Using Labour Productivity Figures above)	FTEs		4,805	3,360	4,674	5,419	5,325	11%	520	14%
FTEs Employed In Banana Supply Chain (Using Employment Mulitplier of 2.52)	FTEs		12,108	8,468	11,779	13,655	13,418	11%	1,311	14%
FTEs Employed On Farm - as Per Project BA 11013 (Economic Contribution)	*FTEs*		*3,808*							
FTEs Employed In Supply Chain - as Per Project BA 11013 (Economic Contribution)	*FTEs*		*9,598*							
Industry Economic Output (QLD)										
Gross Price per Tonne		1,594	1,612	2,287	1,586	1,644	1,640			
Gross Value Ex Farm Gate			499,644,921	461,914,895	539,138,142	651,077,949	678,960,000			
Output Mulitiplier (From Project BA 11013)			1.88	1.88	1.88	1.88	1.88			
Total Industry Output			939,332,452	868,400,003	1,013,579,706	1,224,026,545	1,276,444,800			
Gross Revenue (Return) for Sample		99,083,142	141,368,910	205,294,062	164,300,478	199,723,414	204,599,332	45%	63,230,421	25%
FTEs in Sample		1,119	1,359	1,493	1,424	1,662	1,605	18%	245	13%
Gross Return (Before Marketing & Ripening Costs) per FTE / Annum		88,530	103,993	137,461	115,344	120,154	127,512	23%	23,519	11%

5. DISCUSSION

5.1 The Banana Category and Grower Returns

Production data, per capita consumption data, and the benchmarking data indicate poor and declining grower profitability between 2009/10 (F2010) and 2016/17 (F2017). The major change is the declining value being received by benchmarking participants for their produce. Price achieved has decline in CPI adjusted terms significantly more than operating costs.

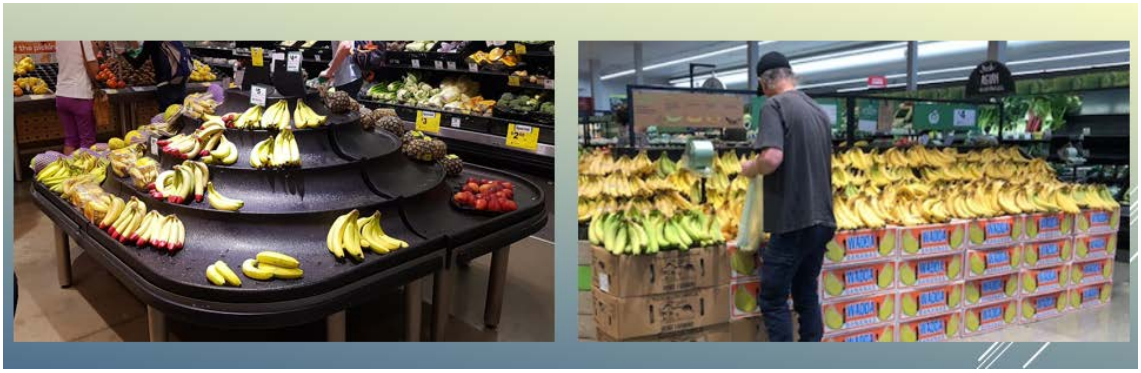
The benchmarking data suggests participants have been effective in containing their costs over an eight-year period (operating costs have increased just 7% over nine years, being a decline of **-7%** in CPI adjusted terms). In the same period gross price has declined by **-12%** in CPI adjusted terms. Participants' success in containing costs is further evidenced by the fact that labour use efficiency, and yield have increased in the same period by 21%.

The banana category is primarily driven by a single product line. Cavendish bananas account for over 95% of banana production and appear in supermarkets as the only facing / product line of any scale, in the banana category.

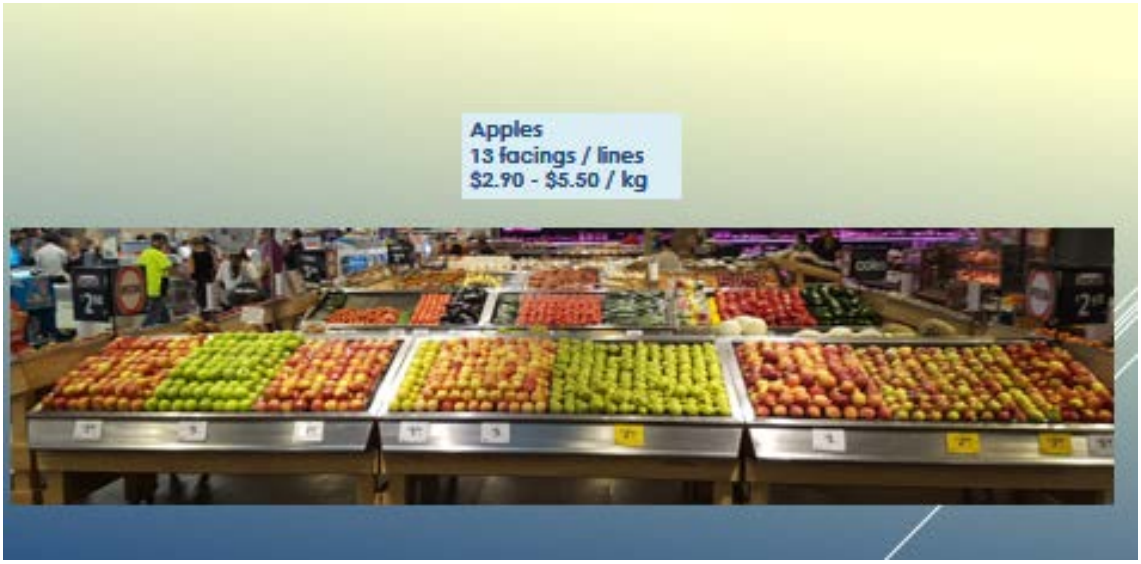
Current consumer behaviour, driven by the internet, smart phones, social media and current culture is to seek choice, in both products and price-points / value propositions. The following images are examples of displays for bananas and for competing categories seen in supermarket stores visited by the researchers in August 2018[4] (stores [banners] and locations identified below each image).

Source: Coles West End Queensland, 12.30 PM Saturday August 4th 2018

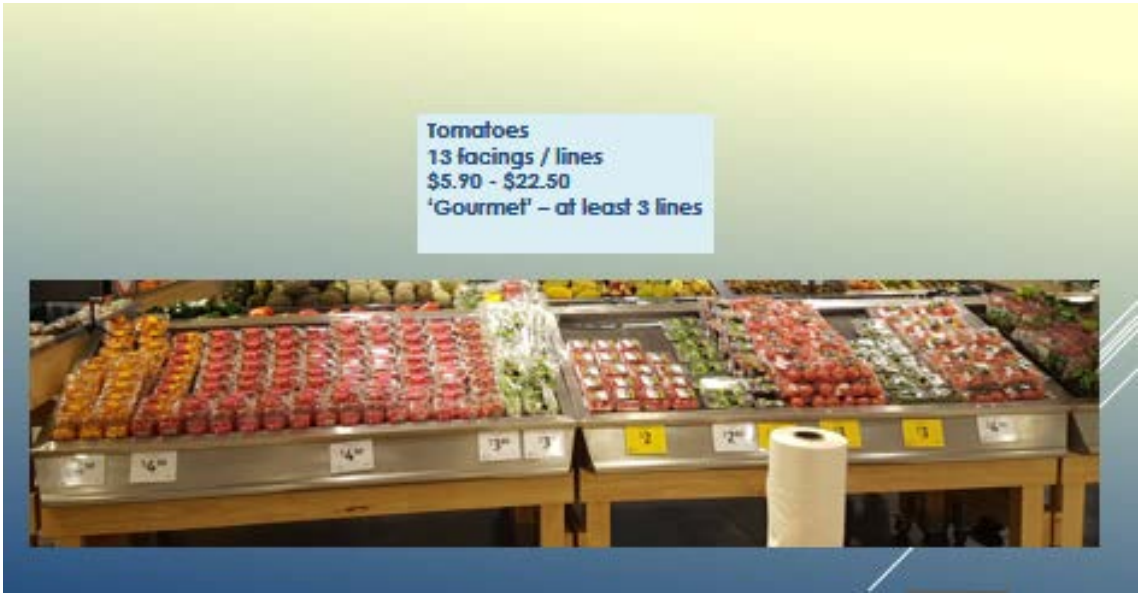
[4] A total of six stores were randomly selected and visited by the researchers in August 2018. These stores may not necessarily be representative of all stores in the relevant banner, or other banners.



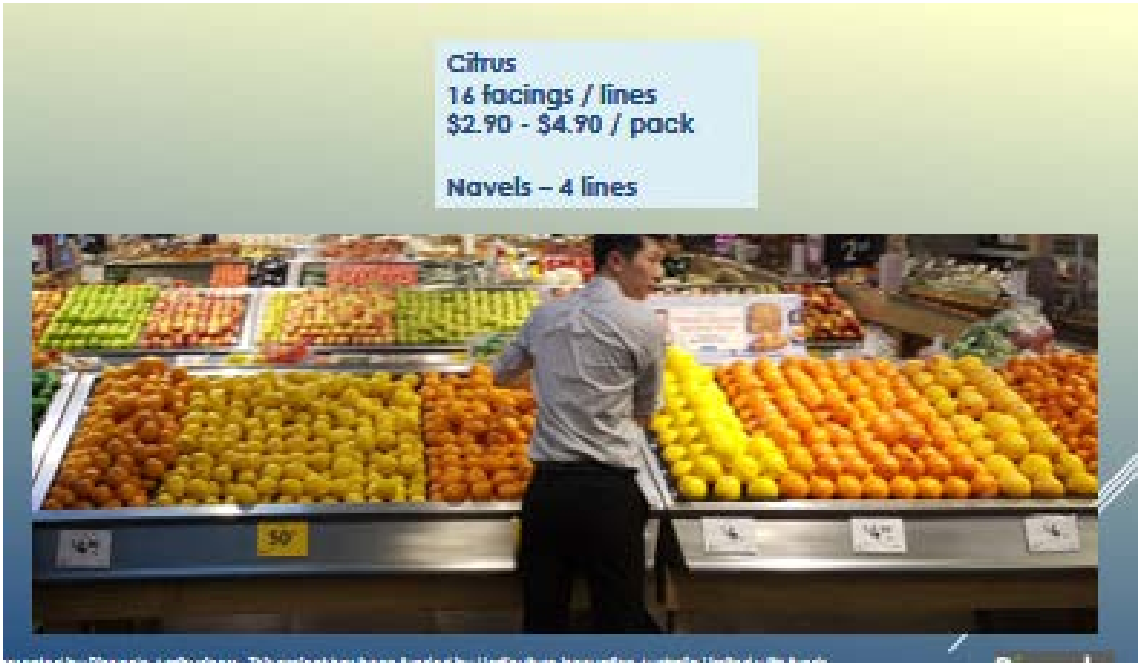
Source: Woolworths, Mission Beach, Wednesday August 8th, 4.30 PM, Woolworths Sippy Downs Queensland, August 2018



Source: Coles West End Queensland, 12.30 PM Saturday August 4th 2018



Source: Coles West End Queensland, 12.30 PM Saturday August 4th 2018



Source: Coles West End Queensland, 12.30 PM Saturday August 4th 2018

It may not currently be possible to offer multiple banana varieties, in multiple product configurations like other produce categories. However, this should not preclude investment in research and adoption of initiatives to improve the banana offer to consumers. (*This very same topic was addressed by a guest speaker Lisa Cork[4], at the most recent Industry Congress in Sydney, 2017.*)

[4] Lisa Cork, Fresh Produce Marketing, Auckland New Zealand, https://www.linkedin.com/in/lisacork

Packaging, branding, pack size, degree of ripeness, product size, and informed demographic differentiation are all possible mechanisms for offering greater choice and improved shelf appeal in the banana category. Such investment may also include training and education for retail and merchandising staff.

The Australian banana industry spends more than any other Australian fresh produce category, both in terms of the proportion of levy funds directed to marketing and the absolute dollar spend. Success to date has been achieved by investing, almost exclusively, on promotion of higher consumption per capita of extra-large and large cavendish (which represents approx. over 90% sales), as a loose, minimally value-added single facing / product line and single value proposition.

The current the marketing program that is focused on driving per capita consumption of XL and L Cavendish would be complimented by expanding the available banana offering to consumers. This may improve the perceived value of bananas in the eyes of consumers and retailers, and improve the value returned to growers.

The value of bananas in the domestic market is possibly impacted by the limited depth of the banana category offering compared to competing fresh produce categories and other snack food products.

Growers may therefore benefit in the form of improved returns, from investment (by industry and / or marketers), into further product differentiation and the development of a more diverse multiple -product (SKU) banana category, with a range of products at differing price points / value propositions.

5.2 Trends and Observations

5.2.1 LABOUR USE EFFICIENCY / COSTS & LABOUR MANAGEMENT SKILLS

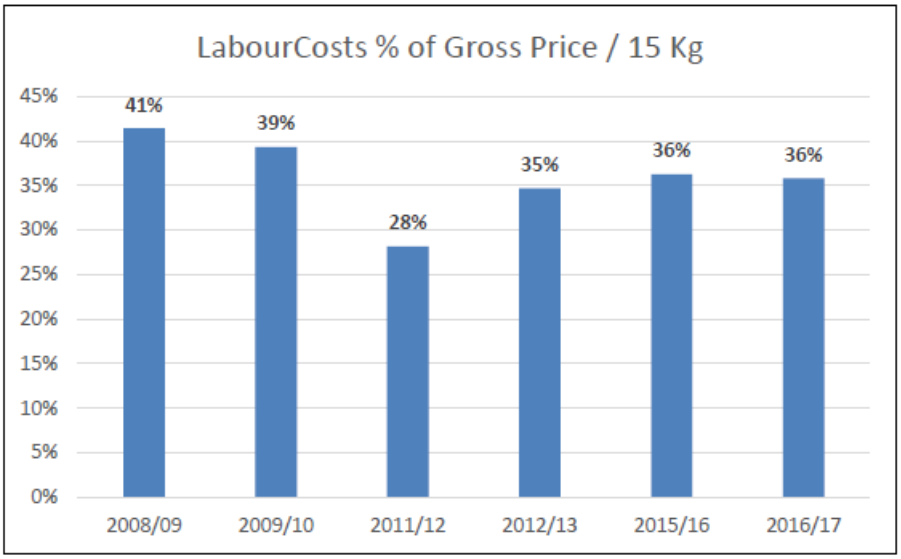
Consistently, across six (6) different years of benchmarking data (in an nine-year period of elapsed time), the cost of labour including contracting and the labour component of contract packing fees (Labour Costs) has been by far the largest single cost for banana growers in the benchmarking program.

(Contract packing is a small component of total packing in the banana industry with two / three recognised contract packing facilities in far north Queensland and one in Carnarvon WA.)

As shown in Figure 4, Labour Costs have only been below 30% of the gross price achieved per 15 kg in one out of six years of benchmarking data. In the two years immediately following Cyclone Yasi, Labour costs were 28% and 35% of Gross Price respectively. In F2012 the benchmarking group was positively impacted by elevated prices.

In F2013, whilst prices may have still have been slightly elevated, the yields achieved by many participants were elevated, perhaps in part due to the positive impact of the adoption of Nurse Suckering by participants as part of the cyclone recovery process. Higher yields directly impact costs and reduce labour per 15 kg equivalent.

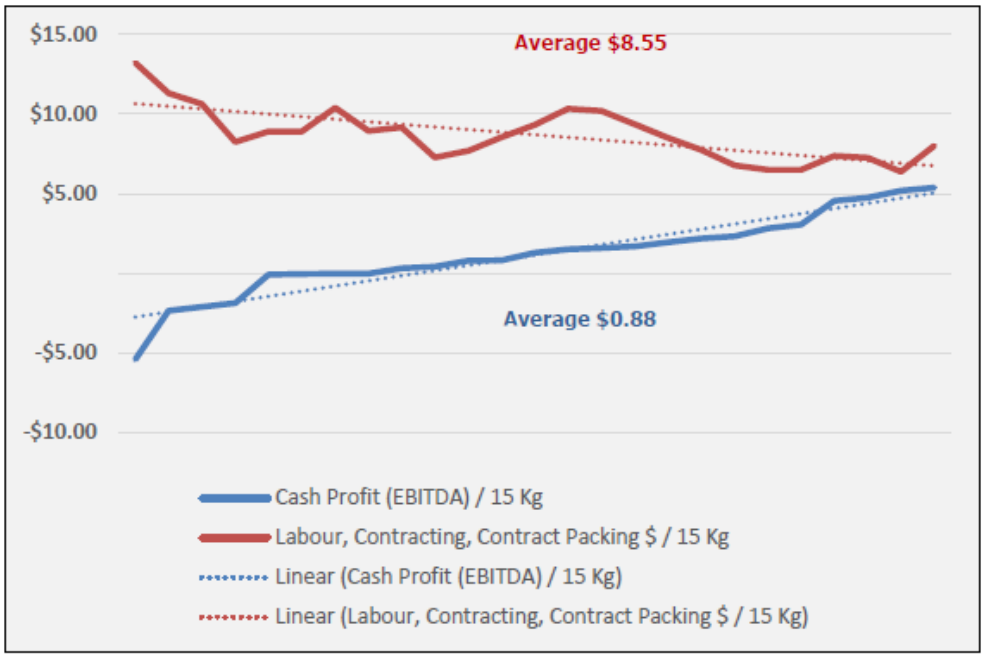
Figure 4: Labour Costs as % of Gross Price Between F2009 & F2017(6 Data-Years)



In F2017, the latest year of benchmarking data, the relationship between Labour Costs and Cash Profit is clearly demonstrated in Figure 5.

Of the top five (5) largest cost items for benchmarking participants (Labour Costs, Freight, Packaging, Marketing & Ripening and Chemicals & Fertilizers) Labour Costs are both the largest single cost and the most 'manager controllable' of these costs.

Figure 5: Relation Between Labour Costs and Cash Profit F2017



Labour costs, and the acquisition of strong labour force management skills appear the highest priority, and the most manager controllable, area for improving costs for banana benchmarking participants. This has been consistently the case in all years of data collection.

Banana packing sheds are food processing factories many of which employ large numbers of people for 4 to 5 days per week and for up to 52 weeks per year. The skills, processes and methods of managing large groups of people in food processing factories and other industrial operations are equally applicable to banana packing facilities.

Process design and labour use efficiency in packing facilities, as well as careful planning and scheduling of production to deliver managed, consistent volumes of product to packing points (across weeks and from week to week) is a crucial component of controlling labour costs. This may be one of the factors behind the data that confirms that:

1. **'Top 10' (higher performing) banana producing businesses use more nurse suckering crop scheduling,**
2. **'Top 10' businesses use more irrigation monitoring technology and irrigate more frequently in peak demand periods,**
3. **'Top 10' businesses have lower labour costs and higher labour use efficiency**

It is also notable that some 'Top 10' (higher performing) participants continue to innovate in how to apply nurse suckering / crop scheduling. One such example is the removal of bells that either emerge early in a block and / or emerge late in a block, to tighten up the labour use efficiency in later tasks including bagging, harvesting and packing.

Either seeking out and employing skilled processing managers and supervisors or finding ways for family members to acquire these same skills and exposure will enhance workflow and process design, labour use efficiency and ultimately Cash Profit.

Top 10, higher performing businesses consistently demonstrate:

1. *Higher yields (and higher cartons / stool / annum)*
2. *Lower operating costs,*
    a. *In particular - lower Labour Costs (and higher labour use efficiency)*
3. *Significantly higher Cash Profits (5 X higher on average)*

..and commonly:

1. *Irrigate at least daily in peak demand periods*
2. *Invest in water monitoring technology*
3. *Use external advice for nutrition and pest monitoring*
4. *Utilise Nurse Suckering*

5.2.2 IMPORTANCE OF YIELD IN HIGH VOLUME PRODUCE COMMODITIES

The banana industry has for many years been characterised by the production and supply of high volumes of a single product line, best described in modern terms as XL and L Cavendish in bulk cartons (now 70%+ 15 kg). This single product commodity is commonly displayed in one large (loose fill) facing in supermarkets, with small volumes of Lady Finger and Eco / Red Tip bananas (commonly not merchandised with / adjacent to Cavendish bananas).

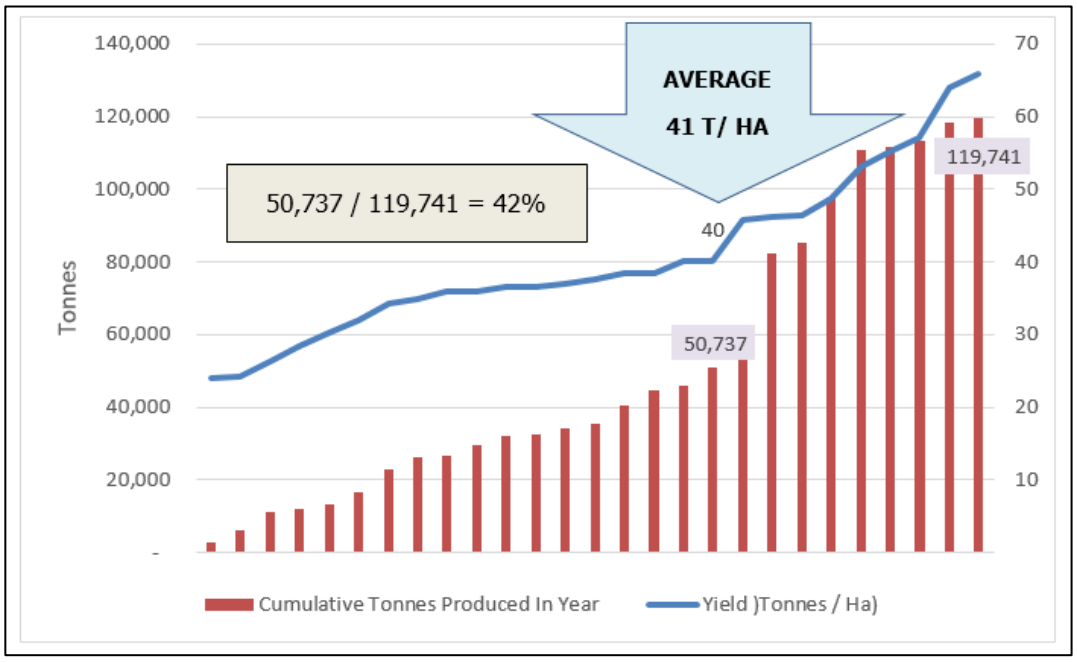
Cavendish bananas are (materially) produced, handled and marketed as a commodity. The product is also marketed predominantly by three (3) marketers whom, collectively, market upwards of 80% of the production of the industry.

For growers to be successful as a profitable supplier to this market they have little choice other than to develop and maintain a highly productive and efficient on-farm operation. The two factors of productivity that are of high priority and the most able to be influenced by management skill and expertise are:

1. Labour Costs and Labour Use Efficiency
2. Yield per hectare.

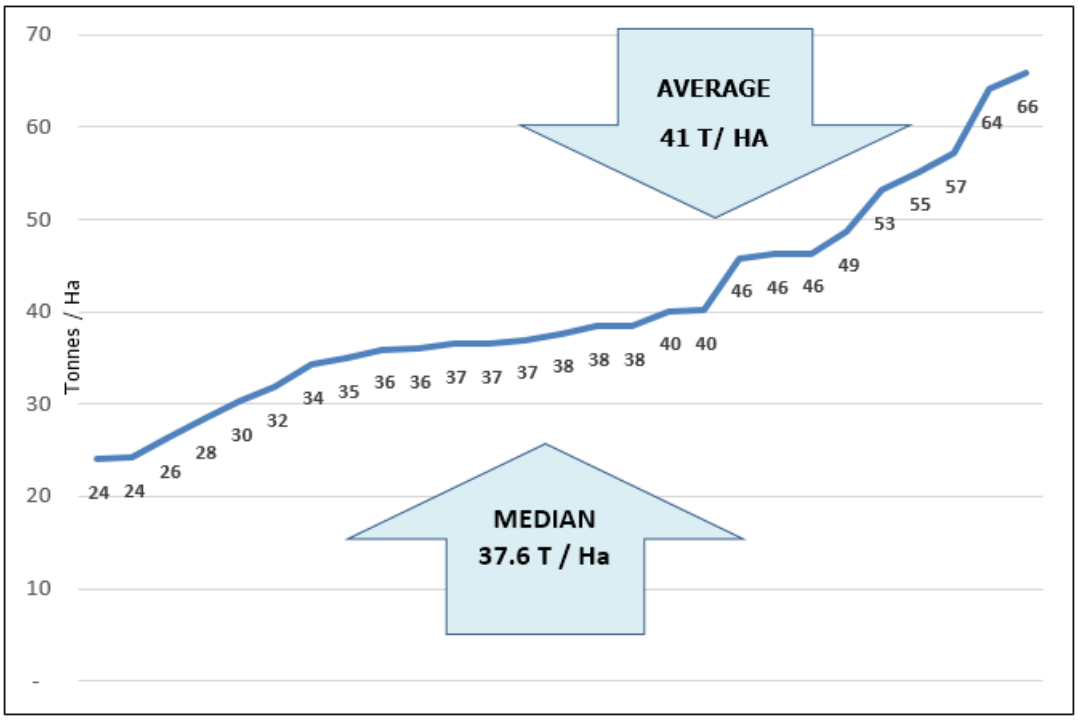
The data in illustrates the range of yields achieved by participants in 2016/17 (F2017). In a market where the product traded is a high-volume undifferentiated commodity (i.e. Fast-Moving Consumer Good of FMCG) growers need to produce competitive yields to sustain viability.

Figure 6: Proportion of Participants with Sub-Average Yield



The technology and expertise to achieve average yields or better exists. Growers with lower yields can immediately improve their operational efficiency and profitability by focusing on yield improvement.

Figure 7: Yield per Ha (Tonnes / Ha) for Tropical Cavendish F2017



It is also demonstrated in Figure 8 that 42% of the total production of the participant group in F2017 was produced with a yield that was below the average yield for the group. In this group 30% of participants reported an operating Cash Loss in F2017 and 48% reported an operating Cash Profit that was below the average for the group.

5.2.3 EFFECTIVENESS OF BIOSECURITY STRUCTURES & PROCESSES

Details of data collected on the biosecurity measures adopted on-farm by participants and the impacts of biosecurity on farm operations are reported in detail in Appendix 5.

Benchmarking participants have invested significant capital in structures, equipment and operational measures in response to the discovery of Panama Disease Tropical Race 4 (TR4), since early 2015. This has resulted in an average $1,600 per producing (Harvested) hectare for all participants. **If this level of investment is pervasive, across all of industry, it would amount to approximately $20 million invested by banana growers, since the discovery of TR4.**

Observations regarding Biosecurity:

1. The role of Biosecurity Queensland (BQ) is clearly focused on infected properties and high-risk properties in relation to TR4. This does not ignore the ongoing BQ role in surveillance.

2. The roles of the Australian Banana Growers Council (ABGC) and the Department of Agriculture and Fisheries (DAF) do not appear to include specific services aimed at maximising the effectiveness of efforts to contain TR4 across the industry in Far North Queensland.

3. There are numerous examples that have been observed where capital has been invested, and processes introduced that do not necessarily appear to be as effective as intended. Some examples:

a. The existence of numerous foot baths and vehicle dips that are not protected by roof structures.

b. Vehicle wash-down facilities and processes, and human access restriction structures / processes that do not appear to be highly effective,

c. Adoption of zoning systems in pack houses and on farms that are not necessarily being operated effectively (through lack of signage, lack of rigour in adoption, or lack of staff buy-in and training).

4. **If effective, relentless, containment of TR4 is of highest priority for this industry, as it is, there appears to be a gap between what BQ's role is and the role of other agencies (e.g. ABGC, DAF), that should seriously be investigated.**

5. **That gap is: An agency or dedicated team of individuals tasked with specific extension, research, monitoring and education of growers about the implementation and adoption of Best Practice Biosecurity across the banana industry in Far North Queensland.**

6. **One possible structural approach may be to allocate more resources to the current ABGC Black Sigatoka monitoring function and expanding that function into an Industry Biosecurity Team. That team would:**

Provide extension, research, monitoring and education of growers about the implementation and adoption of Best Practice Biosecurity (TR4, Black Sigatoka, other specific and general aspects of farm and handling biosecurity) across the banana industry in Far North Queensland.

5.2.4 ATTRIBUTES OF HIGHLY PROFITABLE BANANA GROWING BUSINESSES

Unexpectedly, the benchmarking round just completed has resulted in the 'Top 10' group of business (i.e. Top 10 most profitable businesses per 15 kg) with marked differences to the top 10 groups in previous rounds.

In all previous rounds (and years) of benchmarking the top 10 group was dominated by tropical cavendish growers (refer Table 13.

In F2013, 8 out of 10 in the Top 10 were tropical cavendish growers with an average of 100 producing hectares each. In F2017 the Top 10 contained only 4 tropical cavendish growers (average producing area 71 hectares). The remaining 6 in the top 10 included 2 North Queensland Lady Finger growers and 4 from other regions.

For the tropical cavendish growers that were in the Top 10 in F2013 and F2017, the average Cash Profit per 15 Kg declined as follows:

	2012/13 (F2013)	2016/17 (F2017

Average Cash Profit / 15 Kg for Tropical Cavendish Growers in the 'Top 10' in two years	8.80	4.76

There is material decline in the dominance of tropical cavendish growers in the 'Top 10' group between F2013 and F201. The Cash Profit per 15 kg has also declined markedly (-46%) for tropical cavendish growers in the Top 10. This would suggest that the tropical cavendish sector of the industry has experienced the most significant decline in on-farm business performance in the period.

Analysis in previous sections further suggest that tropical cavendish growers have demonstrated slightly increased yields and increased labour productivity in the same period. In the same period Gross Price for tropical cavendish growers increased by just 3% (-5.5% CPI adjusted) and Operating costs increased by 11% (2.5% CPI adjusted) in the same period.

The main driver of reduced cash profits for tropical cavendish growers that sit in the Top 10 group (highly profitable growers compared to the remainder) is the speed of decline in the value of the end product (Gross Price) (-5.5% CPI adjusted over 4 years) compared to the relatively well contained costs of production (Operating Costs) (2.5% CPI adjusted over 4 years)

Anecdotally it is feasible that the changes in market value of cavendish bananas in the domestic market may, at least in part, be attributable to the change from single size 13 Kg cartons to 15 Kg International Packs (67% XL and 33% L).

It is at least of interest that the -5.5% (CPI adjusted) decline in the Gross Price achieved by benchmarking participants has occurred in the same period that the 15Kg International Pack has grown from a minimal proportion of sales of tropical cavendish to 78% of sales of tropical cavendish amongst benchmarking participants. The additional 2 Kg of produce in each carton represents 13% of the total weight (15 Kg).

Could supermarkets or marketers suggest that the new pack represents a relaxing of specifications and therefore may justify a decline in value?

A counter-argument may well be that the new specification (mixed XL and L) is more in line with feedback that consumers were not completely happy with the dominance of larger bananas (XL) and were seeking smaller bananas, at least for some of the retail offer.

This logic would suggest that the International Pack perhaps justifies higher value than the previous offer, which was 76% XL in F2013

Table 13: Attributes of 'Top 10' Group F2013 and F2017

	Far North QLD Cavendish	Far North QLD Lady finger	New South Wales	Western Australia	Total
In 20012/13 (F2013)					
Number of 'Top 10' Businesses	9			1	10
Top 10' Producing Hectares	976			19	994
% of 'Top 10' Producing Hectares	98%	0%	0%	2%	100%
In 2016/17 (F2017)					
Number of 'Top 10' Businesses	4	2	1	3	10.00
Top 10' Producing Hectares	283.70	73.38	10.50	15.27	382.85
% of 'Top 10' Producing Hectares	74%	19%	3%	4%	100%

5.2.5 TRANSPARENCY AND COMMERCIAL AWARENESS

Unfortunately, in hindsight, survey questions seeking to identify the level of awareness the participants had of the marketing and ripening charges they were paying were not included in the benchmarking information gathering instrument in years prior to F2016.

In the recent round (F2016 and F2017) participants reported that 50% of all participants were aware of these costs. This figure was higher amongst participants that grow tropical cavendish bananas (70%)

Anecdotally the researchers strongly believe that this level of awareness of these costs (the 4th largest costs items for all participants) was not present in earlier years. The fact that one of the largest marketers of bananas has adopted a fully transparent 'agency' model of doing business is likely to have been one notable catalyst for this increase in commercial awareness.

5.2.6 DIFFERENCES ACROSS REGIONS

Detailed data regarding the differences across regions in the recent round of benchmarking is reported upon in Appendix 3. Readers should refer to Appendix 3 – Differences Across Regions

5.2.7 NEW SOUTH WALES

The differences between benchmarking participants in New South Wales and those in other regions and sectors of the industry (Appendix 3) include three points that deserve commentary.

1. Large Difference Between yield and profitability of cavendish growers and Lady Finger growers (See Table 14)

2. Whilst yields are likely to be lower in New south Wales than in North Queensland due to climatic differences and the impact this has on cycle time, it was also notable that average nutrient application rates (N, P, K) were also considerably lower (Refer to Appendix 3, Section 2) in New South Wales.

   New South Wales participants, therefore growers, may improve their profitability by investigating increased levels of nutrient application and possibly re-visiting bunch pruning strategies.

Producing heavier bunches, albeit possibly requiring some adjustment to how bunches are hauled to packing points (on significant gradients), I likely to directly improve costs per unit of sale since labour and machinery will travel the same distances (and take the same time) to perform many tasks regardless of bunch size.

Table 14: Differences Between Participant Businesses in NSW and North QLD

	Cavendish			Lady Finger	
	North QLD	NSW		North QLD	NSW
Average Yield (t/ ha)	16	41		14.5	20
Average Gross Price $ / 15 Kg	21.14	24.15		33.19	46.69
Average Operating Costs $ / 15 Kg	21.79	23.36		27.75	41.4
Average Cash Profit (EBITDA) $ / 15 Kg	0.64	0.79		5.44	6.65

3. The need for Cavendish growers in NSW to target different markets to the mainstream market that is supplied dominantly by North Queensland Cavendish growers

   Given the differences in production economics between cavendish growing in North Queensland and in new South Wales (refer Table 14), New South Wales growers of cavendish bananas are not able to compete with product produced in North Queensland (substantially higher yields, lower costs and strong relationships with marketing channels

   Some (indeed most) New South Wales cavendish growers that participate in the benchmarking do sell some of their produce to alternative markets including local greengrocers, weekend and local market stalls, and others).

   Collaborating groups of growers and / or local marketers of bananas in conjunction with growers, may benefit from:

   1. **Investigating, and defining market segments that have specific requirements including different sized fruit, 'tasty' bananas, and / or other attributes (physical and augmented) that could be produced and delivered with changes to the production, packaging and marketing of NSW cavendish bananas), and**

   2. **Target product specifications, communication and servicing those market segments.**

New South Wales cavendish growers believe that their produce is tastier than that produced in North Queensland. However, there is little evidence that this hypothesis has been tested and used as the basis for product differentiation to niche markets.

5.2.8 WA (CARNARVON): SCALE ECONOMIES (CONTRACT PACKING) & YIELD

The Carnarvon based banana industry is far different to any on the eastern seaboard of Australia. It is a dry and windy subtropical climate, resulting in slower cycle times (compared to North Queensland) with

abundant sunshine. It also has access to moderately reliable irrigation water, albeit with some variation in water quality.

Production systems in Carnarvon are very different. The average plant density is 3,300 plants per hectare (compared to 1,500 / ha east coast average) and the average farm size is small (averqge 5.7 hectares, compared to 73 hectares on the eastern seaboard). However, some benefits flow from these conditions and differences, including improved labour productivity and the production of a relatively consistent quality of smaller fruit (than tropical cavendish).

Benchmarking data suggest that Carnarvon growers that can achieve sound yields can achieve attractive Cash Profits per 15 kg.

Benchmarking participants demonstrate significantly higher average Cash Profits than those of participants in New south Wales and North Queensland. This is achieved with significantly lower costs in areas such as freight and chemicals and fertilizers. Although higher costs are incurred in:

1. Labour (including contract packing charges)

2. Packaging (due to further value adding / pre-packing which is not done anywhere else in the industry), and

3. Marketing (predominantly due to substantive proportions of the crop being marketed directly to Perth supermarkets by the local cooperative packing house, with sub-optimal volumes of throughput which is incurring higher fixed costs).

4. Water costs, which are exceptionally high in comparison to all other growing regions, appear to be driven by combination of high usage (circa. 20-24 ML / ha / annum for bananas), significant system / usage costs (circa. $350 ML /annum) and pumping costs (circa $50-70 ML / annum).

(Water Costs Atherton Tablelands Bananas: Usage circa 10ML / ha / annum, system usage costs circa $60 / ML / annum, pumping costs circa $70 / ML / annum)

Carnarvon based benchmarking participants could directly benefit from:

1. **Continuing to focus on obtaining sound yields (this may require tuning to nutrition, pest control [e.g. nematodes in the view of some participants]),**

2. **Developing strategies to attract and retain greater volume of throughput through the local cooperative packing and marketing operation, and**

3. **Entering negotiations with the operators of the irrigation scheme to put a case for cost relief based on well researched costing data (per 15 Kg / kilogram or tonne of produce produced).**

Appendix 2: Tropical Cavendish Report

APPENDIX 2 - TROPICAL CAVENDISH

TABLE OF CONTENTS

(Biosecurity and Environmental Management are reported on separately in Appendix 4)

1. BENCHMARKING GROUP

General commentary in this section in Appendix 1 – All Industry, is also applicable to this section.

Table 1 outlines the participation levels in this benchmarking program in each of the six (6) years in which data was collected in the period from 2008/09 (F2009) and 2016/17 (F2017), by growers of conventional cavendish bananas in Tropical Far North Queensland

Table 1: FNQ Cavendish Growers – Participation in Benchmarking Program Since F2009

		2008/09	2009/10	2011/12	2012/13	2015/16	2016/17
Industry Production (Total, All Varieties, Annual)	Tonnes		310,000	202,000	340,000	396,000	414,000
Total Production in Benchmarking Group	Tonnes	59,000	84,000	81,000	96,000	117,000	120,000
% of Industry Production in Benchmarking	%		27%	40%	28%	29%	29%
Number of Benchmarking Participants	No.	35	41	40	36	28	28
Total Producing Hectares	Ha	1,901	2,700	2,705	2,456.63	2,850	2,922

A more detailed breakdown of the grower businesses (growing conventional tropical cavendish bananas) that participated in the Banana Benchmarking program in the most recent two (2) years of data collection is provided in Table 2. In Table 2 the participating businesses are categorised into four (4) different sizes of business (by producing hectares in banana production).

Table 2: FNQ Cavendish Growers in Benchmarking, By Business Size - F2016 & F2017

	1 to 50 Ha	51 to 100 Ha	100 Ha and Larger	TOTAL
No of Participants	8	13	7	28
Total Producing Ha	230	830	1861	2921
Average Producing Ha	29	69	266	104
Median Producing Ha	25	66	160	
% of Producing Ha	8%	28%	64%	100%
Total 15 kg Cartons 2017	643,748	226,3916	5,075,040	7,982,704
Average 15 Kg Cartons 2017	80,469	188,606	725,006	285,097
Median 15 Kg cartons 2017	63,711	181,204	404,825	
% of 15 Kg Cartons 2017	8%	28%	64%	100%

2. ECONOMICS AND PRODUCTIVITY

General commentary in this section of Appendix 1 – Tropical Cavendish, is also applicable to this section.

In this section we consider in detail the benchmarking data and findings in the period from 2009/10 (F2010) to 2016/17 (F2017). This is a period in which both benchmarking data and annual banana production data has been collected and reported (production data reported from the statutory levy collection process in bananas and supplied by Australian Banana Growers Council (ABGC).

2.1 Costs, Returns and Productivity

In respect of participants that were growers of conventional cavendish bananas in tropical Far North Queensland, and as illustrated inTable 3, the major changes between 2009/10 and 2016/17, that have been demonstrated in benchmarking data are:

1. **A 3% increase in gross return per 15 Kg equivalent,**
2. **A 10% increase in total Operating Costs, and**
3. **(-63%) decrease in reported EBITDA per 15 kg equivalent**

And, concurrently:

4. **32% increase in average yield per hectare, and**
5. **26% increase in average labour productivity (measured in tonnes /FTE / annum)**

Table 3: Changes to Costs and Returns F2010 to F2017

Far North QLD Conventional Cavendish Only	Unit	2009/10	2016/17	Change % 09/10 to 16/17	Change (Q or $) 09/10 to 16/17
Yield	Kgs / Ha	31,161	40,985	32%	9,824
Yield	15 Kg / Ha	2,077	2,732	32%	655
Average Gross Price	$ / 15 Kg	23.59	24.15	2%	0.6
Average Net Return to Grower (After Paying Marketing and Ripening Costs)	$ / 15 Kg	23.57	21.48	(9%)	(2.1)
Total Operating Costs (Excluding Interest and Depreciation)	$ / 15 Kg	21.43	23.36	9%	1.9
Average EBITDA (Cash Profit)	$ / 15 Kg	2.16	0.79	(63%)	(1.4)
Labour Productivity	Tonne / FTE / annum	67	84	26%	17

Table 4 also provides trends in the five (5) largest cost line items for benchmarking participants. These five cost line items consistently account for between 85% and 90% of all costs for participants, across different years and different sub-groups / regions / types of production of bananas. Labour, contracting and contract packing fees alone (first line item in Table 4) consistently account for between 36% and 40% of total costs.

Table 4: Changes in Key Cost Categories F2010 to F2017

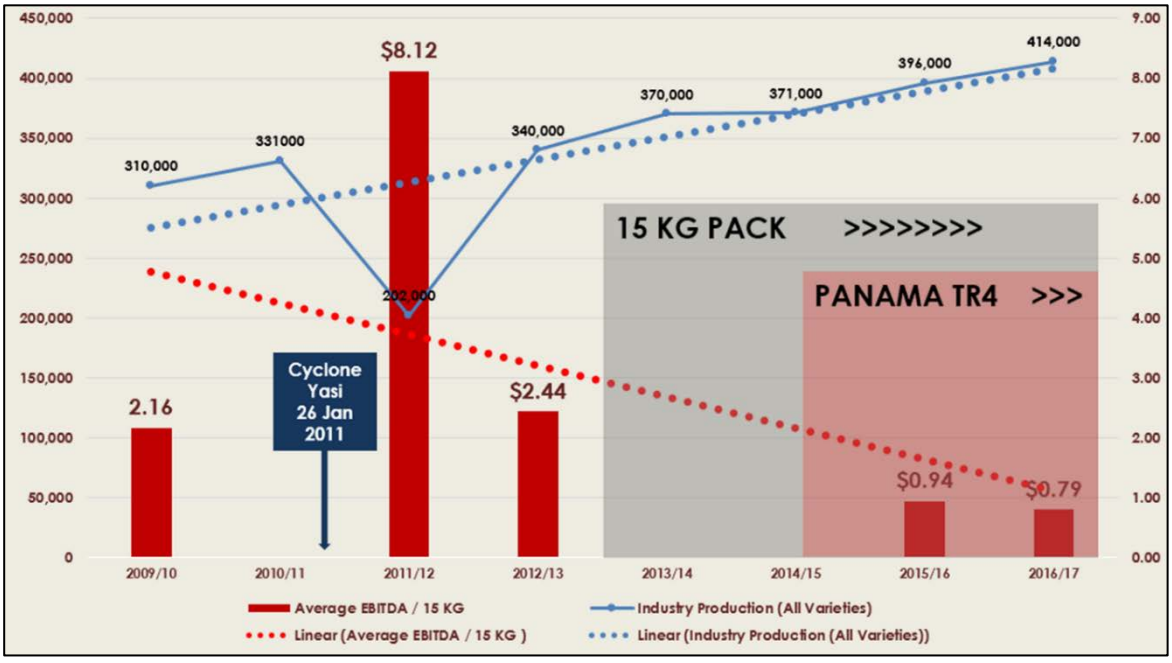
Far North QLD Conventional Cavendish Only	Unit	2009/10	2016/17	Change % 09/10 to 16/17	Change (Q or $) 09/10 to 16/17
Employment / Labour + Contracting & Consulting + Contract Packing	$ / 15 Kg	9.09	$8.55	(6%)	(0.54)
Freight Costs	$ / 15 Kg	3.61	$3.94	9%	0.33
Packaging Costs	$ / 15 Kg	2.14	$2.78	30%	0.64
Marketing and Ripening Costs	$ / 15 Kg	0.90	$2.67	197%	1.77
Chemical and Fertilizer Costs	$ / 15 Kg	2.39	$2.29	(4%)	(0.10)
Other Operating Costs	$ / 15 Kg	3.30	3.12	(5%)	(0.17)

In Figure 1 the annual production volumes of the Australian banana industry and the major events that have impacted the industry since 2009/10 (F2010) are plotted against the Cash Profit per 15 Kg reported by benchmarking participants growing (conventional) tropical cavendish bananas.

Further to information in Table 3, key trends between 2009/10 (F2010) and 2016/17 (F2017) include:

1. **Australian banana production increased 34%**
2. **The Australian population increased by 10%**
3. **The per capita consumption of bananas in Australia increased by 21%, and**
4. **The cost of employing one Full Time Employee (FTE) on Australian banana farms increased 22% (refer Table 5).**

Figure 1: Banana Production & Key BM Data (Tropical Cavendish) F2010 to F2017



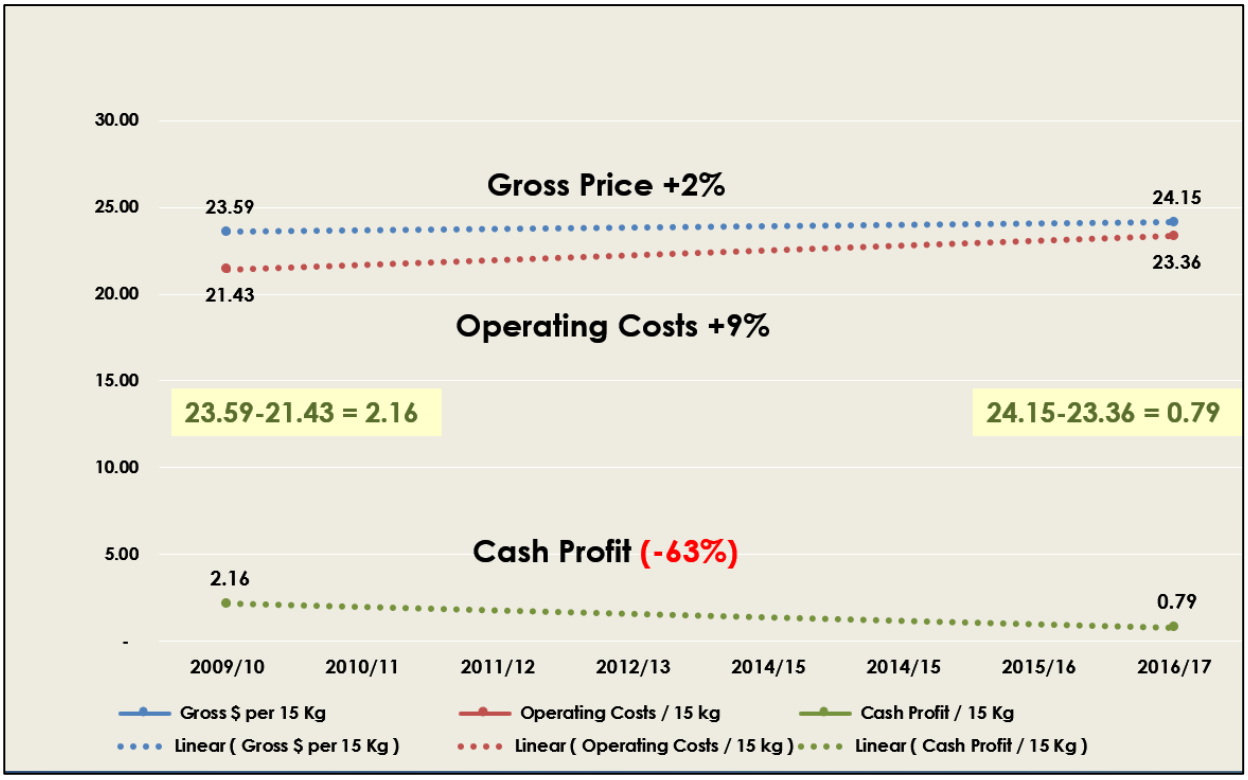
The Cash Profit figures (EBITDA figures) in Figure 1 are calculated as:

Gross Price Achieved – Operating Costs = Cash Profit (EBITDA)

The average gross price (per 15 Kg) and average operating costs (per 5 Kg) for benchmarking participants (conventional tropical cavendish) in 2009/10 (F2010) and 2016/17 (F2017) are also provided in Figure 2, and the resulting Cash Profit per 15 kg.

During this period the gross price received by benchmarking participants (conventional tropical cavendish) (i.e. price before paying for marketing commissions and ripening costs) increased by 2%, while operating costs increased by 9%, resulting in a **(-63%)** decline in Cash Profit (not adjusted for CPI changes in the period).

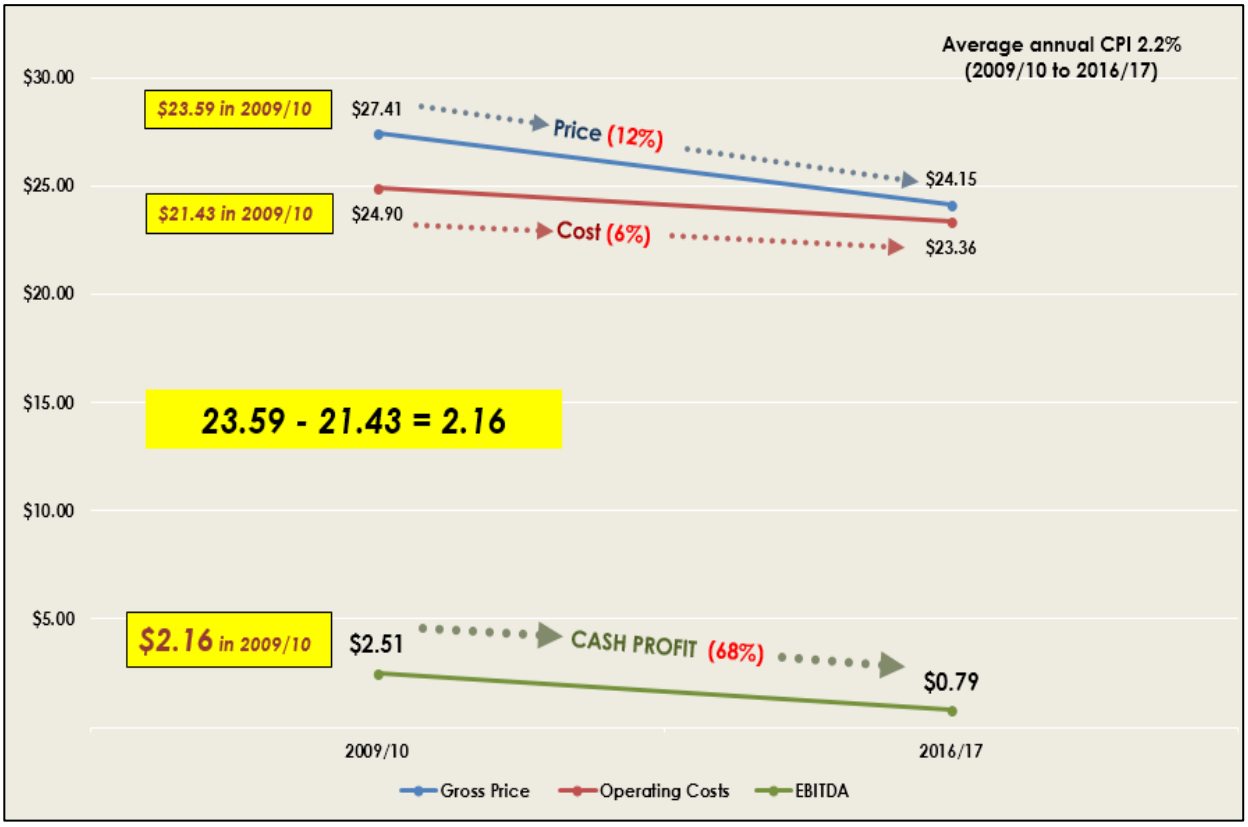
Figure 2: Benchmarking Data - Price, Operating Costs and EBITDA F2010 to F2017



In the same nine (9) year period the Consumer Price Index 'All Groups Brisbane' increased by 15.2%.

This data (in Figure 3) is adjusted for CPI in Figure 3, below, accounting for the change in the time-value of money in the same period.

Figure 3: BM Data (CPI[1] ADJUSTED (*)) – Ave. Price, Op. Cost & EBITDA F2010 to F2017



(*) Data is presented in 2016/17, dollar values

When adjusted for CPI:

1. Average Goss Price decreased by **-12%** in eight (8) years [average **-1.5%** p.a.]
2. Average Operating Costs decreased by **-6%** in eight (8) years [average **-0.75%** p.a.], and
3. Average EBITDA (Cash Profit) decreased by **-68%** in eight (8) years [average of **-8.5%** p.a.]

When this analysis is carried out for the period between 2011/12 (F2012) and 2016/17 (F2017) the same trends are evident, however far more accentuated. This is because in both 2011/12 (F2012) (and in 2012/13 (F2013)) cash profits for benchmarking participants were higher than they were prior to the impact of Cyclone Yasi (February 2011). Using either F2012 or F2013 as the base line / starting point for an analysis of trends over time is therefore not considered to be representative of true long-term trends.

[1] http://www.qgso.qld.gov.au/products/tables/cpi-all-groups-bris-wt-avg-eight-qtr/index.php

Table 5: Award Rates (Horticulture) F2009 to F2017[2]

Year Ended June 30,	$ / Hour	Annual $ / FTE	Variance + / -
2009	15.69	34,406	
2010	17.46	38,287	11%
2011	18.06	39,603	3%
2012	18.58	40,743	3%
2013	19.07	41,818	3%
2014	19.64	43,068	3%
2015	20.13	44,142	2%
2016	20.61	45,195	2%
2017	21.29	46,686	3%
% Increase 2008/09 to 2016/17		12,280	36%
% Increase 2009/10 to 2016/17		8,399	22%

2.2 Top 10 Groups in F2013 and F2017

Considerable detail is provided in Table 6 and Table 7 about changes to the physical and financial performance of Top 10 businesses between 2012/13 (F2013) and 2016/17 (F2017)[3].

Table 6: Key Changes to Top 10 Business Performance F2013 - F2017 (Incl. CPI[4] Adjusted)

	Unit	TROP CAV TOP 10 2013	TROP CAV TOP 10 2017	Variance Q or $	Variance %	Variance % CPI Adjusted
Total KGS Harvested per Producing Hectare	Kgs / Ha	44,051	46,155	2,104	5%	
Total 15 KG Cartons(Equivalent) Harvested per Producing Hectare	15 Kg Cartons / Ha	2,937	3,077	140	5%	
Average Gross Price Achieved $ / 15 KG Equivalent of Market Fruit	$ / 15 Kg	$25.58	$25.27	-$0.31	(1%)	(9%)
Average Net Return to Grower $ / 15 KG Equivalent of Market Fruit (After Paying Marketing and Ripening Costs)	$ / 15 Kg	$23.67	$21.95	-$1.71	(7%)	(15%)
Total Costs per 15 KG Carton Equivalent Sold	$ / 15 Kg	$19.99	$22.14	$2.15	11%	2.5%
Average EBITDA per 15 KG Carton Equivalent Sold	$ / 15 Kg	$6.80	$3.46	-$3.34	(49%)	(58%)
% of Market Fruit Sold in 15 KG International Packs	%		65.31%	65.31%		
% of Market Fruit Sold as XLarge (as single size pack) %	%	87.40%	28.95%	-58.45%	(67%)	

[2] https://www.fwc.gov.au/documents/documents/modern_awards/award/ma000028/default.htm

[3] F2013 to F2017 data is used in this level of analysis /discussion. The benchmarking data demonstrates some notable differences for the period before and after Cyclone Yasi, amongst them what appears to be a permanent increase in average yield for participants which, which directly impacts direct and indirect costs per 15 kg produced and sold. F2013 to F2017 is also more recent and considered therefore to be more salient for analysis purposes, at this level.

[4] http://www.qgso.qld.gov.au/products/tables/cpi-all-groups-bris-wt-avg-eight-qtr/index.php

The following points summarise some of the key areas of difference /change.

For Top 10 Businesses - changes F2013 to F2017

5. Yields increased (Variance 5%)

1. Gross Prices down **1%** (**-9%** CPI adjusted)

2. Operating Costs **11% up** (**2.5%** CPI Adjusted)

3. Cash Profit down **-49%** (**-58%** CPI Adjusted)

4. Rapid domination of 15 Kg International Pack (from almost 0 in F2013 to 65% in F2017)

5. Ongoing Operating Costs incurred due to the discovery of Panama TR4 are not recorded separately by most growers / participants. It is not possible to define how much of the operating cost increase is directly related to measures aimed at containment of TR4.

6. Capital invested in new structures and equipment for the containment of TR4 (biosecurity) has been over $1,600 per producing hectare on average for benchmarking participants.

Table 7: Detailed Trends of Top 10 Businesses F2013 to F2017

	Unit	TROP CAV TOP 10 2013	TROP CAV TOP 10 2017	Variance Q or $	Variance %
ENTERPRISE INFORMATION					
Total KGS Harvested per Producing Hectare	Kgs / Ha	44,051	46,155	2,104	5%
Total 15 KG Cartons(Equivalent) Harvested per Producing Hectare	15 Kg Cartons / Ha	2,937	3,077	140	5%
Average Gross Price Achieved $ / 15 KG Equivalent of Market Fruit	$ / 15 Kg	$25.58	$25.27	(0)	(1%)
Average Net Return to Grower $ / 15 KG Equivalent of Market Fruit (After Paying Marketing and Ripening Costs)	$ / 15 Kg	$23.67	$21.95	(2)	(7%)
Total Costs per 15 KG Carton Equivalent Sold	$ / 15 Kg Carton Sold	$19.99	$22.14	2	11%
Average EBITDA per 15 KG Carton Equivalent Sold	$ / 15 Kg Carton Sold	$6.80	$3.46	(3)	(49%)
% of Market Fruit Sold in 15 KG International Packs	%		65.31%	1	
% of Market Fruit Sold as XLarge (as single size pack) %	%	87.40%	28.95%	(1)	(67%)
				0	
PACK OUT, PRODUCTIVITY, BIOSECURITY, ENVIRONMENTAL					
% of Market Fruit Sold as International Pack	%		65.31%	1	
% of Market Fruit Sold as Single Size	%	100.00%	34.69%	(1)	(65%)
% of Market Fruit Sold as Jumbo %	%	1.18%	1.68%	0	42%
% of Market Fruit Sold as XLarge %	%	87.40%	28.95%	(1)	(67%)
% of Market Fruit Sold as Large %	%	0.40%	0.80%	0	99%
% of Market Fruit Sold as Medium %	%	0.66%	0.77%	0	17%
% of Market Fruit Sold as Small %	%			0	
% of Market Fruit Sold as Other 1 %	%	0.26%	0.10%	(0)	(61%)
% of Market Fruit Sold as Other 2 %	%	0.23%	0.17%	(0)	(24%)
				0	
PRODUCTIVITY				0	
Carton to Bunch Ratio	Cartons / Bunch		2.06	2	
Bags Applied per Labour Hour	Bags / Lab Hr		32.88	33	
Bells Injected per Labour Hour	Bells / Lab Hr		42.67	43	
Line Metres De-Suckered per Labour Hour (Spade)	Line Metres / Lab Hr		240.00	240	
Line Metres De-Suckered per Labour Hour (Spray / Diesel)	Line Metres / Lab Hr			0	
Bunches Picked per Labour Hour	Bunches / Lab Hr		48.00	48	
Cartons Packed per Pack House Labour Day	Cartons / Lab Day		133.29	133	
				0	
BIOSECURITY				0	
Protected Farm Hectares Being Protected by Current Farm Biosecurity	Ha		120.60	121	
Number of Non-Contiguous Areas / Blocks in Protected Farm Area	Number		1.30	1	
Number of Physical Biosecurity Elements Employed (Maximum 10)	Number		7.60	8	
Number of Biosecurity Recording Elements Employed (Maximum 8)	Number		2.67	3	
Average Capital Invested per Protected Hectare for Biosecurity	$ / Prot. Ha		$3,176.97	3,177	
Average Capital Invested per Harvested Hectare for Biosecurity	$ / Harvested Ha		$3,309.80	3,310	

	Unit	TROP CAV TOP 10 2013	TROP CAV TOP 10 2017	Variance Q or $	Variance %
				0	
ENVIRONMENTAL				0	
Proportion of Current Banana Growing Area with More than 3% Gradient	%		12.56%	0	
% of Nutrition Applied by Fertigation	%		85.12%	1	
% of Nutrition Applied by Ground Application	%		14.88%	0	
KG N / Ha / annum Applied in Plant Crops	KG / Ha		305.11	305	
KG of N / Ha / annum Applied in Ratoon Crops	KG / Ha		321.40	321	
KG of P / Ha / annum Applied	KG / Ha		59.88	60	
KG of K / Ha / annum Applied	KG / Ha		917.10	917	
				0	
SELECTED LABOUR USE MEASURES					
Total FTEs Employed / Producing Ha	FTE / Ha	0.40	0.34	(0)	(14%)
Total Producing Hectares Managed per FTE	Ha / FTE	2.50	2.94	0	18%
Gross Sales Revenue Achieved Per Total FTE	$ / FTE	$193,289	$226,988	33,699	17%
EBITDA Achieved Per Total FTE	$ / FTE	$49,715	$31,025	(18,690)	(38%)
Tonnes Produced and Sold Per FTE per Annum	Tonne / FTE	109.65	134.34	25	23%
PROFITABILITY PER PRODUCING HA					
Total Sales Revenue	$ / Producing Ha	$77,655	$77,986	331	.43%
Total Costs	$ / Producing Ha	$58,703	$68,135	9,433	16%
Net Profit (Before Tax)	$ / Producing Ha	$18,952	$9,851	(9,101)	(48%)
EBIT	$ / Producing Ha	$19,572	$10,452	(9,120)	(47%)
				0	
Total Operating Costs (Excluding Interest and Depreciation)	$ / Producing Ha	$57,682	$67,327	9,645	17%
EBITDA	$ / Producing Ha	$19,973	$10,659	(9,314)	(47%)
				0	
COSTS PER PRODUCING HA					
Chemical and Fertiliser Costs	$ / Producing Ha	$5,293	$6,313	1,020	19%
Consultants And Contractor Fees	$ / Producing Ha	$1,814	$3,731	1,918	106%
Contract Packing Fees	$ / Producing Ha	$805		(805)	(100%)
Depreciation and Amortisation Costs	$ / Producing Ha	$401	$208	(194)	(48%)
Employment / Labour Costs	$ / Producing Ha	$17,540	$19,010	1,471	8%
Finance Costs	$ / Producing Ha	$620	$601	(19)	(3%)
Freight Costs	$ / Producing Ha	$12,249	$10,405	(1,843)	(15%)
Fuel & Oil Costs	$ / Producing Ha	$1,054	$600	(454)	(43%)
General Expenses	$ / Producing Ha	$2,566	$3,754	1,189	46%
Insurance Costs	$ / Producing Ha	$251	$234	(17)	(7%)
Marketing & Ripening Costs	$ / Producing Ha	$5,620	$10,190	4,570	81%
Motor Vehicles	$ / Producing Ha	$79	$140	61	77%
Packaging and Pallet Costs	$ / Producing Ha	$6,351	$8,319	1,968	31%
Power & Gas Costs	$ / Producing Ha	$626	$594	(32)	(5%)
Rates Levies, Licenses, Memberships, Registrations	$ / Producing Ha	$921	$1,655	734	80%
Repairs & Replacements	$ / Producing Ha	$2,376	$2,246	(131)	(6%)
Royalties & PVR Costs	$ / Producing Ha			0	

	Unit	TROP CAV TOP 10 2013	TROP CAV TOP 10 2017	Variance Q or $	Variance %
Water Costs	$ / Producing Ha	$136	$135	(1)	(1%)
				0	
PROFITABILITY PER 15 Kg CARTON EQUIVALENT					
Total Sales Revenue	$ / 15 Kg Carton Sold	$26.44	$25.34	(1)	(4%)
Total Costs	$ / 15 Kg Carton Sold	$19.99	$22.14	2	11%
Net Profit Before Tax	$ / 15 Kg Carton Sold	$6.45	$3.20	(3)	(50%)
EBIT	$ / 15 Kg Carton Sold	$6.66	$3.40	(3)	(49%)
				0	
Total Operating Costs (Excluding Interest and Depreciation)	$ / 15 Kg Carton Sold	$19.64	$21.88	2	11%
EBITDA	$ / 15 Kg Carton Sold	$6.80	$3.46	(3)	(49%)
				0	
Total Operating Costs as % of Gross Sales Revenue	%	74.28%	86.33%	0	16%
EBITDA as % of Gross Sales Revenue	%	25.72%	13.67%	(0)	(47%)
				0	
COSTS PER 15 KG EQUIVALENT					
Chemical and Fertiliser Costs	$ / 15 Kg Carton Sold	$1.80	$2.05	0	14%
Consultants And Contractor Fees	$ / 15 Kg Carton Sold	$0.62	$1.21	1	96%
Contract Packing Costs	$ / 15 Kg Carton Sold	$0.27		(0)	(100%)
Depreciation and Amortisation Costs	$ / 15 Kg Carton Sold	$0.14	$0.07	(0)	(51%)
Employment / Labour Costs	$ / 15 Kg Carton Sold	$5.97	$6.18	0	3%
Finance Costs	$ / 15 Kg Carton Sold	$0.21	$0.20	(0)	(7%)
Freight Costs	$ / 15 Kg Carton Sold	$4.17	$3.38	(1)	(19%)
Fuel & Oil Costs	$ / 15 Kg Carton Sold	$0.36	$0.19	(0)	(46%)
General Expenses	$ / 15 Kg Carton Sold	$0.87	$1.22	0	40%
Insurance Costs	$ / 15 Kg Carton Sold	$0.09	$0.08	(0)	(11%)
Marketing and Ripening Costs	$ / 15 Kg Carton Sold	$1.91	$3.31	1	73%
Motor Vehicles	$ / 15 Kg Carton Sold	$0.03	$0.05	0	69%
Packaging Costs	$ / 15 Kg Carton Sold	$2.16	$2.70	1	25%
Power and Gas Costs	$ / 15 Kg Carton Sold	$0.21	$0.19	(0)	(9%)
Rates, Levies, Licenses, Memberships, Registrations	$ / 15 Kg Carton Sold	$0.31	$0.54	0	72%
Repairs & Replacements	$ / 15 Kg Carton Sold	$0.81	$0.73	(0)	(10%)
Royalties & PVR Costs	$ / 15 Kg Carton Sold			0	
Water Costs	$ / 15 Kg Carton Sold	$0.05	$0.04	(0)	(5%)
				0	
Employment / Labour + Contracting & Consulting + Contract Packing	$ / 15 Kg Carton Sold	$6.86	$7.39	1	8%
				0	
PROFITABILITY PER KG PRODUCED AND SOLD					
Total Sales Revenue	$ / Kg	$1.76	$1.69	(0)	(4%)
Total Costs	$ / Kg	$1.33	$1.48	0	11%
Net Profit (Before Tax)	$ / Kg	$0.43	$0.21	(0)	(50%)
EBIT	$ / Kg	$0.44	$0.23	(0)	(49%)
Total Operating Costs (Excluding Interest and Depreciation)	$ / Kg	$1.31	$1.46	0	11%

	Unit	TROP CAV TOP 10 2013	TROP CAV TOP 10 2017	Variance Q or $	Variance %
EBITDA	$ / Kg	$0.45	$0.23	(0)	(49%)

2.3 Practices: Top 10 Compared to the Remainder in F2017

As for previous years, the management practices of the Top 10 group were compared to the management practices of the remainder of the group in 2016/17 (F2017). Other than some small differences, there was little differences in management practices between the two sub-groups. The differences in financial performance and productivity were mainly driven by improvements in yield and labour management.

The Top 10 in F2017 differed in in a small number of areas, including:

1. More Top 10 businesses were using Nurse Suckering or crop scheduling at some level
2. Top 10 businesses sold more produce to wholesalers and less direct to supermarkets (this was reversed in previous years)
3. Top 10 businesses were using more P and more K than the remainder, and more N on ratoon crops

Full detail of the differences reported between management practices for the Top 10 and the remainder in F2017 is provided in Table 8

Table 8: Management Practices by Top 10 and Remainder in F2017

	Measure	Tropical Cavendish Remainder F2017	Tropical Cavendish Top 10 F2017
A: FARM PRACTICES			
Farm Labour			
Local / Australian Workers	% of Total Labour	56.54%	40.69%
International Workers / Backpackers	% of Total Labour	29.20%	38.98%
Pacific Islands Contracting Teams (e.g. Maydec, similar)	% of Total Labour	15.93%	18.55%
Method of Irrigation Monitoring (Scheduling)			
Visual / Judgement	% of Respondents	41.19%	40.00%
Tensiometers	% of Respondents	29.41%	40.00%
Neutron Probes	% of Respondents	5.88%	0.00%
Enviroscan	% of Respondents	11.76%	0.00%
Fixed Scheduling	% of Respondents	11.76%	20.00%
Other	% of Respondents	0.00%	0.00%
Uses Some Form of Technology for Irrigation Monitoring	% of Respondents	58.81%	60.00%
Irrigation Intervals (When Irrigating)			
More than Once per Day	% of Respondents	23.53%	10.00%
Daily	% of Respondents	41.18%	50.00%
Irrigate Daily or More Frequently	% of Respondents	64.71%	60.00%
Every 2 Days	% of Respondents	23.53%	20.00%
Twice Weekly	% of Respondents	0.00%	0.00%
Weekly	% of Respondents	11.76%	20.00%

	Measure	Tropical Cavendish Remainder F2017	Tropical Cavendish Top 10 F2017
Less Frequently Than Once Per Week	% of Respondents	0.00%	0.00%
Use of External Advice			
Engaged Pest Scouts / Monitors / Pest Agronomist	% of Respondents	66.67%	70.00%
Engaged external Nutritional Advisor / Agronomist	% of Respondents	55.56%	70.00%
Principal Method of Applying Fungicides			
Fixed Wing Aircraft	% of Respondents	72.22%	70.00%
Helicopter	% of Respondents	22.22%	20.00%
Ground Application	% of Respondents	5.56%	10.00%
Other Methods	% of Respondents	0.00%	0.00%
Practice and Scale of Nurse Suckering			
No Nurse Suckering Practiced	% of Respondents	49.99%	20.00%
Up to 20% of Producing Area	% of Respondents	16.67%	50.00%
21% to 40% of Producing Area	% of Respondents	27.78%	30.00%
41% to 50% of Producing Area	% of Respondents	5.56%	0.00%
51% to 75% of Producing Area	% of Respondents	0.00%	0.00%
76% to 100% of Producing Area	% of Respondents	0.00%	0.00%
Use Nurse Suckering At Some Level in Plantations	% of Respondents	50.01%	80.00%
Ripening and Marketing Costs			
% of Respondents That Provided Their Current Ripening Costs ($ / Carton)	% of Respondents	62.50%	80.00%
Average Ripening Cost Reported by Respondents	$ / Carton	$2.04	$1.56
% of Respondents That Provided Current Marketing Costs / Fees Paid	% of Respondents	62.50%	80.00%
Produce Marketing Channel Used			
Direct to Supermarkets	% of Respondents	76.72%	68.00%
Via Brokers	% of Respondents	0.28%	0.00%
Through Wholesalers	% of Respondents	23.00%	32.00%
Through Exporters or Direct to Export	% of Respondents	0.00%	0.00%
Through PBR Marketers	% of Respondents	0.00%	0.00%
To Processors, Value Adders, Oil etc.	% of Respondents	0.00%	0.00%
Other	% of Respondents	0.00%	0.00%
B: BIOSECURITY			
Areas, Non-Contiguous Portions,			
Total (Protected) Farm Area reported by all respondents in Group	Hectares	3,588.00	1,011.00
% of (Protected) Farm Area managing one (only) Contiguous Portion	% of Hectares	50.00%	60.00%
% of (Protected) Farm Area managing two (2) Non-Contiguous Portions	% of Hectares	44.44%	30.00%
% of (Protected) Farm Area managing three (3) Non-Contiguous Portions	% of Hectares	0.00%	10.00%
% of (Protected) Farm Area managing more than 3 (>3) Non-Contiguous Portions	% of Hectares	5.56%	0.00%
% of (Protected) Area that Floods:			
Never	% of Hectares	50.00%	70.00%
Less than annually	% of Hectares	44.44%	30.00%
Annually or more frequently than annually	% of Hectares	5.56%	0.00%
Duplication of Plant and Equipment for Biosecurity			
% of Respondents that have had to duplicate plant & equipment	% of Respondents	61.11%	70.00%

	Measure	Tropical Cavendish Remainder F2017	Tropical Cavendish Top 10 F2017
% of (Protected) Farm Area – which has duplicated plant and equipment	% of Hectares	82.11%	59.05%
Planting and Planting Materials BEFORE TR4			
% of Respondents using Tissue Culture Prior to TR4	% of Respondents	72.22%	80.00%
% of Respondents using Bits / Pieces From Their own Farm - Prior to TR4	% of Respondents	27.78%	20.00%
% of Respondents using Bits / Pieces From Other Farms / Sources- Prior to TR4	% of Respondents	0.00%	0.00%
% of (Protected) Farm Area using Tissue Culture Prior to TR4	% of Hectares	85.14%	75.07%
% of (Protected) Farm Area using Bits / Pieces From Their own Farm - Prior to TR4	% of Hectares	14.86%	24.93%
% of (Protected) Farm Area using Bits / Pieces From Other Farms / Sources- Prior to TR4	% of Hectares	0.00%	0.00%
Planting and Planting Materials NOW (AFTER TR4)			
% of Respondents using Tissue Culture Now	% of Respondents	72.22%	100.00%
% of Respondents using Bits / Pieces From Their Own Farm - Now	% of Respondents	27.78%	0.00%
% of Respondents using Bits / Pieces From Other Farms / Sources - Now	% of Respondents	0.00%	0.00%
% of (Protected) Farm Area using Tissue Culture Now	% of Hectares	85.14%	100.00%
% of (Protected) Farm Area using Bits / Pieces From Their Own Farm - Now	% of Hectares	14.86%	0.00%
% of (Protected) Farm Area using Bits / Pieces From Other Farms / Sources - Now	% of Hectares	0.00%	0.00%
Adoption of Physical Biosecurity Measures / Elements (9 Elements)			
% of (Protected) Farm Area Now With:			
1. Biosecurity Signage	% of Hectares	100.00%	100.00%
2. Minimized Access Points to Farm	% of Hectares	93.39%	100.00%
3. Defined Movement Processes Between Non-Contiguous Portions	% of Hectares	50.56%	42.43%
4. Point-to-Point or RORO Systems for Produce Transport	% of Hectares	14.05%	52.62%
5. Specific Earthworks for Biosecurity	% of Hectares	49.78%	62.41%
6. Trained Biosecurity Officers Employed / Engaged	% of Hectares	64.41%	90.50%
7. Fenced All of Farm (Protected) Area	% of Hectares	20.68%	68.64%
8. Fenced Some of Farm (Protected) Area	% of Hectares	71.88%	27.79%
9. Defined Zoning System in Operation within Farm	% of Hectares	94.51%	92.38%
10. Footbaths or Footwear Exchanges Used by All Farm Entrants	% of Hectares	96.18%	100.00%
Average Elements out of 10	Number / 10	6.50	7.60
Adoption of Biosecurity Record Keeping Systems (8 Elements)			
% of (Protected) Farm Area Now With .... In Place			
1. Visitors Register	% of Hectares	49.44%	81.31%
2. Vehicle Movement Register	% of Hectares	17.84%	0.00%
3. Decontamination Register	% of Hectares	0.00%	6.92%
4. Biosecurity Training Register	% of Hectares	32.72%	77.84%
5. Banana Planting Register	% of Hectares	28.21%	38.87%
6. Waste Disposal Register	% of Hectares	0.00%	0.00%
7. Continuous Disease Surveillance Testing & Recording	% of Hectares	6.97%	0.00%
8. Active Checking of Past Exposure / Work Locations for New Employees	% of Hectares	72.13%	80.42%
Average Elements out of 8	Number / 8	2.07	2.50

	Measure	Tropical Cavendish Remainder F2017	Tropical Cavendish Top 10 F2017
Perspectives on Biosecurity For TR4 Management			
% of Respondents Attempting to Adopt MAXIMUM POSSIBLE measures	% of Respondents	16.67%	50.00%
% of Respondents Adopting MIDDLE GROUND / PARTIAL Adoption	% of Respondents	77.78%	50.00%
% pf Respondents Adopting TAKEN NO ACTION	% of Respondents	5.56%	0.00%
% of (Protected) Farm Area for which FULLEST POSSIBLE measures are adopted	% of Hectares	29.32%	45.60%
% of (Protected) Farm Area for which SOME NOT ALL measures are adopted	% of Hectares	69.57%	54.40%
% of (Protected) Farm Area for which MINIMAL OR NO measures are adopted	% of Hectares	1.11%	0.00%
Use of Contractors Since TR4			
% of Respondents Now using Contractors More Than Before TR4	% of Respondents	0.00%	0.00%
% of Respondents Now using Contractors At Same Level as Before TR4	% of Respondents	83.33%	90.00%
% of Respondents Now using Contractors Less Than Before TR4	% of Respondents	16.67%	10.00%
% of Respondents Allowing Contractors to use Their Own Machinery	% of Respondents	17.65%	0.00%
% of Respondents Allowing Contractors to use The Farm's Machinery Only (no external machinery allow	% of Respondents	82.35%	100.00%
Other Impacts of TR4			
% of Respondents that have Reduced Producing Area since TR4	% of Respondents	11.11%	10.00%
% of Respondents that have Knowingly Increased Employees / Employee Hours since TR4	% of Respondents	11.11%	10.00%
C: OPERATING KPI's			
BAGGING: Average Bags Applied per labour Hour	Bags / Hour	28.41	32.88
BELL INJECTION: Average Bells Injected per Labour Hour	Bells / Hour	33.13	42.67
DE-SUCKERING (SPADE): Metres of Banana Line Spaded Per Labour Hour	Metres / Hour	281.33	240.00
DE-SUCKERING (SPRAY / DIESEL / OTHER): Metres Banana line Sprayed / Dieseled per Labour Hour	Metres / Hour	0.00	0.00
HARVESTING: Average Bunches Picked and Delivered to Shed or Tranship point per Labour Hour	Bunches / Hour	36.10	48.00
PACKING: Cartons Packed per Packhouse Labour Day (8 Hour Day) (counts all labour in Shed)	Carons / Labour Day	148.67	133.29
D: BPM / ENVIRONMENTAL MANAGEMENT			
Surfaces and Surface Protection			
% of (Protected) Farm Area with Minimum 60% Ground Cover (Living or Dead) in Inter Rows	% of Hectares	55.35%	94.36%
% of Farm Area with At Least 3% Gradient	% of Hectares	25.82%	14.78%
For Land with Greater that 3% Gradient			
% of Area With Diversion Drains in Place	% of Hectares (3% PLUS)	83.33%	90.00%
% of Area with Spoon Drain Drainage Structures to Collect Run-Off and Slow Down Flow	% of Hectares (3% PLUS)	88.89%	90.00%
% of Area with All Drainage Water Leaving Farm by way of a Silt Trap or Similar Structure	% of Hectares (3% PLUS)	55.56%	60.00%
% of Area with Uniformly Dense Vegetation Buffers, Contour Banks or Other Means of (future) Compliance	% of Hectares (3% PLUS)	83.33%	80.00%
Application of Fertilizer			
% Applied by Fertigation	% of Hectares	64.13%	65.91%
% Applied by Ground Application	% of Hectares	35.87%	34.09%
Calibration Frequency			

	Measure	Tropical Cavendish Remainder F2017	Tropical Cavendish Top 10 F2017
% of Respondents Calibrating Fertilizer Application Equipment At Least Every 6 Months	% of Respondents	14.66%	45.80%
% of Respondents Calibrating Fertilizer Application Equipment At Least Every 12 Months	% of Respondents	10.31%	0.00%
% of Respondents Calibrating Fertilizer Application Equipment Less Often than Every 12 Months	% of Respondents	0.00%	0.00%
% of Respondents Calibrating Fertilizer Application Equipment Every Time a New Product is Applied	% of Respondents	75.03%	54.20%
Record Keeping			
% of Respondents keeping Records of All Soil Tests	% of Respondents	100.00%	100.00%
% of Respondents keeping Records of All Leaf Tests	% of Respondents	100.00%	100.00%
% of Respondents keeping Records of All Fertilizer Applications	% of Respondents	100.00%	100.00%
Types of Record Keeping			
% of Respondents Keeping Electronic Records	% of Respondents	33.42%	84.67%
% of Respondents Keeping Paper or Hard Copy Recordsonly	% of Respondents	66.58%	15.33%
Nutrient Application Levels (Targets)			
Average Kg of N Applied per Hectare per annum ON PLANT CROPS	Kg N / Hectare	316.50	297.33
Average Kg of N Applied per Hectare per annum ON RATOON CROPS	Kg N / Hectare	321.61	314.40
Average Kg of P Applied per Hectare per annum on Banana Crops	Kg P / Hectare	55.00	59.86
Average Kg of K Applied per Hectare per annum Banana Crops	Kg K / Hectare	901.22	917.10
Source of Setting Nutrient Target Levels			
% of Respondents using Targets Set by an EXTERNAL Agronomist	% of Respondents	71.88%	78.34%
% of Respondents using Targets Set by an IN-HOUSE Agronomist	% of Respondents	17.84%	0.00%
% of Respondents using Targets Set by Fertilizer Reseller	% of Respondents	6.38%	21.66%
% of Respondents using Targets Set by Reference to Historical Records	% of Respondents	3.90%	0.00%
% of Respondents using Targets Set Baseed on Yield Data	% of Respondents	0.00%	0.00%
% of Respondents using BEST GUESS Targets	% of Respondents	0.00%	0.00%
% of Respondents using Targets Set by Other Means	% of Respondents	0.00%	0.00%
% of Respondents Using Industry Funded Management Tools			
% of Respondents Using Banana BMP	% of Respondents	53.96%	48.37%
% of Respondents Using Better Bunch App	% of Respondents	7.89%	0.00%

3. TRENDS IN MARKETING AND MANAGEMENT PRACTICES

A detailed survey of marketing and management practices was undertaken as part of the recent benchmarking data collection round (2015/16 and 2016/17).

Table 9 summarises the areas that have continued to be of note and worthy of consideration by growers wishing to identify ways to improve their businesses. Some commentary regarding selected areas of the survey findings also follows.

Table 9: Key Areas of Change in Management Practices Between F2013 and F2017

	Measure	TROPICAL CAVENDISH 2013	TROPICAL CAVENDISH 2017
Pacific Islands Contracting Teams (e.g. Maydec, similar)	% of Total Labour	0.00%	15.83%
Use Technology to Determine Irrigation Frequency	% of Respondents	60.00%	62.96%
Irrigate Daily or More Frequently	% of Respondents	52.00%	62.96%
Use Nurse Suckering / Crop Scheduling at Some Level	% of Respondents	52.00%	60.71%
Engaged Pest Scouts / Monitors / Pest Agronomist	% of Respondents	30.77%	67.86%
Engaged external Nutritional Advisor / Agronomist	% of Respondents	30.77%	60.71%
Sell Produce Direct to Supermarkets	% of Respondents	55.87%	73.61%
Sell Produce via Wholesalers	% of Respondents	35.31%	26.21%

1. **Sources of labour:**

   By 2016/17, 16% of the total labour employed by benchmarking participants had converted primarily from international / backpacker labour to Pacific Islands labour.

2. **Irrigation Practices**

   In 2016/17 63% of benchmarking participants were using some form of technology (e.g. Tensiometers, Enviroscan, other forms including the Wiser System) to determine irrigation frequency.

   The number of benchmarking participants that irrigate daily or more frequently than daily in 2016/17 was 63%, up from 52% identified in 2012/13.

3. **Use of External Expertise for Nutrition Advice and Pest Monitoring**

   The percentage of participants that engage paid external advisors for nutrition advise and pest monitoring in 2016/17 was 61% and 68% respectively, both approximately double the level identified in the 2012/13 survey.

4. **Practice Nurse Suckering**

   61% of participants were nurse suckering some proportion of their plantation area in 2016/17, up from 52% identified in 2012/13.

5. **Awareness of Ripening and Marketing Costs Incurred**

   In 2016/17 69% of participants were aware of and able to list the costs they are incurring for ripening and for marketing. Whilst this information was not collected in 2012/13, researchers believe that this is a substantially higher proportion of participants than it was in previous years.

6. **Operating Key Performance Indicators (KPI's)**

   This area of the survey was supported by a sub-set of the participants. This section was included at the request of a group of progressive growers that are focused on measuring labour use efficiency in key farm operating tasks.

   Labour continues to be by far the largest single cost item for banana growers. The cost of labour (per hour, per FTE/annum) has increased 36% since 2008/09 and 12% since 2012/13. This is an area of increasing importance for growers to investigate and more use of objective labour use efficiency measures is recommended, given declining profitability of participants.

4. KEY DATA SUMMARY FOR FNQ CAVENDISH ONLY F2009 TO F2017

Table 10: Key Data Summary – Tropical Cavendish Only

Benchmarking Data - Far North Queensland Conventional Cavendish Production Only	Unit	Group Average 2008/09	Group Average 2009/10	Group Average 2011/12	Group Average 2012/13	Group Average 2015/16	Group Average 2016/17	Change % 09/10 to 16/17	Change (Q or $) 09/10 to 16/17	Change % 12/13 to 16/17
Industry / Background										
Industry Production (Total, All Varieties, Annual)	Tonnes		310,000	202,000	340,000	396,000	414,000	34%	104,000	22%
% of Industry Production in Benchmarking	%		27%	40%	28%	29%	29%			
Number of Benchmarking Participants	No.	35	41	40	36	28	28			
Annual Cost of 1 Full Time Employee Equivalent (FTE)	$ / FTE	34,406	38,287	40,743	41,818	45,195	46,686	22%	8,399	12%
Benchmarking Group										
Total Producing Hectares	Ha	1,901	2,700	2,705	2,456.63	2,850	2,922	8%		19%
Total Producing Plants (Stools)	Plants					4,291,404	4,455,328			
Average Plant Density	Plants / ha					1,506	1,525			
Average Cartons per Stool per Annum	15 Kg / Stool / annum					1.81	1.79			
Benchmarking Group										
Total KGS Harvested, Packed and Sold	Kgs	58,779,552	84,139,783	81,419,190	96,429,090	116,785,935	119,740,560	42%		24%
Total Cartons (15 Kg Carton Equivalent) Harvested Packed and Sold	15 Kg Cartons	3,918,637	5,609,319	5,427,946	6,428,606	7,785,729	7,982,704	42%		24%
Total KGS Harvested per Producing Hectare	Kgs / Ha	30,913	31,161	30,098	39,253	40,978	40,985	32%	9,824	4%
Total 15 KG Cartons(Equivalent) Harvested per Producing Hectare	15 Kg Cartons / Ha	2,061	2,077	2,007	2,617	2,732	2,732	32%	655	4%
Benchmarking Group										
Average Gross Price Achieved $ / 15 KG Equivalent of Market Fruit	$ / 15 Kg	24.33	23.59	$33.79	$23.48	$24.17	$24.15	2%	0.56	3%
Average Net Return to Grower $ / 15 KG Equivalent (After Paying Marketing & Ripening Costs)	$ / 15 Kg	23.17	23.57	$30.44	$21.46	$21.60	$21.48	(9%)	(2.09)	%
Total Operating Costs (Excluding Interest and Depreciation)	$ / 15 Kg Carton Sold	22.58	21.43	$25.67	$21.04	$23.23	$23.36	9%	1.93	11%
Average EBITDA per 15 KG Carton Equivalent Sold	$ / 15 Kg Carton Sold	1.75	2.16	8.12	2.44	0.94	0.79	(63%)	(1.37)	(68%)
Benchmarking Group										
Employment / Labour + Contracting & Consulting + Contract Packing	$ / 15 Kg Carton Sold	9.74	9.09	$9.20	$7.87	$8.74	$8.55	(6%)	(0.54)	9%
Top 5 Cost Lines (From Below)	$ / 15 Kg Carton Sold	19.59	18.13	21.20	17.84	20.05	20.24	12%	2.11	13%
Top 5 % of Total Operating Costs	$ / 15 Kg Carton Sold	87%	85%	83%	85%	86%	87%			

BA 16009 BANANA BENCHMARKING – TROPICAL CAVENDISH

Benchmarking Data - Far North Queensland Conventional Cavendish Production Only	Unit	Group Average 2008/09	Group Average 2009/10	Group Average 2011/12	Group Average 2012/13	Group Average 2015/16	Group Average 2016/17	Change % 09/10 to 16/17	Change (Q or $) 09/10 to 16/17	Change % 12/13 to 16/17
Benchmarking Group										
Labour Productivity - Tonnes Produced and Sold Per FTE per Annum	Tonne / FTE	55	67	69	82	80	84	26%	17	2%
% of Market Fruit Sold in 15 KG International Packs	%					68%	78%			
% of Market Fruit Sold as XLarge (as single size pack) %	%	73%	78%	64%	77%	24%	16%	(80%)		(80%)
Benchmarking Group - 5 Largest Costs										
Employment / Labour + Contracting & Consulting + Contract Packing	$ / 15 Kg Carton Sold	9.74	9.09	$9.20	$7.87	$8.74	$8.55	(6%)	(0.54)	9%
Freight Costs	$ / 15 Kg Carton Sold	3.95	3.61	$3.39	$3.74	$3.99	$3.94	9%	0.33	5%
Packaging Costs	$ / 15 Kg Carton Sold	2.64	2.14	$2.58	$2.38	$2.58	$2.78	30%	0.64	17%
Marketing and Ripening Costs	$ / 15 Kg Carton Sold	1.16	0.90	$3.35	$2.02	$2.57	$2.67	198%	1.78	32%
Chemical and Fertiliser Costs	$ / 15 Kg Carton Sold	2.09	2.39	$2.67	$1.83	$2.17	$2.29	(4%)	(0.10)	25%
Employment Across QLD Industry									0.00	
Production Queensland	Tonnes / annum		291,400	189,880	319,600	372,240	389,000	33%	97,600	22%
FTEs Employed (On Farm) In QLD Industry (Using Labour Productivity Figures above)	FTEs		4,367	2,765	3,875	4,677	4,620	6%	253	19%
FTEs Employed In Banana Supply Chain out of QLD (Using Employment Mulitplier of 2.52)	FTEs		11,006	6,968	9,766	11,787	11,643	6%	637	19%
FTEs Employed On Farm - as Per Project BA 11013 (Economic Contribution)	*FTEs*		*3,326*							
FTEs Employed In Supply Chain - as Per Project BA 11013 (Economic Contribution)	*FTEs*		*8,384*							
Industry Economic Output (QLD)										
Gross Price per Tonne		1,622	1,573	2,253	1,566	1,612	1,610			
Gross Value Ex Farm Gate			458,367,448	427,711,518	500,354,801	599,893,927	626,384,590			
Output Mulitiplier (From Project BA 11013)			1.88	1.88	1.88	1.88	1.88			
Total Industry Output			861,730,802	804,097,654	940,667,026	1,127,800,582	1,177,603,030			

5. DISCUSSION

5.1 The Banana Category and Grower Returns

Production data, per capita consumption data, and the benchmarking data indicate poor and declining grower profitability between 2009/10 (F2010) and 2016/17 (F2017). The major change is the declining value being received by benchmarking participants for their produce. Price achieved has decline in CPI adjusted terms significantly more than operating costs.

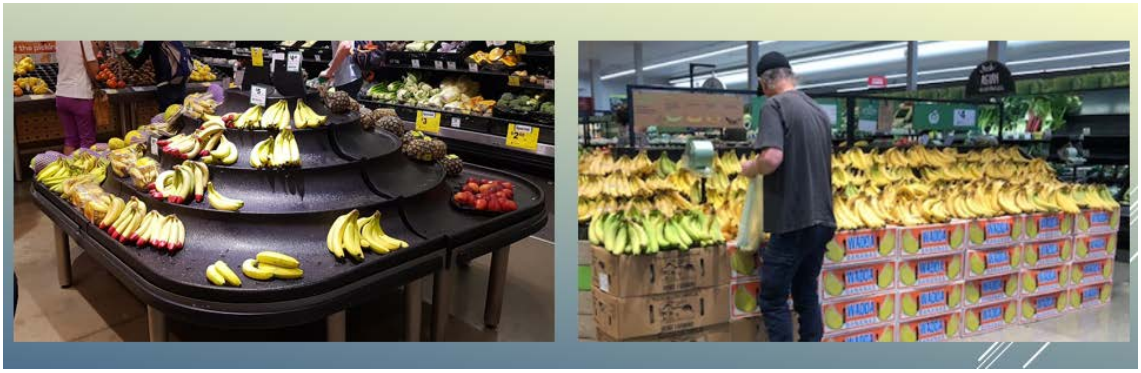
The benchmarking data suggests participants have been effective in containing their costs over an eight-year period (operating costs have increased just 7% over nine years, being a decline of **-7%** in CPI adjusted terms). In the same period gross price has declined by **-12%** in CPI adjusted terms. Participants' success in containing costs is further evidenced by the fact that labour use efficiency, and yield have increased in the same period by 21%.

The banana category is primarily driven by a single product line. Cavendish bananas account for over 95% of banana production and appear in supermarkets as the only facing / product line of any scale, in the banana category.

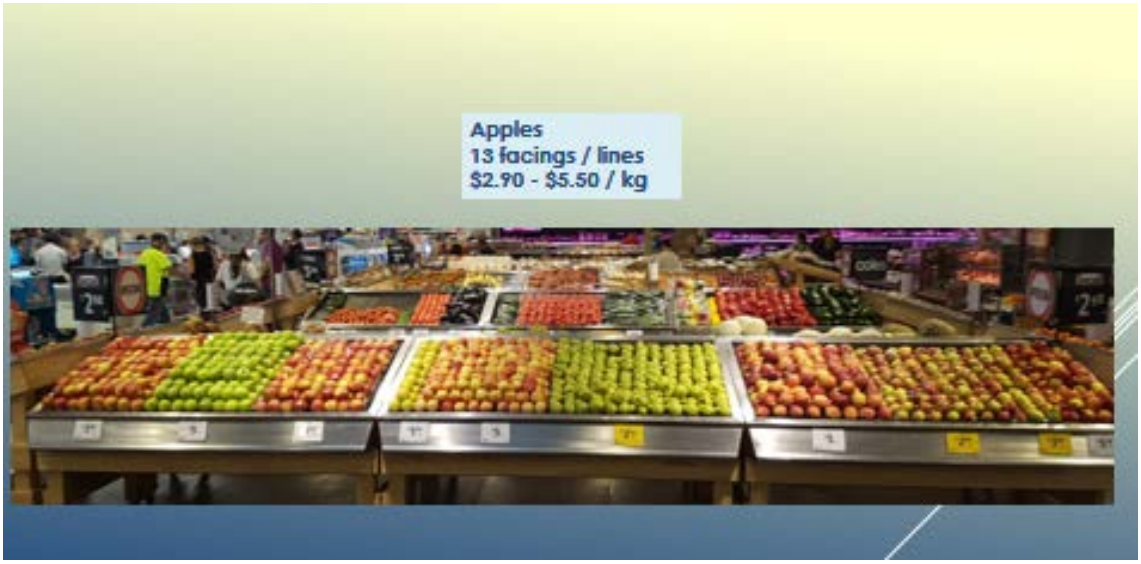
Current consumer behaviour, driven by the internet, smart phones, social media and current culture is to seek choice, in both products and price-points / value propositions. The following images are examples of displays for bananas and for competing categories seen in supermarket stores visited by the researchers in August 2018[4] (stores [banners] and locations identified below each image).

Source: Coles West End Queensland, 12.30 PM Saturday August 4th 2018

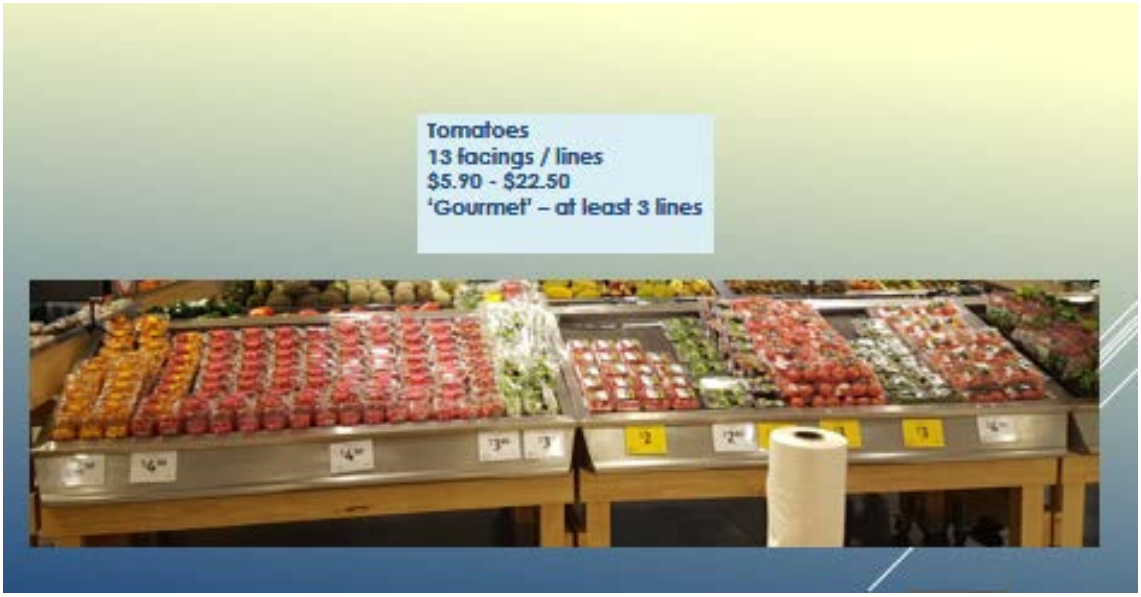
[4] A total of six stores were randomly selected and visited by the researchers in August 2018. These stores may not necessarily be representative of all stores in the relevant banner, or other banners.



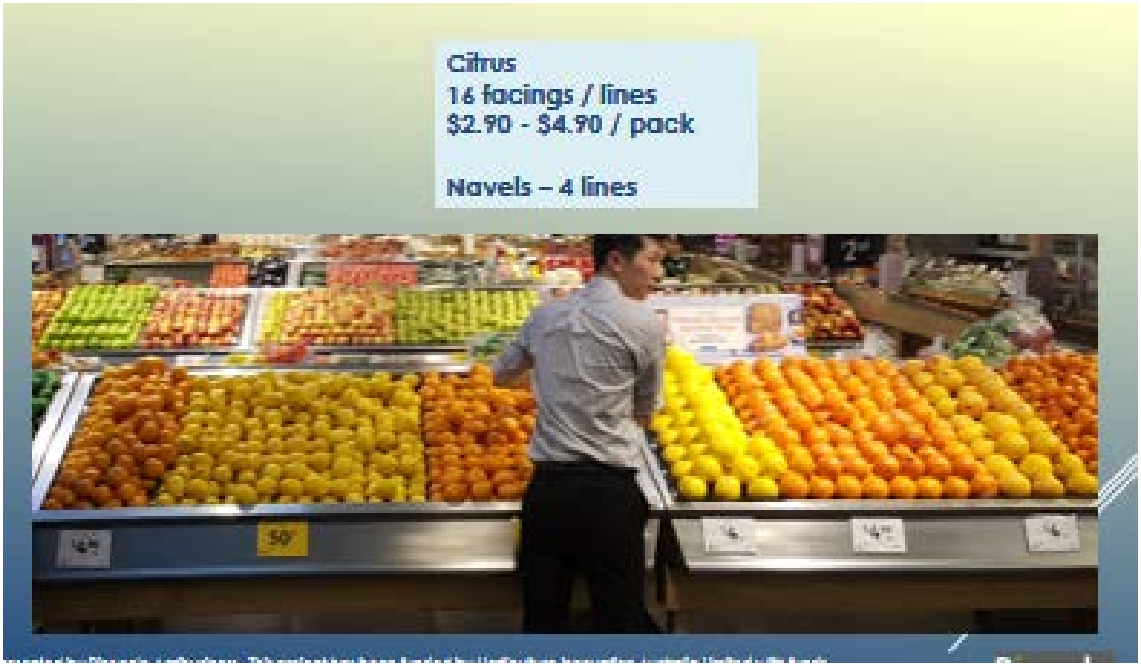
Source: Woolworths, Mission Beach, Wednesday August 8th, 4.30 PM, Woolworths Sippy Downs Queensland, August 2018



Source: Coles West End Queensland, 12.30 PM Saturday August 4th 2018



Source: Coles West End Queensland, 12.30 PM Saturday August 4th 2018



Source: Coles West End Queensland, 12.30 PM Saturday August 4th 2018

It may not currently be possible to offer multiple banana varieties, in multiple product configurations like other produce categories. However, this should not preclude investment in research and adoption of initiatives to improve the banana offer to consumers. (*This very same topic was addressed by a guest speaker Lisa Cork[5], at the most recent Industry Congress in Sydney, 2017.*)

[5] Lisa Cork, Fresh Produce Marketing, Auckland New Zealand, https://www.linkedin.com/in/lisacork

Packaging, branding, pack size, degree of ripeness, product size, and informed demographic differentiation are all possible mechanisms for offering greater choice and improved shelf appeal in the banana category. Such investment may also include training and education for retail and merchandising staff.

The Australian banana industry spends more than any other Australian fresh produce category, both in terms of the proportion of levy funds directed to marketing and the absolute dollar spend. Success to date has been achieved by investing, almost exclusively, on promotion of higher consumption per capita of extra-large and large cavendish (which represents approx. over 90% sales), as a loose, minimally value-added single facing / product line and single value proposition.

The current the marketing program that is focused on driving per capita consumption of XL and L Cavendish would be complimented by expanding the available banana offering to consumers. This may improve the perceived value of bananas in the eyes of consumers and retailers, and improve the value returned to growers.

The value of bananas in the domestic market is possibly impacted by the limited depth of the banana category offering compared to competing fresh produce categories and other snack food products.

Growers may therefore benefit in the form of improved returns, from investment (by industry and / or marketers), into further product differentiation and the development of a more diverse multiple -product (SKU) banana category, with a range of products at differing price points / value propositions.

5.2 Trends and Observations

The commentary and graphs / figures herein are the same as provided in Appendix 1 – All Industry.

In respect to topics covered in this section, the data for tropical cavendish growers is not materially different from that reported for all participants (tropical cavendish growers account for more than 95% of the total data).

It is included again here to facilitate stand-alone consideration of this Appendix 2 – Tropical Cavendish, report.

5.2.1 LABOUR USE EFFICIENCY / COSTS & LABOUR MANAGEMENT SKILLS

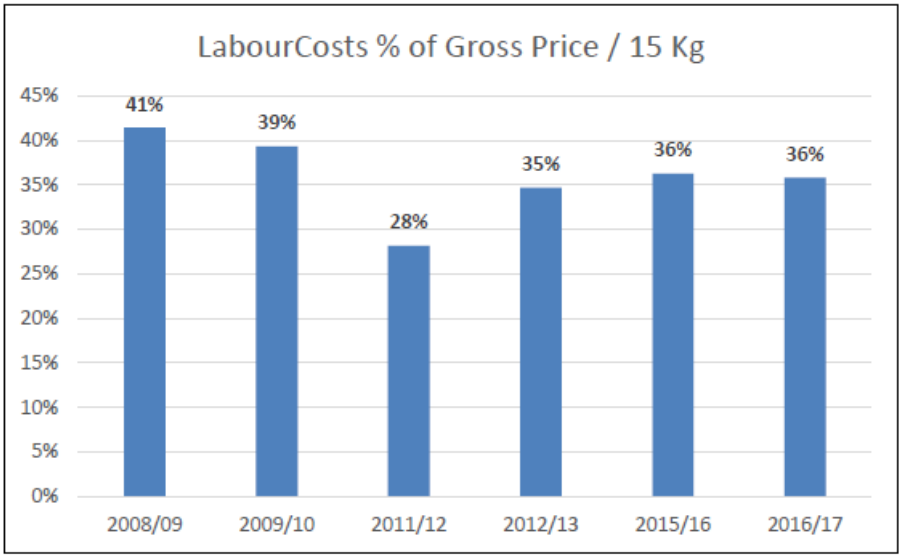
Consistently, across six (6) different years of benchmarking data (in an eight-year period of elapsed time), the cost of labour including contracting and the labour component of contract packing fees (Labour Costs) has been by far the largest single cost for banana growers in the benchmarking program.

(Contract packing is a small component of total packing in the banana industry with two / three recognised contract packing facilities in far north Queensland and one in Carnarvon WA.)

As shown in Figure 4, Labour Costs have only been below 30% of the gross price achieved per 15 kg in one out of six years of benchmarking data. In the two years immediately following Cyclone Yasi, Labour costs were 28% and 35% of Gross Price respectively. In F2012 the benchmarking group was positively impacted by elevated prices.

In F2013, whilst prices may have still have been slightly elevated, the yields achieved by many participants were elevated, perhaps in part due to the positive impact of the adoption of Nurse Suckering by participants as part of the cyclone recovery process. Higher yields directly impact costs and reduce labour per 15 kg equivalent.

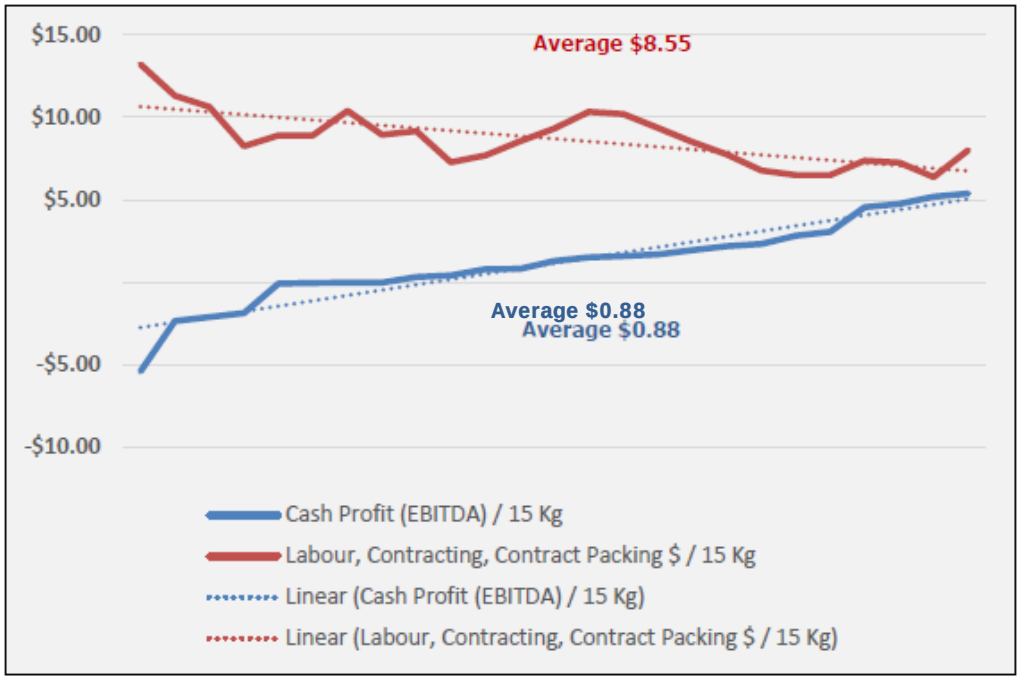
Figure 4: Labour Costs as % of Gross Price Between F2009 & F2017(6 Data-Years)



In F2017, the latest year of benchmarking data, the relationship between Labour Costs and Cash Profit is clearly demonstrated in **Error! Reference source not found.**.

Of the top five (5) largest cost items for benchmarking participants (Labour Costs, Freight, Packaging, Marketing & Ripening and Chemicals & Fertilizers) Labour Costs are both the largest single cost and the most 'manager controllable' of these costs.

Figure 5: Relation Between Labour Costs and Cash Profit F2017



Labour costs, and the acquisition of strong labour force management skills appear the highest priority, and the most manager controllable, area for improving costs for banana benchmarking participants. This has been consistently the case in all years of data collection in banana benchmarking program.

Banana packing sheds are food processing factories many of which employ large numbers of people for 4 to 5 days per week and for up to 52 weeks per year. The skills, processes and methods of managing large groups of people in food processing factories and other industrial operations are equally applicable to banana packing facilities.

Process design and labour use efficiency in packing facilities, as well as careful planning and scheduling of production, to deliver consistent, managed volumes of product to packing points, (across weeks and from week to week), is a crucial component of controlling labour costs. This may be one of the factors behind the data regarding the 'Top 10', that:

1. **'Top 10' (higher performing) banana producing businesses use more nurse suckering crop scheduling,**

2. **'Top 10' businesses use more irrigation monitoring technology and irrigate more frequently in peak demand periods,**

3. **'Top 10' businesses have lower labour costs and higher labour use efficiency**

It is also notable that some 'Top 10' (higher performing) participants continue to innovate in how to apply nurse suckering / crop scheduling. One such example is the removal of bells that either emerge early in a block and / or emerge late in a block, to tighten up the labour use efficiency in later tasks including bagging, harvesting and packing.

Either seeking out and employing skilled processing managers and supervisors <u>or</u> finding ways for family members to acquire these same skills and exposure will enhance workflow and process design, labour use efficiency and ultimately Cash Profit.

Top 10, higher performing businesses consistently demonstrate:

1. *Higher yields (and higher cartons / stool / annum)*
2. *Lower operating costs,*
    a. *In particular - lower Labour Costs (and higher labour use efficiency)*
3. *Significantly higher Cash Profits (5 X higher on average)*

..and commonly:

1. *Irrigate at least daily in peak demand periods*
2. *Invest in water monitoring technology*
3. *Use external advice for nutrition and pest monitoring*
4. *Utilise Nurse Suckering*

5.2.2 IMPORTANCE OF YIELD IN HIGH VOLUME PRODUCE COMMODITIES

The banana industry has for many years been characterised by the production and supply of high volumes of a single product line, best described in modern terms as XL and L Cavendish in bulk cartons (now 70%+ 15 kg). This single product commodity is commonly displayed in one large (loose fill) facing in supermarkets, with small volumes of Lady Finger and Eco / Red Tip bananas (commonly not merchandised with / adjacent to Cavendish bananas).

Cavendish bananas are (materially) produced, handled and marketed as a commodity. The product is also marketed predominantly by three (3) marketers whom, collectively, market upwards of 80% of the production of the industry.

For growers to be successful as a profitable supplier to this market they have little choice other than to develop and maintain a highly productive and efficient on-farm operation. The two factors of productivity that are of high priority and the most able to be influenced by management skill and expertise are:

1. Labour Costs and Labour Use Efficiency
2. Yield per hectare.

The data in Figure 6 illustrates the range of yields achieved by participants in 2016/17 (F2017). In a market where the product traded is a high-volume undifferentiated commodity (i.e. Fast-Moving Consumer Good or FMCG) growers need to produce competitive yields to sustain viability.

The technology and expertise to achieve average yields or better exists. Growers with lower yields can immediately improve their operational efficiency and profitability by focusing on yield improvement.

Figure 6: Proportion of Participants with Sub Average Yield

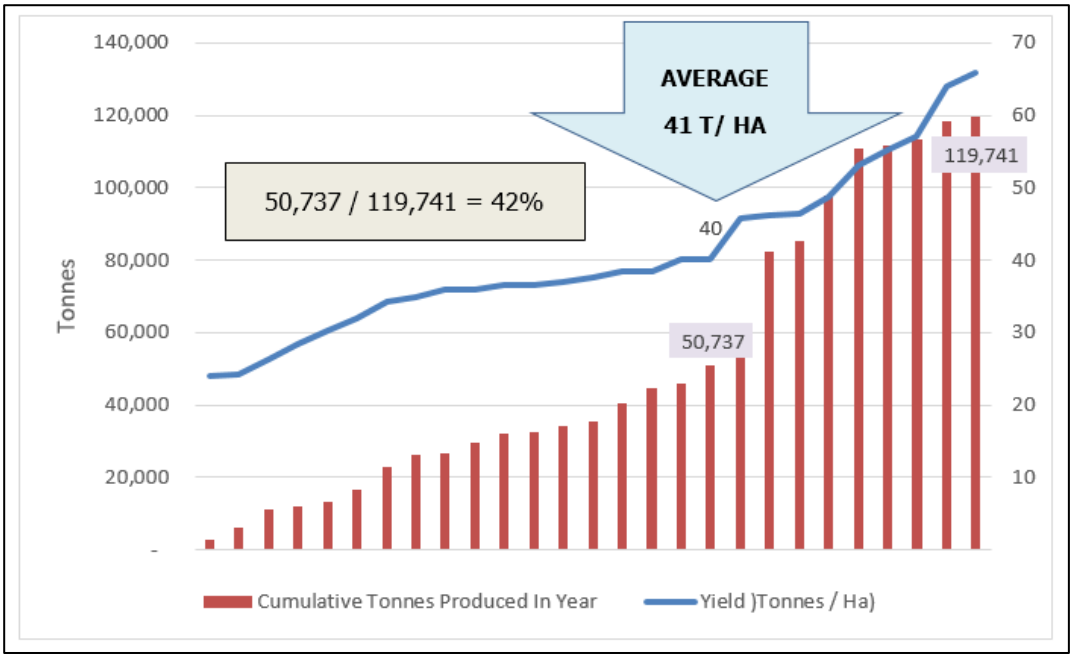
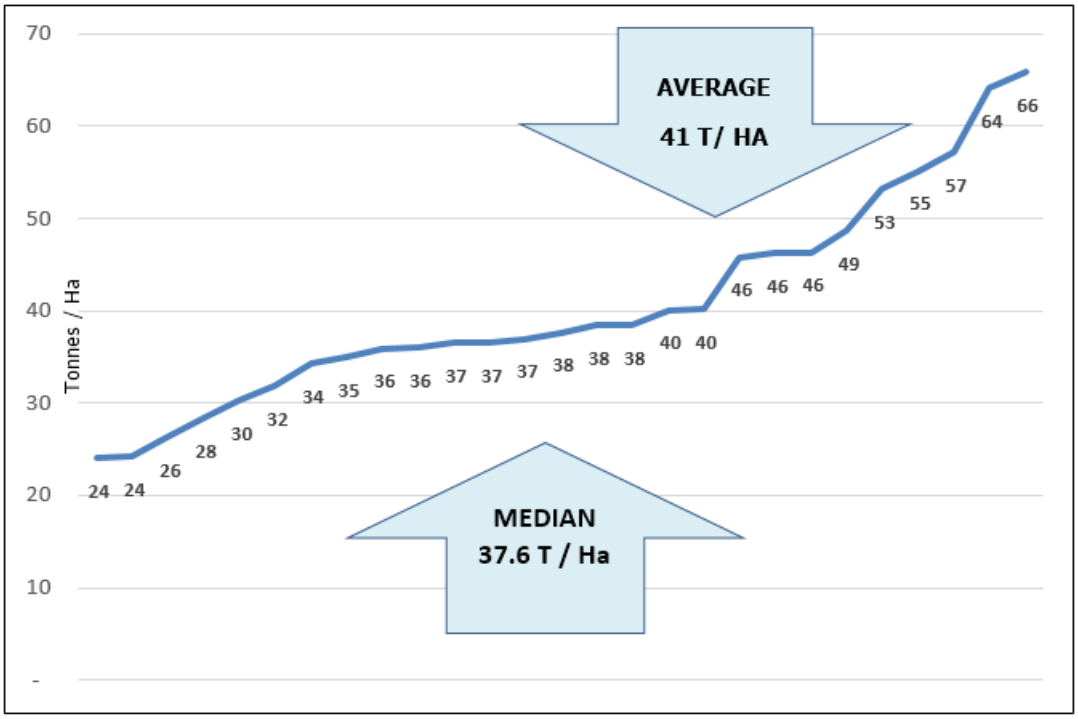


Figure 7: Yield per Ha (Tonnes / Ha) for Tropical Cavendish F2017



demonstrated in **Error! Reference source not found.**that 43% of the total production of the participant group in F2017 was produced with a yield that was below the average yield for the group.

In this group 30% of participants reported an operating Cash Loss in F2017 and 48% reported an operating Cash Profit that was below the average for the group.

5.2.3 EFFECTIVENESS OF BIOSECURITY STRUCTURES & PROCESSES

Details of data collected on the biosecurity measures adopted on-farm by participants and the impacts of biosecurity on farm operations are reported in detail in Appendix 5.

Benchmarking participants have invested significant capital in structures, equipment and operational measures in response to the discovery of Panama Disease Tropical Race 4 (TR4), since early 2015. This has resulted in an average $1,600 per producing (Harvested) hectare for all participants. **If this level of investment is pervasive, across all of industry, it would amount to approximately $20 million invested by banana growers, since the discovery of TR4.**

Observations regarding Biosecurity:

1. The role of Biosecurity Queensland (BQ) is clearly focused on infected properties and high-risk properties in relation to TR4. This does not ignore the ongoing BQ role in surveillance.

2. The roles of the Australian Banana Growers Council (ABGC) and the Department of Agriculture and Fisheries (DAF) do not appear to include specific services aimed at maximising the effectiveness of efforts to contain TR4 across the industry in Far North Queensland.

3. There are numerous examples that have been observed where capital has been invested, and processes introduced that do not necessarily appear to be as effective as intended. Some examples:

    a. The existence of numerous foot baths and vehicle dips that are not protected by roof structures.

    b. Vehicle wash-down facilities and processes, and human access restriction structures / processes that do not appear to be highly effective,

    c. Adoption of zoning systems in pack houses and on farms that are not necessarily being operated effectively (through lack of signage, lack of rigour in adoption, or lack of staff buy-in and training).

4. **If effective, relentless, containment of TR4 is of highest priority for this industry, as it is, there appears to be a gap between what BQ's role is and the role of other agencies (e.g. ABGC, DAF), that should seriously be investigated.**

5. **That gap is: An agency or dedicated team of individuals tasked with specific extension, research, monitoring and education of growers about the implementation and adoption of Best Practice Biosecurity across the banana industry in Far North Queensland.**

6. **One possible structural approach may be to allocate more resources to the current ABGC Black Sigatoka monitoring function and expanding that function into an Industry Biosecurity Team. That team would:**

Provide extension, research, monitoring and education of growers about the implementation and adoption of Best Practice Biosecurity (TR4, Black Sigatoka, other specific and general aspects of farm and handling biosecurity) across the banana industry in Far North Queensland.

5.2.4 ATTRIBUTES OF HIGHLY PROFITABLE BANANA GROWING BUSINESSES

Unexpectedly, the benchmarking round just completed has resulted in the 'Top 10' group of business (i.e. Top 10 most profitable businesses per 15 kg) with marked differences to the top 10 groups in previous rounds.

In all previous rounds (and years) of benchmarking the top 10 group was dominated by tropical cavendish growers (refer **Error! Reference source not found.**.

In F2013, 8 out of 10 in the Top 10 were tropical cavendish growers with an average of 100 producing hectares each. In F2017 the Top 10 contained only 4 tropical cavendish growers (average producing area 71 hectares). The remaining 6 in the top 10 included 2 North Queensland Lady Finger growers and 4 from other regions.

For the tropical cavendish growers that were in the Top 10 in F2013 and F2017, the average Cash Profit per 15 Kg declined as follows:

	2012/13 (F2013)	2016/17 (F2017
Average Cash Profit / 15 Kg for Tropical Cavendish Growers in the 'Top 10' in two years	8.80	4.76

There is material decline in the dominance of tropical cavendish growers in the 'Top 10' group between F2013 and F201. The Cash Profit per 15 kg has also declined markedly (-46%) for tropical cavendish growers in the Top 10. This would suggest that the tropical cavendish sector of the industry has experienced the most significant decline in on-farm business performance in the period.

Analysis in previous sections further suggest that tropical cavendish growers have demonstrated slightly increased yields and increased labour productivity in the same period. In the same period Gross Price for tropical cavendish growers increased by just 3% (-5.5% CPI adjusted) and Operating costs increased by 11% (2.5% CPI adjusted) in the same period.

The main driver of reduced cash profits for tropical cavendish growers that sit in the Top 10 group (highly profitable growers compared to the remainder) is the speed of decline in the value of the end product (Gross Price) (-5.5% CPI adjusted over 4 years) compared to the relatively well contained costs of production (Operating Costs) (2.5% CPI adjusted over 4 years)

Anecdotally it is feasible that the changes in market value of cavendish bananas in the domestic market may, at least in part, be attributable to the change from single size 13 Kg cartons to 15 Kg International Packs (67% XL and 33% L).

It is at least of interest that the -5.5% (CPI adjusted) decline in the Gross Price achieved by benchmarking participants has occurred in the same period that the 15Kg International Pack has grown from a minimal proportion of sales of tropical cavendish to 78% of sales of tropical cavendish amongst benchmarking participants. The additional 2 Kg of produce in each carton represents 13% of the total weight (15 Kg).

Could supermarkets or marketers prosecute an argument that the new pack represents a relaxing of specifications and therefore may justify a decline in value?

A countervailing argument may well be that the new specification (mixed XL and L) is more in line with feedback that consumers were not completely happy with the dominance of larger bananas (XL) and were seeking smaller bananas, at least for some of the retail offer.

This logic would suggest that the International Pack perhaps justifies higher value than the previous offer, which was 76% XL in F2013

Table 11: Attributes of 'Top 10' Group F2013 and F2017

	Far North QLD Cavendish	Far North QLD Lady finger	New South Wales	Western Australia	Total
In 20012/13 (F2013)					
Number of 'Top 10' Businesses	9			1	10
Top 10' Producing Hectares	976			19	994
% of 'Top 10' Producing Hectares	98%	0%	0%	2%	100%
In 2016/17 (F2017)					
Number of 'Top 10' Businesses	4	2	1	3	10
Top 10' Producing Hectares	283.70	73.38	10.50	15.27	382.85
% of 'Top 10' Producing Hectares	74%	19%	3%	4%	100%

5.2.5 TRANSPARENCY AND COMMERCIAL AWARENESS

Unfortunately, in hindsight, survey questions seeking to identify the level of awareness the participants had of the marketing and ripening charges they were paying were not included in the benchmarking information gathering instrument in years prior to F2016.

In the recent round (F2016 and F2017) participants reported that 50% of all participants were aware of these costs. This figure was higher amongst participants that grow tropical cavendish bananas (70%)

Anecdotally the researchers strongly believe that this level of awareness of these costs (the 4th largest costs items for all participants) was not present in earlier years. The fact that one of the largest marketers of bananas has adopted a fully transparent 'agency' model of doing business is likely to have been one notable catalyst for this increase in commercial awareness.

5.2.6 DIFFERENCES ACROSS REGIONS

Detailed data regarding the differences across regions in the recent round of benchmarking is reported upon in Appendix 3. Readers should refer to Appendix 3 – Differences Across Regions

5.2.7 NEW SOUTH WALES

The differences between benchmarking participants in New South Wales and those in other regions and sectors of the industry (Appendix 3) include three points that deserve commentary.

1. Large Difference Between yield and profitability of cavendish growers and Lady Finger growers (See Table 12)

2. Whilst yields are likely to be lower in New south Wales than in North Queensland due to climatic differences and the impact this has on cycle time, it was also notable that average nutrient application rates (N, P, K) were also considerably lower (Refer to Appendix 3, Section 2) in New South Wales.

   New South Wales participants, therefore growers, may improve their profitability by investigating increased levels of nutrient application and possibly re-visiting bunch pruning strategies.
   Producing heavier bunches, albeit possibly requiring some adjustment to how bunches are hauled to packing points (on significant gradients), I likely to directly improve costs per unit of sale since labour and machinery will travel the same distances (and take the same time) to perform many tasks regardless of bunch size.

Table 12: Differences Between Participant Businesses in NSW and North QLD

	Cavendish			Lady Finger	
	North QLD	NSW		North QLD	NSW
Average Yield (t/ ha)	16	41		14.5	20
Average Gross Price $ / 15 Kg	21.14	24.15		33.19	46.69
Average Operating Costs $ / 15 Kg	21.79	23.36		27.75	41.4
Average Cash Profit (EBITDA) $ / 15 Kg	0.64	0.79		5.44	6.65

3. The need for Cavendish growers in NSW to target different markets to the mainstream market that is supplied dominantly by North Queensland Cavendish growers

   Given the differences in production economics between cavendish growing in North Queensland and in new South Wales (refer Table 12), New South Wales growers of cavendish bananas are not able to compete with product produced in North Queensland (substantially higher yields, lower costs and strong relationships with marketing channels
   Some (indeed most) New South Wales cavendish growers that participate in the benchmarking do sell some of their produce to alternative markets including local greengrocers, weekend and local market stalls, and others).
   Collaborating groups of growers and / or local marketers of bananas in conjunction with growers, may benefit from:

1. **Investigating, and defining market segments that have specific requirements including different sized fruit, 'tasty' bananas, and / or other attributes (physical and augmented) that could be produced and delivered with changes to the production, packaging and marketing of NSW cavendish bananas), and**

2. **Target product specifications, communication and servicing those market segments.**

New South Wales cavendish growers believe that their produce is tastier than that produced in North Queensland. However, there is little evidence that this hypothesis has been tested and used as the basis for product differentiation to niche markets.

5.2.8 WA (CARNARVON): SCALE ECONOMIES (CONTRACT PACKING) & YIELD

The Carnarvon based banana industry is far different to any on the eastern seaboard of Australia. It is a dry and windy subtropical climate, resulting in slower cycle times (compared to North Queensland) with abundant sunshine. It also has access to moderately reliable irrigation water, albeit with some variation in water quality.

Production systems in Carnarvon are very different. The average plant density is 3,300 plants per hectare and the average farm size is small. However, some benefits flow from these conditions and differences, including improved labour productivity and the production of a relatively consistent quality of smaller fruit (than tropical cavendish).

Benchmarking data suggest that Carnarvon growers that can achieve sound yields can achieve attractive Cash Profits per 15 kg.

Benchmarking participants demonstrate significantly higher average Cash Profits than those of participants in New south Wales and North Queensland. This is achieved with significantly lower costs in areas such as freight and chemicals and fertilizers. They also incur higher costs in:

1. Labour (including contract packing charges)

2. Packaging (due to further value adding / pre-packing which is not done anywhere else in the industry), and

3. Marketing (predominantly due to substantive proportions of the crop being marketed directly to Perth supermarkets by the local cooperative packing house, with sub-optimal volumes of throughput which is incurring higher fixed costs).

1. Water costs, which are exceptionally high in comparison to all other growing regions, appear to be driven by combination of high usage (circa. 20-24 ML / ha / annum for bananas), significant system / usage costs (circa. $350 ML /annum) and pumping costs (circa $50-70 ML / annum).

(Water Costs Atherton Tablelands Bananas: Usage circa 10ML / ha / annum, system usage costs circa $60 / ML / annum, pumping costs circa $70 / ML / annum)

Carnarvon based benchmarking participants could directly benefit from:

1. **Continuing to focus on obtaining sound yields (this may require tuning to nutrition, pest control [e.g. nematodes in the view of some participants]),**

2. **Developing strategies to attract and retain greater volume of throughput through the local cooperative packing and marketing operation, and**

3. **Entering negotiations with the operators of the irrigation scheme to put a case for cost relief based on well researched costing data (per 15 Kg / kilogram or tonne of produce produced).**

Appendix 3: Differences Across Regions

APPENDIX 3:

DIFFERENCES BETWEEN GROWING REGIONS

TABLE OF CONTENTS

(Biosecurity and Environmental Management are reported separately in Appendix 4)

1. KEY DATA FOR 3 REGIONS

This Appendix report is provided as a source of relevant data, about the range of issues covered in the benchmarking program. It includes information about the differences in responses received about biosecurity and environmental management as collated during the most recent round of banana benchmarking.

There is no discussion included in this section. The data herein is referred to and discussed in the main body of this BA 16009 project report. The three growing regions considered are Far North Queensland, New South Wales and Western Australia (Carnarvon).

Table 1: Key Data Summary for 3 Growing Regions F2017

	ALL PARTICIPANTS	Far North QLD	N.S.W.	W.A. (Carnarvon)
	2016/17	2016/17 (*)	2016/17	2016/17
Industry / Background				
Industry Production (Total, All varieties, Annual)	414,000	397,440	16,560	3,667
% of Industry Production in Benchmarking	30%	31%	7%	34%
Number of Benchmarking Participants	46	32	9	5
Annual Cost of 1 Full Time Employee Equivalent (FTE)	46,686	46,686	46,686	46,686
Benchmarking Group				
Total Producing Hectares	3,123	3,027	68	29
Total Producing Plants (Stools)	4,813,784	4,643,232	76,040	94,512
Average Plant Density	1,541	1,534	1,125	3,300
Average Cartons per Stool per Annum	1.73	1.75	0.96	0.87
Benchmarking Group				
Total KGS Harvested, Packed and Sold	124,755,690	122,118,525	1,095,015	1,239,885
Total Cartons (15 Kg Carton Equivalent) Harvested Packed and Sold	8,317,046	8,141,235	73,001	82,659
Total KGS Harvested per Producing Hectare	39,945	40,343	16,198	43,292
Total 15 KG Cartons(Equivalent) Harvested per Producing Hectare	2,663	2,690	1,098	3,082
Benchmarking Group				
Average Gross Price Achieved $ / 15 KG Equivalent	$24.60	$24.63	$22.72	$31.00
Average Net Return to Grower $ / 15 KG Equivalent (After Marketing & Ripening Costs)	$21.85	$21.85	$19.87	$28.08
Total Operating Costs (Excluding Interest and Depreciation)	$23.71	$23.77	$21.74	$28.13
Average EBITDA per 15 KG Carton Equivalent Sold	$0.89	$0.88	$0.98	$2.87
Benchmarking Group				
Employment / Labour + Contracting & Consulting + Contract Packing	$8.81	$8.72	$10.85	$11.48

	ALL PARTICIPANTS	Far North QLD	N.S.W.	W.A. (Carnarvon)
	2016/17	2016/17 (*)	2016/17	2016/17
Top 5 Cost Lines (From Below)	20.52	20.58	18.95	22.29
Top 5 % of Total Operating Costs	87%	87%	87%	79%

	ALL PARTICIPANTS	Far North QLD	N.S.W.	W.A. (Carnarvon)
	2016/17	2016/17	2016/17	2016/17
Benchmarking Group				
Labour Productivity - Tonnes Produced and Sold Per FTE per Annum	78	83	65	73
FTEs Employed On-Farm Across Benchmarking Group	1600	1470	17	17
% of Market Fruit Sold in 15 KG International Packs	74.99%	77.00%		
% of Market Fruit Sold as XLarge (as single size pack) %	16.69%	16.00%	76.00%	
% of Market Fruit Sold as Large (as 750 G PREPACKS) %				96.00%
Packaging Costs	$2.76	$2.80	$1.81	$4.56
Marketing and Ripening Costs	$2.75	$2.78	$2.85	$2.92
Chemical and Fertilizer Costs	$2.33	$2.35	$2.03	$0.86
Employment Across Australian Industry				
Production	414,000	397,440	16,560	3,667
FTEs Employed (On Farm) Industry Wide (Using Labour Productivity Figures above)	5,325	4,788	255	50
FTEs Employed in Banana Supply Chain (Using Employment Multiplier of 2.52)	13,418	12,065	642	127
Industry Economic Output (QLD)				
Gross Price per Tonne	1,640	1,642	1,515	2,067
Gross Value Ex Farm Gate	678,960,000	652,596,480	25,082,880	7,578,467
Output Multiplier (From Project BA 11013)	1.88	1.88	1.88	1.88
Total Industry Output	1,276,444,800	1,226,881,382	47,155,814	14,247,517

(*) NSW is assumed to be 4% of the national industry for these statistics.

Table 2: Additional Detail – Differences Across Regions

	Unit	FNQ F2017 (All Participants)	NSW 2017	WA 2017
PRODUCTIVITY (1)				
Carton to Bunch Ratio (as reported by participants)	Cartons / Bunch	1.74		
Bags Applied per Labour Hour	Bags / Lab Hr	30.29		
Bells Injected per Labour Hour	Bells / Lab Hr	37.21		
Line Metres De-Suckered per Labour Hour (Spade)	Line Metres / Lab Hr	267.56		
Line Metres De-Suckered per Labour Hour (Spray / Diesel)	Line Metres / Lab Hr			
Bunches Picked per Labour Hour	Bunches / Lab Hr	41.59		
Cartons Packed per Pack House Labour Day	Cartons / Lab Day	140.38		
BIOSECURITY				
Average Protected Farm Hectares Being Protected by Current Farm Biosecurity	Ha	153.67	54.17	33.35
Average Number of Non-Contiguous Areas / Blocks in Protected Farm Area	Number	1.50	1.00	1.00
Average Number of Physical Biosecurity Elements Employed (Maximum 10)	Number	6.82	1.40	1.00
Average Number of Biosecurity Recording Elements Employed (Maximum 8)	Number	2.15	1.00	1.00
PROFITABILITY PER PRODUCING HA				
Total Sales Revenue	$ / Ha	$66,294	$24,535	$89,478
Total Costs	$ / Ha	$65,912	$24,377	$82,729
Net Profit (Before Tax)	$ / Ha	$382	$158	$6,749
EBIT	$ / Ha	$1,109	$299	$7,321
Total Operating Costs (Excluding Interest and Depreciation)	$ / Ha	$63,928	$23,480	$81,198
EBITDA	$ / Ha	$2,366	$1,055	$8,280
COSTS PER PRODUCING HA				
Chemical and Fertilizer Costs	$ / Ha	$6,317	$2,195	$2,480
Consultants and Contractor Fees	$ / Ha	$2,755	$228	$380
Contract Packing Fees	$ / Ha	$565		$18,699
Depreciation and Amortization Costs	$ / Ha	$1,258	$756	$958
Employment / Labour Costs	$ / Ha	$20,125	$11,493	$14,067
Finance Costs	$ / Ha	$727	$141	$573
Freight Costs	$ / Ha	$10,611	$1,520	$7,116
Fuel & Oil Costs	$ / Ha	$672	$297	$516
General Expenses	$ / Ha	$2,686	$374	$3,279
Insurance Costs	$ / Ha	$296	$185	$515
Marketing & Ripening Costs	$ / Ha	$7,467	$3,076	$8,425
Motor Vehicles	$ / Ha	$167	$737	$210
Packaging and Pallet Costs	$ / Ha	$7,518	$1,955	$13,147
Power & Gas Costs	$ / Ha	$921	$223	$1,918
Rates Levies, Licenses, Memberships, Registrations	$ / Ha	$1,087	$394	$3,238
Repairs & Replacements	$ / Ha	$2,464	$802	$1,618

	Unit	FNQ F2017 (All Participants)	NSW 2017	WA 2017
Royalties & PVR Costs	$ / Ha			
Water Costs	$ / Ha	$277		$5,589
PROFITABILITY PER 15 Kg CARTON EQUIVALENT				
Total Sales Revenue	$ / 15 Kg	$24.65	$22.72	$31.00
Total Costs	$ / 15 Kg	$24.51	$22.57	$28.66
Net Profit Before Tax	$ / 15 Kg	$0.14	$0.15	$2.34
EBIT	$ / 15 Kg	$0.41	$0.28	$2.54
Total Operating Costs (Excluding Interest and Depreciation)	$ / 15 Kg	$23.77	$21.74	$28.13
EBITDA	$ / 15 Kg	$0.88	$0.98	$2.87
Total Operating Costs as % of Gross Sales Revenue	%	96.43%	95.70%	90.75%
EBITDA as % of Gross Sales Revenue	%	3.57%	4.30%	9.25%
COSTS PER 15 KG EQUIVALENT				
Chemical and Fertilizer Costs	$ / 15 Kg	$2.35	$2.03	$0.86
Consultants and Contractor Fees	$ / 15 Kg	$1.02	$0.21	$0.13
Contract Packing Costs	$ / 15 Kg	$0.21		$6.48
Depreciation and Amortization Costs	$ / 15 Kg	$0.47	$0.70	$0.33
Employment / Labour Costs	$ / 15 Kg	$7.48	$10.64	$4.87
Finance Costs	$ / 15 Kg	$0.27	$0.13	$0.20
Freight Costs	$ / 15 Kg	$3.95	$1.41	$2.47
Fuel & Oil Costs	$ / 15 Kg	$0.25	$0.28	$0.18
General Expenses	$ / 15 Kg	$1.00	$0.35	$1.14
Insurance Costs	$ / 15 Kg	$0.11	$0.17	$0.18
Marketing and Ripening Costs	$ / 15 Kg	$2.78	$2.85	$2.92
Motor Vehicles	$ / 15 Kg	$0.06	$0.68	$0.07
Packaging Costs	$ / 15 Kg	$2.80	$1.81	$4.56
Power and Gas Costs	$ / 15 Kg	$0.34	$0.21	$0.66
Rates, Levies, Licenses, Memberships, Registrations	$ / 15 Kg	$0.40	$0.37	$1.12
Repairs & Replacements	$ / 15 Kg	$0.92	$0.74	$0.56
Royalties & PVR Costs	$ / 15 Kg			
Water Costs	$ / 15 Kg	$0.10		$1.94
Employment / Labour + Contracting & Consulting + Contract Packing	$ / 15 Kg	$8.72	$10.85	$11.48

	Unit	FNQ F2017 (All Participants)	NSW 2017	WA 2017
PROFITABILITY PER KG PRODUCED AND SOLD				
Total Sales Revenue	$ / Kg	$1.64	$1.51	$2.07
Total Costs	$ / Kg	$1.63	$1.50	$1.91
Net Profit (Before Tax)	$ / Kg	$0.01	$0.01	$0.16
EBIT	$ / Kg	$0.03	$0.02	$0.17
Total Operating Costs (Excluding Interest and Depreciation)	$ / Kg	$1.58	$1.45	$1.88
EBITDA	$ / Kg	$0.06	$0.07	$0.19

(1) This component was supported by a smaller number of progressive growers who wished to explore 'best practice' in a range of performance measures

2. MARKETING AND MANAGEMENT PRACTICES FOR 3 REGIONS

Table 3: Differences in Management Practices Between Regions F2017

	Measure	FNQ	NSW	WA
A: FARM PRACTICES				
Sources of Farm Labour				
Local / Australian Workers	% of Total Labour	54.31%	95.71%	100.00%
International Workers / Backpackers	% of Total Labour	30.57%	4.29%	0.00%
Pacific Islands Contracting Teams (e.g. Maydec, similar)	% of Total Labour	15.12%	0.00%	0.00%
Irrigation Monitoring				
Visual / Judgement	% of Respondents	46.66%	100.00%	33.33%
Tensiometers	% of Respondents	26.67%	0.00%	50.00%
Neutron Probes	% of Respondents	0.00%	0.00%	0.00%
Enviroscan	% of Respondents	10.00%	0.00%	0.00%
Fixed Scheduling	% of Respondents	10.00%	0.00%	16.67%
Other	% of Respondents	6.67%	0.00%	0.00%
Use Technology to Determine Irrigation Frequency		53.34%	0.00%	66.67%
Irrigation Intervals (When Irrigating)				
More than Once per Day	% of Respondents	16.67%	0.00%	0.00%
Daily	% of Respondents	46.66%	0.00%	50.00%
Irrigate Daily or More Frequently that Daily		63.33%	0.00%	50.00%
Every 2 Days	% of Respondents	26.67%	0.00%	33.33%
Twice Weekly	% of Respondents	0.00%	80.00%	16.67%
Weekly	% of Respondents	10.00%	20.00%	0.00%
Less Frequently Than Once Per Week	% of Respondents	0.00%	0.00%	0.00%
Use of External Advisors				
Engaged Pest Scouts / Monitors / Pest Agronomist	% of Respondents	64.52%	0.00%	0.00%
Engaged external Nutritional Advisor / Agronomist	% of Respondents	51.61%	0.00%	0.00%
Principal Method of Applying Fungicides				
Fixed Wing Aircraft	% of Respondents	67.74%	7.14%	0.00%
Helicopter	% of Respondents	19.35%	0.00%	0.00%
Ground Application	% of Respondents	12.90%	92.86%	0.00%
Other Methods	% of Respondents	0.01%	0.00%	100.00%
Nurse Suckering / Crop Scheduling				
No Nurse Suckering Practiced	% of Respondents	45.16%	100.00%	100.00%
Up to 20% of Producing Area	% of Respondents	22.58%	0.00%	0.00%
21% to 40% of Producing Area	% of Respondents	29.03%	0.00%	0.00%
41% to 50% of Producing Area	% of Respondents	3.23%	0.00%	0.00%
51% to 75% of Producing Area	% of Respondents	0.00%	0.00%	0.00%
76% to 100% of Producing Area	% of Respondents	0.00%	0.00%	0.00%
Practice Nurse Suckering on Some of the Plantation		54.84%	0.00%	0.00%
Knowledge of Marketing & Ripening Costs				

	Measure	FNQ	NSW	WA
% of Respondents That Provided Their Current Ripening Costs ($ / Carton)	% of Respondents	60.71%	0.00%	0.00%
Average Ripening Cost Reported by Respondents	$ / Carton	$2.04	$0.00	$0.00
% of Respondents That Provided Current Marketing Costs / Fees Paid	% of Respondents	62.07%	0.00%	0.00%
Marketing Channel				
Direct to Supermarkets	% of Respondents	73.83%	0.00%	0.00%
Through Wholesalers / Packer Marketers	% of Respondents	26.17%	85.00%	100.00%
Sell to Alternative Markets (Farmers Markets, Weekend Markets, Direct to Local Greengrocers		0.00%	15.00%	0.00%
Through Exporters or Direct to Export	% of Respondents	0.00%	0.00%	0.00%
Through PBR Marketers	% of Respondents	0.00%	0.00%	0.00%
To Processors, Value Adders, Oil etc.	% of Respondents	0.00%	0.00%	0.00%
Other	% of Respondents	0.00%	15.00%	0.00%
B: BIOSECURITY				
Areas, Non-Contiguous Portions,				
Total (Protected) Farm Area reported by all respondents in Group	Hectares	4,725.00	455.00	144.40
% of (Protected) Farm Area managing one (only) Contiguous Portion	% of Hectares	48.39%	100.00%	100.00%
% of (Protected) Farm Area managing two (2) Non-Contiguous Portions	% of Hectares	38.71%	0.00%	0.00%
% of (Protected) Farm Area managing three (3) Non-Contiguous Portions	% of Hectares	3.23%	0.00%	0.00%
% of (Protected) Farm Area managing more than 3 (>3) Non-Contiguous Portions	% of Hectares	9.67%	0.00%	0.00%
% of (Protected) Area that Floods:				
Never	% of Hectares	54.84%	80.00%	50.00%
Less than annually	% of Hectares	41.94%	20.00%	50.00%
Annually or more frequently than annually	% of Hectares	3.22%	0.00%	0.00%
Duplication of Plant and Equipment for Biosecurity				
% of Respondents that have had to duplicate plant & equipment	% of Respondents	58.06%	9.09%	0.00%
% of (Protected) Farm Area – which has duplicated plant and equipment	% of Hectares	75.96%	2.56%	0.00%
Capital Invested Directly to Enhance Biosecurity (TR4)				
Average Capital Invested per Protected Hectare for Biosecurity	$ / Prot. Ha	$1,161.67		
Average Capital Invested per Harvested Hectare for Biosecurity	$ / Harvested Ha	$1,639.41		
Planting and Planting Materials BEFORE TR4				
% of Respondents using Tissue Culture Prior to TR4	% of Respondents	74.19%	14.29%	0.00%
% of Respondents using Bits / Pieces from Their own Farm - Prior to TR4	% of Respondents	25.81%	85.71%	83.33%
% of Respondents using Bits / Pieces from Other Farms / Sources- Prior to TR4	% of Respondents	0.00%	0.00%	16.67%
% of (Protected) Farm Area using Tissue Culture Prior to TR4	% of Hectares	85.31%	1.68%	0.00%
% of (Protected) Farm Area using Bits / Pieces from Their own Farm - Prior to TR4	% of Hectares	14.69%	98.32%	96.88%
% of (Protected) Farm Area using Bits / Pieces from Other Farms / Sources- Prior to TR4	% of Hectares	0.00%	0.00%	3.12%
Planting and Planting Materials NOW (AFTER TR4)				
% of Respondents using Tissue Culture Now	% of Respondents	74.19%	14.29%	0.00%
% of Respondents using Bits / Pieces from Their Own Farm - Now	% of Respondents	25.81%	85.71%	83.33%

	Measure	FNQ	NSW	WA
% of Respondents using Bits / Pieces from Other Farms / Sources - Now	% of Respondents	0.00%	0.00%	16.67%
% of (Protected) Farm Area using Tissue Culture Now	*% of Hectares*	*85.31%*	*1.68%*	*0.00%*
% of (Protected) Farm Area using Bits / Pieces from Their Own Farm - Now	*% of Hectares*	*14.69%*	*98.32%*	*96.88%*
% of (Protected) Farm Area using Bits / Pieces from Other Farms / Sources - Now	*% of Hectares*	*0.00%*	*0.00%*	*3.12%*
Adoption of Physical Biosecurity Measures / Elements (9 Elements)				
% of (Protected) Farm Area Now With:				
1. Biosecurity Signage	% of Hectares	98.29%	30.13%	96.54%
2. Minimized Access Points to Farm	% of Hectares	94.98%	52.82%	0.00%
3. Defined Movement Processes Between Non-Contiguous Portions	% of Hectares	51.92%	0.00%	0.00%
4. Point-to-Point or RORO Systems for Produce Transport	% of Hectares	26.96%	0.00%	0.00%
5. Specific Earthworks for Biosecurity	% of Hectares	50.20%	0.00%	0.00%
6. Trained Biosecurity Officers Employed / Engaged	% of Hectares	72.57%	0.00%	0.00%
7. Fenced All of Farm (Protected) Area	% of Hectares	27.34%	0.00%	0.00%
8. Fenced Some of Farm (Protected) Area	% of Hectares	64.53%	0.00%	0.00%
9. Defined Zoning System in Operation within Farm	% of Hectares	80.08%	7.69%	0.00%
10. Footbaths or Footwear Exchanges Used by All Farm Entrants	% of Hectares	97.95%	0.00%	0.00%
Average Elements out of 10	Number / 10	7.10	1.25	1.00
Adoption of Biosecurity Record Keeping Systems (8 Elements)				
% of (Protected) Farm Area Now With .... In Place				
1. Visitors Register	% of Hectares	52.99%	0.00%	0.00%
2. Vehicle Movement Register	% of Hectares	13.54%	0.00%	0.00%
3. Decontamination Register	% of Hectares	0.00%	0.00%	0.00%
4. Biosecurity Training Register	% of Hectares	45.50%	0.00%	0.00%
5. Banana Planting Register	% of Hectares	26.37%	0.00%	0.00%
6. Waste Disposal Register	% of Hectares	1.54%	0.00%	0.00%
7. Continuous Disease Surveillance Testing & Recording	% of Hectares	5.29%	0.00%	0.00%
8. Active Checking of Past Exposure / Work Locations for New Employees	% of Hectares	73.90%	35.26%	80.33%
Average Elements out of 8	Number / 8	2.30	1.00	1.00
Perspectives on Biosecurity for TR4 Management				
% of Respondents Attempting to Adopt MAXIMUM POSSIBLE measures	% of Respondents	35.48%	0.00%	0.00%
% of Respondents Adopting MIDDLE GROUND / PARTIAL Adoption	% of Respondents	61.29%	28.57%	83.33%
% pf Respondents Adopting TAKEN NO ACTION	% of Respondents	3.23%	71.43%	16.67%
% of (Protected) Farm Area for which FULLEST POSSIBLE measures are adopted	% of Hectares	44.53%	0.00%	0.00%
% of (Protected) Farm Area for which SOME NOT ALL measures are adopted	% of Hectares	54.62%	5.89%	96.88%
% of (Protected) Farm Area for which MINIMAL OR NO measures are adopted	% of Hectares	0.85%	94.11%	3.12%
Use of Contractors Since TR4				
% of Respondents Now using Contractors More Than Before TR4	% of Respondents	0.00%	0.00%	0.00%
% of Respondents Now using Contractors at Same Level as Before TR4	% of Respondents	87.10%	100.00%	100.00%

	Measure	FNQ	NSW	WA
% of Respondents Now using Contractors Less Than Before TR4	% of Respondents	12.90%	0.00%	0.00%
% of Respondents Allowing Contractors to use Their Own Machinery	% of Respondents	9.68%	0.00%	0.00%
% of Respondents Allowing Contractors to use The Farm's Machinery Only (no external machinery allowed)	% of Respondents	90.32%	100.00%	100.00%
Other Impacts of TR4				
% of Respondents that have Reduced Producing Area since TR4	% of Respondents	9.68%	0.00%	0.00%
% of Respondents that have Knowingly Increased Employees / Employee Hours since TR4	% of Respondents	12.90%	0.00%	0.00%
C: OPERATING KPI's				
BAGGING: Average Bags Applied per labour Hour	Bags / Hour	30.63	0.00	0.00
BELL INJECTION: Average Bells Injected per Labour Hour	Bells / Hour	40.00	0.00	0.00
DE-SUCKERING (SPADE): Metres of Banana Line Spaded Per Labour Hour	Metres / Hour	274.60	0.00	0.00
DE-SUCKERING (SPRAY / DIESEL / OTHER): Metres Banana line Sprayed / Dieseled per Labour Hour	Metres / Hour	0.00	0.00	0.00
HARVESTING: Average Bunches Picked and Delivered to Shed or Tranship point per Labour Hour	Bunches / Hour	41.54	0.00	0.00
PACKING: Cartons Packed per Packhouse Labour Day (8 Hour Day) (counts all labour in Shed)	Cartons / Labour Day	140.33	0.00	0.00
D: BPM / ENVIRONMENTAL MANAGEMENT				
Surfaces and Surface Protection				
% of (Protected) Farm Area with Minimum 60% Ground Cover (Living or Dead) in Inter Rows	% of Hectares	58.90%	80.13%	0.00%
% of Farm Area with At Least 3% Gradient	% of Hectares	19.77%	83.89%	0.00%
For Land with Greater that 3% Gradient				
% of Area with Diversion Drains in Place	% of Hectares (3% PLUS)	79.31%	40.00%	0.00%
% of Area with Spoon Drain Drainage Structures to Collect Run-Off and Slow Down Flow	% of Hectares (3% PLUS)	82.76%	26.67%	0.00%
% of Area with All Drainage Water Leaving Farm by way of a Silt Trap or Similar Structure	% of Hectares (3% PLUS)	55.17%	13.33%	0.00%
% of Area with Uniformly Dense Vegetation Buffers, Contour Banks or Other Means of (future) Compliance	% of Hectares (3% PLUS)	75.86%	20.00%	0.00%
Application of Fertilizer				
% Applied by Fertigation	% of Hectares	65.62%	4.50%	96.64%
% Applied by Ground Application	% of Hectares	34.38%	95.50%	3.36%
Calibration Frequency				
% of Respondents Calibrating Fertilizer Application Equipment At Least Every 6 Months	% of Respondents	16.57%	0.77%	0.00%
% of Respondents Calibrating Fertilizer Application Equipment At Least Every 12 Months	% of Respondents	9.54%	0.00%	0.00%
% of Respondents Calibrating Fertilizer Application Equipment Less Often than Every 12 Months	% of Respondents	0.00%	72.44%	0.00%
% of Respondents Calibrating Fertilizer Application Equipment Every Time a New Product is Applied	% of Respondents	73.88%	26.79%	100.00%
Record Keeping				
% of Respondents keeping Records of All Soil Tests	% of Respondents	100.00%	98.08%	100.00%
% of Respondents keeping Records of All Leaf Tests	% of Respondents	100.00%	100.00%	100.00%
% of Respondents keeping Records of All Fertilizer Applications	% of Respondents	100.00%	98.08%	100.00%
Types of Record Keeping				
% of Respondents Keeping Electronic Records	% of Respondents	41.46%	0.00%	0.00%
% of Respondents Keeping Paper or Hard Copy Records only	% of Respondents	58.54%	100.00%	100.00%

	Measure	FNQ	NSW	WA
Nutrient Application Levels (Targets)				
Average Kg of N Applied per Hectare per annum ON PLANT CROPS	Kg N / Hectare	307.17	190.67	307.33
Average Kg of N Applied per Hectare per annum ON RATOON CROPS	Kg N / Hectare	325.00	191.67	391.67
Average Kg of P Applied per Hectare per annum on Banana Crops	Kg P / Hectare	60.77	35.25	70.33
Average Kg of K Applied per Hectare per annum Banana Crops	Kg K / Hectare	892.70	282.25	598.33
Source of Setting Nutrient Target Levels				
% of Respondents using Targets Set by an EXTERNAL Agronomist	% of Respondents	68.21%	0.00%	0.00%
% of Respondents using Targets Set by an IN-HOUSE Agronomist	% of Respondents	13.54%	0.00%	0.00%
% of Respondents using Targets Set by Fertilizer Reseller	% of Respondents	15.28%	15.90%	96.54%
% of Respondents using Targets Set by Reference to Historical Records	% of Respondents	2.96%	77.82%	3.46%
% of Respondents using Targets Set Based on Yield Data	% of Respondents	0.00%	0.00%	0.00%
% of Respondents using BEST GUESS Targets	% of Respondents	0.00%	0.00%	0.00%
% of Respondents using Targets Set by Other Means	% of Respondents	0.00%	0.00%	0.00%
% of Respondents Using Industry Funded Management Tools				
% of Respondents Using Banana BMP	% of Respondents	45.16%	0.00%	0.00%
% of Respondents Using Better Bunch App	% of Respondents	5.99%	0.00%	0.00%

Appendix 4: Biosecurity and Environment Report

APPENDIX 4

BIOSECURITY & ENVIRONMENTAL MANAGEMENT

TABLE OF CONTENTS

1. BIOSECURITY

This Appendix report is provided as a source of relevant data related to biosecurity as collated during the most recent round of banana benchmarking.

There is no discussion included in this section. The data herein is referred to and discussed in the main body of this BA 16009 project report.

Biosecurity was included in the benchmarking process for the first time in 2015/16 and 2016/17.

This information is of primary interest to researchers and industry officers charged with responsibilities associated with determining and implementing regional and industry wide policies and procedures to optimize biosecurity and environmental management outcomes for industry.

The responses from all participants, in all regions, regarding biosecurity in this round of benchmarking are provided, in full, in Table 1.

Table 1: Key Biosecurity Data – All Participants F2017

	Measure	Result
Areas, Non-Contiguous Portions,		
Total (Protected) Farm Area reported by all respondents in Group	Hectares	5,068.40
Average Protected farm Hectares per Respondent that is Protected by Biosecurity Measures	Hectares	123
% of (Protected) Farm Area managing one (only) Contiguous Portion	% of Hectares	70.00%
% of (Protected) Farm Area managing two (2) Non-Contiguous Portions	% of Hectares	25.00%
% of (Protected) Farm Area managing three (3) Non-Contiguous Portions	% of Hectares	2.50%
% of (Protected) Farm Area managing more than 3 (>3) Non-Contiguous Portions	% of Hectares	2.50%
% of (Protected) Area that Floods:		
Never	% of Hectares	60.00%
Less than annually	% of Hectares	37.50%
Annually or more frequently than annually	% of Hectares	2.50%
Duplication of Plant and Equipment for Biosecurity		
% of Respondents that have had to duplicate plant & equipment	% of Respondents	46.15%
% of (Protected) Farm Area – which has duplicated plant and equipment	% of Hectares	67.50%
Planting and Planting Materials BEFORE TR4		
% of Respondents using Tissue Culture Prior to TR4	% of Respondents	55.00%
% of Respondents using Bits / Pieces from Their own Farm - Prior to TR4	% of Respondents	45.00%
% of Respondents using Bits / Pieces from Other Farms / Sources - Now	% of Respondents	0.00%
% of (Protected) Farm Area using Tissue Culture Prior to TR4	% of Hectares	72.96%
% of (Protected) Farm Area using Bits / Pieces from Their own Farm - Prior to TR4	% of Hectares	27.04%

	Measure	Result
% of (Protected) Farm Area using Bits / Pieces from Other Farms / Sources- Prior to TR4	% of Hectares	0.00%
Planting and Planting Materials NOW (AFTER TR4)		
% of Respondents using Tissue Culture Now	% of Respondents	60.00%
% of Respondents using Bits / Pieces from Their Own Farm - Now	% of Respondents	40.00%
% of (Protected) Farm Area using Tissue Culture Now	% of Hectares	77.93%
% of (Protected) Farm Area using Bits / Pieces from Their Own Farm - Now	% of Hectares	22.07%
% of (Protected) Farm Area using Bits / Pieces from Other Farms / Sources - Now	% of Hectares	0.00%
Adoption of Physical Biosecurity Measures / Elements (9 Elements)		
% of (Protected) Farm Area Now With:		
1. Biosecurity Signage	% of Hectares	95.66%
2. Minimized Access Points to Farm	% of Hectares	88.75%
3. Defined Movement Processes Between Non-Contiguous Portions	% of Hectares	44.25%
4. Point-to-Point or RORO Systems for Produce Transport	% of Hectares	18.03%
5. Specific Earthworks for Biosecurity	% of Hectares	46.31%
6. Trained Biosecurity Officers Employed / Engaged	% of Hectares	63.87%
7. Fenced All of Farm (Protected) Area	% of Hectares	25.93%
8. Fenced Some of Farm (Protected) Area	% of Hectares	57.45%
9. Defined Zoning System in Operation within Farm	% of Hectares	85.14%
10. Footbaths or Footwear Exchanges Used by All Farm Entrants	% of Hectares	88.25%
Average Elements out of 10	Number / 10	5.53
Adoption of Biosecurity Record Keeping Systems (8 Elements)		
% of (Protected) Farm Area Now With .... In Place		
1. Visitors Register	% of Hectares	49.84%
2. Vehicle Movement Register	% of Hectares	12.63%
3. Decontamination Register	% of Hectares	1.38%
4. Biosecurity Training Register	% of Hectares	36.28%
5. Banana Planting Register	% of Hectares	25.31%
6. Waste Disposal Register	% of Hectares	0.00%
7. Continuous Disease Surveillance Testing & Recording	% of Hectares	4.93%
8. Active Checking of Past Exposure / Work Locations for New Employees	% of Hectares	74.03%
Average Elements out of 8	Number / 8	1.97
Perspectives on Biosecurity for TR4 Management		
% of Respondents Attempting to Adopt MAXIMUM POSSIBLE measures	% of Respondents	22.50%
% of Respondents Adopting MIDDLE GROUND / PARTIAL Adoption	% of Respondents	65.00%
% pf Respondents Adopting TAKEN NO ACTION	% of Respondents	12.50%
% of (Protected) Farm Area for which FULLEST POSSIBLE measures are adopted	% of Hectares	30.88%

	Measure	Result
% of (Protected) Farm Area for which SOME NOT ALL measures are adopted	% of Hectares	62.34%
% of (Protected) Farm Area for which MINIMAL OR NO measures are adopted	% of Hectares	6.79%
Use of Contractors Since TR4		
% of Respondents Now using Contractors More Than Before TR4	% of Respondents	0.00%
% of Respondents Now using Contractors at Same Level as Before TR4	% of Respondents	90.00%
% of Respondents Now using Contractors Less Than Before TR4	% of Respondents	10.00%
% of Respondents Allowing Contractors to use Their Own Machinery	% of Respondents	7.69%
% of Respondents Allowing Contractors to use The Farm's Machinery Only (no external machinery allowed)	% of Respondents	92.31%
Other Impacts of TR4		
% of Respondents that have Reduced Producing Area since TR4	% of Respondents	7.50%
% of Respondents that have Knowingly Increased Employees / Employee Hours since TR4	% of Respondents	7.50%
Estimated Capital Expenditure Incurred for Added Biosecurity Since TR4		
Average Capital Invested per Protected Hectare for Biosecurity	$ / Prot. Ha	$1,161.67
Average Capital Invested per Harvested Hectare for Biosecurity	$ / Harvested Ha	$1,639.41

1.1 Key Data on Biosecurity 3 Regions

The key data / responses regarding biosecurity in the last round of benchmarking as reported per growing region are provided, in full, in Table 2

Table 2: Biosecurity Data - by Region - F2017

	Measure	Far Nth QLD	N.S.W	W.A. (Carnarvon)
Areas, Non-Contiguous Portions,				
Total (Protected) Farm Area reported by all respondents in Group	Hectares	4,725	455	144
% of (Protected) Farm Area managing one (only) Contiguous Portion	% of Hectares	48.39%	100.00%	100.00%
% of (Protected) Farm Area managing two (2) Non-Contiguous Portions	% of Hectares	38.71%	0.00%	0.00%
% of (Protected) Farm Area managing three (3) Non-Contiguous Portions	% of Hectares	3.23%	0.00%	0.00%
% of (Protected) Farm Area managing more than 3 (>3) Non-Contiguous Portions	% of Hectares	9.67%	0.00%	0.00%
% of (Protected) Area that Floods:				
Never	% of Hectares	54.84%	80.00%	50.00%
Less than annually	% of Hectares	41.94%	20.00%	50.00%
Annually or more frequently than annually	% of Hectares	3.22%	0.00%	0.00%
Duplication of Plant and Equipment for Biosecurity				
% of Respondents that have had to duplicate plant & equipment	% of Respondents	58.06%	9.09%	0.00%
% of (Protected) Farm Area – which has duplicated plant and equipment	% of Hectares	75.96%	2.56%	0.00%

	Measure	Far Nth QLD	N.S.W	W.A. (Carnarvon)
Capital Invested Directly to Enhance Biosecurity (TR4)				
Average Capital Invested per Protected Hectare for Biosecurity	$ / Prot. Ha	$1,161.67		
Average Capital Invested per Harvested Hectare for Biosecurity	$ / Harvested Ha	$1,639.41		
Planting and Planting Materials BEFORE TR4				
% of Respondents using Tissue Culture Prior to TR4	% of Respondents	74.19%	14.29%	0.00%
% of Respondents using Bits / Pieces from Their own Farm - Prior to TR4	% of Respondents	25.81%	85.71%	83.33%
% of Respondents using Bits / Pieces from Other Farms / Sources- Prior to TR4	% of Respondents	0.00%	0.00%	16.67%
% of (Protected) Farm Area using Tissue Culture Prior to TR4	*% of Hectares*	*85.31%*	*1.68%*	*0.00%*
% of (Protected) Farm Area using Bits / Pieces from Their own Farm - Prior to TR4	*% of Hectares*	*14.69%*	*98.32%*	*96.88%*
% of (Protected) Farm Area using Bits / Pieces from Other Farms / Sources- Prior to TR4	*% of Hectares*	*0.00%*	*0.00%*	*3.12%*
Planting and Planting Materials NOW (AFTER TR4)				
% of Respondents using Tissue Culture Now	% of Respondents	74.19%	14.29%	0.00%
% of Respondents using Bits / Pieces from Their Own Farm - Now	% of Respondents	25.81%	85.71%	83.33%
% of Respondents using Bits / Pieces from Other Farms / Sources - Now	% of Respondents	0.00%	0.00%	16.67%
% of (Protected) Farm Area using Tissue Culture Now	*% of Hectares*	*85.31%*	*1.68%*	*0.00%*
% of (Protected) Farm Area using Bits / Pieces from Their Own Farm - Now	*% of Hectares*	*14.69%*	*98.32%*	*96.88%*
% of (Protected) Farm Area using Bits / Pieces from Other Farms / Sources - Now	*% of Hectares*	*0.00%*	*0.00%*	*3.12%*
Adoption of Physical Biosecurity Measures / Elements (9 Elements)				
% of (Protected) Farm Area Now With:				
1. Biosecurity Signage	% of Hectares	98.29%	30.13%	96.54%
2. Minimized Access Points to Farm	% of Hectares	94.98%	52.82%	0.00%
3. Defined Movement Processes Between Non-Contiguous Portions	% of Hectares	51.92%	0.00%	0.00%
4. Point-to-Point or RORO Systems for Produce Transport	% of Hectares	26.96%	0.00%	0.00%
5. Specific Earthworks for Biosecurity	% of Hectares	50.20%	0.00%	0.00%
6. Trained Biosecurity Officers Employed / Engaged	% of Hectares	72.57%	0.00%	0.00%
7. Fenced All of Farm (Protected) Area	% of Hectares	27.34%	0.00%	0.00%
8. Fenced Some of Farm (Protected) Area	% of Hectares	64.53%	0.00%	0.00%
9. Defined Zoning System in Operation within Farm	% of Hectares	80.08%	7.69%	0.00%
10. Footbaths or Footwear Exchanges Used by All Farm Entrants	% of Hectares	97.95%	0.00%	0.00%
Average Elements out of 10	*Number / 10*	*7.1*	*1.25*	*1*
Adoption of Biosecurity Record Keeping Systems (8 Elements)				
% of (Protected) Farm Area Now With .... In Place				
1. Visitors Register	% of Hectares	52.99%	0.00%	0.00%
2. Vehicle Movement Register	% of Hectares	13.54%	0.00%	0.00%

	Measure	Far Nth QLD	N.S.W	W.A. (Carnarvon)
3. Decontamination Register	% of Hectares	0.00%	0.00%	0.00%
4. Biosecurity Training Register	% of Hectares	45.50%	0.00%	0.00%
5. Banana Planting Register	% of Hectares	26.37%	0.00%	0.00%
6. Waste Disposal Register	% of Hectares	1.54%	0.00%	0.00%
7. Continuous Disease Surveillance Testing & Recording	% of Hectares	5.29%	0.00%	0.00%
8. Active Checking of Past Exposure / Work Locations for New Employees	% of Hectares	73.90%	35.26%	80.33%
Average Elements out of 8	*Number / 8*	*2.3*	*1*	*1*
Perspectives on Biosecurity for TR4 Management				
% of Respondents Attempting to Adopt MAXIMUM POSSIBLE measures	% of Respondents	35.48%	0.00%	0.00%
% of Respondents Adopting MIDDLE GROUND / PARTIAL Adoption	% of Respondents	61.29%	28.57%	83.33%
% pf Respondents Adopting TAKEN NO ACTION	% of Respondents	3.23%	71.43%	16.67%
% of (Protected) Farm Area for which MAXIMUM POSSIBLE measures are adopted	% of Hectares	44.53%	0.00%	0.00%
% of (Protected) Farm Area for which MIDDLE GROUND / PARTIAL measures are adopted	% of Hectares	54.62%	5.89%	96.88%
% of (Protected) Farm Area for which NO ACTION HAS BEEN TAKEN	% of Hectares	0.85%	94.11%	3.12%
Use of Contractors Since TR4				
% of Respondents Now using Contractors More Than Before TR4	% of Respondents	0.00%	0.00%	0.00%
% of Respondents Now using Contractors at Same Level as Before TR4	% of Respondents	87.10%	100.00%	100.00%
% of Respondents Now using Contractors Less Than Before TR4	% of Respondents	12.90%	0.00%	0.00%
% of Respondents Allowing Contractors to use Their Own Machinery	% of Respondents	9.68%	0.00%	0.00%
% of Respondents Allowing Contractors to use The Farm's Machinery Only (no external machinery allowed	% of Respondents	90.32%	100.00%	100.00%
Other Impacts of TR4				
% of Respondents that have Reduced Producing Area since TR4	% of Respondents	9.68%	0.00%	0.00%
% of Respondents that have Knowingly Increased Employees / Employee Hours since TR4	% of Respondents	12.90%	0.00%	0.00%

2. ENVIRONMENTAL MANAGEMENT

This Appendix report is provided as a source of relevant data related to environmental management as collated during the most recent round of banana benchmarking.

There is no discussion included in this section. The data herein is referred to and discussed in the main body of this BA 16009 project report.

Environmental management topics were included in the benchmarking process for the first time in 2015/16 and 2016/17.

This information is of primary interest to researchers and industry officers charged with responsibilities associated with determining and implementing regional and industry wide policies and procedures to optimize biosecurity and environmental management outcomes for industry.

The responses from all participants in this round of benchmarking regarding environmental management are provided, in full, in Table 3.

Table 3: Environmental Management Data for All Participants - F2017

	Measure	Result
Surfaces and Surface Protection		
% of (Protected) Farm Area with Minimum 60% Ground Cover (Living or Dead) in Inter Rows	% of Hectares	64.34%
% of Farm Area with At Least 3% Gradient	% of Hectares	32.56%
For Land with Greater that 3% Gradient		
% of Area with Diversion Drains in Place	% of Hectares (3% PLUS)	71.79%
% of Area with Spoon Drain Drainage Structures to Collect Run-Off and Slow Down Flow	% of Hectares (3% PLUS)	69.23%
% of Area with All Drainage Water Leaving Farm by way of a Silt Trap or Similar Structure	% of Hectares (3% PLUS)	43.59%
% of Area with Uniformly Dense Vegetation Buffers, Contour Banks or Other Means of (future) Compliance)	% of Hectares (3% PLUS)	61.54%
Application of Fertilizer		
% Applied by Fertigation	% of Hectares	68.43%
% Applied by Ground Application	% of Hectares	31.57%
Calibration Frequency		
% of Respondents Calibrating Fertilizer Application Equipment At Least Every 6 Months	% of Respondents	15.86%
% of Respondents Calibrating Fertilizer Application Equipment At Least Every 12 Months	% of Respondents	8.90%
% of Respondents Calibrating Fertilizer Application Equipment Less Often than Every 12 Months	% of Respondents	5.52%
% of Respondents Calibrating Fertilizer Application Equipment Every Time a New Product is Applied	% of Respondents	69.71%
Record Keeping		
% of Respondents keeping Records of All Soil Tests	% of Respondents	100.00%

	Measure	Result
% of Respondents keeping Records of All Leaf Tests	% of Respondents	100.00%
% of Respondents keeping Records of All Fertilizer Applications	% of Respondents	100.00%
Types of Record Keeping		
% of Respondents Keeping Electronic Records	% of Respondents	39.16%
% of Respondents Keeping Paper or Hard Copy Records only	% of Respondents	60.84%
Nutrient Application Levels (Targets)		
Average Kg of N Applied per Hectare per annum ON PLANT CROPS	Kg N / Hectare	295.00
Average Kg of N Applied per Hectare per annum ON RATOON CROPS	Kg N / Hectare	305.61
Average Kg of P Applied per Hectare per annum on Banana Crops	Kg P / Hectare	57.52
Average Kg of K Applied per Hectare per annum Banana Crops	Kg K / Hectare	797.08
Source of Setting Nutrient Target Levels		
% of Respondents using Targets Set by an EXTERNAL Agronomist	% of Respondents	64.10%
% of Respondents using Targets Set by an IN-HOUSE Agronomist	% of Respondents	12.63%
% of Respondents using Targets Set by Fertilizer Reseller	% of Respondents	14.57%
% of Respondents using Targets Set by Reference to Historical Records	% of Respondents	8.31%
% of Respondents using Targets Set Based on Yield Data	% of Respondents	0.00%
% of Respondents using BEST GUESS Targets	% of Respondents	0.00%
% of Respondents using Targets Set by Other Means	% of Respondents	0.00%
% of Respondents Using Industry Funded Management Tools		
% of Respondents Using Banana BMP	% of Respondents	45.44%
% of Respondents Using Better Bunch App	% of Respondents	5.58%

2.1 Key Data on Environmental Management 3 Regions

The responses regarding environmental management in this round of benchmarking in each growing region are provided, in full, in Table.

Table 4: Environmental Management Data - by Region - F2017

	Measure	Far Nth QLD	N.S.W	W.A. (Carnarvon)
Surfaces and Surface Protection				
% of (Protected) Farm Area with Minimum 60% Ground Cover (Living or Dead) in Inter Rows	% of Hectares	58.90%	80.13%	0.00%
% of Farm Area with At Least 3% Gradient	% of Hectares	19.77%	83.89%	0.00%
For Land with Greater that 3% Gradient				
% of Area with Diversion Drains in Place	% of Hectares (3% PLUS)	79.31%	40.00%	0.00%
% of Area with Spoon Drain Drainage Structures to Collect Run-Off and Slow Down Flow	% of Hectares (3% PLUS)	82.76%	26.67%	0.00%

	Measure	Far Nth QLD	N.S.W	W.A. (Carnarvon)
% of Area with All Drainage Water Leaving Farm by way of a Silt Trap or Similar Structure	% of Hectares (3% PLUS)	55.17%	13.33%	0.00%
% of Area with Uniformly Dense Vegetation Buffers, Contour Banks or Other Means of (future) Compliance	% of Hectares (3% PLUS)	75.86%	20.00%	0.00%
Application of Fertilizer				
% Applied by Fertigation	% of Hectares	65.62%	4.50%	96.64%
% Applied by Ground Application	% of Hectares	34.38%	95.50%	3.36%
Calibration Frequency				
% of Respondents Calibrating Fertilizer Application Equipment At Least Every 6 Months	% of Respondents	16.57%	0.77%	0.00%
% of Respondents Calibrating Fertilizer Application Equipment At Least Every 12 Months	% of Respondents	9.54%	0.00%	0.00%
% of Respondents Calibrating Fertilizer Application Equipment Less Often than Every 12 Months	% of Respondents	0.00%	72.44%	0.00%
% of Respondents Calibrating Fertilizer Application Equipment Every Time a New Product is Applied	% of Respondents	73.88%	26.79%	100.00%
Record Keeping				
% of Respondents keeping Records of All Soil Tests	% of Respondents	100.00%	98.08%	100.00%
% of Respondents keeping Records of All Leaf Tests	% of Respondents	100.00%	100.00%	100.00%
% of Respondents keeping Records of All Fertilizer Applications	% of Respondents	100.00%	98.08%	100.00%
Types of Record Keeping				
% of Respondents Keeping Electronic Records	% of Respondents	41.46%	0.00%	0.00%
% of Respondents Keeping Paper or Hard Copy Records only	% of Respondents	58.54%	100.00%	100.00%
Nutrient Application Levels (Targets)				
Average Kg of N Applied per Hectare per annum ON PLANT CROPS	Kg N / Hectare	307.17	190.67	307.33
Average Kg of N Applied per Hectare per annum ON RATOON CROPS	Kg N / Hectare	325	191.67	391.67
Average Kg of P Applied per Hectare per annum on Banana Crops	Kg P / Hectare	60.77	35.25	70.33
Average Kg of K Applied per Hectare per annum Banana Crops	Kg K / Hectare	892.7	282.25	598.33
Source of Setting Nutrient Target Levels				
% of Respondents using Targets Set by an EXTERNAL Agronomist	% of Respondents	68.21%	0.00%	0.00%
% of Respondents using Targets Set by an IN-HOUSE Agronomist	% of Respondents	13.54%	0.00%	0.00%
% of Respondents using Targets Set by Fertilizer Reseller	% of Respondents	15.28%	15.90%	96.54%
% of Respondents using Targets Set by Reference to Historical Records	% of Respondents	2.96%	77.82%	3.46%
% of Respondents using Targets Set Based on Yield Data	% of Respondents	0.00%	0.00%	0.00%
% of Respondents using BEST GUESS Targets	% of Respondents	0.00%	0.00%	0.00%
% of Respondents using Targets Set by Other Means	% of Respondents	0.00%	0.00%	0.00%
% of Respondents Using Industry Funded Management Tools				
% of Respondents Using Banana BMP	% of Respondents	45.16%	0.00%	0.00%
% of Respondents Using Better Bunch App	% of Respondents	5.99%	0.00%	0.00%

Appendix 5: Output Materials

BUSINESS DETAILS

Business Name	
Business ID Number (if a previous participant)	
Contact First Name	
Contact Surname	
Business Address	
Business City	
Business State	
Business Postcode	
Farm Address (IF NOT AS ABOVE)	
Farm City / District	
Farm State	
FarmPostcode	
Phone	
Fax	
Mobile	
EMAIL	
Growing Region	

TOTAL HARVESTED BANANA AREA AND PLANTS

= All Ratoon Crop plus any Plant Crop that was harvested.

	Year Ended June 30 2016		Year Ended June 30 2017	
Variety	**Hectares**	**Plants / Ha**	**Hectares**	**Plants / Ha**
CAVENDISH				
LADY FINGER				
LITTLE GEM				
DUCASS				
OTHER				
OTHER				
TOTAL	**0**		**0**	

LABOUR AND CONTRACTING

1. Sources and Costs of Casual / Seasonal Labour		Year Ended June 30 2016	Year Ended June 30 2017
Local / Australian Workers	%		
International Workers / Backpackers	%		
Pacific Islands Contracting Work Teams (e.g. Maydec, similar)	%		
ON YOUR PAYROLL What is the normal / average daily rate you pay casual / seasonal workers who you employ directly (on your pay roll)	$ / Hour		
AUSTRALIAN / BACKPACKERS / INTERNATIONAL VIA LABOUR HIRE CONTRACTOR What rate (per hour worked) is the normal / average rate you pay to labour contract firms when you employ these casual / seasonal workers Via a labour hire company	$ / Hour		
PACIFIC ISLANDS CONTRACTING TEAMS LABOUR What rate (per hour worked) is the normal / average rate you pay to labour contract firms when you employ these casual / seasonal workers Via a labour hire company	$ / Hour		

2. Which Tasks do you use Contractors for NOW		Year Ended June 30 2016	Year Ended June 30 2017
Planting	Tick if applicable		
De Suckering	Tick if applicable		
Bell Injection	Tick if applicable		
Spraying	Tick if applicable		
Harvesting	Tick if applicable		
De-Leafing	Tick if applicable		
Bagging	Tick if applicable		
None	Tick if applicable		
Other	Tick if applicable		

3. Which Tasks did you use Contractors for BEFORE TR 4 IN FNQ		Year Ended June 30 2016	Year Ended June 30 2017
Planting	Tick if applicable		
De Suckering	Tick if applicable		
Bell Injection	Tick if applicable		
Spraying	Tick if applicable		
Harvesting	Tick if applicable		
De-Leafing	Tick if applicable		
Bagging	Tick if applicable		
Other	Tick if applicable		

4. Accounting Treatment of Family Labour		Year Ended June 30 2016	Year Ended June 30 2017
Do family members work in the business UNPAID	Tick if applicable		
If Yes, How many family members working (UNPAID) in the business	Enter Number		
If you employed someone to do what UNPAID family members now do, how many FTEs per annum would you employ?	Enter No. (FTEs)		

DISTRIBUTION SYSTEM USED (Marketing Sales)

1. What % of Your Produce is Sold Via:		Year Ended June 30 2016	Year Ended June 30 2017
Major Chains (Direct) (E.G. Greenloads, ripened loads)	%		
Metropolitan / major Produce Wholesalers	%		
Brokers	%		
Independent / Local Greengrocers, Convenience Stores, Farmer's Markets, Similar	%		
Direct to Public	%		
Other Destinations	%		

HARVEST DATA

PLEASE ENTER ALL HARVEST DATA AS KILOGRAMS OR 15 KG EQUIVALENTS, BY VARIETY, AS LISTED BELOW		Year Ended June 30 2016	Year Ended June 30 2017
CAVENDISH		Year Ended June 30 2016	Year Ended June 30 2017
International Pack ("Approx. 33% Large / Premium AND 77% Extra large All PACKED FRUIT 200 MM TO 260 MM")			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Jumbo Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Extra large (XL) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Large (L) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Medium (M) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Small (S) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Other Size / Pack (Describe)			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Other Size / Pack (Describe)			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
LADY FINGER		Year Ended June 30 2016	Year Ended June 30 2017
INTERNATIONAL PACK ("Approx. 33% Large / Premium AND 77% Extra large All PACKED FRUIT 200 MM TO 260 MM")			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Jumbo Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Extra large (XL) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Large (L) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Medium (M) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		

Small (S) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Other Size / Pack (Describe)			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Other Size / Pack (Describe)			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
LITTLE GEM		Year Ended June 30 2016	Year Ended June 30 2017
INTERNATIONAL PACK ("Approx. 33% Large / Premium AND 77% Extra large All PACKED FRUIT 200 MM TO 260 MM")			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Jumbo Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Extra large (XL) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Large (L) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Medium (M) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Small (S) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Other Size / Pack (Describe)			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Other Size / Pack (Describe)			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
OTHER (PLEASE NAME)		Year Ended June 30 2016	Year Ended June 30 2017
INTERNATIONAL PACK ("Approx. 33% Large / Premium AND 77% Extra large All PACKED FRUIT 200 MM TO 260 MM")			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Jumbo Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Extra large (XL) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		

Large (L) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Medium (M) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Small (S) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Other Size / Pack (Describe)			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Other Size / Pack (Describe)			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
OTHER (PLEASE NAME)		Year Ended June 30 2016	Year Ended June 30 2017
INTERNATIONAL PACK ("Approx. 33% Large / Premium AND 77% Extra large All PACKED FRUIT 200 MM TO 260 MM")			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Jumbo Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Extra large (XL) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Large (L) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Medium (M) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Small (S) Size			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Other Size / Pack (Describe)			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		
Other Size / Pack (Describe)			
Kilograms	Kg		
15 Kg Carton Equivalents	15 Kg Equivalent		

FINANCIALS

1. Income		Year Ended June 30 2016	Year Ended June 30 2017
Produce Sales (all)	Income		
Produce Sales - Other	Income		
Other Sales (Juice, Processing)	Income		
Marketing Commissions / Fees	Income		
Contract Packing Fees	Income		
Interest Received	Income		
Rebates and Refunds	Income		
Subsidies and Other Gov't Payments	Income		
Other Income	Income		
TOTAL INCOME / REVENUE	**Income**	**0**	
2. Cost of Goods Sold	**TOTAL**	Year Ended June 30 2016	Year Ended June 30 2017
Audit fees	COGS		
Consultant fees	COGS		
Contract field services	COGS		
Contract packing fees	COGS		
Chemicals and Fertilisers (Combined)	COGS		
Chemicals All	COGS		
Electricity and Gas	COGS		
Fertilizer All	COGS		
Fertiliser - Other	COGS		
Field consumables (Bags, Clipsheets, String,etc.	COGS		
Freight all	COGS		
Freight inwards	COGS		
Freight outwards	COGS		
Fuel and oil	COGS		
Hire of plant and equipment	COGS		
IPM fees	COGS		
Marketing fees and commissions	COGS		
Packaging - all	COGS		
Packaging - cartons	COGS		
Packaging - other	COGS		
Packaging - pallet netting / wrapping	COGS		
Packaging - tape	COGS		
Pallet Hire	COGS		
Payroll tax	COGS		
Ripening Fees	COGS		
Soil and leaf testing	COGS		
Sundry COGS	COGS		
Salaries and Wages - all	COGS		
Superannuation - all	COGS		
Workers compensation - all	COGS		
OR - IF ABLE TO PROVIDE LABOUR COSTS SEPARATED INTO FUNCTIONS			
Superannuation - owners (Paid)	*COGS*		
Superannuation - owners (Unpaid)	*COGS*		

Superannuation - farm	*COGS*		
Superannuation - harvesting	*COGS*		
Superannuation - packing	*COGS*		
Superanuation. Admin./Marketing/Other	*COGS*		
Wages - owners (Paid)	*COGS*		
Wages owners (Unpaid)	*COGS*		
Wages - farm	*COGS*		
Wages harvesting	*COGS*		
Wages - packing	*COGS*		
Wages - admin. / marketing / other	COGS		
Water purchase	COGS		
Water quality testing	COGS		
Wetting agents	COGS		
TOTAL COGS	**COGS**	**0**	
3. Expenses		Year Ended June 30 2016	Year Ended June 30 2017
Administration Fees	Expenses		
Advertising and promotion	Expenses		
Bank charges	Expenses		
Depreciation and amortisation	Expenses		
Discounts given	Expenses		
Discounts received	Expenses		
Drawings	Expenses		
Entertainment	Expenses		
Industry levies	Expenses		
Insurance All	Expenses		
Insurance - Other	Expenses		
Interest - all	Expenses		
Interest - bank	Expenses		
Interest - finance / lease	Expenses		
Interest - other	Expenses		
Lease fees (land)	Expenses		
Legal and accounting	Expenses		
Licenses, permits and fees	Expenses		
Memberships	Expenses		
Motor vehicle expenses	Expenses		
Office expenses	Expenses		
Other general expenses	Expenses		
Printing, postage and stationery	Expenses		
Protective clothing & uniforms, OH&S	Expenses		
Rates & Taxes	Expenses		
Repairs and maintenance - all	Expenses		
Repairs and maintenance - other	Expenses		
Replacements - all	Expenses		
Replacements - All (Incl tools)	Expenses		
Replacements - other	Expenses		
Royalties PBR	Expenses		
Staff amenities	Expenses		
Staff recruitment	Expenses		
Staff training	Expenses		

Subscriptions	Expenses		
Sundry expenses	Expenses		
Telephone and internet	Expenses		
Travelling expenses	Expenses		
Waste removal and Cleaning	Expenses		
TOTAL EXPENSES	**Expenses**	**0**	**0**
Total Income / Revenue	**Income**	**0**	
Cost of Goods Sold	**COGS**	**0**	
Expenses	**Expenses**	**0**	
Net Profit	**NP**		
Add Back Finance Costs			
EBIT	**EBIT**		
Add Back Deprec'n. & Amort'n.			
EBITDA	**EBITDA**		

FARM BIOSECURITY

1. (Protected) Farm Area		Year Ended June 30 2016	Year Ended June 30 2017
How many total hectares (producing, non producing plant crop, fallow, and non-producing/ / other area) in this farm / business	Enter Number		
2. Number of Separated (Non-Contiguous) production areas / blocks in Farm		Year Ended June 30 2016	Year Ended June 30 2017
Exact Number	Enter Number		
1 (One Only) and no non-contiguous portions	Tick if applicable		
2 (Two)	Tick if applicable		
3 (Three)	Tick if applicable		
More than 3 (Three)	Tick if applicable		
3. Does this Farm Flood to and / or from Adjoining Land		Year Ended June 30 2016	Year Ended June 30 2017
Never	Tick if applicable		
Less than Annually	Tick if applicable		
Annualy or More Frequenfly that Annually	Tick if applicable		
4. Have you Duplicated (or more) any Vehicles, Plant / Equipment For Farm Biosecurity		Year Ended June 30 2016	Year Ended June 30 2017
Yes	Tick if applicable		
No	Tick if applicable		
Estimated Capital Cost if Yes is Ticked	Enter Number		
5. Source of Banana Planting Material		Year Ended June 30 2016	Year Ended June 30 2017
Prior to Presence of TR4 in North Queensland what source of planting material were you using			
Tissue Culture	Tick if applicable		
Bits / Pieces / Material from your Own Farm	Tick if applicable		
Bits / Pieces / Material from Other Farms	Tick if applicable		
What source of planting material are you now using			
Tissue Culture	Tick if applicable		
Bits / Suckers / Material from your Own Farm	Tick if applicable		
Bits / Suckers / Material from Other Farms	Tick if applicable		
Cost of Planting Material			
Do you allocate or pay an amount for Bits / Suckers / Material for planting, if so how much per plant	Enter Number (if applicable)		
If using Tissue Culture, how much does it cost per plant to purchase Tissue Culture	Enter Number (if applicable)		

6. Normal Cropping Cycle Used for Bananas (How many Ratoon Crops)		Year Ended June 30 2016	Year Ended June 30 2017
How many years **DO YOU NOW** retain and harvest Ratoon banana crops for,after a Plant Crop	Enter Number		
How many years **DID YOU** retain and harvest Ratoon banana crops for,after a Plant Crop **BEFORE** Discovery of TR4 in FNQ	Enter Number		
How many years old is the oldest block on your farm	Enter Number		
7. Which Best Describes Your Approach to Farm Biosecurity now		Year Ended June 30 2016	Year Ended June 30 2017
We have adopted the Maximum Possible Farm Biosecurity Steps: (Have adopt as many elements / measures as we can afford and/or can physically adopt)	Tick if applicable		
We have adopted some, selected, BS measures, (we have taken a middle-ground / partial approach)	Tick if applicable		
We Don't believe the situation is defendable, and as a result have taken no action	Tick if applicable		
Other (discuss)	Tick if applicable		
8. Third Party Acccess and Production Area		Year Ended June 30 2016	Year Ended June 30 2017
Have you proactively excluded external parties from farm entry (e.g. input and carton reps, researchers, other farmers)	Tick if applicable		
Has the presence of TR4 in FNQ caused you ro reduce your production area	Tick if applicable		
9. Use of Contractors on your farm NOW:		Year Ended June 30 2016	Year Ended June 30 2017
More than it was before TR4 in FNQ	Tick if applicable		
The same as it was before TR4 in FNQ	Tick if applicable		
Less than it was before TR4 in FNQ	Tick if applicable		
Zero now, whereas you did use contractors before TR4 in FNQ	Tick if applicable		
Equipment Used on Your farm by Contractors Today			
Do contractors working on your farm **still now use their own machinery** (bring it onto the farm with them)	Tick if applicable		
Do contractors working on your farm now **use your machinery** (you supply all machinery for contractors)	Tick if applicable		
10. Number of Employees		Year Ended June 30 2016	Year Ended June 30 2017
Have you knowingly increased the number of employees (or hours of employment) on your farm as a result of TR4 being found in FNQ	Tick if applicable		
Estimated new employment Costs per Week from these additional employees / hours of employment) ($ per week)	Enter Number		
11. PHYSICAL ELEMENTS OF FARM BIOSECURITY IMPLEMENTED		Year Ended June 30 2016	Year Ended June 30 2017
Do you have Biosecurity signage installed at Farm entry / exit Points	Tick if applicable		
Have you effectively minimized access points to your farm	Tick if applicable		
Do you have a vehicle Wash Down / Shuttle / Dips installed at farm entry / exit points	Tick if applicable		
Have you implemented a defined process for moving machinery, fruit and people between **Non-Contiguous Blocks** (Soil Free)	Tick if applicable		
Does this 'movements' process include Point to Point or Roll-On Roll-Off (RORO) systems for transporting fruit between farms, or from farm to shed	Tick if applicable		
Have you undertaken earthworks specifically for purposes of biosecurity (e.g. diversion banks or drains for run-off containment)	Tick if applicable		
Is there at least 1 full time employee on the farm that is trained and competent in Farm Biosecurity Systems and their management	Tick if applicable		
Do you have fencing enclosing ALL banana producing areas **OR**	Tick if applicable		
Do you have fencing enclosing SOME banana producing areas / SOME sides only	Tick if applicable		
Have you implemented a defined Biosecurity zoning system on farm	Tick if applicable		
Have you installed Footbaths OR Footwear Change Stations / systems for all persons entering the farm	Tick if applicable		
Physical Elements Installed / Implemented (number of ticks above)	**TOTAL TICKS ABOVE**		

12. BIOSECURITY RECORD KEEPING IMPLEMENTED		Year Ended June 30 2016	Year Ended June 30 2017
Do you have a Visitor Register In use	Tick if applicable		
Do you have a Vehicle Movement Register in use	Tick if applicable		
Do you have a Decontamination Register in use	Tick if applicable		
Do you have a Biosecurity Training Register in use	Tick if applicable		
Do you have a Banana Planting Register (identifying Source of Planting Material) in use	Tick if applicable		
Do you have a Waste Disposal Register in use	Tick if applicable		
Do you have a formal system of Continuous Disease surveillance, testing and Recording in use	Tick if applicable		
Do you qualify intending / new employees to determine where they have worked prior to coming to work on the farm	Tick if applicable		
Record Keeping Systems Installed / In Use (Number of Ticks Above)	**TOTAL TICKS ABOVE**		

13. Capital Investment to Date on Farm Biosecurity		Year Ended June 30 2016	Year Ended June 30 2017
Estimate capital Investment made to date that is directly related to the adoption of higher farm biosecurity measures since the discovery of TR4 in North Queensland, in areas including and not limited to:			
Signage	Enter Number		
Wash Down / Shuttle / Dips	Enter Number		
Fencing	Enter Number		
Zoning On the Farm	Enter Number		
Movement Protocols Between Non-Contiguous Portions	Enter Number		
Biosecurity Training, Processes, Systems for Staff	Enter Number		
Footbaths or Footwear Change Stations / Systems	Enter Number		
Duplication of machinery (in order to achieve safe PEOPLE, VEHICLES & MACHINERY, PLANT or FRUIT movement on farm (including between non-contigous portions), zoning, or other aspects of farm biosecurity)	Enter Number		
Feral animal control	Enter Number		
Earthworks, (Eg. diversion banks or drains for run-off containment)	Enter Number		
Other (Describe)	Enter Number		
TOTAL ESTIMATED CAPITAL INVESTED (TOTAL ABOVE)	**TOTAL ABOVE**		

ON FARM PRACTICES

1. Markets and Marketing - Primary Banana Marketer		Year Ended June 30 2016	Year Ended June 30 2017
Arcello	%		
Costas	%		
Deluca DBM	%		
LaManna / LP Group	%		
Mackays Banana Marketng MBM	%		
Nutrano	%		
Ten Farms	%		
J E Tipper	%		
Wing Chong	%		
Viva Produce	%		
Quality Produce	%		
Mercer Mooney	%		
P W Chew	%		
D & G Fruit Distributors	%		
Other	%		

2. Markets and Marketing - % Sold as Green Loads		Year Ended June 30 2016	Year Ended June 30 2017
% of Produce Sold as Greenloads (Direct to WWths, Coles or Aldi DCs)	%		

3. Markets and Marketing - Carton to Bunch Ratio		Year Ended June 30 2016	Year Ended June 30 2017
Do you calculate your Carton to Bunch Ratio at Regular Intervals	Tick if applicable		
What was your Average 15 kg Carton Equivalents Per Bunch Picked in year ended June 30 2017	Enter Number		
4. Markets and Marketing - Ripening and Marketing Costs You Incur		**Year Ended June 30 2016**	**Year Ended June 30 2017**
Do you know how much per carton you are paying for Ripening Fees	Yes / No		
Ripening Fee $ / Carton	$		
Do you know how much you are paying for marketing (% of Gross Sales)	Yes / No		
Marketing Fee / Commission %	%		
5. Irrigation - Irrigation Monitoring		**Year Ended June 30 2016**	**Year Ended June 30 2017**
Visual	Tick if applicable		
Tensiometers	Tick if applicable		
Neutron probes	Tick if applicable		
Enviroscan	Tick if applicable		
Fixed Scheduling / Other	Tick if applicable		
6. Irrigation - Irrigation Intervals (in peak water demand / dry periods)		**Year Ended June 30 2016**	**Year Ended June 30 2017**
More than Once / Day	Tick if applicable		
Once / Day	Tick if applicable		
Once / 2 Days	Tick if applicable		
Twice Weekly	Tick if applicable		
Once / Week	Tick if applicable		
Less Often than Once / Week	Tick if applicable		
None	Tick if applicable		
9. Use of Advisors - Do you use an External Nutrition Advisor		**Year Ended June 30 2016**	**Year Ended June 30 2017**
Use Paid External Agronomist for Nutrition Program	Tick if applicable		
Use Supplier Staff (Not Paid) as part of their service	Tick if applicable		
Make all decisions regarding Nutrition Program Internally	Tick if applicable		
10. Use of Advisors - Do you use an External Bug Checker		**Year Ended June 30 2016**	**Year Ended June 30 2017**
Use Paid External Agronomist for Bug Checker	Tick if applicable		
Use Supplier Staff (Not Paid) as part of their service	Tick if applicable		
Make all decisions regarding Nutrition Program Internally	Tick if applicable		
11. Method of Applying Fungicides / Disease Control (% of Total Applications)		**Year Ended June 30 2016**	**Year Ended June 30 2017**
Fixed Wing Aircraft	%		
Helicopter	%		
Ground Application	%		
Other	%		
12. Nurse Suckering - Do you Practice Nurse Suckering /Crop Scheduling		**Year Ended June 30 2016**	**Year Ended June 30 2017**
None	Tick if applicable		
Up to 20% of the Crop per year	Tick if applicable		
21% to 40% of the Crop per year	Tick if applicable		
41% to 50% of the Crop per year	Tick if applicable		
51% to 75% of the Crop per year	Tick if applicable		
76% to 100% of the Crop per year	Tick if applicable		

13. Use of Clipsheets - Do you use Clipsheets Between Hands in Bunches		Year Ended June 30 2016	Year Ended June 30 2017
Yes	Tick if applicable		
No	Tick if applicable		

14. Packing Strategy - Own packing or Contract Packer		Year Ended June 30 2016	Year Ended June 30 2017
Pack own Produce Only	Tick if applicable		
Use Contract Pack House	Tick if applicable		

15. Packing Strategy - If Using Contract Packing, House,		Year Ended June 30 2016	Year Ended June 30 2017
ABC / Darragee	%		
Arcello Bananas	%		
Fresh Yellow	%		
Neighbour, other grower nearby	%		
Other (name)	%		

16. Packing Strategy - Packing Shed Records and Systems (If Pack Own Fruit)		Year Ended June 30 2016	Year Ended June 30 2017
Do you Record Kilograms of Waste / Fruit Not Shipped	Tick if applicable		
Do you record Bunch Numbers entering Packing Shed	Tick if applicable		

OPERATING KPI's - KEY LABOUR USE MEASURES

		Year Ended June 30 2016	Year Ended June 30 2017
If you actively record and use the following Labour (ONLY) Productivity Measures as part of managing your business please provide your average achieved for the year ended June 30th 2017			
Bagging: Bags Applied per Labour Hour (incl. Bagging, stringing, dusting, and clip sheets applied, where applicable)	Enter Number		
Total bunch bags applied divided by total hours paid to bagging teams Includes applying clipsheets (if applicable), dusting and stringing each bagged bunch			
Bagging Related: How many Clip Sheets are you applying on average per bunch **(Starting from '0')**	Enter Number		
If clipsheets not used enter '0', otherwise enter average number clipsheets applied per bunch			
Bell Injection: Bell Injections per Labour Hour	Enter Number		
Total bells injected divided by total labour hours paid to bell injecting teams			
Desuckering (Spade):Metres of Banana Lines Spade Desuckered per Labour Hour	Enter Number		
METRE OF BANANA LINES: In a banana inter-row each metre of inter-row contains 2 metres of banana lines (one each side of the inter-row). If 2 people traversed a 50 metre double planted inter-row (and de-suckered 1 line each side of the inter-row), they would collecively complete 100 metres of banana lines in the time taken to finish each inter-row Excludes any labour used to mark / paint / select suckers for removal (treat this as a separate process)			
Desuckering (Spray, Diesel, Other): Metres of Banana Lines treated per Labour Hour	Enter Number		
METRE OF BANANA LINES: In a banana inter-row each metre of inter-row contains 2 metres of banana lines (one each side of the inter-row). If 2 people traversed a 50 metre double planted inter-row (and de-suckered 1 line each side of the inter-row), they would collecively complete 100 metres of banana lines in the time taken to finish each inter-row Excludes any labour used to mark / paint / select suckers for removal (treat this as a separate process)			

Harvesting: Bunches Picked and **delivered to Shed, (if Shed is on same farm, OR delivered to assembly point IF packing shed is off the farm)** per Labour Hour	Enter Number		
Because some farms transport bunches to a site off-farm for packing (i.e. another farm or a stand-alone packing shed, or a contract packing house), only include labour used to deliver to an on-farm shed, or to harvest and move bunches inside of the farm itself.			
Packing: Cartons Packed per Pack House Labour Day (8 hours at station)	Enter Number		
Number of cartons packed divided by total labour days employed in packhouse (all staff hours employed in the pack house operation from Bunch Receiving to Carton Dispatch)			

BMP / ENVIRONMENTAL MANAGEMENT

1. Impacts of BMP Adoption (and Environmental Management)		Year Ended June 30 2016	Year Ended June 30 2017
Are your inter-rows currently covered with a minimum of at least 60% ground cover (living or dead)	Tick if applicable		
What proportion of your banana growing land has a gradient of greater than 3%	Enter number		
2. For your banana land that has more than 3% gradient:		**Year Ended June 30 2016**	**Year Ended June 30 2017**
Do you have diversion drains in place (diverting flow away from exposed soil)	Tick if applicable		
Are all of your drainage structures vegetated spoon drains designed to collect run-off and slow-down water velocity	Tick if applicable		
Does all drainage water that leaves this area of your farm enter a silt trap or similar structure before it leaves your farm	Tick if applicable		
Do you have uniformally dense vegetated grass buffers, contour banks, or other means to comply with likely future regulation	Tick if applicable		
3. Nutrient Application and Records on Banana Crops		**Year Ended June 30 2016**	**Year Ended June 30 2017**
% of all your Fertilizer currently applied via:			
Fertigation	%		
Banded surface application	%		
Broadcast surface application	%		
4. How often do you calibrate fertilizer application equipment		**Year Ended June 30 2016**	**Year Ended June 30 2017**
At least every 6 months	Tick if applicable		
At least every 12 months	Tick if applicable		
Less often than every 12 months	Tick if applicable		
Every time you change the product being applied	Tick if applicable		
5. Do you keep records (date and result) of:		**Year Ended June 30 2016**	**Year Ended June 30 2017**
Soil Tests	Tick if applicable		
Leaf tests	Tick if applicable		
Fertilizer applications	Tick if applicable		
6. If you keep these records, do you keep them:		**Year Ended June 30 2016**	**Year Ended June 30 2017**
Electronically, or	Tick if applicable		
On Paper / Hard Copy Only	Tick if applicable		
7. Nutrient Targets (Application Levels)		**Year Ended June 30 2016**	**Year Ended June 30 2017**
How many Kg of Nitrogen do you apply per hectare, per annum, on Plant crops	Enter Number		
How many Kg of Nitrogen do you apply per hectare, per annum, on Ratoon Crops	Enter Number		
How many Kg of Phosphorous do you apply per hectare per annum on banana crops	Enter Number		
How many Kg of Potassium do you apply per hectare per annum on banana crops	Enter Number		

8. How is your nutrient target (nutrient application levels) established?		Year Ended June 30 2016	Year Ended June 30 2017
Agronomist (external)	Tick if Applicable		
In-house Agronomist	Tick if Applicable		
Fertiliser reseller	Tick if Applicable		
Historical	Tick if Applicable		
Yield data	Tick if Applicable		
Best guess	Tick if Applicable		
Other (specify)	Tick if Applicable		

Approximate Nutrient Targets (Application Levels) as per BMP Guidelines
Nitrogen (Plant Crop)250 KgN / Ha / annum
Nitrogen (Ratoon Crop) 350 KgN / ha / annum
Phosphorous 60KgP / ha / annum

9. Are you interested in / do you need extension support on the following?		Year Ended June 30 2016	Year Ended June 30 2017
Banana BMP	Tick if Applicable		
BetterBunch	Tick if Applicable		
On-farm nutrient or sediment management practice improvements	Tick if Applicable		
Other (specify)	Tick if Applicable		

BANANA BENCHMARKING COMPARATIVE ANALYSIS REPORT

THIS REPORT COVERS THE YEARS ENDED JUNE 2016 AND JUNE 2017 COMBINED
(2016/17 at the top of each page refers to these two years)

FAR NORTH QLD

ALL PARTICIPATING GROWERS

FOR TWO YEARS, BEING:

Year Ended June 30 2016
and
Year Ended June 30 2017

Prepared by Pinnacle Agribusiness
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This project is funded by Horticulture Innovation Australia Limited
with Banana industry levy funds and Australian Government funds

Comparative Analysis Report (2016/2017)-A SAMPLE 02 ID 801-Total Group

A SAMPLE 02					801		
	Unit	Your Value	Group Average	Group High	Group Low	Your Rank in Group	Total Number in Group (Count)
1. ENTERPRISE INFORMATION							
Total Producing Hectares	Ha	0.75	0.00	0.00	0.00	0	
Total Producing Plants (Stools)	Plants	0.00	0.00	0.00	0.00	0	
			0	0	0	0	
Total Hectares Planted (Producing and Immature)	Ha	0.75	0.00	0.00	0.00	0	
			0	0	0	0	
Total KGS Harvested, Packed and Sold	Kgs	30,000	0	0	0	0	
Total KGS Sold as Juice, Oil, Processing	Kgs	0	0	0	0	0	
Total KGS Harvested	Kgs	30,000	0	0	0	0	
			0	0	0	0	
Total Cartons (15 Kg Carton Equivalent) Harvested Packed and Sold	15 Kg Cartons	2,000	0	0	0	0	
			0	0	0	0	
Total KGS Harvested per Producing Hectare	**Kgs / Ha**	**40,000**	**40,293**	**61,033**	**13,008**	**14**	**32**
Total 15 KG Cartons(Equivalent) Harvested per Producing Hectare	**15 Kg Cartons / Ha**	**2,667**	**2,686**	**4,069**	**867**	**14**	**32**
			0	0	0	0	
Average Gross Price Achieved $ / 15 KG Equivalent of Market Fruit	**$ / 15 Kg**	**$17.50**	**$24.64**	**$61.01**	**$17.50**	**32**	**32**
			0	0	0	0	
Average Net Return to Grower $ / 15 KG Equivalent of Market Fruit (After Paying Marketing and Ripening Costs)	**$ / 15 Kg**	**$17.50**	**$21.90**	**$51.52**	**$15.01**	**30**	**32**
			0	0	0	0	
Total Costs per 15 KG Carton Equivalent Sold	**$ / 15 Kg Carton Sold**	**$17.40**	**$24.49**	**$51.51**	**$17.40**	**32**	**32**
			0	0	0	0	
Average EBITDA per 15 KG Carton Equivalent Sold	**$ / 15 Kg Carton Sold**	**$0.10**	**$0.92**	**$9.52**	**($5.20)**	**22**	**32**
			0	0	0	0	
% of Market Fruit Sold in 15 KG International Packs	**%**	**100.00%**	**71.59%**	**100.00%**	**71.20%**	**2**	**19**
% of Market Fruit Sold as XLarge (as single size pack) %	**%**	**0.00%**	**20.20%**	**96.12%**	**2.80%**	**0**	**22**
			0	0	0	0	
2. BUSINESS SCALE AND OUTCOMES							
Gross Sales Revenue (Before Marketing & Ripening Costs) $	$	$35,000	$6,211,356	$0	$0	0	
Total Costs	$	$34,800	$6,171,198	$0	$0	0	
			0	0	0	0	
NET PROFIT BEFORE TAX	$	$200	$40,157	$0	$0	0	
EBIT $	$	$200	$107,338	$0	$0	0	
			0	0	0	0	

Comparative Analysis Report (2016/2017)-A SAMPLE 02 ID 801-Total Group

A SAMPLE 02					801		
	Unit	Your Value	Group Average	Group High	Group Low	Your Rank in Group	Total Number in Group (Count)
Total Operating Costs (Excluding Interest and Depreciation)	$	$34,800	$5,979,941	$0	$0	0	
EBITDA $	$	$200	$231,415	$0	$0	0	
Operating Costs as % of Gross Sales Revenue	%	99.43%	96.27%	124.07%	84.39%	12	32
3. PACK OUT, PRODUCTIVITY, BIOSECURITY, ENVIRONMENTAL							
% of Market Fruit Sold as International Pack	%	100.00%	71.59%	100.00%	71.20%	2	19
% of Market Fruit Sold as Single Size	%	0.00%	28.41%	100.00%	0.25%	0	30
% of Market Fruit Sold as Jumbo %	%	0.00%	0.72%	11.21%	0.04%	0	13
% of Market Fruit Sold as XLarge %	%	0.00%	20.20%	96.12%	2.80%	0	22
% of Market Fruit Sold as Large %	%	0.00%	5.75%	30.00%	0.25%	0	27
% of Market Fruit Sold as Medium %	%	0.00%	2.30%	18.91%	0.00%	0	16
% of Market Fruit Sold as Small %	%	0.00%	0.01%	0.32%	0.32%	0	1
% of Market Fruit Sold as Other 1 %	%	0.00%	0.95%	66.11%	0.04%	0	16
% of Market Fruit Sold as Other 2 %	%	0.00%	0.15%	3.09%	0.71%	0	3
			0	0	0	0	
PRODUCTIVITY			0	0	0	0	
Carton to Bunch Ratio	Cartons / Bunch	0.00	1.79	2.70	1.24	0	18
Bags Applied per Labour Hour	Bags / Lab Hr	0.00	30.41	50.00	15.00	0	19
Bells Injected per Labour Hour	Bells / Lab Hr	0.00	39.90	90.00	19.50	0	15
Line Metres De-Suckered per Labour Hour (Spade)	Line Metres / Lab Hr	0.00	267.56	338.00	100.00	0	9
Line Metres De-Suckered per Labour Hour (Spray / Diesel)	Line Metres / Lab Hr	0.00	0.00	0.00	0.00	0	0
Bunches Picked per Labour Hour	Bunches / Lab Hr	0.00	41.57	120.00	10.35	0	13
Cartons Packed per Pack House Labour Day	Cartons / Lab Day	0.00	140.92	272.00	88.00	0	13
			0	0	0	0	
BIOSECURITY			0	0	0	0	
Protected Farm Hectares Being Protected by Current Farm Biosecurity	Ha	0.00	149.26	640.00	14.00	0	31
Number of Non-Contiguous Areas / Blocks in Protected Farm Area	Number	0.00	1.58	4.00	1.00	0	31
Number of Physical Biosecurity Elements Employed (Maximum 10)	Number	0.00	6.90	9.00	1.50	0	31
Number of Biosecurity Recording Elements Employed (Maximum 8)	Number	0.00	2.22	5.00	1.00	0	27
Average Capital Invested per Protected Hectare for Biosecurity	$ / Prot. Ha	$0.00	$1,154.52	$7,462.69	$203.13	0	28
Average Capital Invested per Harvested Hectare for Biosecurity	$ / Harvested Ha	$0.00	$1,619.68	$7,462.69	$203.13	0	28
			0	0	0	0	
ENVIRONMENTAL			0	0	0	0	
Proportion of Current Banana Growing Area with More than 3% Gradient	%	0.00%	20.44%	96.00%	3.00%	0	27

Comparative Analysis Report (2016/2017)-A SAMPLE 02 ID 801-Total Group

A SAMPLE 02					801		
	Unit	Your Value	Group Average	Group High	Group Low	Your Rank in Group	Total Number in Group (Count)
% of Nutrition Applied by Fertigation	%	0.00%	67.67%	100.00%	20.00%	0	27
% of Nutrition Applied by Ground Application	%	0.00%	32.33%	100.00%	5.00%	0	23
KG N / Ha / annum Applied in Plant Crops	KG / Ha	0.00	307.06	400.00	150.00	0	31
KG of N / Ha / annum Applied in Ratoon Crops	KG / Ha	0.00	322.06	400.00	90.00	0	31
KG of P / Ha / annum Applied	KG / Ha	0.00	60.11	114.00	25.00	0	27
KG of K / Ha / annum Applied	KG / Ha	0.00	893.92	1,300.00	600.00	0	31
			0	0	0	0	
4. SELECTED LABOUR USE MEASURES							
Total FTEs Employed / Producing Ha	FTE / Ha	0.00	0.39	0.56	0.12	0	31
Total Producing Hectares Managed per FTE	Ha / FTE	0.00	2.56	8.33	1.79	0	31
Gross Sales Revenue Achieved Per Total FTE	$ / FTE	$0	$171,316	$535,376	$122,333	0	31
EBITDA Achieved Per Total FTE	$ / FTE	$0	$6,383	$37,556	($42,570)	0	31
Tonnes Produced and Sold Per FTE per Annum	Tonne / FTE	0.00	104.23	352.74	30.42	0	31
5. PROFITABILITY PER PRODUCING HA							
Total Sales Revenue	$ / Producing Ha	$46,667	$66,223	$100,724	$27,185	29	32
Total Costs	$ / Producing Ha	$46,400	$65,795	$99,144	$27,638	0	
Net Profit (Before Tax)	$ / Producing Ha	$267	$428	$11,468	($11,501)	0	
EBIT	$ / Producing Ha	$267	$1,144	$11,576	($11,501)	0	
			0	0	0	0	
Total Operating Costs (Excluding Interest and Depreciation)	$ / Producing Ha	$46,400	$63,756	$99,138	$27,638	30	32
EBITDA	$ / Producing Ha	$267	$2,467	$11,576	($10,434)	22	32
			0	0	0	0	

Comparative Analysis Report (2016/2017)-A SAMPLE 02 ID 801-Total Group

A SAMPLE 02					801		
	Unit	Your Value	Group Average	Group High	Group Low	Your Rank in Group	Total Number in Group (Count)
6. COSTS PER PRODUCING HA							
Chemical and Fertiliser Costs	$ / Producing Ha	$0	$6,144	$11,328	$2,492	0	31
Consultants And Contractor Fees	$ / Producing Ha	$0	$2,716	$11,810	$340	0	28
Contract Packing Fees	$ / Producing Ha	$0	$538	$11,510	$688	0	6
Depreciation and Amortisation Costs	$ / Producing Ha	$0	$1,323	$4,512	$8	0	16
Employment / Labour Costs	$ / Producing Ha	$0	$20,448	$31,001	$6,781	0	31
Finance Costs	$ / Producing Ha	$0	$716	$5,117	$5	0	27
Freight Costs	$ / Producing Ha	$0	$10,656	$14,409	$3,037	0	31
Fuel & Oil Costs	$ / Producing Ha	$0	$696	$1,173	$122	0	29
General Expenses	$ / Producing Ha	$46,400	$2,809	$46,400	$289	1	32
Insurance Costs	$ / Producing Ha	$0	$291	$1,478	$3	0	30
Marketing & Ripening Costs	$ / Producing Ha	$0	$7,348	$19,428	$4,460	0	31
Motor Vehicles	$ / Producing Ha	$0	$161	$848	$19	0	27
Packaging and Pallet Costs	$ / Producing Ha	$0	$7,244	$17,069	$1,945	0	31
Power & Gas Costs	$ / Producing Ha	$0	$891	$1,826	$94	0	31
Rates Levies, Licenses, Memberships, Registrations	$ / Producing Ha	$0	$1,021	$2,292	$175	0	31
Repairs & Replacements	$ / Producing Ha	$0	$2,528	$8,574	$444	0	31
Royalties & PVR Costs	$ / Producing Ha	$0	$0	$0	$0	0	0
Water Costs	$ / Producing Ha	$0	$266	$1,835	$74	0	11
			0	0	0	0	
7. PROFITABILITY PER 15 Kg CARTON EQUIVALENT							
Total Sales Revenue	$ / 15 Kg Carton Sold	$17.50	$24.65	$61.01	$17.50	32	32
Total Costs	$ / 15 Kg Carton Sold	$17.40	$24.49	$51.51	$17.40	32	32
Net Profit Before Tax	$ / 15 Kg Carton Sold	$0.10	$0.16	$9.50	($5.73)	16	32
EBIT	$ / 15 Kg Carton Sold	$0.10	$0.43	$9.52	($5.73)	20	32
			0	0	0	0	
Total Operating Costs (Excluding Interest and Depreciation)	$ / 15 Kg Carton Sold	$17.40	$23.73	$51.49	$17.40	32	32
EBITDA	$ / 15 Kg Carton Sold	$0.10	$0.92	$9.52	($5.20)	22	32
			0	0	0	0	
Total Operating Costs as % of Gross Sales Revenue	%	99.43%	96.27%	124.07%	84.39%	12	32
EBITDA as % of Gross Sales Revenue	%	0.57%	3.73%	15.61%	-24.07%	21	32
			0	0	0	0	

Comparative Analysis Report (2016/2017)-A SAMPLE 02 ID 801-Total Group

A SAMPLE 02					801		
	Unit	Your Value	Group Average	Group High	Group Low	Your Rank in Group	Total Number in Group (Count)
8. COSTS PER 15 KG EQUIVALENT							
Chemical and Fertiliser Costs	$ / 15 Kg Carton Sold	$0.00	$2.29	$5.10	$1.12	0	31
Consultants And Contractor Fees	$ / 15 Kg Carton Sold	$0.00	$1.01	$4.98	$0.14	0	28
Contract Packing Costs	$ / 15 Kg Carton Sold	$0.00	$0.20	$4.31	$0.27	0	6
Depreciation and Amortisation Costs	$ / 15 Kg Carton Sold	$0.00	$0.49	$2.07	$0.00	0	16
Employment / Labour Costs	$ / 15 Kg Carton Sold	$0.00	$7.61	$23.94	$2.54	0	31
Finance Costs	$ / 15 Kg Carton Sold	$0.00	$0.27	$2.72	$0.00	0	27
Freight Costs	$ / 15 Kg Carton Sold	$0.00	$3.97	$4.83	$2.47	0	31
Fuel & Oil Costs	$ / 15 Kg Carton Sold	$0.00	$0.26	$0.77	$0.04	0	29
General Expenses	$ / 15 Kg Carton Sold	$17.40	$1.05	$17.40	$0.16	1	32
Insurance Costs	$ / 15 Kg Carton Sold	$0.00	$0.11	$0.67	$0.00	0	30
Marketing and Ripening Costs	$ / 15 Kg Carton Sold	$0.00	$2.74	$9.49	$1.71	0	31
Motor Vehicles	$ / 15 Kg Carton Sold	$0.00	$0.06	$0.44	$0.01	0	27
Packaging Costs	$ / 15 Kg Carton Sold	$0.00	$2.70	$6.03	$2.09	0	31
Power and Gas Costs	$ / 15 Kg Carton Sold	$0.00	$0.33	$0.87	$0.04	0	31
Rates, Levies, Licenses, Memberships, Registrations	$ / 15 Kg Carton Sold	$0.00	$0.38	$0.78	$0.06	0	31
Repairs & Replacements	$ / 15 Kg Carton Sold	$0.00	$0.94	$3.52	$0.25	0	31
Royalties & PVR Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	0	0
Water Costs	$ / 15 Kg Carton Sold	$0.00	$0.10	$0.97	$0.02	0	11
			0	0	0	0	
Employment / Labour + Contracting & Consulting + Contract Packing	$ / 15 Kg Carton Sold	$0.00	$8.82	$0.00	$0.00	0	31
			0	0	0	0	
9. PROFITABILITY PER KG PRODUCED AND SOLD							
Total Sales Revenue	$ / Kg	$1.17	$1.64	$4.07	$1.17	32	32
Total Costs	$ / Kg	$1.16	$1.63	$3.43	$1.16	32	32
Net Profit (Before Tax)	$ / Kg	$0.01	$0.01	$0.63	($0.38)	16	32
EBIT	$ / Kg	$0.01	$0.03	$0.63	($0.38)	20	32
Total Operating Costs (Excluding Interest and Depreciation)	$ / Kg	$1.16	$1.58	$3.43	$1.16	32	32
EBITDA	$ / Kg	$0.01	$0.06	$0.63	($0.35)	22	32

Multiple Year Benchmarking Data For Years 2012 / 2013 / 2016 / 2017 And Aggregate Average Values-Z SAMPLE 01 ID 801

Z SAMPLE 01						801
	Unit	2012	2013	2016	2017	Aggregate Ave. Values for Yrs 2012 / 2013 / 2016 / 2017
1. ENTERPRISE INFORMATION						
Total Producing Hectares	Ha	0.00	0.00	0.00	0.00	0.00
Total Producing Plants (Stools)	Plants	0.00	0.00	0.00	0.00	0.00
Total Hectares Planted (Producing and Immature)	Ha	0.00	0.00	0.00	0.00	0.00
Total KGS Harvested, Packed and Sold	Kgs	0	0	0	0	0
Total KGS Sold as Juice, Oil, Processing	Kgs	0	0	0	0	0
Total KGS Harvested	Kgs	0	0	0	0	0
Total Cartons (15 Kg Carton Equivalent) Harvested Packed and Sold	15 Kg Cartons	0	0	0	0	0
Total KGS Harvested per Producing Hectare	Kgs / Ha	0	0	0	0	0
Total 15 KG Cartons(Equivalent) Harvested per Producing Hectare	15 Kg Cartons / Ha	0	0	0	0	0
Total 15 KG Cartons(Equivalent) Harvested per Producing Plant (Stool) per annum	15 Kg Cartons / Plants	0.00	0.00	0.00	0.00	0.00
Average Gross Price Achieved $ / 15 KG Equivalent of Market Fruit	$ / 15 Kg	$0.00	$0.00	$0.00	$0.00	$0.00
Average Net Return to Grower $ / 15 KG Equivalent of Market Fruit (After Paying Marketing and Ripening Costs)	$ / 15 Kg	$0.00	$0.00	$0.00	$0.00	$0.00
Total Costs per 15 KG Carton Equivalent Sold	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Average EBITDA per 15 KG Carton Equivalent Sold	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
% of Market Fruit Sold in 15 KG International Packs	%	0.00%	0.00%	0.00%	0.00%	0.00%
% of Market Fruit Sold as XLarge (as single size pack) %	%	0.00%	0.00%	0.00%	0.00%	0.00%
2. BUSINESS SCALE AND OUTCOMES						
Gross Sales Revenue (Before Marketing & Ripening Costs) $	$	$0	$0	$0	$0	$0
Total Costs	$	$0	$0	$0	$0	$0

Multiple Year Benchmarking Data For Years 2012 / 2013 / 2016 / 2017 And Aggregate Average Values-Z SAMPLE 01 ID 801

Z SAMPLE 01						801
	Unit	2012	2013	2016	2017	Aggregate Ave. Values for Yrs 2012 / 2013 / 2016 / 2017
NET PROFIT BEFORE TAX	$	$0	$0	$0	$0	$0
EBIT $	$	$0	$0	$0	$0	$0
Total Operating Costs (Excluding Interest and Depreciation)	$	$0	$0	$0	$0	$0
EBITDA $	$	$0	$0	$0	$0	$0
Operating Costs as % of Gross Sales Revenue	%	0.00%	0.00%	0.00%	0.00%	0.00%
3. PACK OUT, PRODUCTIVITY, BIOSECURITY, ENVIRONMENTAL						
% of Market Fruit Sold as International Pack	%	0.00%	0.00%	0.00%	0.00%	0.00%
% of Market Fruit Sold as Single Size	%	0.00%	0.00%	0.00%	0.00%	0.00%
% of Market Fruit Sold as Jumbo %	%	0.00%	0.00%	0.00%	0.00%	0.00%
% of Market Fruit Sold as XLarge %	%	0.00%	0.00%	0.00%	0.00%	0.00%
% of Market Fruit Sold as Large %	%	0.00%	0.00%	0.00%	0.00%	0.00%
% of Market Fruit Sold as Medium %	%	0.00%	0.00%	0.00%	0.00%	0.00%
% of Market Fruit Sold as Small %	%	0.00%	0.00%	0.00%	0.00%	0.00%
% of Market Fruit Sold as Other 1 %	%	0.00%	0.00%	0.00%	0.00%	0.00%
% of Market Fruit Sold as Other 2 %	%	0.00%	0.00%	0.00%	0.00%	0.00%
% Sold as 'Green Loads'	%	0.00%	0.00%	0.00%	0.00%	0.00%
PRODUCTIVITY						
Carton to Bunch Ratio	Cartons / Bunch	0.00	0.00	0.00	0.00	0.00
Bags Applied per Labour Hour	Bags / Lab Hr	0.00	0.00	0.00	0.00	0.00
Number of Clipsheets Applied per Bunch	Clipsheets / bunch	0.00	0.00	0.00	0.00	0.00
Bells Injected per Labour Hour	Bells / Lab Hr	0.00	0.00	0.00	0.00	0.00
Line Metres De-Suckered per Labour Hour (Spade)	Line Metres / Lab Hr	0.00	0.00	0.00	0.00	0.00
Line Metres De-Suckered per Labour Hour (Spray / Diesel)	Line Metres / Lab Hr	0.00	0.00	0.00	0.00	0.00
Bunches Picked per Labour Hour	Bunches / Lab Hr	0.00	0.00	0.00	0.00	0.00
Cartons Packed per Pack House Labour Day	Cartons / Lab Day	0.00	0.00	0.00	0.00	0.00
BIOSECURITY						
Protected Farm Hectares Being Protected by Current Farm Biosecurity	Ha	0.00	0.00	0.00	0.00	0.00

Multiple Year Benchmarking Data For Years 2012 / 2013 / 2016 / 2017 And Aggregate Average Values-Z SAMPLE 01 ID 801

Z SAMPLE 01						801
	Unit	2012	2013	2016	2017	Aggregate Ave. Values for Yrs 2012 / 2013 / 2016 / 2017
Number of Non-Contiguous Areas / Blocks in Protected Farm Area	Number	0.00	0.00	0.00	0.00	0.00
Number of Physical Biosecurity Elements Employed (Maximum 10)	Number	0.00	0.00	0.00	0.00	0.00
Number of Biosecurity Recording Elements Employed (Maximum 8)	Number	0.00	0.00	0.00	0.00	0.00
Average Capital Invested per Protected Hectare for Biosecurity	$ / Prot. Ha	$0.00	$0.00	$0.00	$0.00	$0.00
Average Capital Invested per Harvested Hectare for Biosecurity	$ / Harvested Ha	$0.00	$0.00	$0.00	$0.00	$0.00
ENVIRONMENTAL						
Proportion of Current Banana Growing Area with More than 3% Gradient	%	0.00%	0.00%	0.00%	0.00%	0.00%
% of Nutrition Applied by Fertigation	%	0.00%	0.00%	0.00%	0.00%	0.00%
% of Nutrition Applied by Ground Application	%	0.00%	0.00%	0.00%	0.00%	0.00%
KG N / Ha / annum Applied in Plant Crops	KG / Ha	0.00	0.00	0.00	0.00	0.00
KG of N / Ha / annum Applied in Ratoon Crops	KG / Ha	0.00	0.00	0.00	0.00	0.00
KG of P / Ha / annum Applied	KG / Ha	0.00	0.00	0.00	0.00	0.00
KG of K / Ha / annum Applied	KG / Ha	0.00	0.00	0.00	0.00	0.00
4. SELECTED LABOUR USE MEASURES						
Total FTEs Employed / Producing Ha	FTE / Ha	0.00	0.00	0.00	0.00	0.00
Total Producing Hectares Managed per FTE	Ha / FTE	0.00	0.00	0.00	0.00	0.00
Gross Sales Revenue Achieved Per Total FTE	$ / FTE	$0	$0	$0	$0	$0
EBITDA Achieved Per Total FTE	$ / FTE	$0	$0	$0	$0	$0
Tonnes Produced and Sold Per FTE per Annum	Tonne / FTE	0.00	0.00	0.00	0.00	0.00
5. PROFITABILITY PER PRODUCING HA						
Total Sales Revenue	$ / Producing Ha	$0	$0	$0	$0	$0
Total Costs	$ / Producing Ha	$0	$0	$0	$0	$0
Net Profit (Before Tax)	$ / Producing Ha	$0	$0	$0	$0	$0
EBIT	$ / Producing Ha	$0	$0	$0	$0	$0
Total Operating Costs (Excluding Interest and Depreciation)	$ / Producing Ha	$0	$0	$0	$0	$0
EBITDA	$ / Producing Ha	$0	$0	$0	$0	$0

Multiple Year Benchmarking Data For Years 2012 / 2013 / 2016 / 2017 And Aggregate Average Values-Z SAMPLE 01 ID 801

Z SAMPLE 01						801
	Unit	2012	2013	2016	2017	Aggregate Ave. Values for Yrs 2012 / 2013 / 2016 / 2017
6. COSTS PER PRODUCING HA						
Chemical and Fertiliser Costs	$ / Producing Ha	$0	$0	$0	$0	$0
Consultants And Contractor Fees	$ / Producing Ha	$0	$0	$0	$0	$0
Contract Packing Fees	$ / Producing Ha	$0	$0	$0	$0	$0
Depreciation and Amortisation Costs	$ / Producing Ha	$0	$0	$0	$0	$0
Employment / Labour Costs	$ / Producing Ha	$0	$0	$0	$0	$0
Finance Costs	$ / Producing Ha	$0	$0	$0	$0	$0
Freight Costs	$ / Producing Ha	$0	$0	$0	$0	$0
Fuel & Oil Costs	$ / Producing Ha	$0	$0	$0	$0	$0
General Expenses	$ / Producing Ha	$0	$0	$0	$0	$0
Insurance Costs	$ / Producing Ha	$0	$0	$0	$0	$0
Marketing & Ripening Costs	$ / Producing Ha	$0	$0	$0	$0	$0
Motor Vehicles	$ / Producing Ha	$0	$0	$0	$0	$0
Packaging and Pallet Costs	$ / Producing Ha	$0	$0	$0	$0	$0
Power & Gas Costs	$ / Producing Ha	$0	$0	$0	$0	$0
Rates Levies, Licenses, Memberships, Registrations	$ / Producing Ha	$0	$0	$0	$0	$0
Repairs & Replacements	$ / Producing Ha	$0	$0	$0	$0	$0
Royalties & PVR Costs	$ / Producing Ha	$0	$0	$0	$0	$0
Water Costs	$ / Producing Ha	$0	$0	$0	$0	$0
7. PROFITABILITY PER 15 Kg CARTON EQUIVALENT						
Total Sales Revenue	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Total Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Net Profit Before Tax	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
EBIT	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Total Operating Costs (Excluding Interest and Depreciation)	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
EBITDA	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Total Operating Costs as % of Gross Sales Revenue	%	0.00%	0.00%	0.00%	0.00%	0.00%
EBITDA as % of Gross Sales Revenue	%	0.00%	0.00%	0.00%	0.00%	0.00%

Multiple Year Benchmarking Data For Years 2012 / 2013 / 2016 / 2017 And Aggregate Average Values-Z SAMPLE 01 ID 801

Z SAMPLE 01						801
	Unit	2012	2013	2016	2017	Aggregate Ave. Values for Yrs 2012 / 2013 / 2016 / 2017
8. COSTS PER 15 KG EQUIVALENT						
Chemical and Fertiliser Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Consultants And Contractor Fees	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Contract Packing Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Depreciation and Amortisation Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Employment / Labour Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Finance Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Freight Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Fuel & Oil Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
General Expenses	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Insurance Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Marketing and Ripening Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Motor Vehicles	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Packaging Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Power and Gas Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Rates, Levies, Licenses, Memberships, Registrations	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Repairs & Replacements	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Royalties & PVR Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
Water Costs	$ / 15 Kg Carton Sold	$0.00	$0.00	$0.00	$0.00	$0.00
9. PROFITABILITY PER KG PRODUCED AND SOLD						
Total Sales Revenue	$ / Kg	$0.00	$0.00	$0.00	$0.00	$0.00
Total Costs	$ / Kg	$0.00	$0.00	$0.00	$0.00	$0.00
Net Profit (Before Tax)	$ / Kg	$0.00	$0.00	$0.00	$0.00	$0.00
EBIT	$ / Kg	$0.00	$0.00	$0.00	$0.00	$0.00
Total Operating Costs (Excluding Interest and Depreciation)	$ / Kg	$0.00	$0.00	$0.00	$0.00	$0.00
EBITDA	$ / Kg	$0.00	$0.00	$0.00	$0.00	$0.00

Banana Benchmarking Program 2015/16 and 2016/17

MANAGEMENT PRACTICES SUMMARY

All Far North QLD Participants

Produced by Pinnacle Agribusiness
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This project has been funded by Horticulture Innovation Australia Limited using the Banana industry levy and funds from the Australian Government.

Banana Benchmarking Program 2015/16 and 2016/17

MANAGEMENT PRACTICES SUMMARY

ALL FAR NORTH QLD PARTICIPANTS

	Measure	Result
A: FARM PRACTICES		
Farm Labour		
Local / Australian Workers	% of Total Labour	53.28%
International Workers / Backpackers	% of Total Labour	37.60%
Pacific Islands Contracting Teams (e.g. Maydec, similar)	% of Total Labour	9.12%
Method of Irrigation Monitoring (Scheduling)		
Visual / Judgement	% of Respondents	41.39%
Tensiometers	% of Respondents	31.03%
Neutron Probes	% of Respondents	1.72%
Enviroscan	% of Respondents	8.62%
Fixed Scheduling	% of Respondents	10.34%
Other	% of Respondents	6.90%
Irrigation Intervals (When Irrigating)		
More than Once per Day	% of Respondents	17.24%
Daily	% of Respondents	44.83%
Every 2 Days	% of Respondents	25.86%
Twice Weekly	% of Respondents	0.00%
Weekly	% of Respondents	12.07%
Less Frequently Than Once Per Week	% of Respondents	0.00%
Use of External Advice		
Engaged Pest Scouts / Monitors / Pest Agronomist	% of Respondents	63.33%
Engaged external Nutritional Advisor / Agronomist	% of Respondents	55.00%
Principal Method of Applying Fungicides		
Fixed Wing Aircraft	% of Respondents	68.33%
Helicopter	% of Respondents	20.00%
Ground Application	% of Respondents	11.67%
Other Methods	% of Respondents	0.00%
Practice and Scale of Nurse Suckering		
No Nurse Suckering Practiced	% of Respondents	43.34%
Up to 20% of Producing Area	% of Respondents	25.00%
21% to 40% of Producing Area	% of Respondents	28.33%
41% to 50% of Producing Area	% of Respondents	3.33%
51% to 75% of Producing Area	% of Respondents	0.00%
76% to 100% of Producing Area	% of Respondents	0.00%
Ripening and Marketing Costs		
% of Respondents That Provided Their Current Ripening Costs ($ / Carton)	% of Respondents	63.64%
Average Ripening Cost Reported by Respondents	$ / Carton	$1.93
% of Respondents That Provided Current Marketing Costs / Fees Paid	% of Respondents	64.29%
Produce Marketing Channel Used		
Direct to Supermarkets	% of Respondents	73.55%
Via Brokers	% of Respondents	0.08%
Through Wholesalers	% of Respondents	26.37%
Through Exporters or Direct to Export	% of Respondents	0.00%
Through PBR Marketers	% of Respondents	0.00%
To Processors, Value Adders, Oil etc	% of Respondents	0.00%
Other	% of Respondents	0.00%

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MANAGEMENT PRACTICES SUMMARY

ALL FAR NORTH QLD PARTICIPANTS

B: BIOSECURITY		
Areas, Non-Contiguous Portions,		
Total (Protected) Farm Area reported by all respondents in Group	Hectares	4,701.00
% of (Protected) Farm Area managing one (only) Contiguous Portion	% of Hectares	55.00%
% of (Protected) Farm Area managing two (2) Non-Contiguous Portions	% of Hectares	36.67%
% of (Protected) Farm Area managing three (3) Non-Contiguous Portions	% of Hectares	3.33%
% of (Protected) Farm Area managing more than 3 (>3) Non-Contiguous Portions	% of Hectares	5.00%
% of (Protected) Area that Floods:		
Never	% of Hectares	56.67%
Less than annually	% of Hectares	40.00%
Annually or more frequently than annually	% of Hectares	3.33%
Duplication of Plant and Equipment for Biosecurity		
% of Respondents that have had to duplicate plant & equipment	% of Respondents	60.00%
% of (Protected) Farm Area – which has duplicated plant and equipment	% of Hectares	76.20%
Planting and Planting Materials BEFORE TR4		
% of Respondents using Tissue Culture Prior to TR4	% of Respondents	71.67%
% of Respondents using Bits / Pieces From Their own Farm - Prior to TR4	% of Respondents	28.33%
% of Respondents using Bits / Pieces From Other Farms / Sources- Prior to TR4	% of Respondents	0.00%
% of (Protected) Farm Area using Tissue Culture Prior to TR4	% of Hectares	82.58%
% of (Protected) Farm Area using Bits / Pieces From Their own Farm - Prior to TR4	% of Hectares	17.42%
% of (Protected) Farm Area using Bits / Pieces From Other Farms / Sources- Prior to TR4	% of Hectares	0.00%
Planting and Planting Materials NOW (AFTER TR4)		
% of Respondents using Tissue Culture Now	% of Respondents	75.00%
% of Respondents using Bits / Pieces From Their Own Farm - Now	% of Respondents	25.00%
% of Respondents using Bits / Pieces From Other Farms / Sources - Now	% of Respondents	0.00%
% of (Protected) Farm Area using Tissue Culture Now	% of Hectares	85.33%
% of (Protected) Farm Area using Bits / Pieces From Their Own Farm - Now	% of Hectares	14.67%
% of (Protected) Farm Area using Bits / Pieces From Other Farms / Sources - Now	% of Hectares	0.00%
Adoption of Physical Biosecurity Measures / Elements (9 Elements)		
% of (Protected) Farm Area Now With:		
1. Biosecurity Signage	% of Hectares	99.12%
2. Minimized Access Points to Farm	% of Hectares	93.97%
3. Defined Movement Processes Between Non-Contiguous Portions	% of Hectares	49.58%
4. Point-to-Point or RORO Systems for Produce Transport	% of Hectares	22.32%
5. Specific Earthworks for Biosecurity	% of Hectares	49.83%
6. Trained Biosecurity Officers Employed / Engaged	% of Hectares	70.99%
7. Fenced All of Farm (Protected) Area	% of Hectares	28.33%
8. Fenced Some of Farm (Protected) Area	% of Hectares	63.33%
9. Defined Zoning System in Operation within Farm	% of Hectares	87.38%
10. Footbaths or Footware Exchanges Used by All Farm Entrants	% of Hectares	97.46%
Average Elements out of 10	Number / 10	6.90

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MANAGEMENT PRACTICES SUMMARY

ALL FAR NORTH QLD PARTICIPANTS

Adoption of Biosecurity Record Keeping Systems (8 Elements)		
% of (Protected) Farm Area Now With …. In Place		
1. Visitors Register	% of Hectares	54.67%
2. Vehicle Movement Register	% of Hectares	13.91%
3. Decontamination Register	% of Hectares	0.76%
4. Biosecurity Training Register	% of Hectares	41.89%
5. Banana Planting Register	% of Hectares	27.49%
6. Waste Disposal Register	% of Hectares	0.79%
7. Continuous Disease Surveillance Testing & Recording	% of Hectares	5.43%
8. Active Checking of Past Exposure / Work Locations for New Employees	% of Hectares	75.04%
Average Elements out of 8	Number / 8	2.22
Perspectives on Biosecurity For TR4 Management		
% of Respondents Attempting to Adopt MAXIMUM POSSIBLE measures	% of Respondents	33.33%
% of Respondents Adopting MIDDLE GROUND / PARTIAL Adoption	% of Respondents	63.33%
% pf Respondents Adopting TAKEN NO ACTION	% of Respondents	3.33%
% of (Protected) Farm Area for which MAXIMUM POSSIBLE measures are adopted	% of Hectares	39.86%
% of (Protected) Farm Area for which MIDLE GROUND / PARTIAL measures are adopted	% of Hectares	59.27%
% of (Protected) Farm Area for which NO ACTION HAS BEEN TAKEN	% of Hectares	0.87%
Use of Contractors Since TR4		
% of Respondents Now using Contractors More Than Before TR4	% of Respondents	0.00%
% of Respondents Now using Contractors At Same Level as Before TR4	% of Respondents	86.67%
% of Respondents Now using Contractors Less Than Before TR4	% of Respondents	13.33%
% of Respondents Allowing Contractors to use Their Own Machinery	% of Respondents	10.17%
% of Respondents Allowing Contractors to use The Farm's Machinery Only (no external machinery allow	% of Respondents	89.83%
Other Impacts of TR4		
% of Respondents that have Reduced Producing Area since TR4	% of Respondents	10.00%
% of Respondents that have Knowingly Increased Employees / Employee Hours since TR4	% of Respondents	11.67%
Estimated Capital Expenditure Incurred for Added Biosecurity Since TR4 Per Farm 'Protected' Hectare – ON:		
Total	$ per Hectare	$1,154.52
C: OPERATING KPI's		
BAGGING: Average Bags Applied perlabour Hour	Bags / Hour	30.42
BELL INJECTION: Average Bells Injected per Labour Hour	Bells / Hour	38.75
DE-SUCKERING (SPADE): Metres of Banana Line Spaded Per Labour Hour	Metres / Hour	267.56
DE-SUCKERING (SPRAY / DIESEL / OTHER): Metres Banana line Sprayed / Dieseled per Labour Hour	Metres / Hour	0.00
HARVESTING: Average Bunches Picked and Delivered to Shed or Transhipping point per Labour Hour	Bunches / Hour	41.57
PACKING: Cartons Packed per Packhouse Labour Day (8 Hour Day) (counts all labour in Shed)	Carons / Labour Day	140.36
D: BPM / ENVIRONMENTAL MANAGEMENT		
Surfaces and Surface Protection		
% of (Protected) Farm Area with Minimum 60% Ground Cover (Living or Dead) in Inter Rows	% of Hectares	60.86%
% of Farm Area with At Least 3% Gradient	% of Hectares	20.44%

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Banana Benchmarking Program 2015/16 and 2016/17

MANAGEMENT PRACTICES SUMMARY

ALL FAR NORTH QLD PARTICIPANTS

For Land with Greater that 3% Gradient		
% of Area With Diversion Drains in Place	% of Hectares (3% PLUS)	81.03%
% of Area with Spoon Drain Drainage Structures to Collect Run-Off and Slow Down Flow	% of Hectares (3% PLUS)	84.48%
% of Area with All Drainage Water Leaving Farm by way of a Silt Trap or Similar Structure	% of Hectares (3% PLUS)	55.17%
% of Area with Uniformly Dense Vegetation Buffers, Contour Banks or Other Means of (future) Complian	% of Hectares (3% PLUS)	77.59%
Application of Fertilizer		
% Applied by Fertigation	% of Hectares	67.67%
% Applied by Ground Application	% of Hectares	32.33%
Calibration Frequency		
% of Respondents Calibrating Fertilizer Application Equipment At Least Every 6 Months	% of Respondents	17.18%
% of Respondents Calibrating Fertilizer Application Equipment At Least Every 12 Months	% of Respondents	9.80%
% of Respondents Calibrating Fertilizer Application Equipment Less Often than Every 12 Months	% of Respondents	0.00%
% of Respondents Calibrating Fertilizer Application Equipment Every Time a New Product is Applied (Includes Fertigation Usage)	% of Respondents	73.01%
Record Keeping		
% of Respondents keeping Records of All Soil Tests	% of Respondents	100.00%
% of Respondents keeping Records of All Leaf Tests	% of Respondents	100.00%
% of Respondents keeping Records of All Fertilizer Applications	% of Respondents	100.00%
Types of Record Keeping		
% of Respondents Keeping Electronic Records	% of Respondents	42.87%
% of Respondents Keeping Paper or Hard Copy Recordsonly	% of Respondents	57.13%
Nutrient Application Levels (Targets)		
Average Kg of N Applied per Hectare per annum ON PLANT CROPS	Kg N / Hectare	307.06
Average Kg of N Applied per Hectare per annum ON RATOON CROPS	Kg N / Hectare	322.06
Average Kg of P Applied per Hectare per annum on Banana Crops	Kg P / Hectare	60.11
Average Kg of K Applied per Hectare per annum Banana Crops	Kg K / Hectare	893.92
Source of Setting Nutrient Target Levels		
% of Respondents using Targets Set by an EXTERNAL Agronomist	% of Respondents	70.35%
% of Respondents using Targets Set by an IN-HOUSE Agronomist	% of Respondents	13.91%
% of Respondents using Targets Set by Fertilizer Reseller	% of Respondents	12.70%
% of Respondents using Targets Set by Reference to Historical Records	% of Respondents	3.04%
% of Respondents using Targets Set Baseed on Yield Data	% of Respondents	0.00%
% of Respondents using BEST GUESS Targets	% of Respondents	0.00%
% of Respondents using Targets Set by Other Means	% of Respondents	0.00%
% of Respondents Using Industry Funded Management Tools		
% of Respondents Using Banana BMP	% of Respondents	48.23%
% of Respondents Using Better Bunch App	% of Respondents	6.15%

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BANANA BENCHMARKING (BA 16009)

Now Covering six (6) non consecutive financial years from 2008/09 to 2016/17

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20-Jul-18

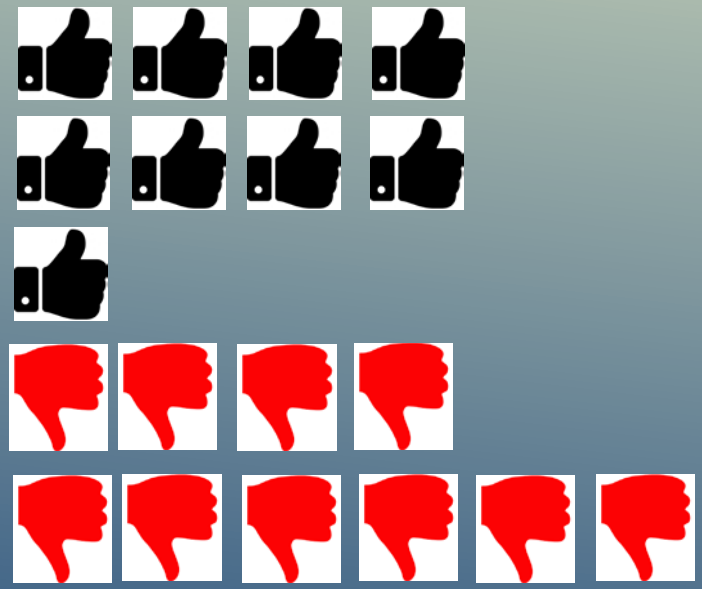
BANANA BENCHMARKING STARTED 2008/09

SINCE BANANA LEVIES STARTED IN 2009/10 (AND UP UNTIL 2016/17)

- Australian Banana Production Increased by 34%
- Australian Population Increased by 10%
- Per capita (per person) Banana Consumption Increased by 21%
- The cost of 1 Full Time Employee Equivalent (FTE) has increased 22%

IN THE SAME PERIOD, FOR FNQ CAVENDISH GROWERS IN BENCHMARKING

- Labour Productivity has Increased by 26%
- Yield has Increased by 32%
- Gross Price has Increased by 2%
- Operating Costs have Increased by 9%
- Cash Profit (EBITDA) has Decreased by (63%)



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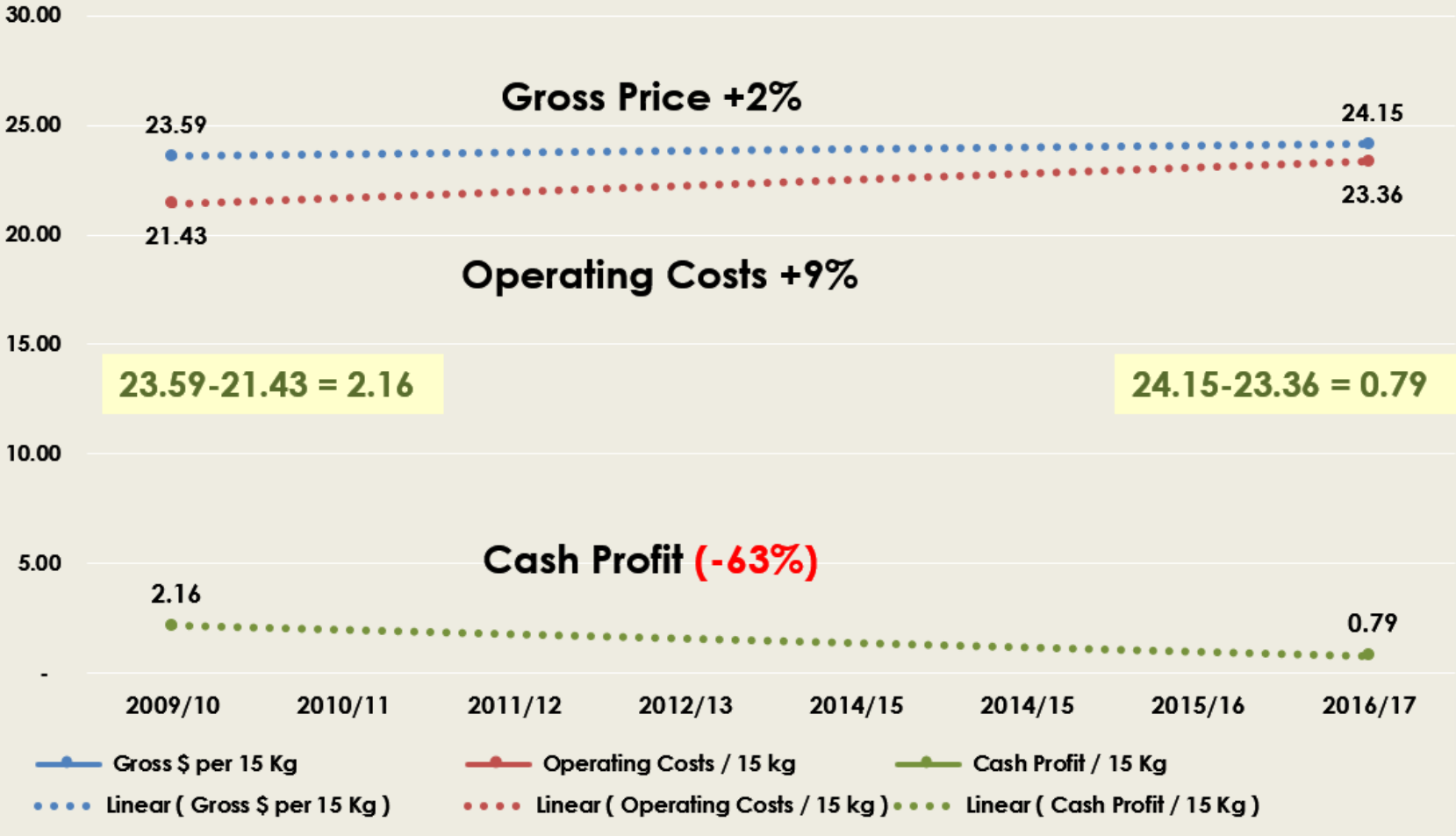
FNQ CAVENDISH GROWERS IN BENCHMARKING

2009/10 VERSES 2016/17



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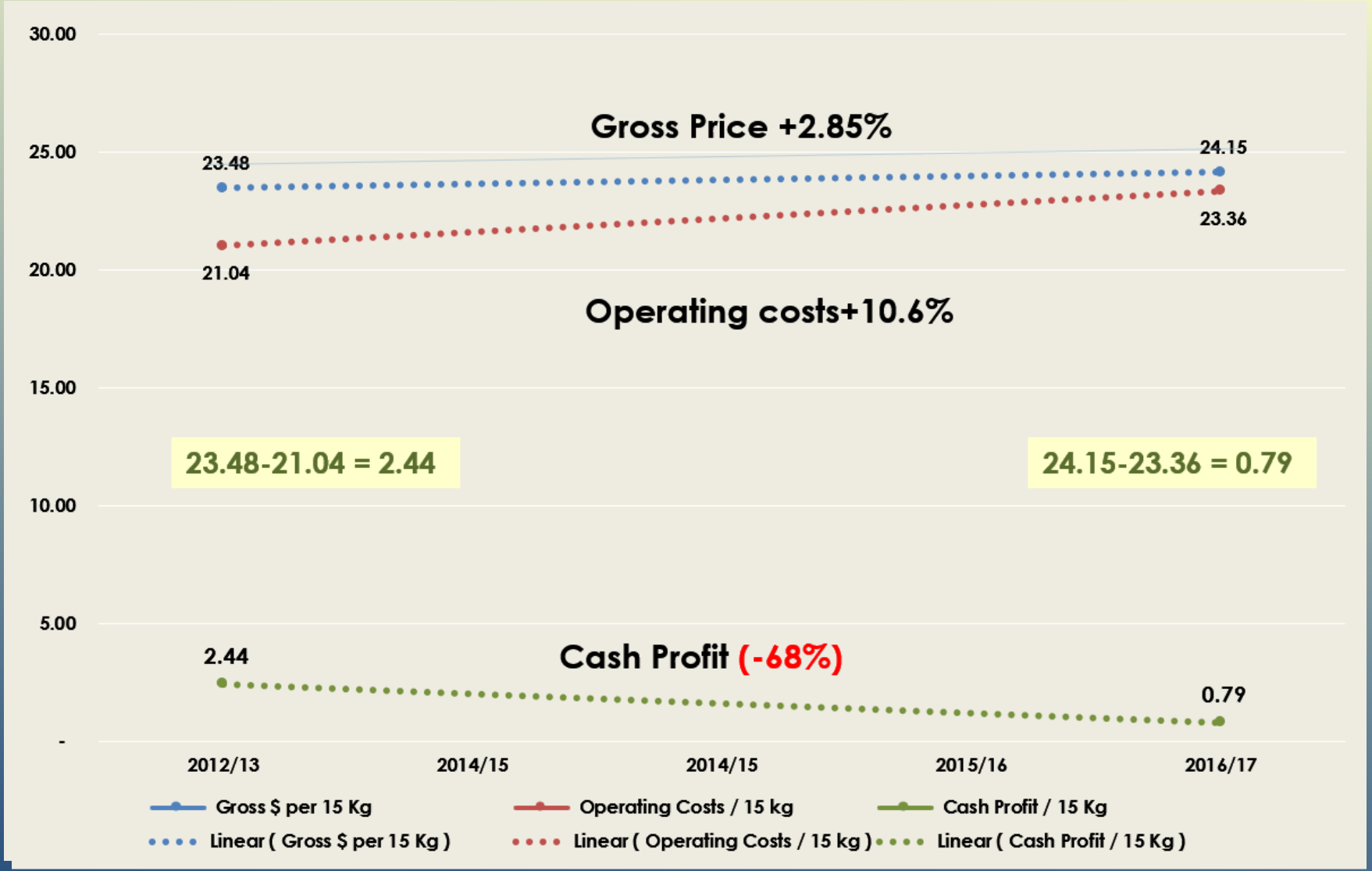
Pinnacle AGRIBUSINESS

FNQ CAVENDISH GROWERS IN BENCHMARKING

20012/13 VERSES 2016/17



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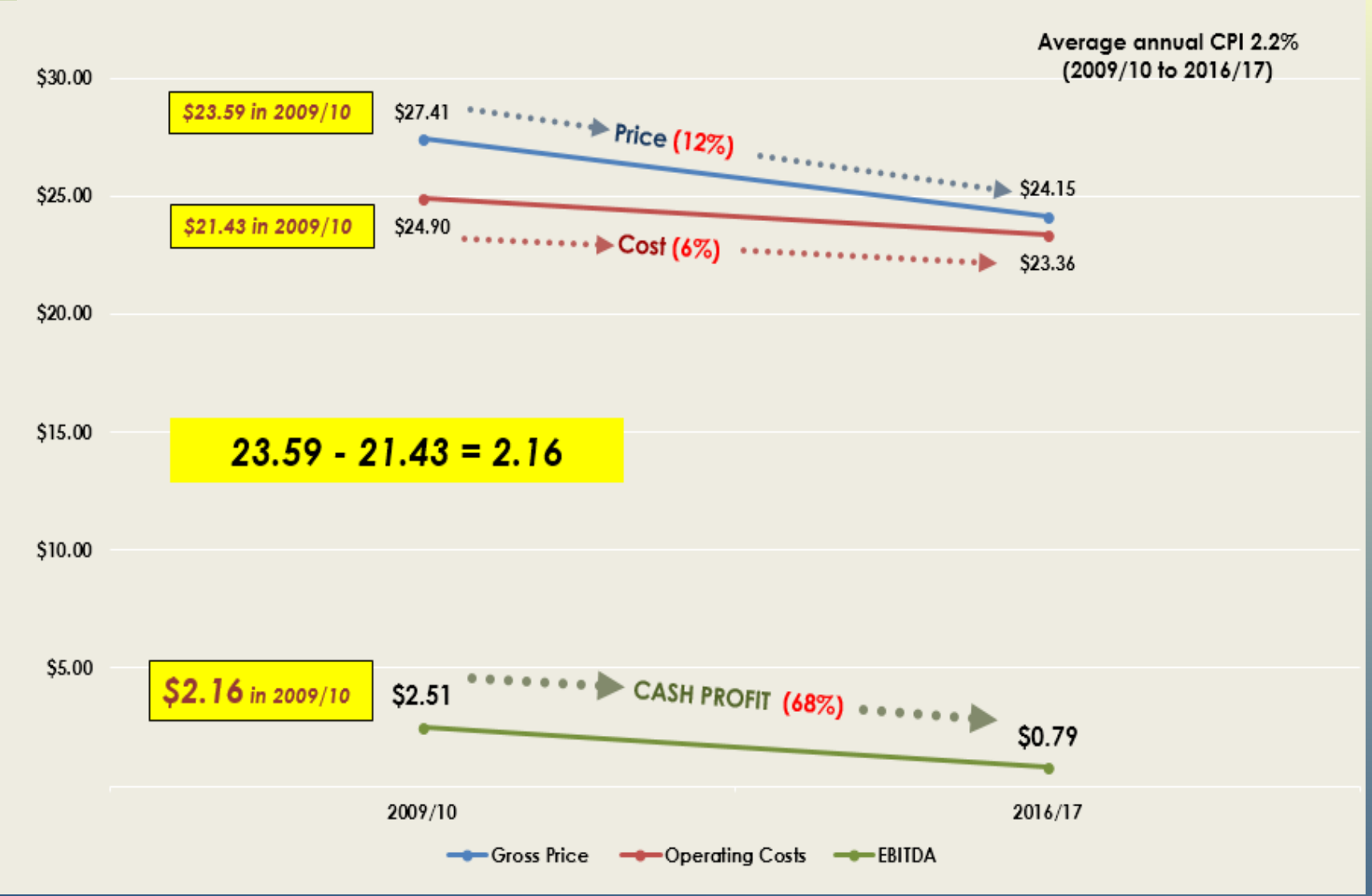
2009/10 Compared to 2016/17 Adjusted for CPI
(i.e. In 2016/17 Dollar Values)



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PRODUCTIVITY, COSTS AND RETURNS

MAJOR COST ITEMS

	Unit	NORTH QLD CAVENDISH 2009/10	NORTH QLD CAVENDISH 2012/13	NORTH QLD CAVENDISH 2016/17
Employment / Labour + Contracting & Consulting + Contract Packing INCLUDING UNPAID FAMILY LABOUR	$ / 15 Kg	9.09	7.87	$8.55
Freight Costs	$ / 15 Kg	3.61	3.74	$3.94
Packaging Costs	$ / 15 Kg	2.14	2.38	$2.78
Marketing and Ripening Costs	$ / 15 Kg	1.90	2.02	$2.67
Chemical and Fertiliser Costs	$ / 15 Kg	2.39	1.83	$2.29
Total for These 5 Largest Cost Items	**$ / 15 Kg**	**$19.13**	**$18.13**	**$20.53**
% of Total Costs in These 5 Items	**%**	**89%**	**86%**	**88%**

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“TOP 10” IN 2016/17 – WHAT DO THEY DO DIFFERENT

On Average Per 15 Kg

- Higher Yields (6%)
- Higher Cartons / Stool / annum (7%)
- Lower Operating Costs (-7%)
  - Lower ‘Top 5 Costs’ (-7%)
  - Lower Labour and Contracting Costs (-13%) and higher labour efficiency (16%)
- More Sold in 13 kg Packs
- Cash Profit 5 X Higher

And are more likely to …

- Irrigate at least daily in peak demand
- Use Water Monitoring Technology
- Use Helicopter for Applying Fungicide ? ?
- Utilise Nurse Suckering
- Have Flatter producing area (more land under 3 degrees grad.)
- Use more P / ha (17%) and K / ha (7%), less N

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BIOSECURITY

- Average $1600 per producing hectare spent by North QLD participants since TR4 Discovery on “New Capital Items”

New approach needed

Industry needs to invest in making sure these investments / installations are “EFFECTIVE”

e.g.

INDUSTRY BIOSECURITY TEAM

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BIOSECURITY

- Footbaths / Shoe Exchange (97%, but how effective?)
- Fencing (64% partially fenced, 28% fully fenced, some not pig-proof)
- Earthworks (51% invested in earthworks for biosecurity)

ENVIRONMENTAL MANAGEMENT

- Groundcover (61% have greater than 60% cover)
- Greater than 3% gradient (20% producing land)
- Silt traps (55% have full capture of run off into silt traps)
- 48% Using Banana BMP, 6% using Better Bunch

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FOR PRODUCTION ECONOMICS

WHAT ARE THE SOLUTIONS

Two Real Options

1. Reduce the cost of production of the product

- No.1: Labour Management Skills, Labour Efficiency, Labour Costs
- No.2: Continued Yield Improvement (of high value outputs)
  - The most profitable have higher yields, which result in lower labour $ per 15 Kg
- **No.3**: Freight, packaging, marketing & ripening costs, chemical & Fert

  - ***(you have less control of these than you do of Labour & Yield)***

2. Increase the value of your product in the market

- Is Bananas competing effectively for consumer attention and support**?**

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Bananas
4 facings / lines

Cavendish: 1 facing
Other 3: 4 isles away

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Apples
13 facings / lines
$2.90 - $5.50 / kg

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Tomatoes
13 facings / lines
$5.90 - $22.50
‘Gourmet’ – at least 3 lines

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Lettuce / Leafy Vege
9 facings / lines
$1.50 - $3.50 / pack

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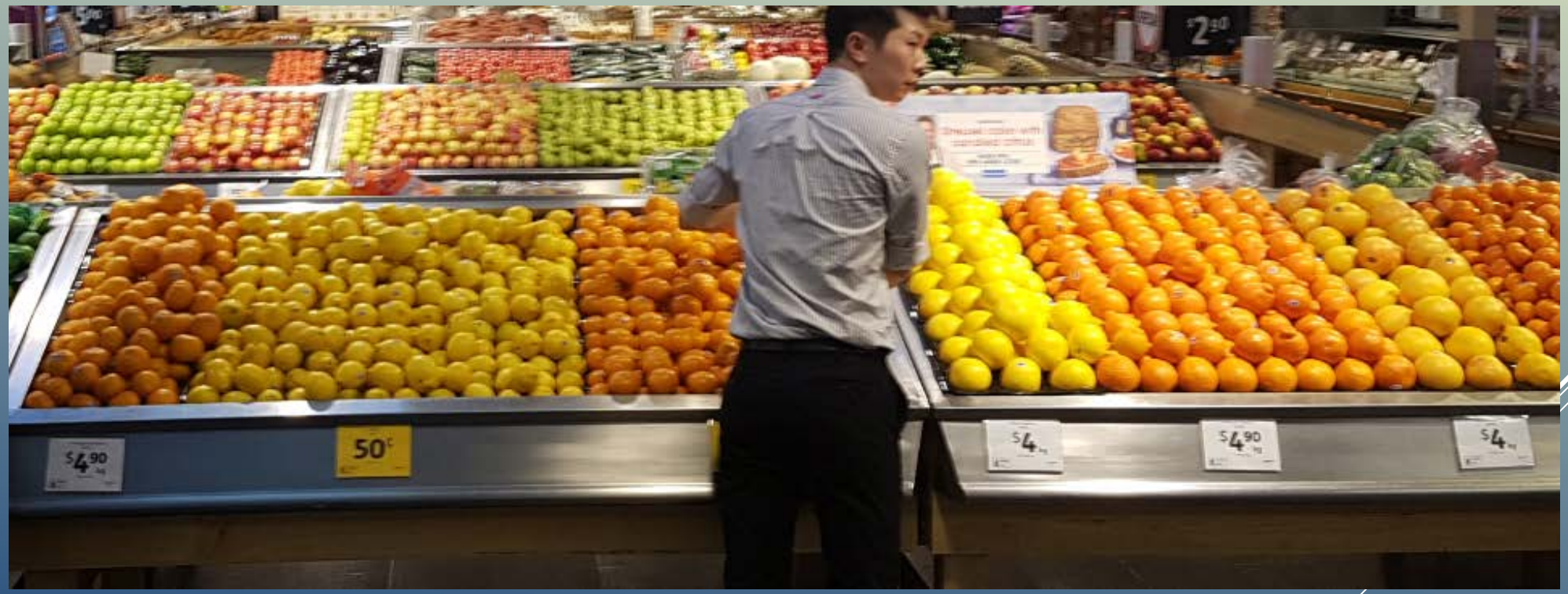
Citrus
16 facings / lines
$2.90 - $4.90 / pack

Navels – 4 lines



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In the late 90's field grown 'Gourmet' tomatoes were to the Tomato Category what Cavendish is to the Banana Category in 2018. It was 98% of the category.

Field grown Gourmet tomatoes were 'light pink', gas ripened, hard and, tasteless. Now <u>even the Gourmet</u> is ripe, red and inviting.

There were 4 different lines / facings of Gourmet in store

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CONCLUSIONS

- The banana industry is no longer sustainably profitable for many growers.
- Other industries have been here, e.g. Apples *(Red Delicious)*, Tomatoes *(Field Gourmet)*, Citrus *(Imperial, Valencia)*, Leafy Vegetables *(Ice Burg)*, Potatoes, others.
- **With recent changes to marketing and packaging (15 kg mixed size), and**
- **Impressive improvements in key productivity measures (over 7 years):**
  - **Yield 36%, (the range in 2016/17 was 25 tonnes to 65 tonnes per hectare)**
  - **Labour Use Efficiency 26% (measured in tonnes / FTE / per annum, range 62 to 120)**
- **Costs are increasing at more than 3 times the rate of returns, and profits are 30% of what they were in 2009/10**

- The industry has a 'single product' offer to consumers, other produce categories are diverse (multiple facings / lines)
- Bananas needs to invest in its category - Multiple products (*doesn't have to be multiple varieties*), and a range of price-point / value propositions.
- Managing TR4 is important, so is putting some value back into the product.
  - Unlikely to be achieved by more $ and effort to increase per capita consumption of Cavendish XL & L.
- The Banana Category needs to be an exciting and changing assortment of products, that makes shoppers stop and think which one to buy

Market / Category Development **Labour / Process Re-engineering** **Yield** **Industry Biosecurity Unit**

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