# Banana Enterprise Performance Comparison

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Project Number: BA09037

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# BANANA ENTERPRISE PERFORMANCE COMPARISON

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**CDI Pinnacle Management Pty Ltd**

**Project No. BA09037 (May, 2011)**

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**Purpose of Report:**

BA09037 is a banana benchmarking project, which provides business and economic comparative performance data for 46 banana growers in Australia. In addition, the project documents key production, packing and marketing systems data in use by each grower. The principle goal of the project is to give growers a tool that that will enable them to adopt production, packaging and marketing systems that will improve their productive and financial viability.

The purpose of this report is to:

- document the approach / methodology undertaken by the consultants in conducting this project.
- provide by way of example the quantitative and qualitative benchmarking reports that have been provided to each of the grower participants.
- provide 'industry' average data and observations on their importance on a broad range of key performance indicators (KPI's) relating to the average economic and productive performance of all of the growers in the study.
- provide recommendations to the Australian banana industry for future action.

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# Terms and Definitions

| Term | Definition |
|---|---|
| Business expenses | Costs incurred in the operation of the business that are not directly related to the volume of production of bananas eg. insurance, repairs & maintenance. |
| Cost of goods sold (COGS) | Costs incurred (on-farm and off-farm) that are directly related to the volume of production of bananas. |
| FTE | A person who workers on average 40 hours per week for 48 weeks per year. |
| Gross profit | Total income less COGS. |
| Gross profit margin | Gross profit / total income expressed as a %. |
| Net banana sales | Total banana sales less off-farm costs. |
| Net profit | Gross profit less business expenses or total income less COGS and expenses. For this project, the majority of growers do not have a provision for depreciation and amortisation. |
| Net profit margin | Net profit / total income expressed as a %. |
| Off-farm costs | The value of freight outwards + levies + marketing fees and commissions + ripening fees. |
| On-farm costs | All costs incurred 'inside' the farm gate. |
| Planted area | The area planted to bananas in 08/09. |
| Total banana area | The total area developed for the planting of bananas. Total banana area equals the fallow area + planted area. |

# Media Summary

BA09037 is a banana benchmarking project (Banana BM), which provides business and economic comparative performance data for 46 banana growers in Australia. In addition, the project documents key production, packing and marketing systems in use by each grower. The purpose of this project is to assist banana growers achieve better business practices to improve their economic performance.

Growers involved in the project were from Queensland, New South Wales and Western Australia. A range of business sizes were included (<$250k to >$10 million turnover). Both Cavendish (97% of production) and Lady Finger (3% of production) varieties were included.

The growers participating in this project represent 22.0% of the estimated area under banana production in Australia based on the average estimated area of production made by the Australian Bureau of Statistics from 2007 to 2009 as provided by the ABGC.

The average net farm profit margin for all growers in the project was 10.7% (not inclusive of depreciation and amortization). The average net profit was $5,026 per hectare.

The key observations from the analysis of the collective data for the Top 10 farms compared with the remainder are that they:

1. are 39.6% more productive (in terms of cartons per hectare).
2. generate net sales returns that are 7.1% higher per carton.
3. have 25.9% lower on-farm costs production costs per carton.
4. have labour costs (owners, employees and contractors) 25.5% lower per carton.
5. have freight costs that are 14.1% lower per carton.
6. overall, have net profit of $16,064 per hectare compared with an average of $3,114 for the whole group.

The criteria used to determine if a farm was inside or outside the Top 10 farms was on the basis of net profit per planted hectare. Other measures did not adequately take into consideration the combined impacts of yield, net returns and production costs.

The Top 10 growers comprised businesses from every business size group (<50k, 50-<75k, 75k-<150k, >150k cartons), although proportionally there were less growers in the smallest group size. However, generally business size plays little role in the potential to be included in the Top 10. Two ‘groups’ of growers were not in the Top 10, those who supplied central packhouses and corporate growers.

This project highlighted significant differences in the farm management activities of individual growers which in turn are leads to a wide variation in business profitability. However, the data compiled relates to a single year, 2008/09, and is not necessarily indicative of industry performance across multiple years.

Note: The second phase of the project is currently being implemented, which is expected to increase the reliability of the data.

# Technical Summary

Previously, the Australian banana industry lacked a mechanism by which it was able to compare itself across a variety of production and financial parameters with its international competitors. Consequently, the domestic industry does not know where it 'sits' in terms of international best practice.

Further, individual growers have also lacked the ability to compare how they perform in comparison with other growers across a range of production, packaging and marketing activities. The inability to compare or 'benchmark' their activities has resulted in growers not knowing whether or not they perform in the top, middle or bottom against their industry peers. This knowledge is valuable to growers so that they can:

- Focus on those activities which result in the greatest potential economic gain;
- Not waste resources on activities that are not going to benefit their business, either due to the lack of incremental gain, because they are already achieving high industry standards.

From a more holistic level, the project results allow industry to focus on investment areas which have the greatest potential impact and further allow industry to measure the impacts of R&D adoption on improved economic and productive performance.

The project involved growers being interviewed face to face to provide responses to detailed questions about their production, packing and marketing activities (see Appendix 1) in 2008/09. Separately, growers provided business Profit & Loss information, harvest statistics and full details about their farms. Microsoft Access was used to develop a purpose built program called 'Banana BM', to store and analyse the data. A series of KPI reports (qualitative and quantitative) were provided to growers by email and hard copy.

Banana BM has the ability to deliver reports on a broad series of selection criteria, e.g. grower location, business size, packing type and variety. For example, when data is being presented to North Queensland growers, CDIPM will provide data specific to that region. This flexibility is useful in enabling industry to measure specific outcomes or performances for a wide variety of sub-groups.

Key observations from the analysis of the collective data for the Top 10 farms compared with the remainder are as follows:

1. The net margin for the Top 10 growers is 26.7%, whereas the average for all growers is 7.7% and for the bottom 35 growers is 3.05%. The top four growers had a net margin that ranged from 29.7% to 39.3%.

2. Net profit margin per hectare is the measure used on whether or not a grower is in the Top 10 of growers. Business size is not an indicator of growers who were in the Top 10. In the Top 10, two growers produced less than 50k cartons, four growers produced 50-75k cartons, one grower produced 75-150k cartons and three growers were growing more than 150k cartons.

3. As a group, growers who produced 75k-150k cartons were the most profitable.

4. The number of cartons harvested per hectare 39.6% higher for the Top 10 growers compared to the overall average. A primary reason for this may be the strong crop management skills of these growers as they had the ability to produce significantly larger percentages of extra large bananas compared with other growers. This is discussed further in the Results section

5. Labour cost per carton (employed labour, contractors, and owners' labour) for the Top 10 growers is $5.72 compared to $7.18 per carton for the overall average and $7.53 for those growers

outside the Top 10. This is indicative of these growers having more developed HR management skills and more efficient farming and packing systems.

6. Average sales return per carton is 7.1% for the Top 10.

7. Fertiliser and chemical usage costs are 9.8% lower than for the remaining growers. The lower costs per carton are expected to be largely due to the higher yield per cartons. Fertiliser and chemical usage costs per hectare were not formally conducted as part of this analysis although our observations suggest the Top 10 actually have higher fertiliser and chemical costs per hectare.

8. No growers in the Top 10 were corporate growers or were growers who had their fruit packed by contract packers.

Table 1 provides a listing of the KPI Reports produced during the course of this project, a description of the information contained in this report, and to whom the reports are available.

Table 1: Listing of KPI Reports, Description of Information Contained and Who Reports are Available To

| Report Name | Description | Availability of Report |
|---|---|---|
| Individual Grower Benchmarking Report (Financial) | Individual growers financial benchmarking data compared with selected other growers. Grower supplied with a listing of the KPI's, its value, the minimum and maxiumum of the KPI for the selected group, the selected group average KPI value, and that grower's position or ranking within the selected group. | Confidential to participant growers |
| Individual Grower Benchmarking Report (Non-Financial) | Individual growers **non-**financial benchmarking data compared with selected other growers. Grower supplied with a listing of the KPI's, the value, the minimum and maxiumum of the KPI for the selected group, the selected group average KPI value and that grower's position or ranking within the selected group. | Confidential to participant growers |
| Selected Grower Group Benchmarking Report (Financial) | For a selected group of growers, the report shows the financial KPI measured, the minimum and maximum value (where appropriate) for the selected group and the selected group average KPI value. | Available to industry |
| Selected Grower Group Benchmarking Report (Non-Financial) | For a selected group of growers, the report shows the **non-**financial KPI measured, the minimum and maximum value (where appropriate) for the selected group and the selected group average KPI value. | Available to industry |
| KPI Charting | For a selected KPI, a graph that depicts the range of values that each grower generated. Grower identity is protected by a grower specific ID number. | Either confidential to participant growers or available to industry depending on chart at Appendix 6 |
| Qualitative Benchmarking Report | For a selected group of growers, the report shows the qualitative information supplied by the grower sample to questions relating to | Confidential to participant growers |

| Report Name | Description | Availability of Report |
|---|---|---|
| | production, packing and marketing. | |

Further, industry now has information that can be used in applicable forums such as other supply chain members, government or financiers) to support the interests of banana growers e.g. objective / real cost of production.

Industry also now has a tool which can be used to evaluate data on the focus areas that will provide the greatest contribution to growers. Following the completion of research, researchers and others will be able to use the base information provided in the calculation of cost benefit analysis.

This project highlighted significant differences in the farm management activities of individual growers which in turn are leading to a wide variation in business profitability. However, the data compiled relates to a single year, 2008/09, and is not necessarily indicative of industry performance across multiple years. Compilation of at least two years of additional data from the existing grower group will provide more statistical accuracy. Statistical accuracy will be further enhanced by increasing the number of growers involved to achieve 30% of the productive area under production. Further, by having up to three years of data growers will be able to identify the benefits (or costs) of any changed practices. Previous experience suggests that, if extended, the project will have no difficulty in enrolling new growers as each sees the commercial applicability of project outcomes.

If the project is extended, the consultant will work with growers to achieve greater harmonisation or standardisation in respect of how data is collected.

Key industry performance data including additional detail on the project has been made available to growers (participating and non-participating) via a series of local grower associations, shed meetings and teleconferences.

Note: The second phase of the project is currently being implemented, which is expected to increase the reliability of the data.

# Introduction

Previously, the Australian banana industry lacked a mechanism by which it is able to compare itself with its international competitors across a variety of production and financial parameters. Consequently, the domestic industry does not know where it 'sits' in terms of international best practice.

Further, individual growers have also lacked the ability to compare how they perform in comparison with other growers across a range of production, packaging and marketing activities. The inability to compare or 'benchmark' their activities has resulted in growers not knowing whether or not they are perform in the top, middle or bottom against their industry peers.

In 2009, Horticulture Australia Ltd (HAL), in consultation with the Banana Industry, requested consultancy proposals that were able to address the following:

*In order to maximize industry profitability it is important to drive cost out of the supply chain, but at the same time, maximise product quality and utilize environmentally sound practices. One way to identify areas for improvement throughout the supply chain is to compare the performance of individual businesses or individual supply chains.*

*This project aims to identify and document industry best practice throughout the supply chain and implement a mechanism for industry participants to compare and improved their performance.*

CDI Pinnacle Management's (CDIPM) experience in other agricultural industries, in particular dairying, grain and animal production, had shown that where growers are able to compare their business performance, overall industry performance has been raised as growers seek to become better growers in comparison with their neighbours. CDIPM's experience is that KPI comparison used in conjunction with compilation of detailed knowledge of how growers 'grow, pack and market bananas, would be the most beneficial approach in terms of improving individual business as well as industry performance.

Benchmarking gives the opportunity for businesses and its industry to measure. By being able to measure, businesses and industry are able to assess the implications of changed practices. A failure to measure effectively makes the assessment of changed practices only guesswork.

The Australian banana industry has undertaken two prior benchmarking studies, both of which varied considerably in methodology, factors which we consider contributed to neither project having any ongoing success. The KPI's investigated were significantly different from those compiled in this study. Neither previous study involved the compilation of database software which allows for benchmarking analysis beyond one year.

During the course of this project, CDIPM developed a detailed data collection and analysis tool that enables 46 growers (Pers. comm. ABGC) who represent 22% of the total area of Australian banana production) of the current estimated area of banana production in Australia, to compare their economic performance across a wide variety of KPI's. Further, through a series of non-financial KPI's, e.g. labour and production, the growers are able to again compare how their businesses are operated compared to other growers. And finally, through having been asked an extensive array of questions that relate to the production, packaging and marketing aspects of their businesses, the growers are now able to see how their counterparts are addressing key operational areas of their business. All this information is collected and reported confidentially.

Through the provision of this information, individual growers and industry are expected to benefit by:

1. Industry better understanding the key areas that will make the greatest difference to banana growers' livelihoods for future investment in R&D.

2. Industry being able to measure the impact of the outcomes of R&D on the economic and productive performance of growers.

3. Growers better understanding where they are performing well against their peers, and more importantly, where improvement is required.

4. Growers better understanding what can be achieved by the adoption of ‘best practice’ and the impact that this potentially may have on their economic performance.

5. Growers better understanding what constitutes ‘best practice’.

# Materials and Methods

This project involved two distinct series of activities, data collection, data analysis and reporting. The approach undertaken to complete these activities is detailed in the following sections.

## Data Collection Function – General

The approach undertaken by CDIPM for the collection of data from each of the grower contributors was as follows:

1. In February, 2010 the Australian Banana Growers Council (ABGC) emailed all growers inviting their participation in the project. Only two growers responded. This activity served two purposes:

    a. Getting growers involved who wanted to contribute, as opposed to having growers participate despite the fact that they may not really want to.

    b. Ensuring that no grower at some stage in the future could argue that they were not provided with the opportunity to participate.

2. CDIPM identified growers through a series of touchstones in each of the major production regions. These touchstones were familiar with the growers in each of the major regions, their approximate business size and potential willingness to contribute. The grower database is confidential to CDIPM.

3. The sampling methodology utilized was a mixture of growers numbers versus production volumes. We are satisfied with respect to the numbers of growers involved. There is a wide variation of business size. Without having any objective data regarding business sizes we have used a best approximation to select the number of growers in each size range, based on consultation with growers and industry liaison persons located in the regions.

4. The number and location of the growers included in the study were: NSW = 4, Carnarvon = 2, North Queensland = 40 (includes Kennedy, Tully, Mission Beach, Innisfail, Palmerston and Atherton Tablelands). All major production regions have had growers included.

5. Each grower was initially contacted by telephone, where CDIPM discussed:

    a. The purpose and goals of the project.

    b. The data collection methodology including the key data areas for which information would be required.

    c. The experience of CDIPM in undertaking similar projects.

    d. The previous experience of the Project Leader in working with growers.

    e. Responses to questions that the grower had about the project.

    f. If the grower required further information, this was provided by a follow up email which confirmed in writing the information to be supplied as well as providing examples of outputs generated from previous projects.

Growers either expressed a willingness to be a project participant, requested additional information, or indicated that they needed to discuss the project with other family or business partners before responding. Only 21% of growers approached declined to be participants

6. An appointment was scheduled to undertake a face-to-face consultation for each grower willing to be participate. Growers were sent an email in advance with a list of information that they may have to source rather than provide from memory.

7. At the interview, to each grower each of the questions was asked. If the grower did not have the information available, a follow up email was sent. This email may also contain points of clarification on data provided as the interviews were 'tidied' up by CDIPM soon after the meeting. Data for the most part was directly entered into Banana BM during the interview. For many growers there were a number of communications in order to complete the data file.

8. There were a total of 10 core areas to the data collection (and subsequent data analysis) for the project. For each of the 10 areas, there were a number of questions and information requested either by way of direct questions or requests for the provision of historical information. The 10 key areas were:

    a. Grower details – business name, address details and contact points.

    b. Employment information

    c. Property information

    d. Production details

        - Site preparation
        - Plant and sucker management
        - Irrigation and fertiliser
        - Pest and disease
        - Bell emergence and bagging
        - Bunch management

    e. Harvest details

    f. Packing operations information

        - Own packing (pack own fruit only)
            - Pre-packing
            - Packing
            - Post-packing
            - Transportation
            - QA

- Own packing (pack own & other fruit)
    - Pre-packing
    - Packing
    - Post-packing
    - Transportation
    - QA
    - Own & contract packing
- All contract packed

g. Harvest statistics

h. Data management

i. Marketing information

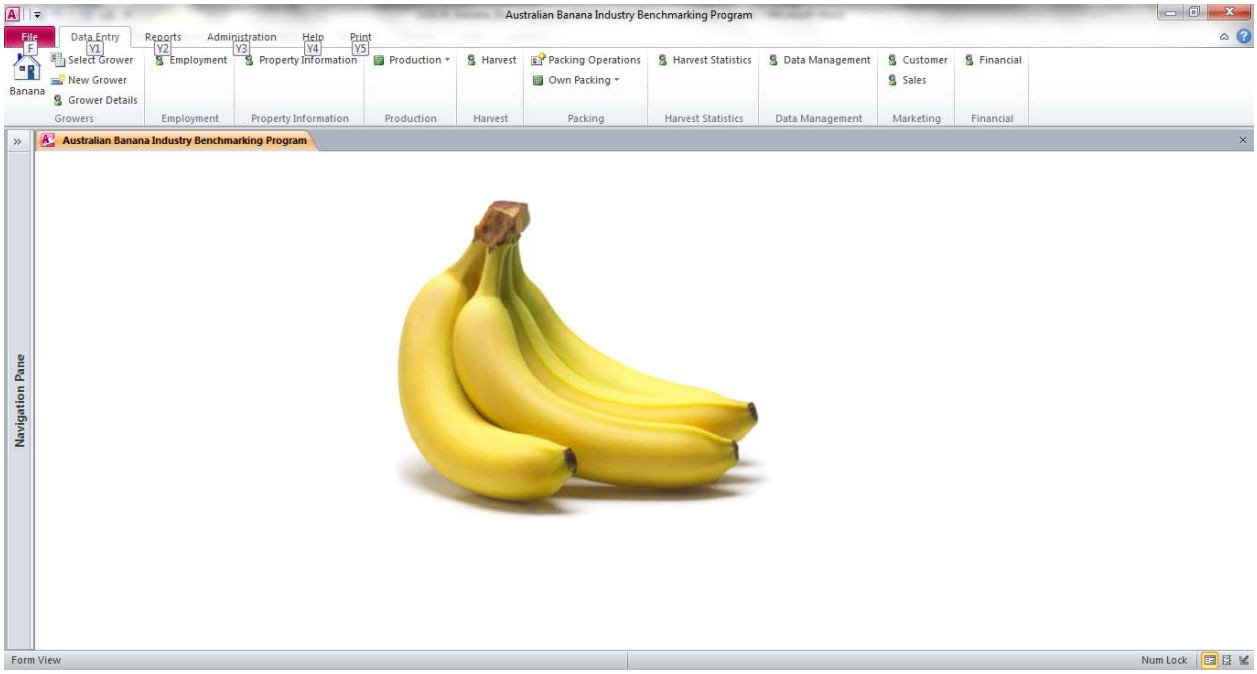
- Customer
- Sales

j. Financial (detailed breakdown of growers' Profit & Loss).

Each section requested responses to a series of detailed questions.

A screen shot of Banana BM data collection menu is provided in Figure 1.

Figure 1: Banana BM Data Entry Screen




The location and size (in 13kg cartons) of growers who contributed to the study is presented in Table 2.

Table 2: Size and Location of Contributing Growers

| Location | <50k cartons | 50k-<75k cartons | 75k-<150k cartons | >150k cartons |
|---|---|---|---|---|
| Atherton Tablelands | 2 | 0 | 0 | 1 |
| Innisfail | 7 | 3 | 8 | 3 |
| Tully / Mission Beach | 4 | 4 | 2 | 3 |
| Kennedy Valley | 1 | 1 | 0 | 1 |
| Far Northern NSW | 2 | 0 | 0 | 0 |
| Northern NSW | 2 | 0 | 0 | 0 |
| Carnarvon | 2 | 0 | 0 | 0 |
| **Total** | **20** | **8** | **10** | **8** |

## Data Collection Function – Financial

A core element of this benchmarking study was the detailed analysis of the Profit & Loss statements of the each contributing grower. Each grower supplied a copy of their Profit & Loss statement or Cashbook for project analysis prior to analysis by their accountant. CDIPM spent considerable time with each grower to understand the nature of the entries and for certainty that the financial statements used represented the financial performance of each business.

In order to ensure that each business was being evaluated on an equal footing, every grower and family member who were active contributors to the business were paid a wage and superannuation equivalent to the estimated salary if employed by a business owner to perform the same role. A number of growers who were paying themselves a wage had those amounts 'backed out' of the financials and a standard

salary package applied. The managers wage varied from $65k per annum for a smaller sized business up to $120k per annum for businesses with turnovers over $5 million per annum. Family members who were not managers were 'paid' a salary of $50k per annum per FTE. For family workers such as sons and daughters who simply worked in the business and were paid a wage by the owners, they were treated as workers and not owners.

## Data Analysis and Reporting Function

Banana BM contains 5 main separate reporting functions. These are:

1. Data summaries. Once they have supplied all of the information each growers is provided with a copy of their own individual data summary. The grower was asked to review the data so any amendments or errors can be corrected.

2. KPI Reports. This includes two main types:

    a. Single Grower – Comparative Other Growers. This enables an individual grower's financial and non-financial KPI results (2 separate reports) to be compared against all or a selection of other contributing growers.

    b. Industry. This enables CDIPM to print out the KPI average results for all or a selection of growers. These results are presented as two separate reports, financial and non-financial.

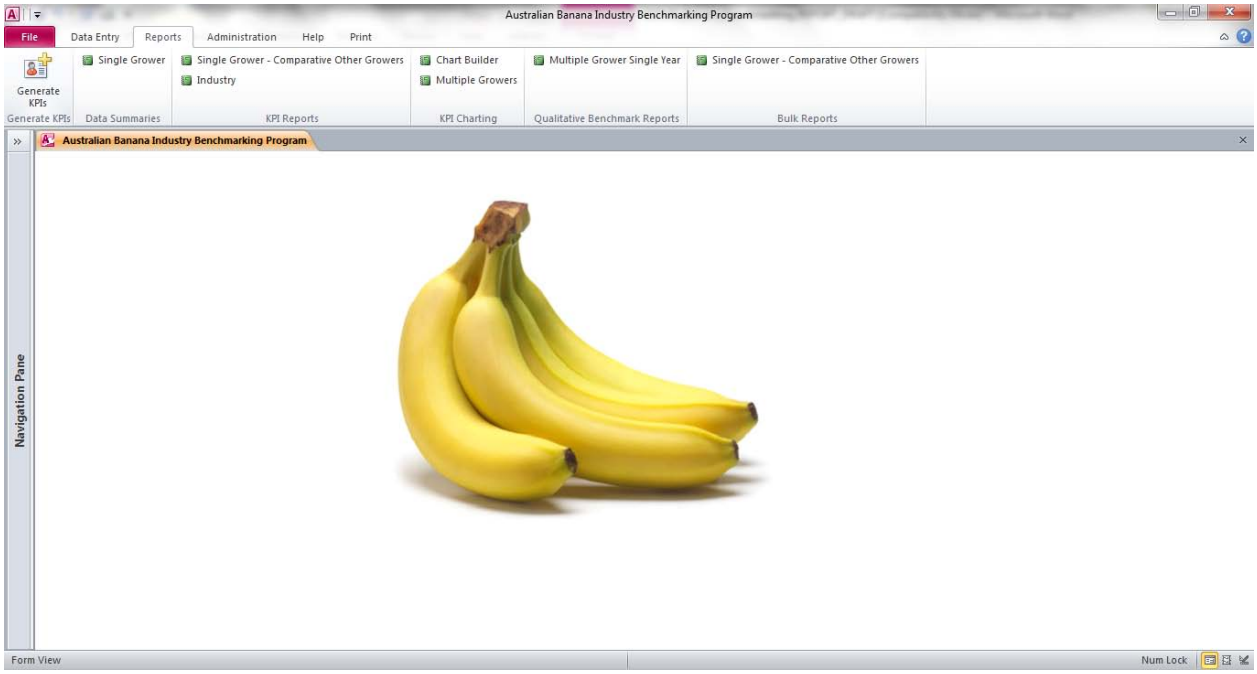
3. KPI Charting. This is a function that permits the development of a graph for any selection of growers for any KPI. Each grower's identity is protected via an identification number (ID) which is known only to them.

4. Qualitative Benchmarking Reports. For a selection of growers, the qualitative benchmark reports provide the responses of every grower to an extensive series of questions. Each question has the grower's response only identifiable via the growers ID.

5. Bulk Reports. This is a function that allows for the rapid development of individual and industry reports for presentation to relevant parties.

A screen shot of Banana BM report selection menu screen is provided in Figure 2.

Figure 2: Banana BM Report Selection Screen




## Detailed Methodology

The agreed core elements of the project methodology as per the original proposal are listed below:

**Step 1: Scope, Process & Engagement ("Getting Started")**

- Agreed on the project scope and the methods of working with the Project Management Committee ("PMC"). Discussed and achieved consensus on any adjustments/agreements to the original project methodology.

- Identified reporting, interaction steps, timings and key contacts for the management of the project with the PMC.

- Discussed and agreed on key focus points for the Benchmarking study. That is, define the KPI's for which information was to be collected and the key variables / factors associated with the production, processing and marketing of bananas. Examined the information compiled by other benchmarking studies and explore what additional information was required. This information was used to develop the first draft of the grower survey questionnaire.

- Identify, discuss and agreed on the sampling methodology for growers in the first round of consultations. Items discussed included how many growers should be consulted and how they should be selected in terms of geography, business size and production technologies in use.

- A selection of growers was identified to become project contributors based on the sampling methodology.

- Sourced key contact information for each of these growers (name, business name, address, phone, mobile, email address and / or fax numbers) from the ABGC.

- Discussed with the PMC on what information each grower were required to be prepared to contribute to the study in order to be included in the first round of consultations.

- Discussed with the PMC how the growers were to be notified of the existence of the project. CDIPM recommended that each grower receive a letter notifying them of study, inviting participation and outlining information requirements. Those growers who indicated they wished to be involved were then be added to list of growers identified by the PMC as project collaborators / contributors.

**Step 2: Grower Consultation Instrument – Develop, Test and Finalise**

- Conducted discussions with selected growers to identify the key production, packaging and marketing operations within their business that impacted greatest on business profitability. From these discussions, a target list of KPI's (quantitative and qualitative) was identified for calculation.

- Input was provided by the ABGC in relation to other more industry-wide KPI's that the industry would benefit having information collected on.

- Using the information gathered relating to key quantitative and qualitative factors that impact on banana production, packing and marketing, to develop a consultation instrument.

- CDIPM tested the consultation instrument with five growers and modified as necessary.

- The PMC signed off on the consultation instrument after having viewed a list of the questions that were to be asked.

**Step 3: Finalise List, Co-ordinate & Undertake One-on-One Visit Program**

- Discussed with the PMC the involvement of other growers who indicated their willingness to participate.

- The growers who contributed to the study were largely identified through a series of grower touchstones. In particular Mr Louis Lardie, Yellow Sigatoka Liasion Officer, ABGC was invaluable through his on-farm involvement in identifying growers who may be willing contributors and who fitted the distribution profiles CDIPM implemented.

- The Northern Territory was not included in the project as they do not have a viable banana industry.

- The 1st Round Grower Consultation List was finalized.

- The meeting program for the first round of grower consultations in Queensland, New South Wales and Western Australia were organized and completed

- Follow-up discussions were held with project participants with regards any gaps / missing information following the initial one-on-one interviews. In a number of instances there were a number of cycles necessary to receive all of the requested information.

- CDIPM interviewed growers operating 51 farms. A total of 46 growers were included in the analysis. One grower has had their financial data excluded from analysis as they were a 'start up' in 08/09 and had very low yields compared to farm operating costs. If included, the statistical analysis would have been skewed significantly on the calculation of the minimum and maximum of the ranges.

**Step 4: Software Development**

- Used Microsoft Access to develop a capture and analysis program for the data collected from banana growers.
- The growers' identity was preserved through the use of a numerical grower ID system.
- Once software development was completed, all quantitative and qualitative data was entered.
- Individual grower reports / data were provided to each contributing grower for sign-off/verification prior to industry reports being circulated.
- Note: CDIPM is yet to hold a discussion with the PMC about the protocols to be followed in respect of data access.

**Step 5: Compilation and Presentation of Draft Findings**

- Insights / Planning: Using the results of the Benchmarking and KPI study and feedback resulting from the consultation phase a series of recommendations were developed. These recommendations included strategies aimed at improving industry performance and strategies for individual businesses which may be delivered via industry organisations / providers going forward into the future.
- A brief report providing top-line information in respect of the quantitative and qualitative information gathered from the benchmarking study was provided by way of a draft report.

**Step 6: PMC, HAL and / or ABGC De-Briefing**

CDIPM provided a draft report to HAL for consideration and comment. These comments were included in the draft report. A project de-briefing has not been provided to HAL. A number of briefings were provided to HAL and the ABGC during the course of the project. :

**Step 7: Communication of Project Findings**

1. Each contributing grower was provided with an electronic copy of his/her own individual benchmarking data, comparisons with all growers (KPI and qualitative data) and also with 'like' growers.
2. CDIPM undertook general industry presentations in the following regions regarding findings and key recommendations :
    a. Kennedy Valley (North Qld) – shed meeting
    b. Innisfail / Tully (North Qld) – general LGA meeting
    c. Atherton Tableland (North Qld) – shed meeting
    d. Coffs Harbour (NSW) – general LGA meeting
    e. Carnarvon (WA) – video conference

**Step 8: Finalisation of Written Project Report**

**Step 9: Project Completion**

## Why This Methodology

Our discussions with two parties indicated that the previous banana benchmarking industry studies met with limited success and that some growers may be skeptical towards undertaking “another” benchmarking study.

Therefore, CDIPM needed to develop a project methodology that ensured ‘buy in’ from the growers so that they considered it a worthwhile investment of their time to contribute to.

CDIPM’s approach has proven to be successful in other agricultural industries. Our approach in terms of addressing some of the issues raised above included:

1. Contacting individual growers and arranging face-to-face meetings with the growers to ‘walk them through’ the aims of the project and what level of information would be required from participants. We have found this achieved ‘buy-in’ from the growers.

2. CDIPM organising and completing face-to-face interviews to gather information, rather than relying on the grower to complete the forms when (and if) they are able (or willing) to.

3. Involving only senior CDIPM in the project. In this instance the project was managed and conducted by Shane Comiskey who has managed the other benchmarking projects as well as having extensive experience in horticulture, having been a farmer in North Queensland. By being able to understand and appreciate production issues, growers had a greater level of confidence in providing their ‘sensitive’ commercial information.

4. Operating the benchmarking program from a single central location. The information provided by growers has a maximum of two custodians who are responsible for data entry and management of the program. In addition to having confidentiality agreements in place, the custodians are required to destroy all hard copy of provided information once it has been entered into the program.

5. Having each grower’s identity kept confidential with each grower being identified by a numerical ID number.

6. Having all KPI’s calculated in formats that do not allow the identity of specific growers. For instance we report not on gross sales but on gross sales per box etc.

7. Personally contacting individual growers so as to ‘walk them through’ what were the aims of the project and what level of information that was required from participants. This initial contact was followed up with an email or fax confirming the types of information required and showing the results of previous benchmarking projects to the growers so as to demonstrate how this project would be beneficial to them. From there a follow up phone call to confirm their willingness (or not) to be involved in the project was undertaken. Arrangements were then made for a face-to-face interview with the grower to collect the information required.

# Results

## Introduction and Reporting

The project involved growers being interviewed face to face to provide responses to a detailed series of questions relating to their production, packing and marketing activities in 2008/09. Additionally, data was obtained about their property (banana block sizes, age, planting material, irrigation types), harvest statistics, hours worked and financial statements. This data was entered into a purpose built access software program called 'Banana BM'.

This data was then analysed to calculate a set of KPI's for each business. Each business, where applicable, was ranked against the other growers, enabling growers to see how they performed compared to others. Each grower received a Financial and Non-Financial KPI report which showed their values for a particular KPI, the high and low range for the sample for that KPI, sample average and ranking. Growers were also provided with graphical representations for core KPI's which indicated the performance value for all growers in the sample. Growers and others are able to access the sample average data by way of a separate series of reports currently referred to as Industry Financial and Non-Financial KPI reports.

Further, the responses to each production, packing and marketing question was tabulated into a series of qualitative reports. Each grower included in the study is able to view the responses from every other grower. Again, each grower's identity is protected by displaying only a numerical ID.

The list of reports supplied to each grower, a description of the data included in each report, and the location of an example of a report, is provided in Table 3. The reader should note that the reports located in Appendix 2 and 3 represent the findings from an existing grower and that grower's identity has been removed from the report title.

Table 3: List of Reports Supplied to Each Grower

| Report Name | Description | Location of Example |
|---|---|---|
| Individual Grower Benchmarking Report (Financial) | Individual growers financial benchmarking data compared with selected other growers. Grower supplied with a listing of the KPI's, its value, the minimum and maxiumum of the KPI for the selected group, the selected group average KPI value and that growers position or ranking within the selected group | Appendix 1 |
| Individual Grower Benchmarking Report (Non-Financial) | Individual growers **non-**financial benchmarking data compared with selected other growers. Grower supplied with a listing of the KPI's, the value, the minimum and maxiumum of the KPI for the selected group, the selected group average KPI value and that grower's position or ranking within the selected group | Appendix 2 |
| All Growers / Industry Group Benchmarking Report (Financial) | For a selected group of growers, the report shows the financial KPI measured, the minimum and maximum value (where appropriate) for the selected group and the selected group average KPI value. An electronic copy of these reports | Appendix 3 |

| Report Name | Description | Location of Example |
|---|---|---|
| | have been provided as an adjunct to this report. | |
| All Growers / Industry Group Benchmarking Report (Non-Financial) | For a selected group of growers, the report shows the non-financial KPI measured, the minimum and maximum value (where appropriate) for the selected group and the selected group average KPI value. An electronic copy of these reports have been provided as an adjunct to this report. | Appendix 4 |
| List of Financial and Non-Financial All Growers / Industry Group Charts | Shows the list of graphs provided to growers in electronic format. Examples of the graphs provided to growers are provided throughout this report. An electronic copy of these reports have been provided as an adjunct to this report. | Appendix 5 |
| List of Qualitative Reports | Shows the list of qualitative reports provided to growers in electronic format. Each report shows shows the qualitative information supplied by the grower sample to questions relating to production, packing and marketing. An electronic copy of these reports have been provided as an adjunct to this report. | Appendix 6 |
| Example of Qualitative Report | For a selected group of growers, the report shows the qualitative information supplied by the grower sample to questions relating to production, packing and marketing. | Appendix 7 |

## 'Industry' Financial Performance

Table 4 provides a summary of the gross financial performance of 45 businesses, with one grower having been excluded as their data would have skewed the minimum and maximum calculations for the majority of KPI's.

Table 4: Summary of Industry Gross Farm Financial Statistics

| KPI Name | Min | Max | Average |
|---|---|---|---|
| Average business net banana sales ($) | | | $2,066,813 |
| Average banana sales per planted ha ($/ha) | $15,267 | $63,492 | $42,230 |
| Average banana sales of total banana area ($/ha) | $14,946 | $56,590 | $39,473 |
| Average cost of goods sold ($) | | | $1,736,029 |
| Average COGS per planted ha ($/ha) | $14,724 | $58,703 | $35,471 |
| Average COGS per ha of total banana area ($/ha) | $14,414 | $58,703 | $33,156 |
| Average business gross profit ($) | | | $378,684 |
| Average gross profit per planted ha ($/ha) | -$11,441 | $31,488 | $7,607 |
| Average gross profit per ha of total banana area ($/ha) | -$11,441 | $28,291 | $7,110 |
| Average gross profit margin (%) | -42.2% | 45.1% | 17.7% |
| Average business expenses ($) | | | $209,242 |

| KPI Name | Min | Max | Average |
|---|---|---|---|
| Average expenses per planted ha ($/ha) | $1,530 | $13,649 | $4,275 |
| Average expenses per ha of total banana area ($/ha) | $1,530 | $13,649 | $3,996 |
| Average business net profit ($) | | | $163,041 |
| Average net profit per planted ha ($/ha) | -$14,049 | $25,163 | $3,331 |
| Average net profit ha of total banana area ($/ha) | -$14,049 | $22,609 | $3,114 |
| Average net profit margin (%) | -51.8% | 39.3 % | 7.7% |

The key findings from this analysis are:

1. The average net banana sales per business were $2,066,813. This figure is after all commission and marketing charges have been deducted.

2. The average banana sales per planted ha are equivalent to $42,230 per ha. This figure is useful from a budgeting perspective for new and existing businesses.

3. COGS represent 89.2% of total business operating costs, expenses (or overheads represent 10.8%). These figures indicate a significant variable cost of production. However, the reader should not interpret that if no banana production occurs within a period, 89.2% of the costs this to mean are not incurred. A grower is still required to undertake plantation management activities and will use field labour largely irrespective of the production volume achieved.

4. The average business net profit is $163,041. This figure does not include a provision for income tax. The majority of growers are also not including a provision for D&A (in their own statements) which for businesses of this type are expected to run at 7-8% of total business costs.

5. The average net profit margin is 7.7%, which, by comparison with other industry standards, is borderline acceptable. However, as indicated above, there is no provision for income tax and limited inclusion of D&A costs for some businesses. When these costs are taken into consideration the rate of return on capital invested (farm value) is less than what would be normally regarded as commercially acceptable by non-agricultural business classes. The maximum net profit percentage of 39.3% indicates an extremely high level of business performance, agricultural or non-agricultural.

6. As evidenced by the minimum and maximum values of the KPI's presented there is significant variation in the financial performance of growers. Factors contributing to this variation will be discussed in subsequent sections of the Results section and will be the subject of further discussion in the Conclusions section. In a number of instances there may be explanations why a business has performed badly. These may include: that the business is at an early stage of development or that it undertook significant replanting in the 08/09 year and so had minimal income orthat the business size may be very small in relation to sales or that the business is being poorly operated.

## 'Industry' Sales Performance

The 'average' banana business in this project had a net banana sales turnover of $2,066,813 (see Table 5), which based on previous studies undertaken by CDIPM is relatively large for horticultural businesses. The range of business sizes in the project is extensive but cannot be reported upon as it may identify individual businesses. The figure quoted is for net banana sales turnover. This figure comprises all banana sales, fresh and processing, and is net of any marketing fees and commissions. Other off-farm

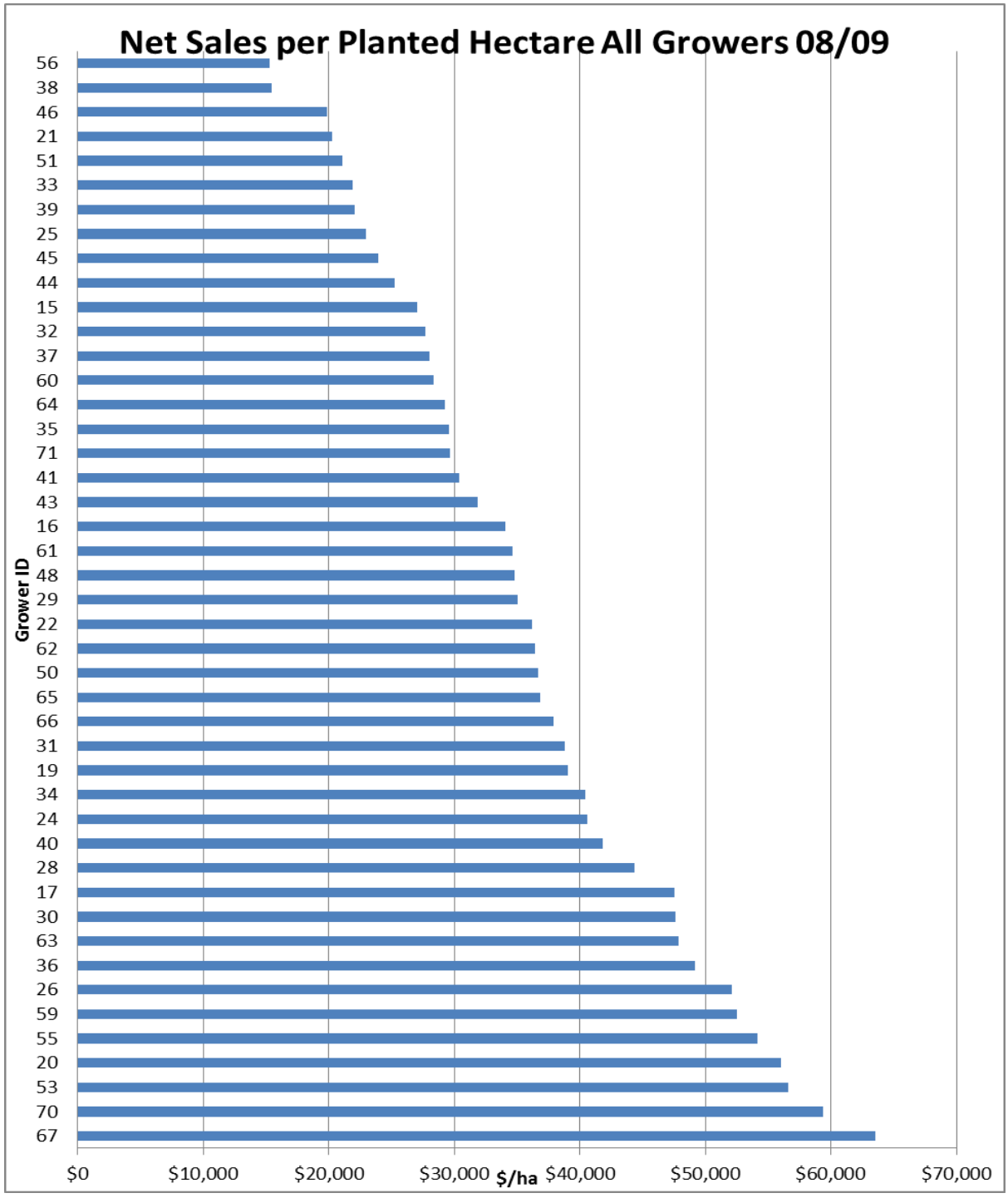
costs, including transport, ripening fees and levies have not been deducted and are treated as COGS or expenses.

Table 5: Summary of Industry Gross Farm Financial Statistics

| KPI Name | Min | Max | Average |
|---|---|---|---|
| Average business net banana sales ($) | | | $2,066,813 |
| Average banana sales per planted ha ($/ha) | $15,267 | $63,492 | $42,230 |
| Average banana sales of total banana area ($/ha) | $14,946 | $56,590 | $39,473 |

Net sales per planted hectare vary extensively from $15,267 to $63,492 per hectare with a mean of $42,230. The range of net sales per hectare is presented in Figure 3.

Figure 3: Net Sales per Planted Hectare for All Growers - 2009

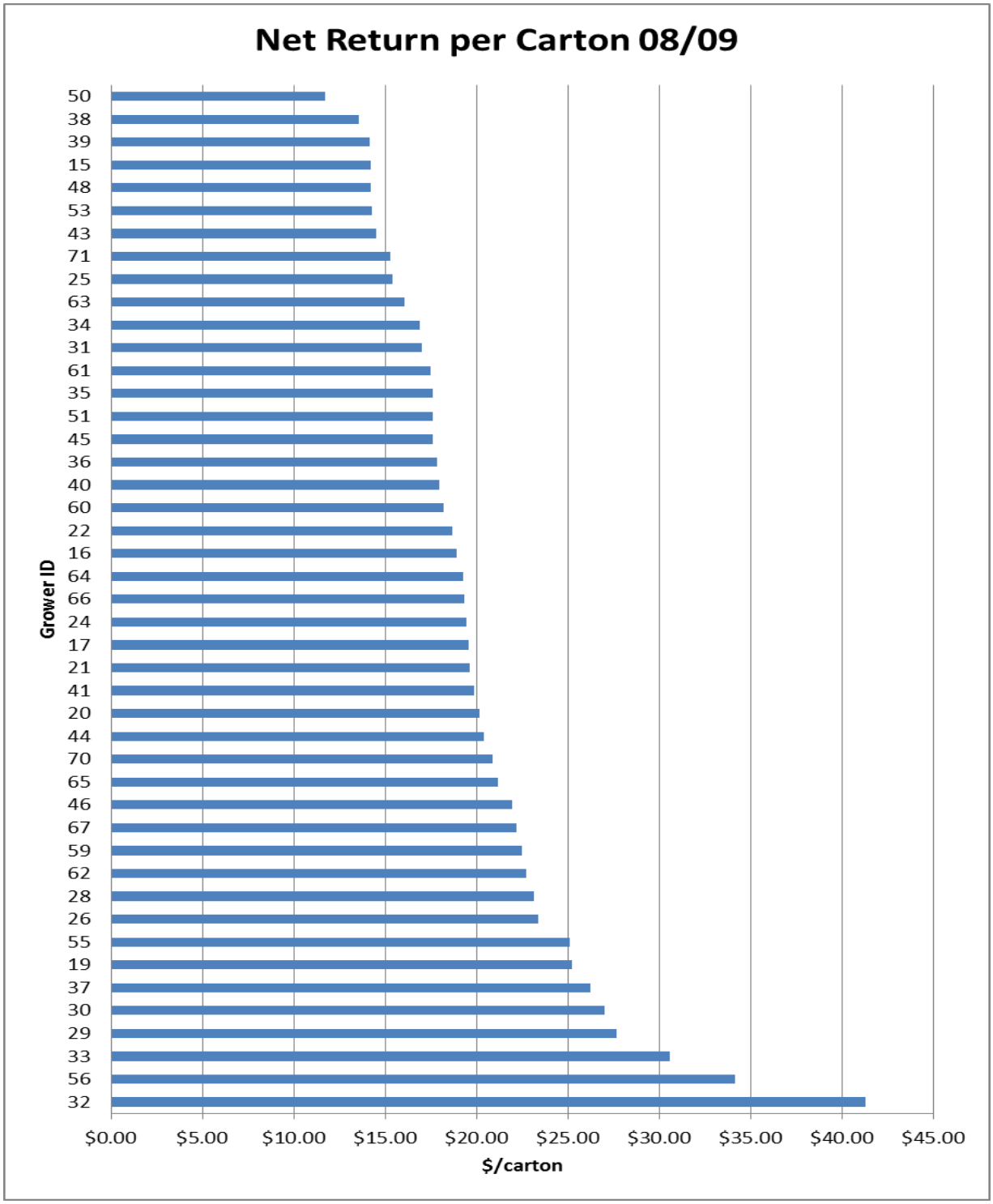


Banana sales are dependent on two factors, namely sales returns and yields. Banana yields are discussed in more detail in the Results section entitled “Industry Harvest / Yield Data”.

As evidenced in Figure 4, net sales return per carton varies significantly between growers. The reader should be aware that the top three average returns relate to two lady finger growers and an organics grower.

The Discussion section will outline factors that CDIPM considers are contributing to the high degree of variability in growers’ returns.

Figure 4: Net sales return per 13kg carton - 2009



## 'Industry' Costs Data

*Cost of Banana Production*

The average on-farm cost for all growers is $15.20 per carton, inclusive of owners' labour. However this is not the cost of production for bananas. The cost of transportation, levies, marketing fees and commissions and ripening costs needs to be added to the on-farm cost of production to calculate an accurate average cost of banana production. These costs are referred to as off-farm costs in this study. Based on the sales data received the average net price received by growers was $19.98 per carton. This price is net of marketing fees and commission.

Marketing fees and commissions, based on previous CDIPM experience, are on average around 15% of the gross sales price. However they may be slightly lower and potentially significantly higher than this. Based on an average net sales price of $19.98, the gross price and assuming a 15% deduction the gross sale price is $22.98 giving a marketing and commission 'charge' of $3.00 per carton.

For our grower sample, the average cost of freight and storage is $2.98 per carton with industry levies of $0.25 per carton.

The average cost of ripening is $1.90 per carton, with the range being $1.80 to $2.00 per carton. There are only a few marketers who deduct this charge and as a result should only be added to the cost of production in specific circumstances where this occurs.

Based on these statistics an indicative average cost of production model for bananas is shown in Table 6.

Table 6: Average costs of production data for banana growers 2008/09.

| Cost Centre | Details | $ per carton (without ripening fees included) | $ per carton (with ripening fees included) |
|---|---|---|---|
| On farm costs of production | From data analysis | $15.20 | $15.20 |
| Freight | From data analysis | $2.98 | $2.98 |
| Industry levies | From data analysis | $0.25 | $0.25 |
| Ripening fees | Indicated average charge for ripening. | | $1.90 |
| Marketing fees and commissions | Gross price average $22.94. Commission rate assessed at 15%. | $3.00 | $3.00 |
| **Average Total Cost of Production ($/carton)** | | **$21.43** | **$23.33** |

The reader should also note that this is average data and is inclusive of Lady Finger production costs which are higher than for Cavendish production. However, Lady Finger's represent only 2.5% of production in this study however and so won't have a significant impact on the averages.

Also, growers from NSW and WA were included in the study. These growers on average have lower transportation and marketing costs as not all fruit is sold through the central market system. Again, NSW growers only represent a comparatively small volume of total production.

*On-Farm Costs – Detailed Analysis*

Table 7 provides a summary of the average on-farm costs of production for bananas and the percentage each cost item represents of the total.

Table 7: On-Farm Costs of Production - % and costs per carton analysis

| Cost Category | % of On-Farm Costs | Cost per Carton ($) |
|---|---|---|
| Administration | 0.1% | $0.02 |
| Consultant fees | 0.4% | $0.06 |
| Contract packing | 7.7% | $1.17 |
| Contract spraying | 0.5% | $0.08 |
| Electricity and gas | 0.9% | $0.13 |
| D&A* | 0.6% | $0.09 |
| Employment expenses | 0.3% | $0.04 |
| Fertiliser and chemicals | 11.9% | $1.80 |
| Field consumables | 1.2% | $0.18 |
| Finance | 1.1% | $0.17 |
| Freight inwards | 0.0% | $0.01 |
| Fuel and oil | 2.8% | $0.43 |
| Hire of plant and equipment | 0.4% | $0.07 |
| Insurance | 0.6% | $0.09 |
| Lease and rental (non-financial) | 0.9% | $0.14 |
| Legal and accounting | 0.7% | $0.11 |
| Licenses, permits and fees | 0.1% | $0.02 |
| Marketing and promotion (not commissions or marketing fees) | 0.2% | $0.03 |
| Miscellaneous | 0.2% | $0.03 |
| Packaging | 14.9% | $2.27 |
| Planting materials | 0.1% | $0.02 |
| Rates | 0.5% | $0.07 |
| R&M and replacements | 5.8% | $0.88 |
| Soil, leaf and water testing | 0.1% | $0.02 |
| Telephone and internet | 0.3% | $0.04 |
| Wages (employees) and contract labour services | 39.1% | $5.95 |
| Wages and on costs (owners)** | 8.1% | $1.23 |
| Water purchase | 0.4% | $0.06 |
| **Total** | **100.0%** | **$15.20** |

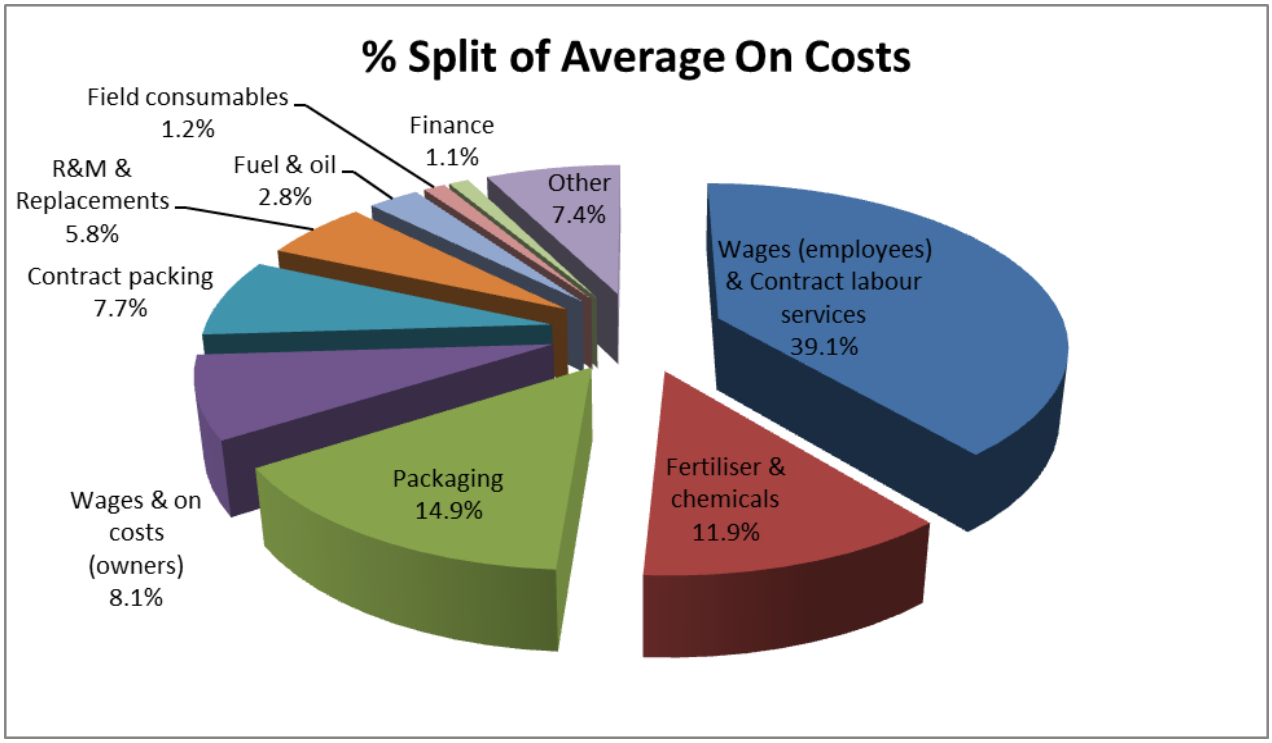
*D&A only a provision for a small number of farms. Previous experience suggests should be 6-7% of total costs.
**Includes a commercial rate of remuneration for the business owner/s.

The reader should be aware that these are average costs and for an individual business the costs do vary considerably. For example, the average cost of packaging of $1.89 per carton is low if a grower packs all

of their own fruit. The lower figure may be expected by that type of grower because a percentage of growers in the sample have their fruit contract packed, the cost of which is included in another cost category, that is, contract packing.

Figure 5 provides a diagrammatic representation of the percentage cost split for on-farm banana production for the Top 10 cost centres.

Figure 5: % Split of Average Business On-Costs per Carton for Top 10 Cost Centres - 2009




The Top 10 on-farm cost areas represent 92.6% of total on-farm costs. The top six on-cost areas represent 87.5% and are shown in Table 8.

Table 8: Top 6 On-Farm Cost Categories for Banana Growers - 2009

| Cost Category | % of On-Farm Costs | Cost per Carton ($) |
|---|---|---|
| Wages (employees) and contract labour services | 39.1% | $5.95 |
| Packaging | 14.9% | $2.27 |
| Fertiliser and chemicals | 11.9% | $1.80 |
| Wages and on costs (owners) | 8.1% | $1.23 |
| Contract packing | 7.7% | $1.17 |
| R&M and replacements | 5.8% | $0.88 |
| **Total** | **87.5%** | **$13.30** |

The fact that these are the major cost centres for the operation of a banana business will not be surprising to banana growers. However, the implication is that if a researcher or grower is focussed on

the reduction of on-farm costs, the areas of focus that will provide the greatest per unit benefit to banana growers are in these six areas (if all are applicable).

From an individual grower's perspective, their costs compared to the average are of the greatest concern to them. There is a wide level of variation between growers in each of these cost centres, as evidenced by the minimum and maximum values for these six cost centres as demonstrated in Table 9.

Table 9: Top 6 On-Farm Cost Categories for Banana Growers including Minimum & Maximum ($ per carton)

| KPI Name | Min | Max | Average |
|---|---|---|---|
| Wages (employees) and contract labour services | $0.25 | $11.72 | $5.95 |
| Fertiliser and chemicals | $0.31 | $5.81 | $2.27 |
| Packaging | $0.00 | $7.03 | $1.80 |
| Wages and on costs (owners) | $0.00 | $12.28 | $1.23 |
| Contract packing | $0.00 | $10.51 | $1.17 |
| R&M and replacements | $0.34 | $2.79 | $0.88 |
| **Total** | | | **$13.30** |

The reader should be cautious in analysing the minimum and maximum values of data ranges as there may be factors not readily identifiable that have contributed to extreme values. For instance, a small grower may not employ any labour and so therefore will have a nil wages costs for employees and contractors. Or a grower may have had a series of one-off major mechanical breakdowns which have contributed to an higher average cost of repairs and maintenance, particularly if they are smaller grower.

Given this observation, growers are able to receive a more accurate picture of where their business performs through a view of the KPI charting results. For a particular KPI, these graphs demonstrate the range of values that each grower in the sample has, identified by grower specific ID. Growers are therefore better able to 'ignore' outlier results and better see where they 'fit' in comparison to other growers.

Figure 6, Figure 7, Figure 8 and Figure 9 show the distribution of costs per carton for the top four on-farm costs identified in this study. The four KPI's are wages (employees) and contract labour services, fertiliser and chemicals, packaging and wages and on costs for the owners.

For each business, CDIPM included a wages provision for every business owner inclusive of superannuation commensurate with the size of the business. If a grower's financials included an abnormal payment in terms of wages or superannuation, these amounts were 'backed out' of the financials and replaced with the 'standard' owner's salary. This approach is undertaken for two reasons. Firstly, by treating each business in a standard way in respect of payments to owners' comparisons more accurate comparison are able to be made between businesses. Secondly, the financial returns, e.g. net profit margins indicate the true financial performance of the businesses as financial advisors etc would wish to assess the business.

Figure 6: Wages (employees) and Contract Labour Services ($ per carton) - 2009

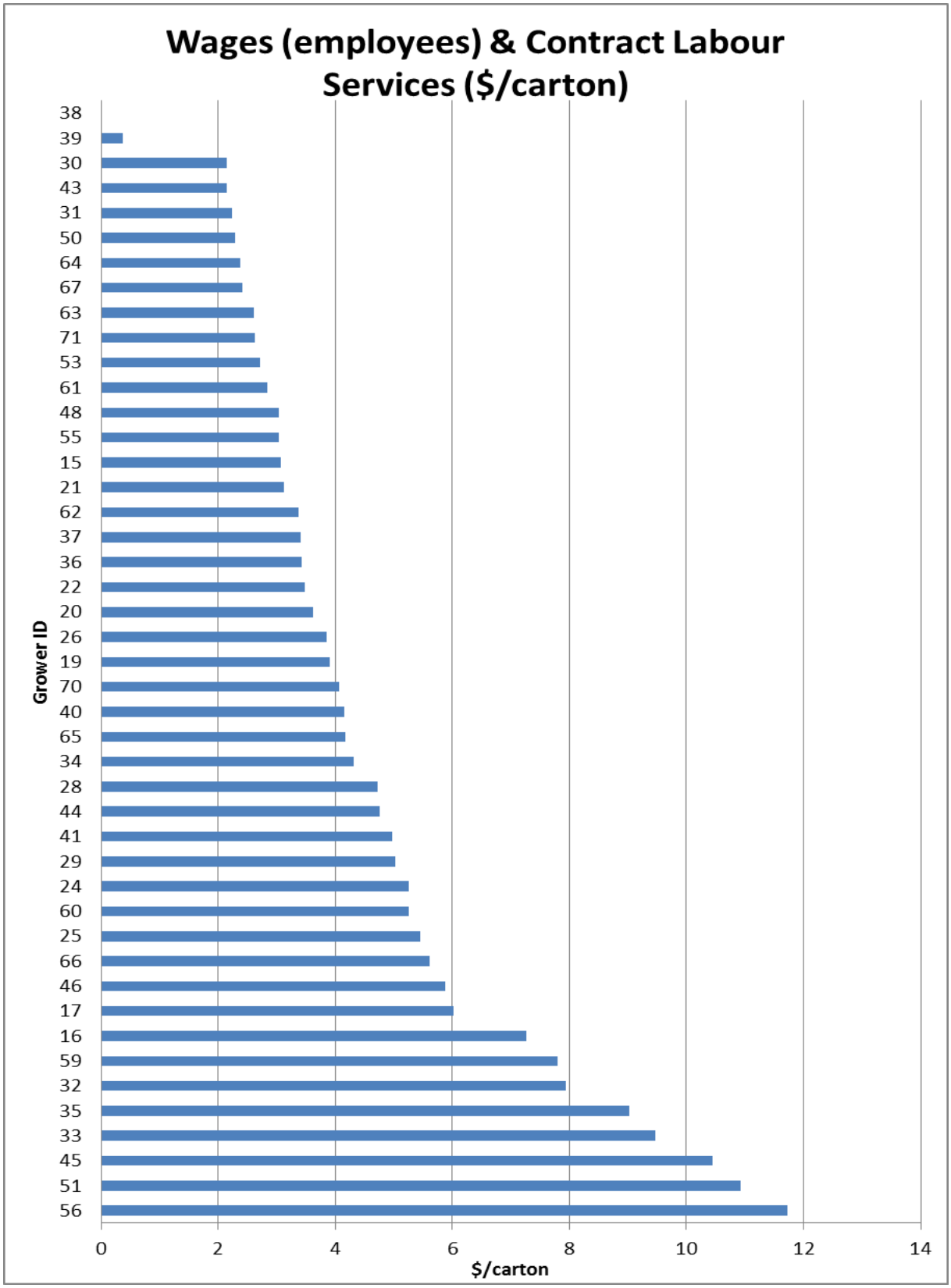


Figure 7: Fertiliser & Chemical Costs ($/carton) - 2009

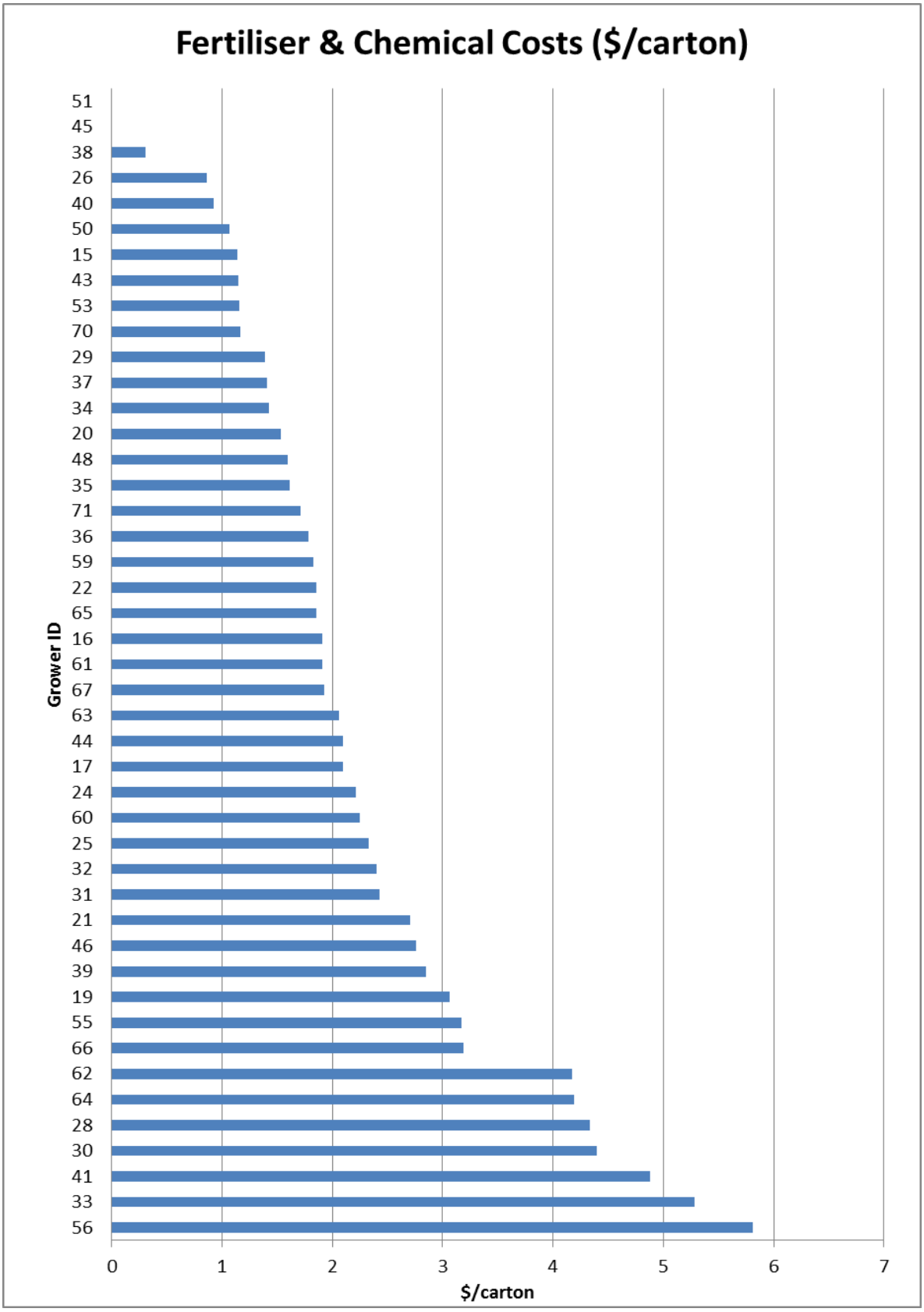


Figure 8: Packaging Costs ($/carton) - 2009

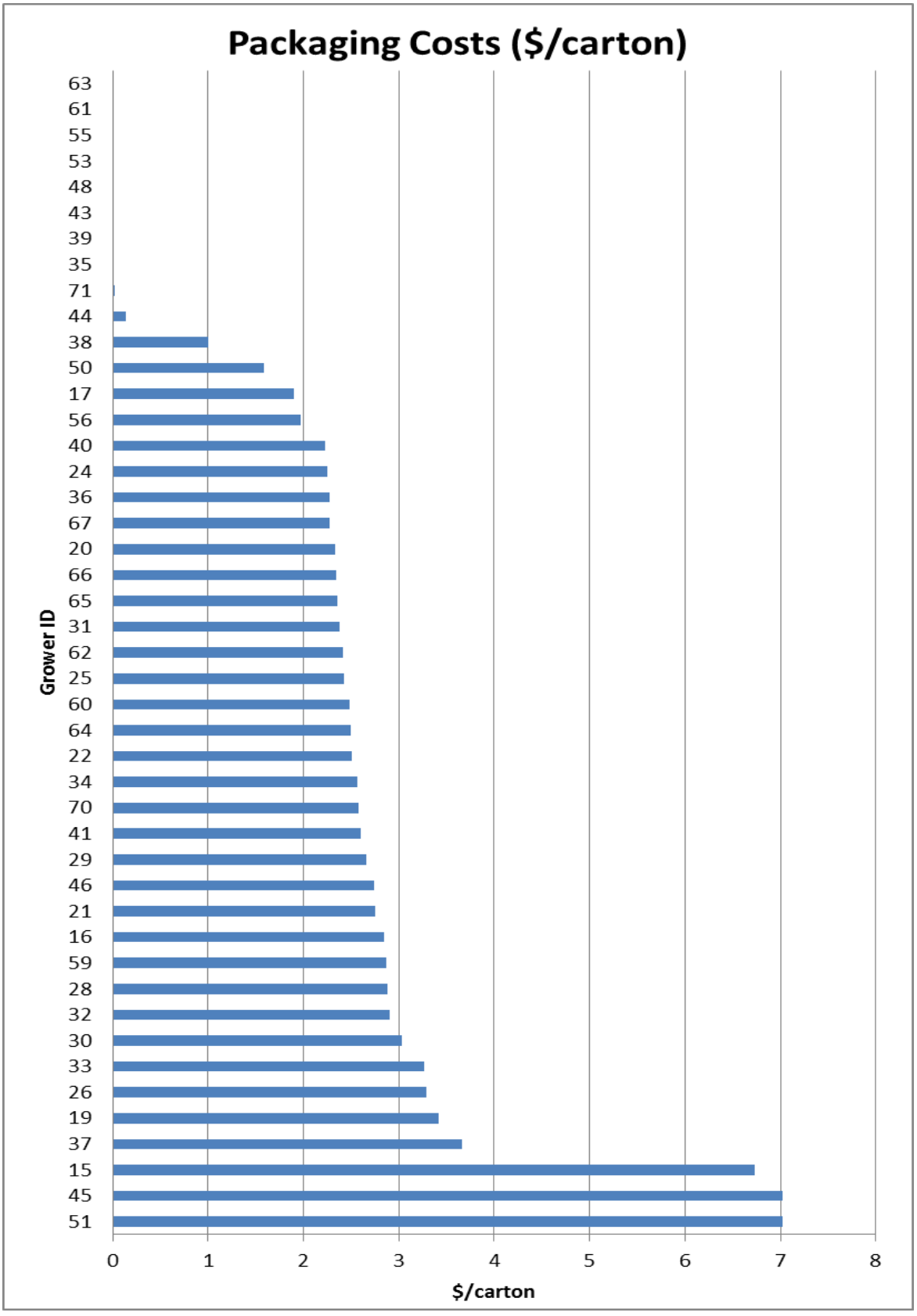
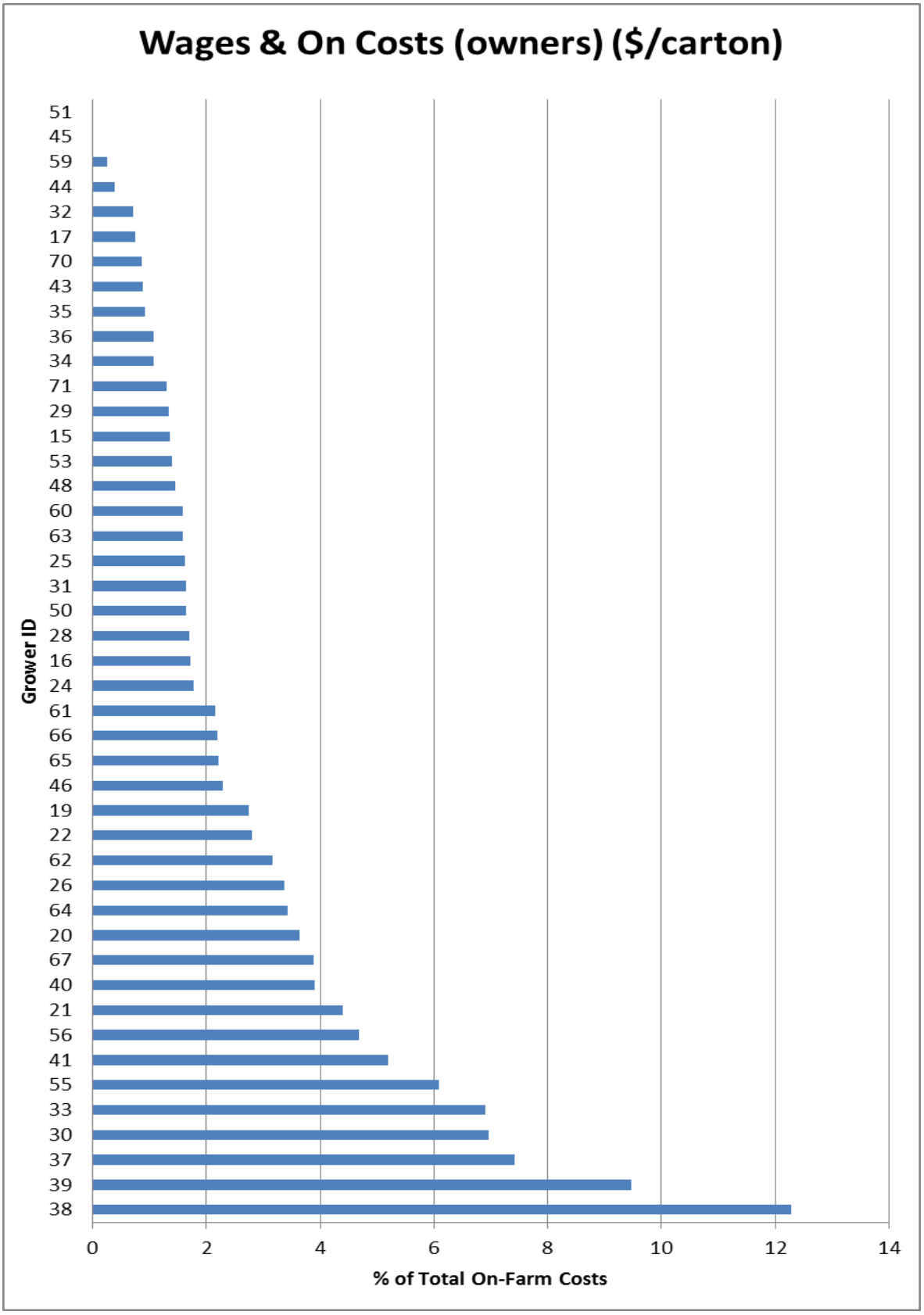


Figure 9: Wages & On Costs (owners) ($/carton) - 2009



*Off-Farm Costs – Detailed Analysis*

There are four cost centres which can be regarded as being off-farm. These are:

1. Marketing fees and commissions
2. Transport outwards
3. Industry levies
4. Ripening Fees

Marketing fees and commissions. Growers generally receive a net price per carton from their wholesalers and marketers and so the deduction made by them for marketing fees and commissions is not known to the growers. 33 growers in this study received a price net of marketing fees and commissions with 13 growers receiving advice of the quantum of the fee charged. As a consequence of this lack of 'transparency' of fees charged, it is not possible to accurately assess the unit cost ($ or %) that marketing fees and commissions represent in the operation of a banana business.

Marketing fees and commissions are discussed in significant detail in the Discussion section.

Transport outwards. The importance that freights costs play in the overall cost structure of a banana business is dependant on which destinations the grower sells their produce to, distance to market, size of the grower and the ability of the grower to negotiate advantageous freight rates. Also, whether or not a grower uses rail or road transport has a large impact. Rail freight is considerably cheaper than road transport, however only a small percentage of growers use rail as the majority of the growers cited issues with convenience and greater levels of damage as to why they did not use it. And lastly, some customers of growers will pay freight, although this is considered to represent only a small percentage of costs.

Industry levies. The average payment made by growers for industry levies is 25 cents per carton.

Ripening Fees. Three growers included ripening fees as a separate line item in their financial statements. It is expected that some growers include ripening fees in their marketing fees and commissions. Ripening fees if charged, range from $1.80 to $2.00 per carton.

## Industry Harvest / Yield Data

The principal measure used by growers to assess the productivity of their plantations is the number of cartons packed per hectare. However, it alone should not be seen as a 'success marker' as a number of growers commented that other growers may aim for high cartons per hectare but the quality of the fruit produced is lower.

An alternative but less accurate measures of performance relating to banana production, are both "net banana sales per ha" and "on-farm costs per ha". The reader should be aware that some businesses may have high COGS costs per hectare because they are focused on producing a high quality product and so have higher per unit costs. Conversely, a grower may have very low per unit costs per hectare but they produce a poor quality product.

Therefore, a more accurate marker of grower performance is to assess the net profit per planted hectare.

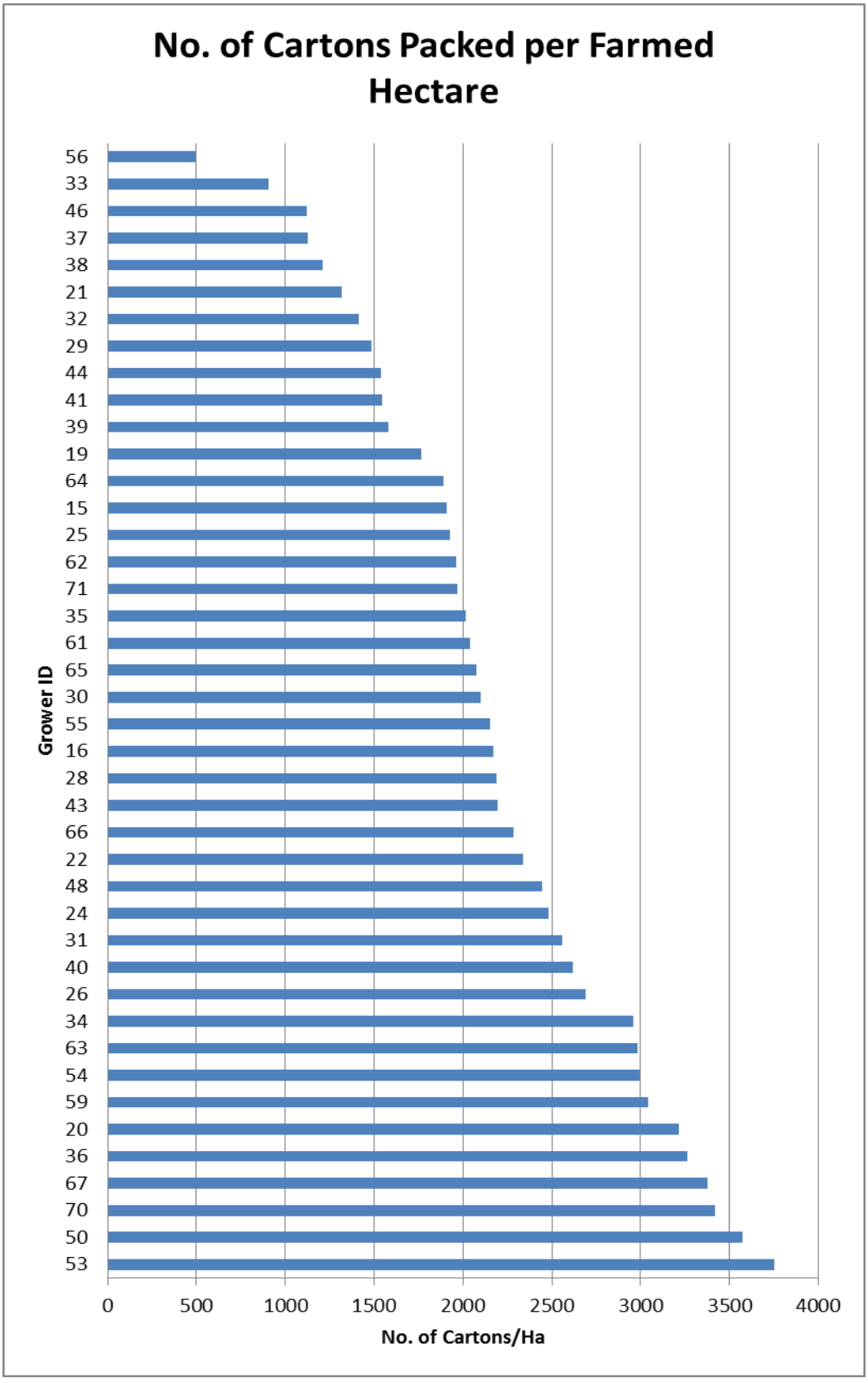
The average results for each of these KPI's is presented in Table 10.

Table 10: Production Productivity Measures

| KPI Name | Min | Max | Average |
|---|---|---|---|
| No. of cartons per planted hectare (cartons/ha) | 493 | 3,750 | 2,191 |
| No. of cartons per farmed ha (cartons/ha) | 483 | 3,750 | 2,042 |

Figure 10 demonstrates the number of cartons packed per hectare for all growers.

Figure 10: Grower Distribution of Results for Cartons per Farmed Hectare - 2009



## Production / Plantation Data

*Farm Location & Production*

The location of the 46 growers included in the data analysis combined with their production in numbers of cartons is presented in Table 2 on page 12.

*Farm Information*

The average area currently used for banana production included in the study was 51.22ha, with 93.4% of the farm planted to bananas. The average area planted to bananas in 08/09 was 47.87ha. The distribution of farm sizes is not able to be reported as it may identify larger growers. The average block size per farm is 4.97ha.

The Cavendish variety is planted on 97% of the total area planted and with 3% to Lady Finger. There are no growers in the sample producing the varieties Gold Finger, Ducasse or Plantain in any reportable quantities. Just under 99% of the total reported volume of production is Cavendish with Lady Fingers representing just over 1.0%.

Two of the growers were considered to be under corporate ownership. That is, the owners of the business were not involved in the day-to-day management of the farming operation.

A total of eight growers supplied a central packhouse. Two of these growers supplied a grower owned packhouse and six growers supplied a corporate packhouse. The remaining 38 growers all packed their own bananas and none packed on behalf of others.

*Cartons Grown and Size Distribution*

The 46 growers in this analysis produced on average 103,923 cartons of Cavendish bananas and 1,063 cartons of Lady Finger bananas in 08/09.

The average size split for Cavendish and Lady Fingers is shown in Table 12 and Table 13 respectively.

Table 11: % Pack Size Split of Total Cavendish Production - 2009

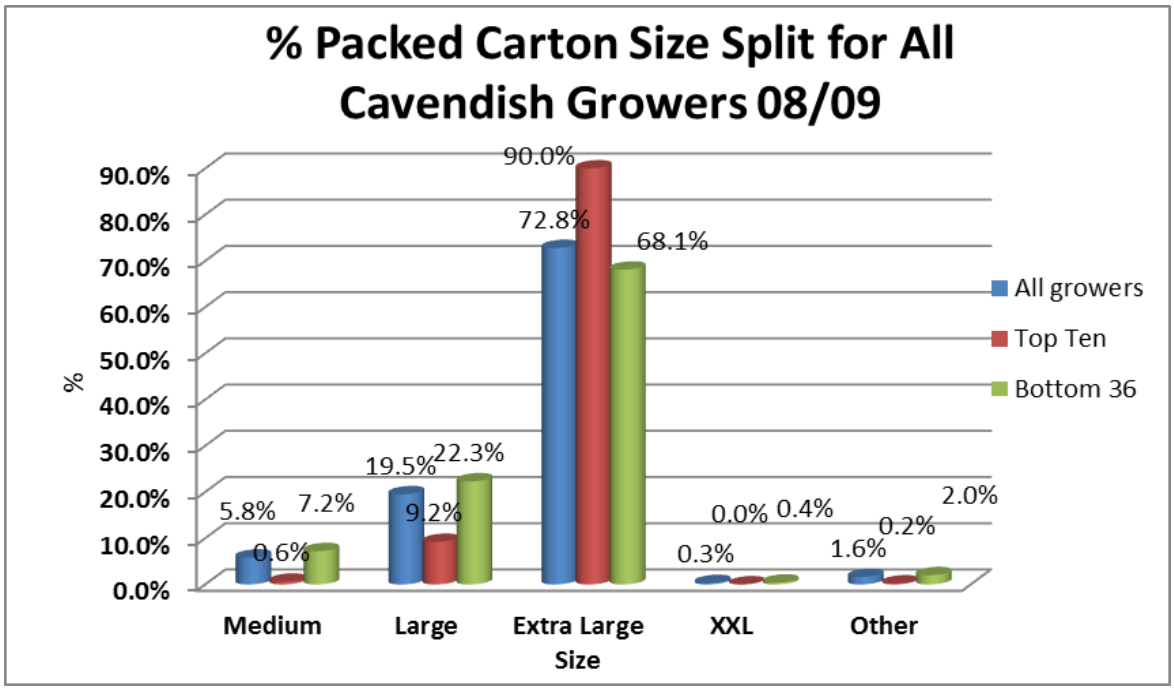
| KPI | % |
|---|---|
| % Medium | 6.2 |
| % Large | 19.7 |
| % Extra Large | 71.8 |
| % Double Extra Large | 0.2 |
| % Other 1 | 1.9 |
| % Other 2 | 0.2 |

Table 12: % Pack Size Split of Total Lady Finger Production - 2009

| KPI | % |
|---|---|
| % Medium | 3.1 |
| % Large | 11.5 |
| % Extra Large | 85.4 |

There appears to be a strong positive correlation between business profitability as evidenced by the Top 10 growers and average fruit size harvested. This correlation is demonstrated in Figure 11. Growers in the Top had 90% of the cartons they grew in the Extra Large class whereas the average was 72.8%. Conversely, the Top 10 growers only had 9.2% of their fruit in the large range compared with 19.5% for the average. These correlations are considered further in the Discussion section.

Figure 11: Comparison of Cavendish Grower Classes of Carton Size Splits for 2009




*Age of Plantation*

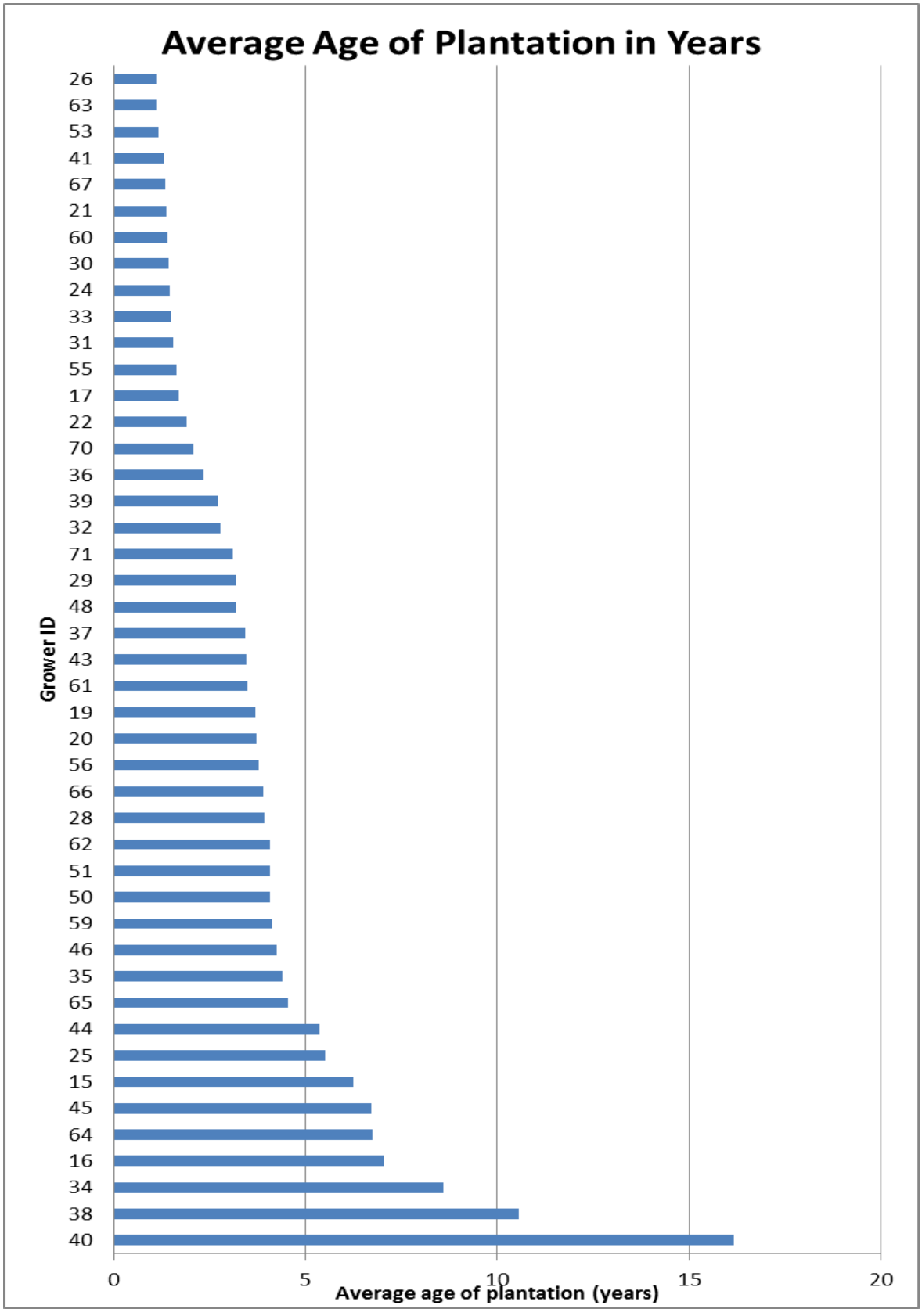
Growers have long argued about the merits of regularly 'turning over' plantations or maintaining plantations so as not to necessitate the costs of replanting. This study does not provide enough data to

calculate if there are direct correlations between the average age of the plantation and profitability or productivity. With the collection of additional data a correlation analysis will be able to be conducted to identify if there is a statistical linkage.

The average age of plantations is 4.25 years. For the Top 10 growers the average plantation age was 3.04 years.

The average age of plantation for each grower's business is presented in Figure 12.

Figure 12: Average Age of Plantation of Growers Plantations in Years - 2009



*Planting Material*

As Table 14 demonstrates, 69% of the blocks planted are done using bits sourced from their own plantation. The reasons given for why growers use their own planting material is cost, convenience and desire to maintain a varietal line. A number of growers commented adversely about using tissue culture. Some growers commented on product supply issues, toughness / performance in difficult production conditions and cost. Conversely, the advocates for tissue culture (22% of total area planted) stated their reasons using it were consistency of product appearance and shape, evenness of crop harvest (also sighted as a disadvantage by some) and another job (bit harvesting) that doesn't need to be done by the grower.

Table 13: Grower Distribution of Results for Planting Material Usage - 2009

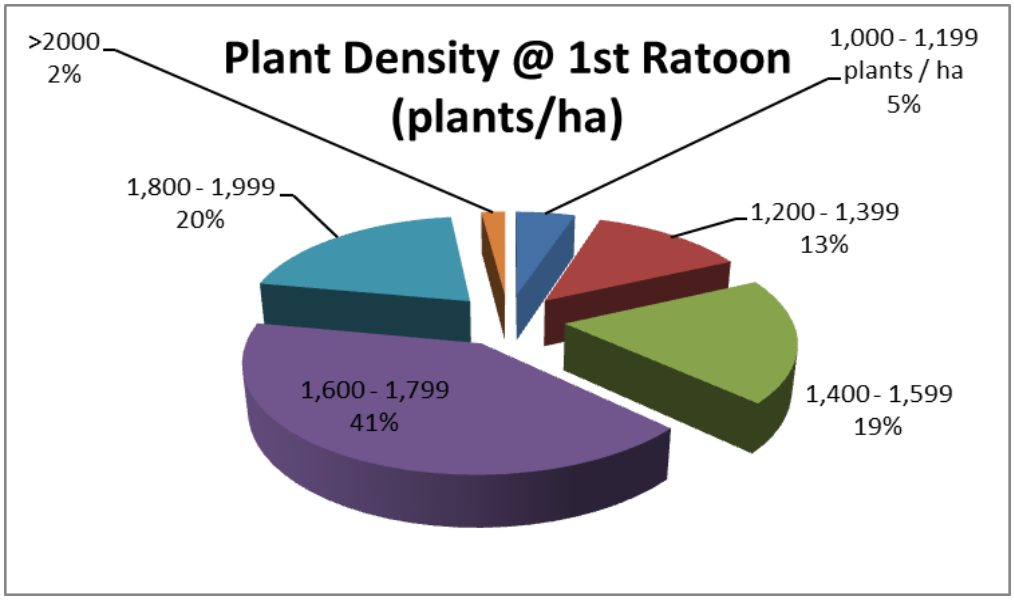
| KPI | % |
|---|---|
| % Tissue culture external | 20 |
| % Tissue culture with own nursery | 1 |
| % Bits from own plantation | 71 |
| % Bits from another plantation | 5 |
| % Pots | 3 |

*Plant Density at 1st Ratoon*

A central production issue facing growers is at what density to plant bananas to maximize production volume and product quality. Many growers have limited ability to influence the width that rows are planted at due to the mains and sub-main spacing. In some instances, this also impacts on whether growers plant single or double rows.

Figure 13 shows the distribution of plant densities for every block grown by the 46 growers. The principal plant densities range from 1,200-1,399 to 1,800-1,999 plants per hectare at the point of 1st ratoon. The Qualitative Benchmark Reports at Appendix 6 goes into further detail about why each grower chooses to plant at the densities they do.

Figure 13: Distribution of Plant Densities at 1st Ratoon for All Growers - 2009




This study does not provide enough data to calculate if there are correlations between plantation density and plantation profitability or productivity. With the collection of additional data, a correlation analysis can be conducted to identify if there is a statistical linkage.

*Irrigation Method*

The majority of growers (59%) use micro-sprinklers to irrigate their bananas. Dripper tape and overhead irrigation are the other two main methods (19% and 13% respectively). Reasons why growers use micro-sprinklers were cited as:

1. Ability to fertigate.
2. Ability to wash in solid fertilisers
3. Better coverage of the soil profile
4. Ease of maintenance (all above ground).

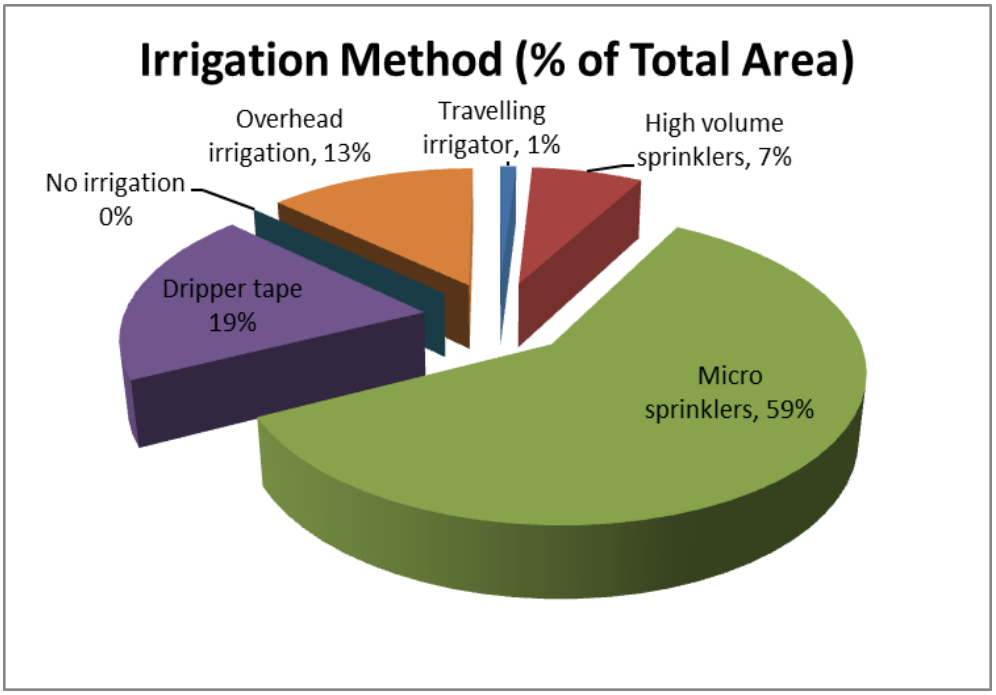
Growers use dripper tape for the following reasons:

1. Relatively low cost
2. Ease of maintenance (don't have to repair sprinklers)
3. Irrigation efficiency where growers have low levels of available water.

Although 13% of plantations still use overhead irrigation, these growers would prefer or are in the process of transitioning from drip or micro-sprinklers. The reason why they have not transitioned over as yet is the cost of doing so. Maintenance and water wastage, particularly as water management plans are introduced, are the principal reasons for wanting to changeover.

Figure 14 shows the distribution of principal irrigation methods in use by banana growers.

Figure 14: Grower Distribution of Results for Principal Irrigation Method Used - 2009

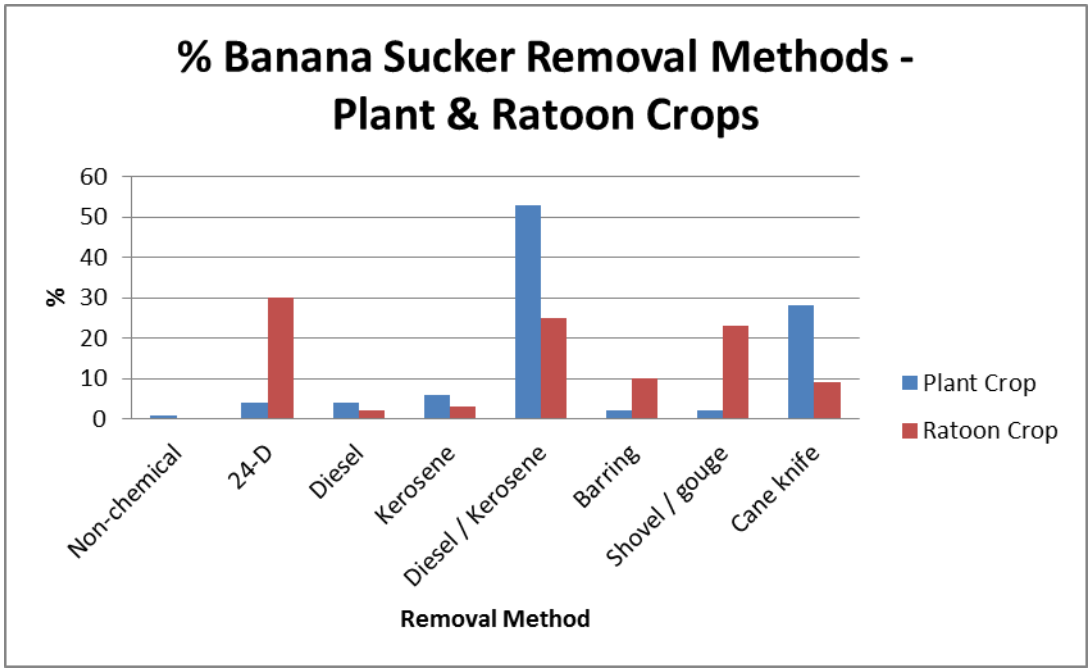



*Banana Sucker Removal*

Growers identified a wide variety of methods to remove unwanted banana suckers. Further, the methods used often vary from the plant crop to subsequent ratoon crops.

Figure 15 shows the relative proportions of the various sucker removal methods used for plant and ratoon crops.

Figure 15:% Use of Banana Sucker Removal Methods – Plant & Ratoon Crops - 2009




Some growers place a high degree of focus on sucker selection in the belief that the position and health of the sucker has a significant impact on harvest volumes, fruit quality and fruit losses.

*Fertiliser Application*

Growers utilise three systems for the application of fertilisers, namely solid /ground application, fertigation or foliar fertilisers or a combination of both. Many growers have definite views on the preferred method of application method. Growers may use solid / ground or fertigation or a combination of both. No grower uses foliar fertilisers as the sole method of application due to the volume of nutrients that are required.

There appears to be a general movement by growers to move towards using fertigation as the principal fertilizer application method, with solid fertilizer applications only being used during periods of extended rain or when a major nutrient correction is required. Reasons given by growers for why they have moved over totally or principally to fertigation are:

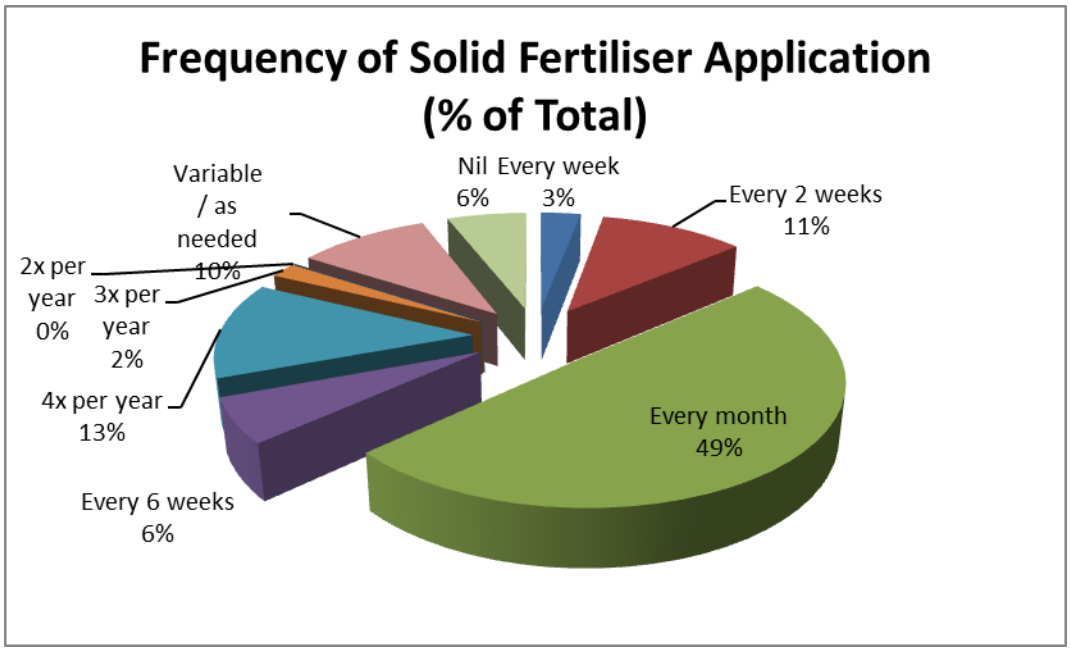
1. More targeted use of fertilizer with lower rates per hectare able to be used.
2. Less potential for fertilizer losses due to high intensity rainfall events (in the event they are using solids).
3. Quicker for the plant to take up.
4. Easier / more convenient to use as they only have to work from a central point.
5. Less traffic in the plantation = less potential damage to bunches.

A number of growers, particularly those in WA, have developed fully automated irrigation systems where plants receive fertilizer every time irrigation is applied, which in their case is up to three times per day.

Growers who are dedicated to the use of solid fertilisers do so principally out of convenience or because they are not wishing to go to the added capital expense. Also, growers who use drippers often do not fertigate due to the limit application area that drippers can 'wet'.

The frequency of solid fertilizer application is presented in Figure 16.

Figure 16: Frequency of Application of Solid Fertilisers - 2009




Sixty percent of growers apply their solid fertilisers monthly or more frequently. There is an apparent tendency of growers to reduce the period between fertilizer applications in order to reduce the risk of high rainfall events washing fertilizer away and polluting waterways. Less frequent applications also tend to give trees a 'hit' of fertilizer which may not be ideal.

*Soil Borne Pests*

There are three principal soil borne pests which banana growers may control,being nematodes, cane beetle and weevil borers. Some growers, due to location and / or soil type, may elect not to treat for these pests. Appendix 6 provides details on the methods used by growers to control each of these pests.

Table 15 shows the responses to a series of questions regarding whether or not they seek to control nematodes, cane beetles or weevil borers.

Table 14: Soil Borne Pests – Do Growers Undertake Control Measures for Selected Pests?

| KPI Question | % |
|---|---|
| Have you undertaken control measures for nematodes in the last 12 months - Yes | 33 |
| Have you undertaken control measures for nematodes in the last 12 months - No | 67 |
| Have you treated for cane beetle in the last 12 months - Yes | 46 |
| Have you treated for cane beetle in the last 12 months – No | 54 |
| Have you treated for weevil borer in the last 12 months - Yes | 69 |
| Have you treated for weevil borer in the last 12 months - No | 31 |

*Agronomist Services*

Table 16 provides a summary of the use or otherwise of agronomists by growers. There are relatively equal percentages of growers who are not using agronomists or are using the services of private companies / individuals or using the services of one employed by a chemical company.

Table 15: Soil Borne Pests – Do Growers Undertake Control Measures for Selected Pests?

| KPI Question | % |
|---|---|
| Have you used the services of an agronomist in the last 12 months? Yes – private / company individual (%) | 34 |
| Have you used the services of an agronomist in the last 12 months? Yes – employee of a chemical company (%) | 30 |
| Have you used the services of an agronomist in the last 12 months? Yes – Inhouse (%) | 7 |
| Have you used the services of an agronomist in the last 12 months? No (%) | 29 |

Our observations concluded that chemical company agronomists were generally only advising on the use of fertilisers. Private individuals provided a range of services including fertilizer advice, pest and disease monitoring, chemical use advice and crop management programs.

Growers not using agronomists did so as they believed they do not add sufficient value to justify their engagement.

Due to the comparatively limited data set it is currently not possible to assess if there is a correlation between the use of an agronomist and business profitability.

*Pesticide and Fungicide Spray Frequency*

Pesticide and fungicide spray frequency varied depending on the farm location. In WA, growers rarely have a need to spray for pests and never for fungicides due to the dry nature of the climate. NSW growers had low levels of chemical applications due to the cooler climate and less prevalence of fungal diseases in comparison to the hotter, wetter and more humid North Queensland growers.

Growers in North Queensland generally spray fortnightly during summer. In winter, growers apply chemicals every two to four weeks, due to the generally lower disease pressure.

Table 17 demonstrates the frequency of pesticide and fungicide application during summer and winter.

Table 16: Frequency of Pesticide and Fungicide Application during Summer and Winter.

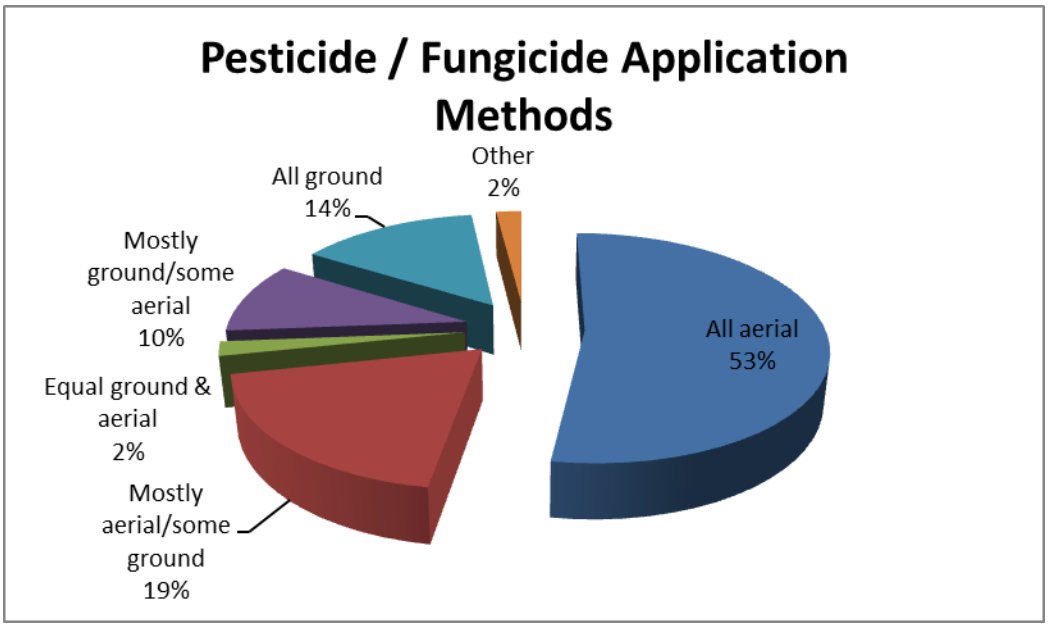
| KPI Question | Summer % | Winter % |
|---|---|---|
| Pesticide / fungicide spray frequency – 2x per week | 0 | 0 |
| Pesticide / fungicide spray frequency – weekly | 0 | 0 |
| Pesticide / fungicide spray frequency – 10-12 days | 13 | 0 |
| Pesticide / fungicide spray frequency – fortnightly | 71 | 56 |
| Pesticide / fungicide spray frequency – monthly | 7 | 33 |
| Pesticide / fungicide spray frequency – bi-monthly | 4 | 2 |
| Pesticide / fungicide spray frequency – quarterly | 2 | 7 |
| Pesticide / fungicide spray frequency – nil | 2 | 2 |

*Pesticide and Fungicide Application Method/s*

Figure 17 demonstrates that the majority of growers (72%) either use aerial or predominately aerial methods for pesticide and fungicide applications. These growers indicated that using aerial is quick and relatively cheap and another job that the grower is required to do. Growers who use ground rigs to apply chemicals either equally, predominately or exclusively do so because they consider that by applying chemicals two ways (top down and down up) gives an improved level of pest and fungal disease control.

Although there is a limited data set, there does appear to be a correlation between average profitability and the method that pesticides and fungicides are controlled.

Figure 17: Pesticide / Fungicide Application Method - 2009

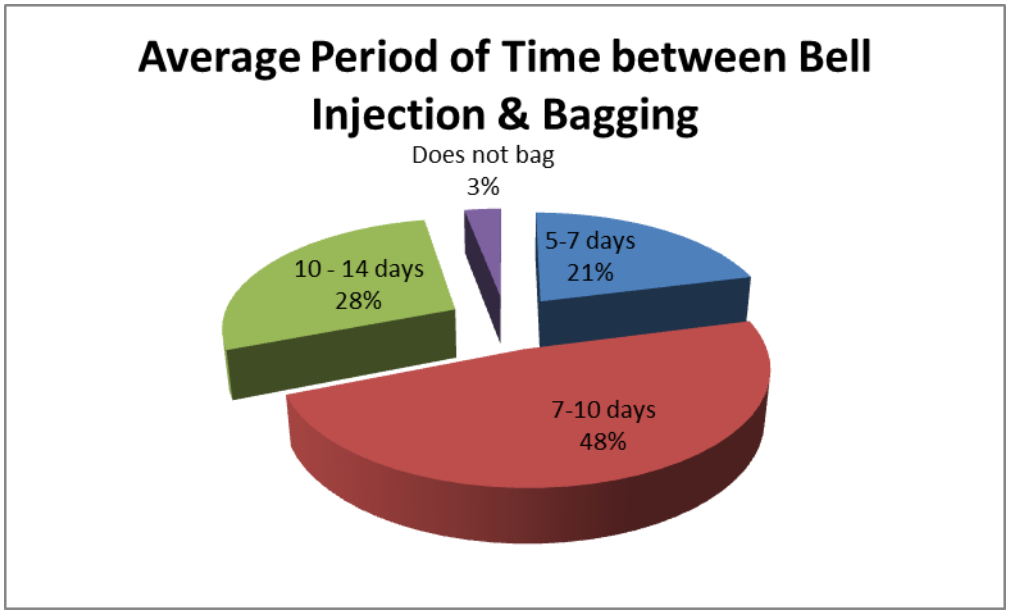



*Bell Emergence and Bagging*

Figure 18 shows that 48% of growers bag their bananas approximately 7-10 days after bell injecting, with 21% doing so 5-7 days after injecting and 28% bagging 10-14 days after bagging.

Further work is required to ascertain whether there is a linkage between the periods of time to bag with the average return for bananas. We acknowledge that bagging time will not be the sole factor contributing to banana quality; however our anecdotal observations suggest that attention to detail in bagging intervals indicates greater attention to overall farm management.

Figure 18: Length of Period from Bell Injecting to Bagging - 2009

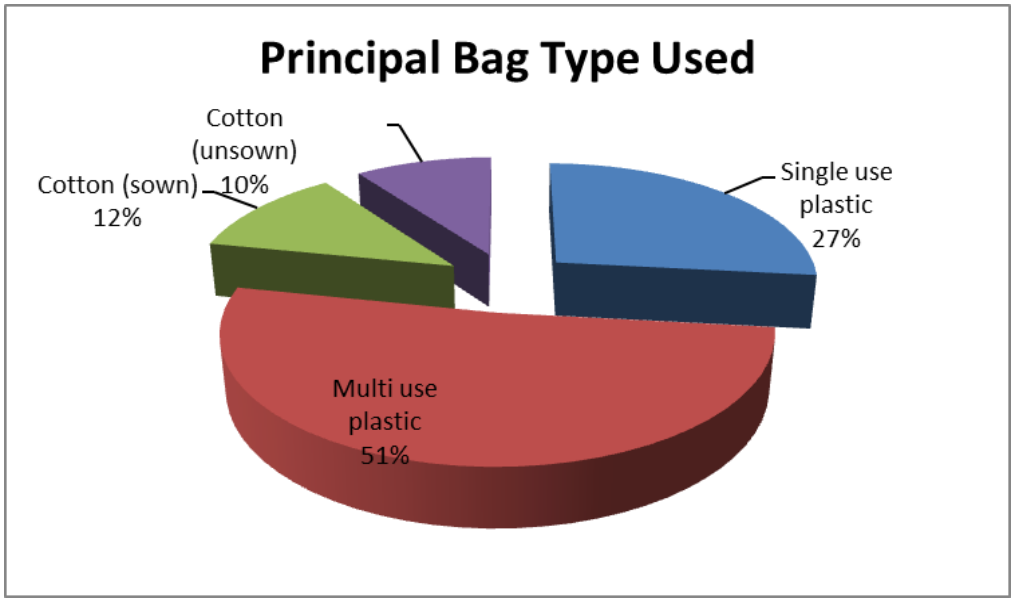



Four percent of growers do not bag their fruit. None of these growers are in North Queensland. Some growers in NSW do not bag as there is less pressure from scab moth in that state. Bagging for scab moth or other predators is not practiced in WA due to low pest pressures.

Growers use four principal types of bags for bagging. These being single use plastic, coax or multi use plastic bags, sown cotton bags with a plastic outer and unsown cotton bags. Figure 18 shows that the principal bag type used is still a coax bag. Growers appear uncertain if the added cost of cotton bags – sown or unsown, is justified in the terms of improved fruit quality. A number of 'convertees' are strong advocates of cotton bags, with one grower indicating that if they are able to harvest an extra hand per bunch on average, the added costs are justified in one use.

CDIPM would recommend that a commercial evaluation trial be completed in a number of locations with the results made available to industry. Trials undertaken by commercial parties associated with the ownership of products are viewed by growers with skepticism.

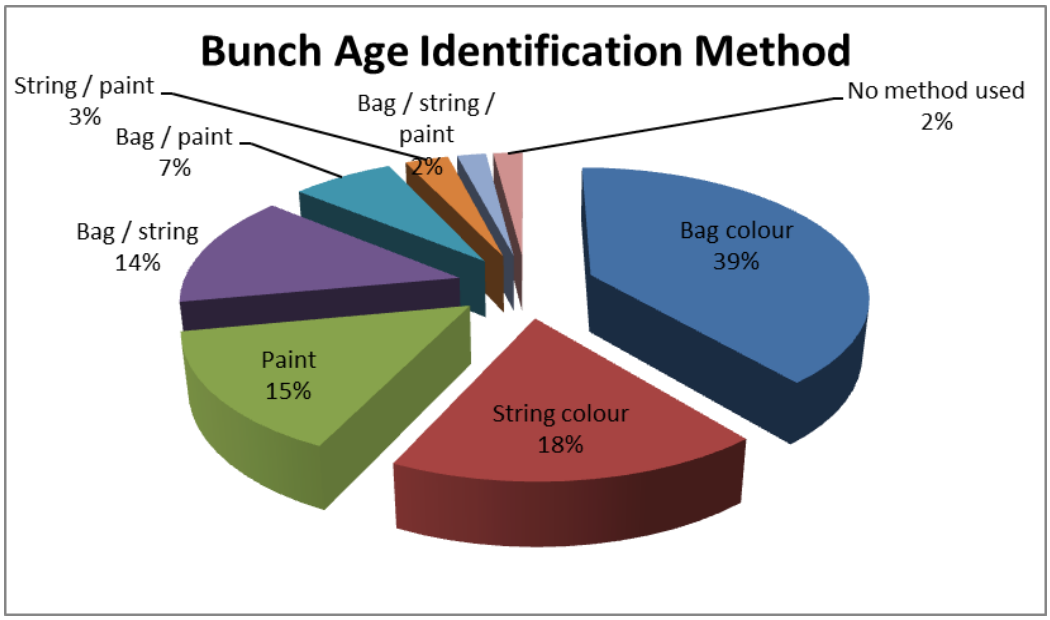
Figure 19: Principal Bag Type Used - 2009




*Bunch Identification Method*

Banana growers utilise an extensive array of strategies for bunch age identification, as demonstrated in Figure 20. A number of growers use multiple systems. Each grower claims advantages over other methods in the systems they use. However, our observations suggest that some growers over-complicate their bunch identification systems resulting in confusion and potential loss of productivity amongst workers.

Figure 20: Principal Bunch Age Identification Method/s - 2009



## Packing Systems

*Introduction*

The majority of questions relating to packing systems are discussed in considerable detail in the qualitative and industry group reports which are listed in Appendix 5 and Appendix 6. These qualitative questions relate to how growers handle bananas at receival, all the way through the handling process to packing, palletizing, precooling and transportation.

Additionally, growers were asked to indicate what they pay for transportation and cartons. There is considerable variability in the prices paid by growers, even if the growers are in the same location and are of approximately the same size. One of the reasons identified suggest this might be the case is because of the relative focus that the grower has on ensuring the costs of these services are 'commercially' appropriate.

Packing rates were also assessed by CDIPM and are reported upon in specific qualitative reports. Our observations indicate there is considerable variability in the number of cartons that growers pack per hour in their facility. Packing rates varied from 6.2 to 18.4 cartons per hour. Packing rates have a significant impact on labour costs for packing and business profitability.

Additional data is required to identify the correlation between business profitability and packing rates. CDIPM expect a correlation to exist as packing costs represent a significant component of total labour costs (between 20% and 35% of total employee labour costs). The variation in packing productivity is directly related to the management style of the grower and the 'product flow' technologies in place in each packing shed. Further work is recommended in this area and is discussed in greater detail in the Recommendations section.

*Packing Equipment*

Growers principally use two packing systems for bananas: rotary wheels (68%) and water and belt conveyors (30%). Generally, smaller growers use a rotary wheel with larger growers using water and belt conveyors. The reasons for this trend are:

1. The capital cost of rotary wheels is low thus suiting smaller growers.

2. Rotary wheels are majorly used by growers who grow 50 ha or less of bananas. Beyond 50 ha growers are more likely to use a water and belt conveyor. Larger growers cannot typically use a rotary wheel due to the size of the shed that would be required to house the wheel making it impractical to implement.

3. Larger growers believe water and belt conveyors achieve higher packing rates (yet to be proven).

4. Rotary wheels are suited to having a variable number of staff operating them which suits smaller businesses where staff members may also be doing field work, harvesting and packing. By comparison, water and belt conveyors require a relatively fixed number of staff to operate.

5. Rotary wheel converts consider fruit is less damaged.

6. Growers are unable to pack hands effectively in a water and belt conveyor.

Limited empirical work has been undertaken concerning the relative productivity of packing systems, as in many instances it is not the packing system that determines if packing rates are high or low, but rather the HR management strategies in place.

## Labour Productivity & Other Measures

*Labour Employment*

The 46 businesses in the study employed 83.2 FTE family members who were not paid wages and a further 559.5 FTE workers, whether they be paid family members, permanent, permanent part time or casual workers.

Therefore, for these 46 businesses the average number of family FTE's engaged are 1.81 and 12.16 workers. A FTE is defined as a person who works for 1,920 hours per year (48 weeks x 40 hours / week).

Of the 559.5 FTE's employed the estimated 'nationality' or origin of these workers were:

| | |
|---|---|
| Australian | 65.4% |
| Backpackers | 15.6% |
| Asian / Indian | 15.9% |
| Pacific Islander / PNG Employees | 0.1% |
| Don't Know / Unknown | 3.0% |

In discussions with growers there was strong evidence of growers moving away from the use of Australian workers either because they could not source them or found that they were too unreliable and lacking of work ethic. Growers would prefer to employ Australians out of 'loyalty' but this is increasingly becoming difficult to do.

In the Innisfail region in particular, workers of Asian or Indian descent are increasingly making up a larger proportion of the workforce. Growers commented very favourably about their reliability and willingness to work.

Backpackers continue to play a core role in the operation of the banana industry. Their flexibility in terms of the hours of work provided to them (particularly associated with packing) and their work ethic (generally) make them attractive to banana growers to employ.

Growers commented that sourcing people to work was generally not an issue. The issue is rather the lack of banana growing or packing skills workers necessitating considerable investment in training and re-training of workers.

*Labour Productivity*

Table 18 provides a series of labour productivity measures for use by participating growers and others.

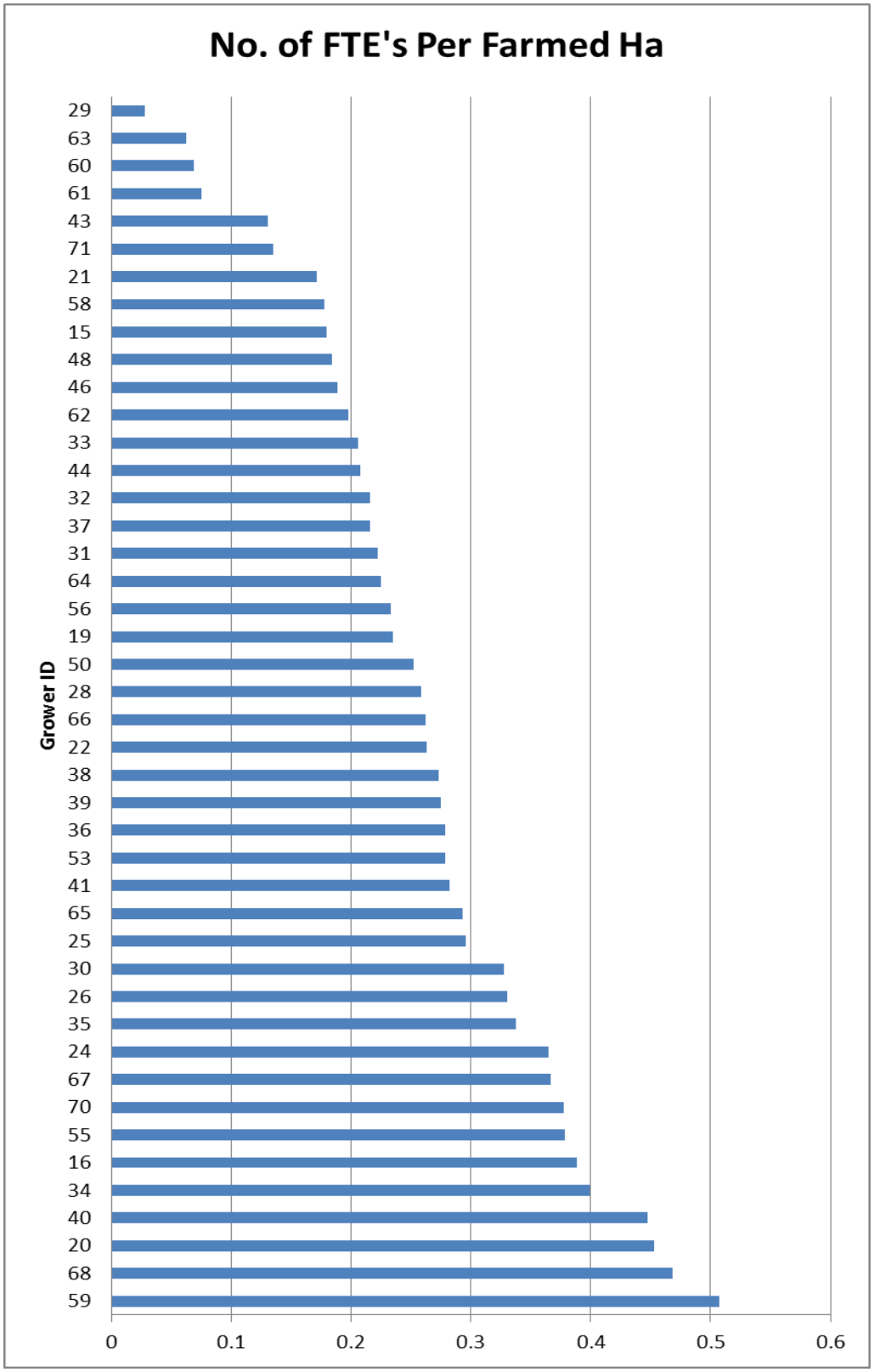
Table 17: Labour Productivity Measures - 2009

| KPI Name | Min | Max | Average |
|---|---|---|---|
| No. of FTE's per planted ha (FTE/ha) | 0.03 | 0.51 | 0.29 |
| No. of FTE's per ha of farmed area (FTE/ha) | 0.03 | 0.51 | 0.27 |
| No. of cartons per FTE (cartons / FTE) | 2,115 | 53,413 | 7,352 |
| Net banana sales per FTE ($/FTE) | 56,241 | 1,262,817 | 120,257 |
| Total On-Farm Costs per FTE ($/FTE) | 66,521 | 694,481 | 111,681 |

Each of these measures is a useful tool for individual growers to compare how they are performing in terms of total employment levels and productivity and so identify if improvements in HR management and worker activity management are required. Additionally, a grower can calculate whether or not there is a benefit to the efficiency of the business operation through employment of additional employees or alternatively reducing employment numbers.

As demonstrated in Figure 21, there is a wide variation in terms of labour use per hectare. This maybe reflective of the type of farming operation the grower has. For instance, if the grower employs a contract harvester and does not pack their own fruit, labour use per hectare will be low. However, in general CDIPM observed a considerable number of strategies implemented by higher performing businesses that were not in evidence in lesser performing businesses. This subject is discussed further in the section entitled "Observations on Successful Banana Farmers".

Figure 21: No. of FTE's per Farmed hectare by Grower ID - 2009



## Marketing Systems

*Transaction Systems*

There are five principal methods by which growers market bananas to the next transaction point. These are:

1. Weekly fixed price (5% of respondents): Principally, this is achieved by growers who deal directly with one of the major chain operators who fix a price, typically on a Thursday or Friday the week before delivery. The price paid is generally fixed however it may be adjusted depending on the movement of wholesale prices. At least one organic grower also indicated that the prices for their product have little movement week to week.

2. Pooled returns (10% of respondents): Growers who supply a central packhouse in all instances have their returns pooled across a size and grade on a weekly basis. Growers are generally advised of the performance of their pool two weeks after delivery of the product. In one instance, the central packhouse provides a very high level of transparency (and other services) to their growers, even indicating to who the product is sold. This packhouse is grower owned but in the majority of other cases the packhouse is owned by a third party, most often a wholesaler or affiliated company.

3. Merchant transaction (45% of respondents): 45% of growers indicated that they considered the basis of the transaction which they have with their customer is a merchant transaction. That is, they do not see the gross price that the bananas are sold for, but rather net price. However, further investigation indicated that the vast majority of these transactions are not completed according to the Horticultural Code of Conduct, where wholesalers trading as merchants are required to negotiate the purchase of bananas within 24 hours of arrival. In fact, the vast majority of growers are not even being informed of the price they will receive for their product until the final payment is received by growers.

4. Agency transaction (25% of respondents): 25% of growers indicated that they considered the basis of the transaction which they have with their customer is an agency transaction. This is on the basis that the grower is advised a gross selling price less deductions for marketing commissions and charges. No grower, however, appears to be being informed or seeking to being informed of the identity of the purchaser. A large percentage of growers is not being advised of the gross price that they have received for their product, often not until the final payment is received by the grower.

5. Brokerage: 12% of growers indicated that they have a brokerage arrangement for the marketing of their produce. In the majority of instances, the broker has a commercial relationship with one or both of the major chain retailers and smaller chain retailers. The broker attempts not to have to market fruit through the wholesaler system as this attracts another level of marketing charges. The level of transparency between brokers and growers appears relatively strong.

Payment terms for the vast majority of growers was between three and five weeks from date of consignment, which is considered quite acceptable by other horticultural industry standards.

Our general observations with respect to growers marketing of bananas are:

1. The vast majority of banana wholesalers are operating outside of the Horticultural Code of Conduct, with respect to price notification, negotiation and transparency.

2. Wholesalers are being permitted to be in breach, by banana growers who generally have limited proactive input into banana marketing and demanding greater adherence to the Horticultural Code of Conduct.

3. Growers have 'adopted' this approach based on long held traditions about how bananas are marketed which are not appropriate in today's business environment.

4. An observation of the average net returns received by growers indicates a very high degree of variability in prices received.

The grower sample is neither large enough nor the level of investigation detailed enough to indicate if there is a link between the level of marketing 'proactivity' by growers and the average net return that growers receive for their product. Fruit quality and volumes supplied are other variables that should be included in such an investigation.

CDIPM's commercial experience indicates that growers, irrespective of the Horticultural Code have marketing fee deductions that may vary by up to 50%. This variance depends on the skills of the grower to understand and communicate their knowledge about how the 'markets are performing'. This may equate to up to 10% of the gross sales return for the growers product. Therefore CDIPM see this as a major focus area where growers may be able to improve business performance, namely through the development of improved marketing skills and awareness. This will be discussed further in the Recommendations section of the report.

*Marketing Channels*

Table 19 provides details on where which channels that growers market their fruit. The percentage figures represent the volumes of fruit delivered to each channel.

Table 18: % Bananas Sold Through Each Marketing Channel - 2009

| KPI Question | % |
|---|---|
| % Sold to metropolitan wholesalers (agent or merchant) | 65.4 |
| % Sold via a broker | 25.4 |
| % Customer not known or unavailable | 5.6 |
| % Sold direct to major chain retailers | 2.6 |
| % Sold to regional wholesalers | 0.6 |
| % Sold direct to the public | 0.3 |
| % Other | 0.1 |

65.4% of bananas are sold through wholesalers. In many instances this fruit is then sold or prepared for sale to one of the major chain retailers. The grower is often aware of this as they supply 'green loads' to these wholesalers. A number of the major brokers also have supplier status with the chain retailers. They may either facilitate the delivery of green loads or co-ordinate the ripening activity prior to delivery. These services are provided for both major and smaller chain store operators.

Banana growers engage in limited value adding or selling of product direct to the public. This occurs is with smaller growers in NSW or through the operation of road side stalls in either NSW or Queensland.

## Comparing the Top 10 Growers with the Remainder

This section discusses the differences in productive and financial performance between the Top 10 growers and the remaining 35 growers included in the financial analysis. We will then identify some of the factors contributing to these variations in performance. The data collected only relates to one year and has a comparatively small sample size and so should not be regarded as conclusive and 'industry wide' observations.

Whether or not a grower was included in the Top 10 growers or not was based on their net sales (after commission) per hectare. This measure was considered the most accurate indicator of business performance as this figure combines the three principal components of business viability being productivity, sales and costs per unit. Other traditional measures such as gross profit, cartons per hectare are net return per carton are not considered appropriate business viability measures because they are not as comprehensive in terms of approach.

*Gross Financial Performance*

Table 20 demonstrates the difference in performance on selected KPI's of the Top 10 growers compared against the rest.

Table 19: Gross Financial Performance Comparison Between Top 10, All Growers & Bottom 35 Banana Growers - 2009

| KPI Name | Top 10 Growers | All Growers | Bottom 35 |
|---|---|---|---|
| No. of growers in sample | 10 | 45 | 35 |
| Banana sales per planted ha ($/ha) | $58,534 | $42,230 | $39,503 |
| COGS per planted ha ($/ha) | $37,972 | $35,471 | $35,053 |
| Gross profit per planted ha ($/ha) | $22,110 | $7,607 | $4,977 |
| Average gross profit margin (%) | 36.8% | 17.7% | 12.9% |
| Expenses per planted ha ($/ha) | $6,046 | $4,275 | $3,979 |
| Net profit per planted ha ($/ha) | $16,064 | $3,114 | $1,155 |
| Average net profit margin (%) | 26.7% | 7.7% | 3.0% |

The key observations on the performance of the Top 10 growers in this comparison are:

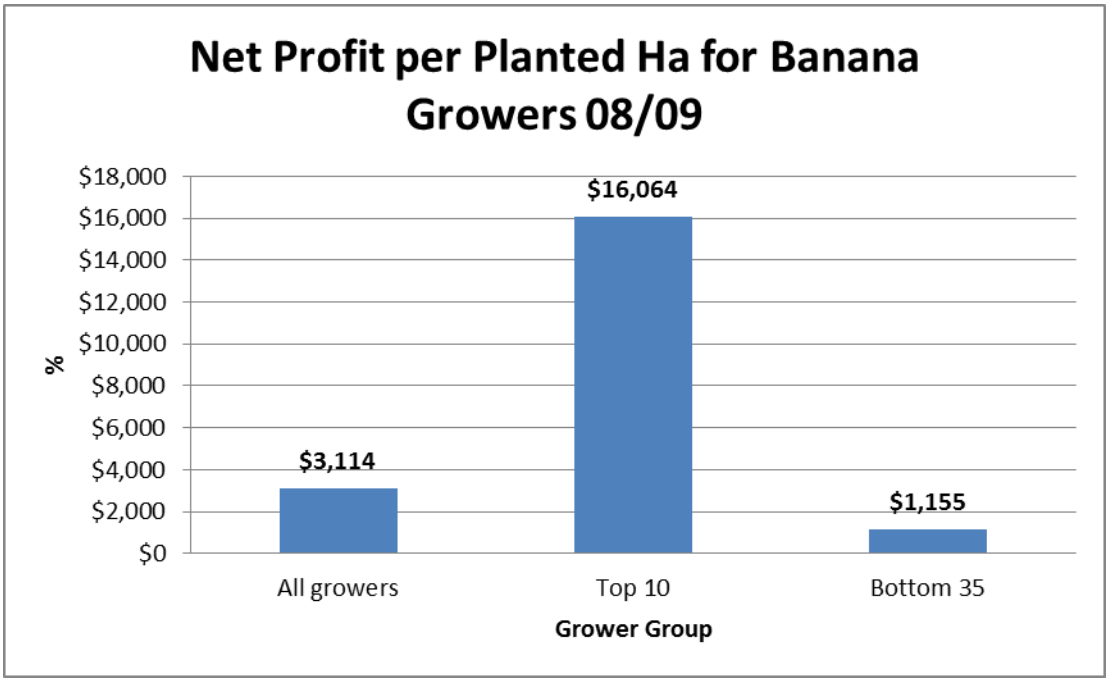
1. The value of net banana sales per hectare is 38.6% higher than the average.

2. Costs per hectare are slightly higher compared with the average, both in terms of COGS and expenses. Therefore, a lower cost of production per hectare is not why the Top 10 perform better financially, although the average cost is lower.

3. Due to the significantly higher sales per hectare and comparable cost structures, the net profit of $16,064 per hectare is nearly $13k per hectare ahead of the average grower. The extent of this variation is demonstrated in Figure 22.

4. An average net profit margin of 26.7% in horticulture is considered to be exceptional, as is the case here, particularly when we also include that a provision for owners wages have been included for all growers.

Figure 22: Comparison in Net Profit per Planted Hectare for the Top 10, All and Bottom 35 Banana Growers

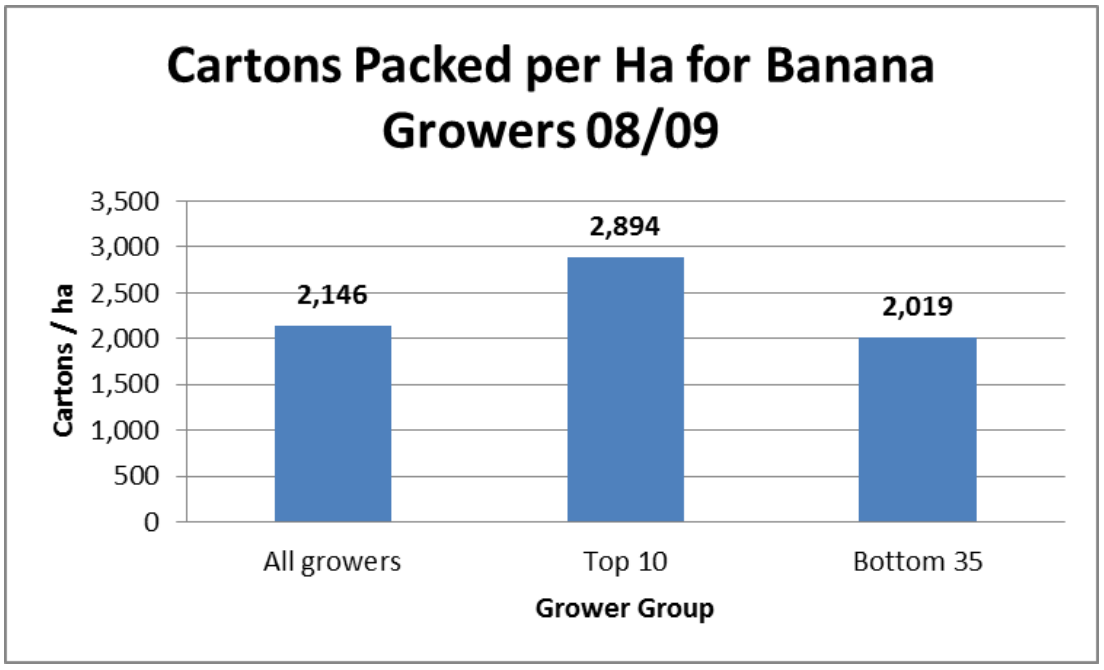



*Productivity*

The Top 10 growers in 08/09 produced 34.9% more packed cartons per hectare than the average grower. As will be discussed, the superior yields per hectare are a major factor to why the Top 10 growers are in that position.

Figure 23 shows the comparison in yields between the three classes of growers.

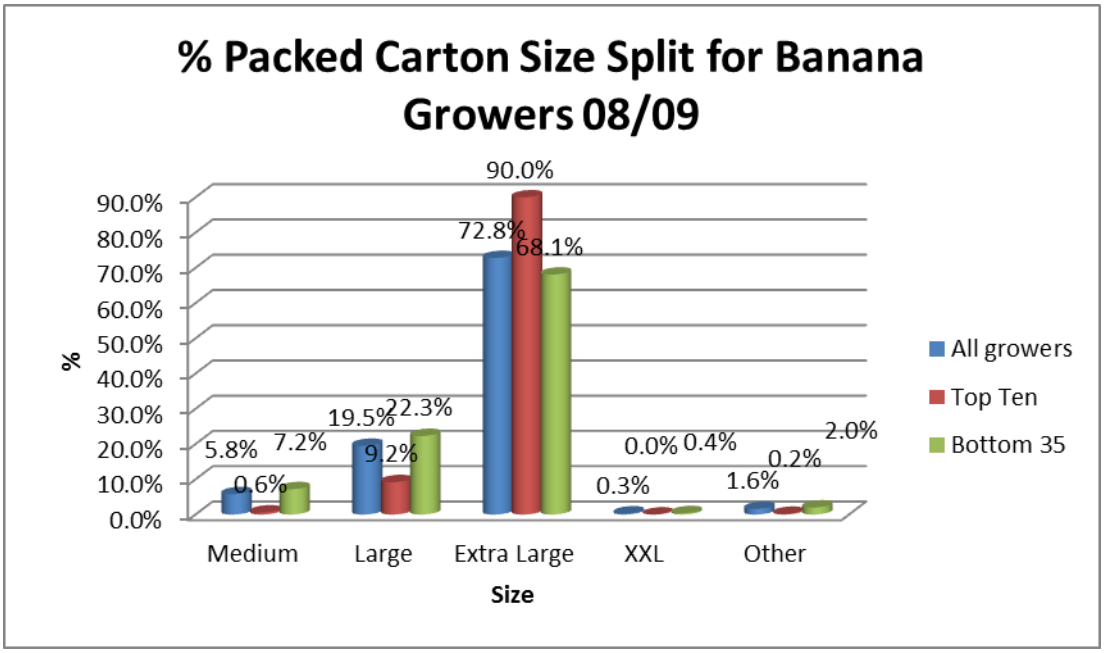
Figure 23: Comparison in Cartons Packed per Planted Hectare for the Top 10, All and Bottom 35 Banana Growers



One of the contributing factors to the higher yield per hectare is that the Top 10 growers pack 90.0% of their cartons as Extra Large compared with an average of 72.8% for all growers. The larger than 'average' fruit from these Top 10 growers goes some way to explaining the higher yield per hectare.

Figure 24 shows the size variation in packed bananas between the different grower classes.

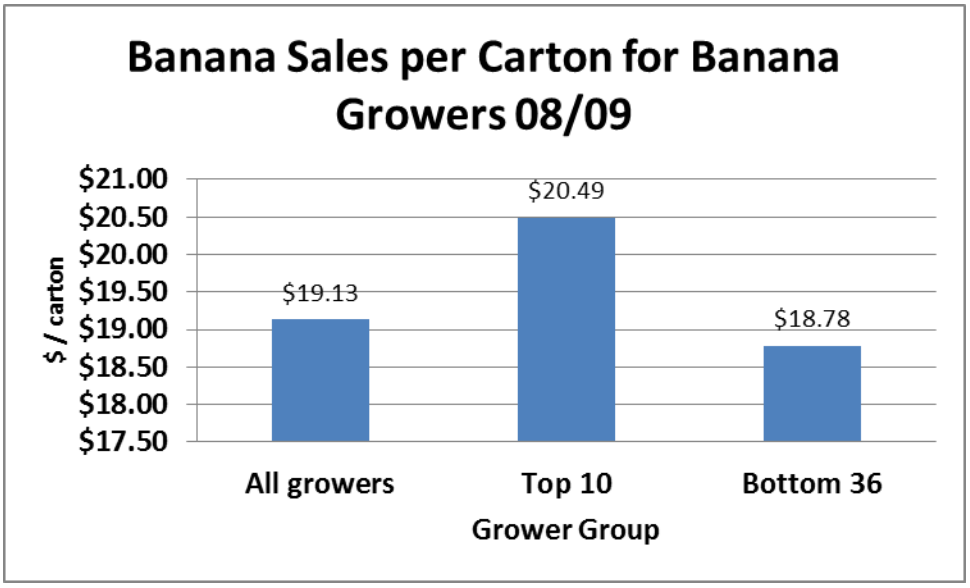
Figure 24: Comparison in Carton Size Split Packed per Planted Hectare for the Top 10, All and Bottom 35 Banana Grower - 2009




*Price Returns*

Figure 25 shows that on average the Top 10 banana growers receive $1.36 carton more than the average. This represents a 7.1% better return, which is very significant when the 'average' grower packed over 100k cartons of bananas per business.

Figure 25: Comparison in Net Sales Return per Carton for the Top 10, All and Bottom 35 Banana Growers - 2009




*On-Farm Costs*

Table 21 provides a comparison of the on-farm carton costs between the Top 10 growers and the others. The areas of greatest variation are highlight in blue.

Table 20: Top 8 On-Farm Carton Cost Comparison between the Top 10 Grower and Others - 2009

| Cost Category | Top 10 Growers | All Growers | Bottom 35 |
|---|---|---|---|
| Wages (employees) and contract labour services | $4.00 | $5.95 | $6.42 |
| Packaging | $2.38 | $2.27 | $2.24 |
| Fertiliser and chemicals | $1.64 | $1.80 | $1.84 |
| Wages and on costs (owners)** | $1.72 | $1.23 | $1.11 |
| Contract packing | $0.00 | $1.17 | $1.44 |
| R&M and replacements | $1.00 | $0.88 | $0.85 |
| Fuel and oil | $0.31 | $0.43 | $0.45 |
| Field consumables | $0.05 | $0.18 | $0.21 |
| **Total Top 8 On-Farm Cost per Carton** | **$11.10** | **$13.91** | **$14.56** |
| | | | |
| **Combined Labour Costs** | **$5.72** | **$7.18** | **$7.53** |
| | | | |
| **Total On-Farm Cost per Carton** | **$12.07** | **$15.20** | **$15.95** |

The key observations from Table 21 on the Top 10 growers from these statistics are:

1. Overall on-farm costs incurred for the top 8 cost centres shows that the Top 10 growers on average are producing cartons of bananas for $2.81 less than the average.

2. Average total ton-farm costs for the Top 10 growers are $3.13 per carton when compared with the average.

3. Wages (not owners) costs are $1.95 per carton cheaper than the average. CDIPM considers that labour management as one of the critical factors separating the Top 10 growers from the rest. This observation is further discussed in the Conclusion section.

4. Wages (owners) are higher by $0.49 per carton on average. This is reflective of the proportionally higher level of family involvement in these businesses and / or the smaller size of some businesses in the Top 10. This is particularly the case for the five growers who produce less than 75k cartons per annum.

5. Average packing costs are zero for the Top 10 growers. This is because there is no grower within the Top 10 who supplies fruit to a contract packing operation. All growers in the Top 10 pack at 'home'.

6. Packaging, fertiliser and chemicals, and fuel and oil, R&M and replacements do not vary significantly per carton between groups. However the reader should be aware that as this statistic is a 'per carton' calculation and the Top 10 growers are producing on average 34.9% more cartons per ha, the spend or investment per ha by the Top 10 growers would in fact be higher per hectare.

7. By combining the two labour costs (owners and non-owners) the cost per carton for the Top 10 growers is $1.46 lower than the average.

*Off-Farm Costs*

An aspect that is not able to be analysed in detail is the off-farm costs per carton in detail. One of the principal components of off-farm costs is marketing fees and commissions. As has been discussed previously, there is limited transparency in respect of this cost centre. The majority of growers receive a 'net of marketing fees' return so in there is not even a cost centre created in the majority of cases.

There are three other off-farm costs incurred by banana growers. These are:

1. Industry levies

2. Ripening fees

3. Freight outwards

Industry levies are a gazetted / legislated cost and so should be equivalent amongst growers in each state, with the national levy the same throughout. However, the cost centre was not equal amongst growers which may warrant some investigation by the ABGC to ensure that all growers are paying the correct levy. Alternatively, the correct levy amount may be being paid by incorrectly reported in the grower's financials.

Ripening fees may or may not be charged by grower's customers, and are definitely not being not being charged in the majority of cases. The standard cost appears to be $1.80 to $2.00 per carton.

Average freight costs for the Top 10 growers are $2.61 per carton. This figure is lower than the average of $2.98 and $3.07 for the bottom 35 growers. There may be a number of explanations for this cost differential including:

1. The Top 10 growers place a greater emphasis on negotiating their freight charges compared with other growers.

2. The Top 10 growers may use alternative lower cost transport methods (true in two instances of growers in the Top 10)

3. On average , the Top 10 growers may be supplying markets closer to the source of production on average compared to others

4. The Top 10 growers may be achieving greater pallet utilisation than their counterparts (ie. cartons per pallet).

Issues pertaining to marketing fees and commissions will be discussed in more detail in the Discussion section along with some recommendations pertaining to further investigations on freight costs.

*Size Does Not Make a Difference (Much)*

Table 22 demonstrates that business size, as measured in number of cartons harvested, is not necessarily a factor in whether or not they were in the Top 10. Although only one grower was included in the 75k-<150k range there were a number of growers who were just outside of this business size range (larger and smaller) and so did not fall into this category.

Certainly the figures do suggest that if a grower is harvesting less than 50k cartons, there is less chance of them making the Top 10. There may be a number of reasons for this including the fact that they will have a relatively high owner's labour cost per carton or may not be as motivated to optimise production compared with others.

Table 21: Size Distribution for Top 10 Growers and All Growers in Study - 2009

| Grower Type | <50k cartons | 50k-<75k cartons | 75k-<150k cartons | >150k cartons |
|---|---|---|---|---|
| Top 10 | 2 | 4 | 1 | 3 |
| Total Growers | 19 | 8 | 10 | 8 |

*Summary of Quantitative Findings of the Top 10 Growers*

The take home messages from examination of the financial and productive performance of the Top 10 growers compared to the average in 08/09 are:

1. They are 39.6% more productive.

2. Their net sales return is 7.1% higher.

3. Their on-farm costs per carton are 25.9% lower.

4. Have labour costs (owners, employees and contractors) 25.5% lower per carton.

5. Freight outwards costs are lower by 14.1%.

The Discussion section will outline factors which CDIPM believe contribute to the performance of the Top 10 growers. The Discussion and Recommendations sections will provide further considerations on how the factors contributing to the performance of the Top 10 growers could be verified.

# Discussion

## Data Collection and Analysis

This project compiled extensive production, packing and marketing data from 46 banana growers in Australia who represent approximately 22% of the estimated area planted to bananas in Australia. Further, the project received from growers detailed employment, harvest and financial data for the 08/09 season.

This data was analysed through the development of a purpose built software program entitled 'Banana BM'. Participant growers and others have received an extensive series of:

1. individual financial and non-financial reports which has allowed them to benchmark how they are performing against other growers;

2. graphs which provide clear comparisons on individual performance against all other growers in relation to a particular KPI (60 reports in total); and

3. finally the industry has the first round of data which demonstrates how 22% of growers grow, pack and market bananas (100 reports in total).

## Observations on the Top 10 Growers

Analysis of the data shows clearly that individual grower performance in terms of productivity, sales returns and costs of production, varies significantly from grower to grower. And whilst the Top 10 growers compare well in financial return terms against other horticultural growers, there is a significant portion of growers whose performance does not. Further, the 08/09 year was anecdotally seen by many growers as a 'good' year and therefore the average performance across more years may be even worse..

However, when compared with the average the Top 10 growers were shown to:

1. be 39.6% more productive (in terms of cartons per hectare).

2. have 7.1% higher net sales returns per carton.

3. have 25.9% lower on-farm costs production costs per carton.

4. have labour costs (owners, employees and contractors) 25.5% lower per carton.

5. have freight costs that are 14.1% lower per carton.

The individual grower financial and non-financial reports provide a valuable barometer to each grower to evaluate how they are performing against other growers, across a very broad range of KPI's. By analyzing the reports a grower is able to identify those areas in their business where they need to improve, where they are doing well, and just as importantly, identify how far away from 'best practice' they in fact are.

This information combined with the responses made by each of the 46 contributing growers pertaining to how they undertake a wide variety of tasks associated with producing, packing and marketing of bananas, will serve as a valuable tool for identifying improved operational practices. Presently, these qualitative reports are only available to contributing growers. Over time as more data is compiled which can then be statistically proven to result in improved operational and business performance, the industry will benefit by being able to identify Australian best practice standards of production, packing and marketing.

Our general observations and conclusions on why the Top 10 growers are in that position (again based on a single years' worth of data include:

1. Business owners have a higher level of motivation and therefore better work ethic than others.

2. Business owners have a 'hands-on' approach in the daily farm operations. No corporate farms or very large farms were in the Top 10 partly because the owners cannot be 'across' all aspects' of the business, all of the time.

3. Business owners have developed remuneration and reward systems that motivate and reward staff for above 'average' contributions.

4. Additionally owners by working closely with their staff, have developed a 'lead by example' approach. That is, these business owners work harder than anyone else in the business.

5. Business owners have a stronger focus on the marketing of their product. That is, they are more aware of what is happening in the major metropolitan market places on a daily or weekly basis, so have better 'market intelligence'. They visit the market places more frequently and they communicate there greater market knowledge to their customers / marketers. (Conversely, less successful growers are less hands on and are more likely not to take any notice of what is happening in the market place and be more 'trusting' that the their customers / marketers are doing the best possible 'job' for them. This may not be a correct strategy to adopt).

6. Business owners have developed a clear picture of the 'recipe' that they follow in terms of production and packing. That is, they know clearly how they want to grow and pack bananas and are less likely to undertake fundamental changes in their business operation processes. As a consequence the Top 10 growers are generally more established growers who have many years of experience. Interestingly, these growers are not 'stuck' in the old production cycles of their forebears and are quite willing to adjust, albeit on a small scale, to improve their overall operation.

7. Business owners have a clear understanding of what is required in the business on daily, weekly and monthly basis (and so is linked to (5)). Further, their team of workers are also aware of what is required and when. As a consequence, this results in greater labour efficiency and lower costs, and CDIPM believe, delivers a more 'settled' and possibly satisfied workforce.

8. Business owners have extended this systems approach from the paddock and to packing shed to having a greater knowledge through the development of information systems (reports, spreadsheets, recording devices etc) in their business. The Top 10 growers are more likely to regularly compile statistics associated with their on-farm business activities, their productive (production and labour) and financial performance on a more regular basis than their counterparts.

9. Based on the fact that none of the growers who were in the Top 10 were contract packer suppliers, that financially growers may be better off to pack their own fruit.

10. If net return per hectare is the sole criteria used to evaluate business 'success' businesses who pack less than 50k cartons per annum are less likely to be successful than larger growers. However, our observations suggest that the best performing businesses are family owned and run operations who continue to be able to maintain a higher level of daily control and input into farming operations (as per points (1) and (2)) raised above.

11. CDIPM considers that the Top 10 growers have developed production and packing processes / systems that are superior to others, e.g. why are they getting consistently larger fruit. Whether or not this is the case can only be reliably ascertained with data collection and analysis across more years. However, CDIPM have developed a short list of areas that warrant further detailed

investigation including HR / labour management, planting density, pest and disease management, fertilizer and chemical application and management, packing systems (particularly as it relates to labour) and packout standards, handling systems (from bagging to packing) and marketing systems.

Readers, including both growers and industry, are cautioned about making general conclusions about on industry performance based on the collection of a single year of data. Further data collection is required, to consider if the Top 10 growers performance is replicable across more than one year, which would then provide of consistently better farming and management practices.

Through this report CDIPM have made available data on 'Industry' averages which can be used by industry organisations and others for future R&D planning of project activities.

Over time, Australia will be able to establish best practice production, packing and marketing processes and standards, which is verifiable by financial and productive benchmarks. This information will then allow for direct comparisons with international best practice benchmarks and processes.

CDIPM will make a series of recommendations about ongoing data collection and analysis and special areas warranting additional focus in the Recommendations section.

# Technology Transfer

## Communication to Contributing Growers

Each of the 46 growers who supplied a full data file to the study has been provided with:

1. An electronic 'data file' of the information that they provided to CDIPM. This information was provided for two reasons. Firstly, to provide a historical record for the grower of the information they provided and secondly, to allow them to advise of any amendments required to their information. This electronic data file was provided prior to the grower reports being produced.

2. An electronic file including:

    a. their individual Financial benchmarking report with results compared against all other growers included in the study.

    b. their individual Non-Financial benchmarking report with results compared against all other growers included in the study.

    c. an extensive series of graphs for specifically selected financial and non-financial KPI's depicting the results of all growers included in the study.

    d. a qualitative benchmarking report providing the responses of all 46 growers to the extensive range of questions asked during the course of the study.

3. An invitation to contact CDIPM at the conclusion of this study to discuss their own individual results. CDIPM has committed to providing thoughts / recommendations to individual growers on the areas that we believe they should be focusing on to improve their economic viability. CDIPM is providing this offer at no additional cost to the project.

## Communication to Non-Contributing Growers / Rest of Industry

*Grower Presentations*

CDIPM communicated to industry the key findings and conclusions of the study to industry via a series of meetings in each of the major production districts. The details of these events, the method of delivery, and comments on attendance are provided in Table 23.

Table 22: Details of Grower Presentations for Project

| Who | Date | Location | Delivery Method | No. of Growers Attending |
|---|---|---|---|---|
| Carnarvon growers | 13th April, 2011 | Brisbane | Video conference | 4 |
| Kennedy Valley growers | 14th April, 2011 | Kennedy | Shed meeting | 7 |
| Cassowary Coast (Tully / Innifail) Grower Association | 14th April, 2011 | Innisfail | Local grower association meeting | 34 |
| Atherton Tableland Growers | 15th April, 2011 | Walkamin | Shed meeting | 4 |

| Who | Date | Location | Delivery Method | No. of Growers Attending |
|---|---|---|---|---|
| Coffs Harbour Growers | 3rd May, 2011 | Coffs Harbour | Local grower assocation meeting | 16 |

Please note that:

1. The content was varied slightly for each presentation depending on the location of the meeting so as to provide the greatest level of relevance to attending growers.

2. Growers were given and did in all cases take up the opportunity to ask questions of the research.

3. Feedback appeared very positive with no adverse comments relating to the research outcomes.

4. Some growers raised concerns about the circulation of information to other members of the supply chain who may 'use it against them'.

5. No meeting was held in Tweed Heads / Murwillumbah as growers were not prepared to undertake a shed meeting.

*ABGC*

CDIPM will provide a de-briefing of the final report to the CEO of the ABGC, and if required the ABGC Board, at a mutually convenient time.

This meeting should include discussion and agreement obtained about how financial information (particularly costs) is to be disseminated to parties other than growers. During the course of the study and at the industry meetings growers expressed some concern regarding the fact that, not handled correctly other supply chain members could use the information 'against them'.

CDIPM's view is that they in conjunction with members or staff of the ABGC should facilitate meetings with other supply chain members in order to ensure the 'correct' messages and information are provided and so mitigate the risk of 'misunderstandings' occuring. These discussions will be external of the current project brief.

An electronic copy of the industry reports will be provided to the ABGC for subsequent inclusion on their website and in articles published in their six monthly periodical.

*Grower Associations*

CDIPM will make available an electronic copy of the industry reports in association with a notation that the final report will be made available by HAL in due course to each of the known local / regional grower associations only after resolution of the issues raised above in the "ABGC section" are addressed.

# Recommendations

The benefits of benchmarking come from comparing an individual grower's business performance across multiple years. Further, by having data from multiple growers over multiple years an improved picture of how the industry is moving towards international best practice can be made. This is one area where previous benchmarking programs have failed over the years. That is, the industry has failed to provide the resources necessary to enable the activity to continue over a number of years.

1. This project highlighted significant differences in the farm management activities of individual growers which in turn is contributing to wide variations in productive and financial performance. However, the data compiled however relates to one single year, 2008/09, and may not necessarily be indicative of industry performance across multiple years. Compilation of at least two years of additional data from the existing grower group will provide more statistical accuracy. Statistical accuracy will further enhanced by increasing the number of growers involved to achieve 30% representation of the productive area under production. Further, by having up to three years of data, growers will be able to identify the benefits (or costs) of any changed practices.

   If the project is extended, the consultant should work with growers to achieve greater harmonisation or standardisation in how data is collected.

2. CDIPM recommends that greater focus in any Round II data collection and analysis be undertaken in order to more comprehensively define the operational differences between the Top 10 (or 15) growers and the rest of the industry in the following areas:

   a. Development of a grower index based on HR management and employment practice, including exploration of linkages to sales returns and / or profitability.

   b. Development of a grower index based on the skills exhibited by growers in the marketing of bananas, including exploration of linkages to sales returns and / or profitability.

   c. Planting density and factors contributing to choices.

   d. Pest and disease management practices.

   e. Fertiliser and chemical application and management.

   f. Packing systems and labour productivity within packing sheds.

   g. Soil types.

3. Average pack quality and the linkage to grower returns has not been explored as part of this project. CDIPM have limited assessment skills in this area however we do believe that a project which explores the linkage between the two may be justified. However, a concerning factor is that product quality varies from day to day and month to month despite the introduction of quality systems

   By development of quality indices and exploring the linkage to sales returns, growers may be able to identify if they are in in fact being rewarded for the quality of produce grown. How these quality indices are developed is worthy of further consideration in the opinion of CDIPM.

4. As discussed previously, marketing skills is an area which CDIPM generally considers to be lacking amongst growers. We understand that a supply chain project is currently being undertaken (amongst other topics) to investigate and provide solutions to these matters. The

establishment of an 'index' in any Round II project will identify the extent of the problem. CDIPM would seek to work with the consultants on the supply chain project to identify any synergies and commonality of language that could be introduced.

5. CDIPM also understands (without understanding the content) that an industry extension project is currently being implemented. CDIPM considers that at the conclusion of any Round II (or III) project that valuable information pertaining to how growers may seek to achieve operational business practice will be developed. Participant growers will have access to this information, however, others outside the project group will not. The ABGC and HAL need to consider how best to equitably make this information available. Further, how the information from this project can be 'linked' to the existing extension project should be investigated. However, our observations are that not all growers utilise the traditional methods of industry extension, newsletters and government extension officers are outdated and some growers adopt or receive information better if that information is provided in a 1 on 1 or small group situation.

# Acknowledgments

The consultants wish to express their thanks to both Horticulture Australia Ltd and the Australian Banana Growers Council for the opportunity to undertake this consultancy. We greatly enjoyed working on this project and, hopefully, contributing to a better livelihood for banana growers.

The consultancy team expresses their sincere gratitude to all the growers who willingly gave up their valuable time to contribute to this study. Their overall willingness to provide detailed and often confidential information is greatly appreciated.

In particular, we would like to express our gratitude to John Tyas, Industry Services Manager, who provided us with significant assistance in directing the project.

We look forward to being of further service to growers and the banana industry.

# Appendix 1 – Individual Grower Benchmarking Report (Financial) & Selected Growers Comparison

| KPI Performance Summary - Financial | | 2009 Grower Example Pty Ltd | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| **KPI** | **Value** | **Minimum** | **Maximum** | **Average** | **Rank** | **No. of Farms*** |
| **Gross Financial Statistics** | | | | | | |
| Total income ($) | $1,155,400 | | | | | 45 |
| Total gross banana sales ($) | $1,144,981 | | | | | 45 |
| Total non-banana sales ($) | $10,419 | | | | | 45 |
| | | | | | | 45 |
| Administration ($) | $684 | | | | | 45 |
| Contract spraying ($) | $2,990 | | | | | 45 |
| Electricity and gas ($) | $7,192 | | | | | 45 |
| Fertiliser and chemicals ($) | $100,345 | | | | | 45 |
| Field consumables ($) | $927 | | | | | 45 |
| Finance ($) | $1,131 | | | | | 45 |
| Freight and storage ($) | $176,800 | | | | | 45 |
| Fuel and oil ($) | $22,769 | | | | | 45 |
| Hire of plant and equipment ($) | $3,550 | | | | | 45 |
| Levies ($) | $7,559 | | | | | 45 |
| Insurance ($) | $364 | | | | | 45 |
| Legal and accounting ($) | $15,891 | | | | | 45 |
| Marketing and promotion ($) | $5,246 | | | | | 45 |
| Miscellaneous ($) | $2,570 | | | | | 45 |
| Packaging ($) | $127,495 | | | | | 45 |
| Rates ($) | $6,869 | | | | | 45 |
| R&M and replacements ($) | $72,694 | | | | | 45 |
| Soil, leaf and water testing ($) | $7,164 | | | | | 45 |
| Telephone and internet ($) | $3,258 | | | | | 45 |
| | | | | | | |

| KPI Performance Summary - Financial | | 2009 Grower Example Pty Ltd | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| **KPI** | **Value** | **Minimum** | **Maximum** | **Average** | **Rank** | **No. of Farms*** |
| Wages (employees) and contract labour services ($) | $225,526 | | | | | 45 |
| Wages and on costs – owner ($) | $119,900 | | | | | 45 |
| | | | | | | |
| **Summary Gross Farm Statistics ($)** | | | | | | |
| Total net banana sales ($) | $960,622 | | | | | 45 |
| Total off-farm costs ($) | $184,359 | | | | | 45 |
| Total on-farm costs ($) | $726,565 | | | | | 45 |
| Net banana sales per planted ha ($/ha) | $36,805 | $15,267 | $63,942 | $42,230 | 19 | 45 |
| Net banana sales per ha of total banana area ($/ha) | $36,805 | $14,946 | $56,590 | $39,473 | 17 | 45 |
| Total costs of goods sold ($) | $794,581 | | | | | 45 |
| COGS per planted ha ($/ha) | $30,444 | $14,724 | $58,703 | $35,471 | 19 | 45 |
| COGS per ha of total banana area ($/ha) | $30,444 | $14,414 | $58,703 | $33,156 | 21 | 45 |
| Total gross profit ($) | $360,819 | | | | | 45 |
| Gross profit per planted ha ($/ha) | $13,824 | $-11,441 | $31,488 | $7,607 | 9 | 45 |
| Gross profit per ha of total banana area ($/ha) | $13,824 | $-11,441 | $28,291 | $7,110 | 8 | 45 |
| Gross profit margin (%) | 31.2% | -42.2% | 45.1% | 17.7% | 9 | 45 |
| Total expenses ($) | $116,343 | | | | | 45 |
| Expenses per planted ha ($/ha) | $4,458 | $1,530 | $13,649 | $4,275 | 21 | 45 |
| Expenses per ha of total banana area ($/ha) | $4,458 | $1,530 | $13,649 | $3,996 | 22 | 45 |
| Total net profit ($) | $244,476 | | | | | 45 |
| Net profit per planted ha ($/ha) | $9,367 | $-14,049 | $25,163 | $3,331 | 10 | 45 |
| Net profit per ha of total banana area ($/ha) | $9,367 | $-14,049 | $22,609 | $3,114 | 9 | 45 |
| Net profit margin (%) | 21.2% | -51.8% | 39.3% | 7.7% | 10 | 45 |

| KPI Performance Summary - Financial | | 2009 Grower Example Pty Ltd | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| **KPI** | **Value** | **Minimum** | **Maximum** | **Average** | **Rank** | **No. of Farms*** |
| **% On Farm Costs (%)** | | | | | | |
| % Administration | 0.1% | 0.0% | 0.9% | 0.1% | 24 | 45 |
| % Consultant fees | 0.0% | 0.0% | 1.9% | 0.4% | 28 | 45 |
| % Contract packing | 0.0% | 0.0% | 52.3% | 7.7% | 33 | 45 |
| % Contract spraying | 0.4% | 0.0% | 2.3 % | 0.5% | 23 | 45 |
| % Electricity and gas | 1.0% | 0.0% | 2.3% | 0.9% | 31 | 45 |
| % Depreciation and amortization | 0.0% | 0.0% | 10.2% | 0.6% | 35 | 45 |
| % Employment expenses | 0.0% | 0.0% | 0.8% | 0.3% | 21 | 45 |
| % Fertiliser and chemicals | 13.8% | 0.0% | 26.4% | 11.9% | 26 | 45 |
| % Field consumables | 0.1% | 0.0% | 5.0% | 1.2% | 19 | 45 |
| % Finance costs | 0.2% | 0.0% | 13.5% | 1.1% | 15 | 45 |
| % Freight inwards | 0.0% | 0.0% | 2.2% | 0.0% | 36 | 45 |
| % Fuel and oil | 3.1% | 0.8% | 6.4% | 2.8% | 33 | 45 |
| % Hire of plant and replacement | 0.5% | 0.0% | 2.6% | 0.4% | 32 | 45 |
| % Insurance | 0.1% | 0.0% | 3.2% | 0.6% | 5 | 45 |
| % Lease and rental (non-financial) | 0.0% | 0.0% | 7.2% | 0.9% | 34 | 45 |
| % Legal and accounting | 2.2% | 0.0% | 3.3% | 0.7% | 41 | 45 |
| % Licenses, permits and fees | 0.0% | 0.0% | 0.5% | 0.1% | 11 | 45 |
| % Marketing and promotion | 0.7% | 0.0% | 1.3% | 0.2% | 40 | 45 |
| % Miscellaneous | 0.4% | 0.0% | 2.3% | 0.2% | 36 | 45 |
| % Packaging | 17.5% | 0.0% | 34.3% | 14.9% | 30 | 45 |
| % Planting materials | 0.0% | -0.3% | 2.1% | 0.1% | 33 | 45 |
| % Rates | 0.9% | 0.0% | 2.8% | 0.5% | 31 | 45 |
| % Repairs & maintenance and replacements | 10.0% | 2.1% | 14.2% | 5.8% | 40 | 45 |
| % Soil, leaf and water testing | 1.0% | 0.0% | 1.0% | 0.1% | 45 | 45 |

| KPI Performance Summary - Financial | | 2009 Grower Example Pty Ltd | | | | |
|---|---|---|---|---|---|---|
| **KPI** | **Value** | **Minimum** | **Maximum** | **Average** | **Rank** | **No. of Farms*** |
| KPI | Value | Minimum | Maximum | Average | Rank | No. of Farms |
| % Telephone and internet | 0.4% | 0.0% | 1.4% | 0.3% | 32 | 45 |
| % Wages (employees) and contract labour services | 31.0% | 0.0% | 64.8% | 39.1% | 28 | 45 |
| % Wages and on costs – owners | 16.5% | 0.0% | 79.8% | 8.1% | 30 | 45 |
| % Water purchase | 0.0% | 0.0% | 2.4% | 0.4% | 40 | 45 |
| **On Farm Costs per Carton ($/carton)** | | | | | | |
| Administration ($/carton) | $0.01 | $0.00 | $0.18 | $0.02 | 19 | 45 |
| Consultant fees ($/carton) | $0.00 | $0.00 | $0.27 | $0.06 | 28 | 45 |
| Contract packing ($/carton) | $0.06 | $0.00 | $10.51 | $1.17 | 33 | 45 |
| Contract spraying ($/carton) | $0.06 | $0.00 | $0.38 | $0.08 | 24 | 45 |
| Electricity and gas ($/carton) | $0.13 | $0.00 | $0.62 | $0.13 | 29 | 45 |
| Depreciation and amortization ($/carton) | $0.00 | $0.00 | $1.86 | $0.09 | 35 | 45 |
| Employment expenses ($/carton) | $0.00 | $0.00 | $0.17 | $0.04 | 21 | 45 |
| Fertiliser and chemicals ($/carton) | $1.85 | $0.00 | $5.81 | $1.80 | 21 | 45 |
| Field consumables ($/carton) | $0.02 | $0.00 | $1.03 | $0.18 | 18 | 45 |
| Finance costs ($/carton) | $0.02 | $0.00 | $2.22 | $0.17 | 15 | 45 |
| Freight inwards ($/carton) | $0.00 | $0.00 | $0.29 | $0.01 | 36 | 45 |
| Fuel and oil ($/carton) | $0.42 | $0.13 | $1.51 | $0.43 | 29 | 45 |
| Hire of plant and replacement ($/carton) | $0.07 | $0.00 | $0.45 | $0.07 | 30 | 45 |
| Insurance ($/carton) | $0.01 | $0.00 | $0.46 | $0.09 | 5 | 45 |
| Lease and rental (non-financial) ($/carton) | $0.00 | $0.00 | $2.42 | $0.14 | 34 | 45 |
| Legal and accounting ($/carton) | $0.29 | $0.00 | $0.61 | $0.11 | 39 | 45 |

| KPI Performance Summary - Financial | | 2009 Grower Example Pty Ltd | | | | |
|---|---|---|---|---|---|---|
| **KPI** | **Value** | **Minimum** | **Maximum** | **Average** | **Rank** | **No. of Farms*** |
| Licenses, permits and fees ($/carton) | $0.00 | $0.00 | $0.18 | $0.02 | 11 | 45 |
| Marketing and promotion ($/carton) | $0.10 | $0.00 | $0.24 | $0.03 | 37 | 45 |
| Miscellaneous ($/carton) | $0.05 | $0.00 | $0.37 | $0.03 | 33 | 45 |
| Packaging ($/carton) | $2.36 | $0.00 | $7.03 | $2.27 | 21 | 45 |
| Planting materials ($/carton) | $0.00 | -$0.05 | $0.42 | $0.02 | 33 | 45 |
| Rates ($/carton) | $0.13 | $0.00 | $0.48 | $0.07 | 32 | 45 |
| Repairs & maintenance and replacements ($/carton) | $1.34 | $0.34 | $2.79 | $0.88 | 35 | 45 |
| Soil, leaf and water testing ($/carton) | $0.13 | $0.00 | $0.13 | $0.02 | 45 | 45 |
| Telephone and internet ($/carton) | $0.06 | $0.00 | $0.37 | $0.04 | 25 | 45 |
| Wages (employees) and contract labour services ($/carton) | $4.17 | $0.00 | $11.72 | $5.95 | 26 | 45 |
| Wages and on costs – owners ($/carton) | $2.22 | $0.00 | $12.28 | $1.23 | 27 | 45 |
| Water purchase ($/carton) | $0.00 | $0.00 | $0.74 | $0.06 | 40 | 45 |
| On-Farm costs per carton ($/carton) | $13.42 | $7.96 | $33.82 | $15.20 | 10 | 45 |
| **% Off-Farm Costs** | | | | | | |
| % Freight and storage | 95.9% | 0.0% | 100.0% | 89.5% | 41 | 45 |
| % Levies | 4.1% | 0.0% | 100.0% | 7.6% | 10 | 45 |
| % Marketing fees and commissions | 0.0% | 0.0% | 0.0% | 0.0% | 45 | 45 |
| % Ripening fees | 0.0% | 0.0% | 26.4% | 2.9% | 41 | 45 |
| **Off-Farm Costs per Carton ($/carton)** | | | | | | |
| Freight and storage ($/carton) | $3.27 | $0.00 | $5.95 | $2.98 | 34 | 45 |
| Levies ($/carton) | $0.14 | $0.00 | $1.08 | $0.25 | 13 | 45 |
| Marketing fees and commissions ($/carton) | $0.00 | $0.00 | $0.00 | $0.00 | 45 | 45 |
| Ripening fees ($/carton) | $0.00 | $0.00 | $0.82 | $0.10 | 41 | 45 |

# Appendix 2 – Individual Grower Benchmarking Report (Non-Financial) & Selected Growers Comparison

| KPI Performance Summary – Non-Financial | | 2009 Grower Example Pty Ltd | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| **KPI** | **Value** | **Minimum** | **Maximum** | **Average** | **Rank** | **No. of Farms*** |
| **Individual Gross Farm Statistics** | | | | | | |
| Total planted banana area (ha) | 26.1 | | | | | 45 |
| Total unplanted banana area (ha) | 0.0 | | | | | 45 |
| Total banana area (ha) | 26.1 | | | | | 45 |
| | | | | | | 45 |
| Total production – All varieties (cartons) | 54,122 | | | | | 45 |
| Total Cavendish production (cartons) | 54,122 | | | | | 45 |
| Total Lady Finger production (cartons) | 0 | | | | | 45 |
| Total Ducasse production (cartons) | 0 | | | | | 45 |
| Total Gold finger production (cartons) | 0 | | | | | 45 |
| Total Plantain production (cartons) | 0 | | | | | 45 |
| | | | | | | 45 |
| Average age of plantation (years) | 4.54 | 1.10 | 16.16 | 4.25 | | 45 |
| Average block size (ha/block) | 8.70 | 0.70 | 17.46 | 4.46 | | 45 |
| **Production Statistical Analysis** | | | | | | |
| % Medium of total Cavendish production | 4.4% | | | | | 45 |
| % Large of total Cavendish production | 13.7% | | | | | 45 |
| % XL of total Cavendish production | 81.8% | | | | | 45 |
| **Labour Productivity** | | | | | | |
| Total number of FTE's | 7.7 | 0.6 | 159.4 | 642.6 | | 45 |
| No. of FTE's per planted hectare (FTE/ha) | 0.29 | 0.03 | 0.51 | 0.29 | 30 | 45 |
| No. of FTE's per hectare of farmed area (FTE/ha) | 0.29 | 0.03 | 0.51 | 0.27 | 34 | 45 |
| No. of cartons per FTE (cartons/FTE) | 7,066 | 2,115 | 53,413 | 7,352 | 27 | 45 |
| | | | | | | |

| KPI Performance Summary – Non-Financial | | 2009 Grower Example Pty Ltd | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| **KPI** | **Value** | **Minimum** | **Maximum** | **Average** | **Rank** | **No. of Farms*** |
| Net banana sales per FTE ($/FTE) | $125,424 | $56,421 | $1,262,817 | $120,257 | 26 | 45 |
| Total on-farm costs per FTE ($/FTE) | $94,864 | $66,521 | $694,481 | $111,681 | 10 | 45 |
| **Production Productivity** | | | | | | |
| No. of cartons per planted hectare (cartons/ha) | 2,074 | 493 | 3,750 | 2,146 | 23 | 45 |
| No. of cartons per farmed hectare (cartons/ha) | 2,074 | 493 | 3,750 | 2,005 | 20 | 45 |

** One growers' figures excluded due to start up nature of business causing abnormalities in the calculation of minimum and maximum values.*

# Appendix 3 – All Growers / Industry Group Benchmarking Report (Financial)

| All Growers / Industry Group Benchmarking Report (Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| **Farm Statistics – All Growers / Industry Group** | | | |
| Average business net banana sales ($) | | | $2,066,813 |
| Net banana sales per planted ha ($/ha) | $15,267 | $63,942 | $42,230 |
| Net banana sales per ha of total banana area ($/ha) | $14,946 | $56,590 | $39,473 |
| Average business costs of goods sold ($) | | | $1,736,029 |
| Average business COGS per planted ha ($/ha) | $14,724 | $58,703 | $35,471 |
| Average business COGS per ha of total banana area ($/ha) | $14,414 | $58,703 | $33,156 |
| Average business gross profit ($) | | | $372,283 |
| Average business gross profit per planted ha ($/ha) | $-11,441 | $31,488 | $7,607 |
| Average business gross profit per ha of total banana area ($/ha) | $-11,441 | $28,291 | $7,110 |
| Average business gross profit margin (%) | -42.2% | 45.1% | 17.7% |
| Average business expenses ($) | | | $209,242 |
| Average business expenses per planted ha ($/ha) | $1,530 | $13,649 | $4,275 |
| Average business expenses per ha of total banana area ($/ha) | $1,530 | $13,649 | $3,996 |
| Average business net profit ($) | | | $163,041 |
| Average business net profit per planted ha ($/ha) | $-14,049 | $25,163 | $3,331 |
| Average business net profit per ha of total banana area ($/ha) | $-14,049 | $22,609 | $3,114 |
| Average business net profit margin (%) | -51.8% | 39.3% | 7.7% |
| **% On-Farm Costs - All Growers / Industry Group** | | | |
| % Administration | 0.0% | 0.9% | 0.1% |
| % Consultant fees | 0.0% | 1.9% | 0.4% |
| % Contract packing | 0.0% | 52.3% | 7.7% |
| % Contract spraying | 0.0% | 2.3 % | 0.5% |
| % Electricity and gas | 0.0% | 2.3% | 0.9% |
| % Depreciation and amortization | 0.0% | 10.2% | 0.6% |
| % Employment expenses | 0.0% | 0.8% | 0.3% |

| All Growers / Industry Group Benchmarking Report (Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| % Fertiliser and chemicals | 0.0% | 26.4% | 11.9% |
| % Field consumables | 0.0% | 5.0% | 1.2% |
| % Finance costs | 0.0% | 13.5% | 1.1% |
| % Freight inwards | 0.0% | 2.2% | 0.0% |
| % Fuel and oil | 0.8% | 6.4% | 2.8% |
| % Hire of plant and replacement | 0.0% | 2.6% | 0.4% |
| % Insurance | 0.0% | 3.2% | 0.6% |
| % Lease and rental (non-financial) | 0.0% | 7.2% | 0.9% |
| % Legal and accounting | 0.0% | 3.3% | 0.7% |
| % Licenses, permits and fees | 0.0% | 0.5% | 0.1% |
| % Marketing and promotion | 0.0% | 1.3% | 0.2% |
| % Miscellaneous | 0.0% | 2.3% | 0.2% |
| % Packaging | 0.0% | 34.3% | 14.9% |
| % Planting materials | -0.3% | 2.1% | 0.1% |
| % Rates | 0.0% | 2.8% | 0.5% |
| % Repairs & maintenance and replacements | 2.1% | 14.2% | 5.8% |
| % Soil, leaf and water testing | 0.0% | 1.0% | 0.1% |
| % Telephone and internet | 0.0% | 1.4% | 0.3% |
| % Wages (employees) and contract labour services | 0.0% | 64.8% | 39.1% |
| % Wages and on costs – owners | 0.0% | 79.8% | 8.1% |
| % Water purchase | 0.0% | 2.4% | 0.4% |
| **On-Farm Costs per Carton - All Growers / Industry Group** | | | |
| Administration ($/carton) | $0.00 | $0.18 | $0.02 |
| Consultant fees ($/carton) | $0.00 | $0.27 | $0.06 |
| Contract packing ($/carton) | $0.00 | $10.51 | $1.17 |
| Contract spraying ($/carton) | $0.00 | $0.38 | $0.08 |

| All Growers / Industry Group Benchmarking Report (Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| Electricity and gas ($/carton) | $0.00 | $0.62 | $0.13 |
| Depreciation and amortization ($/carton) | $0.00 | $1.86 | $0.09 |
| Employment expenses ($/carton) | $0.00 | $0.17 | $0.04 |
| Fertiliser and chemicals ($/carton) | $0.00 | $5.81 | $1.80 |
| Field consumables ($/carton) | $0.00 | $1.03 | $0.18 |
| Finance costs ($/carton) | $0.00 | $2.22 | $0.17 |
| Freight inwards ($/carton) | $0.00 | $0.29 | $0.01 |
| Fuel and oil ($/carton) | $0.13 | $1.51 | $0.43 |
| Hire of plant and replacement ($/carton) | $0.00 | $0.45 | $0.07 |
| Insurance ($/carton) | $0.00 | $0.46 | $0.09 |
| Lease and rental (non-financial) ($/carton) | $0.00 | $2.42 | $0.14 |
| Legal and accounting ($/carton) | $0.00 | $0.61 | $0.11 |
| Licenses, permits and fees ($/carton) | $0.00 | $0.18 | $0.02 |
| Marketing and promotion ($/carton) | $0.00 | $0.24 | $0.03 |
| Miscellaneous ($/carton) | $0.00 | $0.37 | $0.03 |
| Packaging ($/carton) | $0.00 | $7.03 | $2.27 |
| Planting materials ($/carton) | -$0.05 | $0.42 | $0.02 |
| Rates ($/carton) | $0.00 | $0.48 | $0.07 |
| Repairs & maintenance and replacements ($/carton) | $0.34 | $2.79 | $0.88 |
| Soil, leaf and water testing ($/carton) | $0.00 | $0.13 | $0.02 |
| Telephone and internet ($/carton) | $0.00 | $0.37 | $0.04 |
| Wages (employees) and contract labour services ($/carton) | $0.00 | $11.72 | $5.95 |
| Wages and on costs – owners ($/carton) | $0.00 | $12.28 | $1.23 |
| Water purchase ($/carton) | $0.00 | $0.74 | $0.06 |
| On-Farm costs per carton ($/carton) | $7.96 | $33.82 | $15.20 |
| | | | |

| All Growers / Industry Group Benchmarking Report (Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| **% Off-Farm Costs - All Growers / Industry Group** | | | |
| % Freight and storage | 0.0% | 100.0% | 89.5% |
| % Levies | 0.0% | 100.0% | 7.6% |
| % Marketing fees and commissions | 0.0% | 0.0% | 0.0% |
| % Ripening fees | 0.0% | 26.4% | 2.9% |
| **% Off-Farm Costs per Carton - All Growers / Industry Group** | | | |
| Freight and storage ($/carton) | $0.00 | $5.95 | $2.98 |
| Levies ($/carton) | $0.00 | $1.08 | $0.25 |
| Marketing fees and commissions ($/carton) | $0.00 | $0.00 | $0.00 |
| Ripening fees ($/carton) | $0.00 | $0.82 | $0.10 |

** One growers' figures excluded due to start up nature of business causing abnormalities in the calculation of minimum and maximum values.*

# Appendix 4 – All Growers / Industry Group Benchmarking Report (Non-Financial)

| All Growers / Industry Group Benchmarking Report (Non-Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| **Cavendish Production Statistical Analysis – All Growers / Industry Group** | | | |
| Average Cavendish production – medium (cartons) | | | 6,428 |
| Average Cavendish production – large (cartons) | | | 20,479 |
| Average Cavendish production – XL (cartons) | | | 74,601 |
| Average Cavendish production – 2XLmedium (cartons) | | | 255 |
| Average Cavendish production – other 1 (cartons) | | | 1,990 |
| Average Cavendish production – other 2 (cartons) | | | 170 |
| % Medium of total production – Cavendish | | | 6.2% |
| % Large of total production – Cavendish | | | 19.7% |
| % XL of total production – Cavendish | | | 71.8% |
| % 2XL of total production – Cavendish | | | 0.2% |
| % Other 1 of total production – Cavendish | | | 1.9% |
| % Other 2 of total production – Cavendish | | | 0.2% |
| **Lady Finger Production Statistical Analysis – All Growers / Industry Group** | | | |
| Average Lady Finger production – medium (cartons) | | | 33 |
| Average Lady Finger production – large (cartons) | | | 122 |
| Average Lady Finger production – XL (cartons) | | | 908 |
| % Medium of total production – Lady Finger | | | 3.1% |
| % Large of total production – Lady Finger | | | 11.5% |
| % XL of total production – Lady Finger | | | 85.4% |
| **Total Production Statistical Analysis – All Growers / Industry Group** | | | |
| % Cavendish production of total production | | | 99.0% |
| % Lady Finger production of total production | | | 1.0% |
| % Ducasse production of total production | | | 0.0% |

| All Growers / Industry Group Benchmarking Report (Non-Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| % Gold Finger production of total production | | | 0.0% |
| % Plantain production of total production | | | 0.0% |
| **Total Production Statistical Analysis – All Growers / Industry Group** | | | |
| Average no. of FTE's per planted hectare (FTE/ha) | | | 0.29 |
| Average no. of FTE's per hectare of farmed area (FTE/ha) | | | 0.27 |
| Average no. of cartons packed per FTE (cartons/FTE) | | | 7,352 |
| Average net banana sales per FTE ($/FTE) | | | $120,257 |
| Average on-farm costs per FTE ($/FTE) | | | $111,681 |
| **Total Production Statistical Analysis – All Growers / Industry Group** | | | |
| No. of cartons per planted hectare (cartons/ha) | | | 2,146 |
| No. of cartons per farmed ha (cartons/ha) | | | 2,005 |
| **Employment Statistical Analysis – All Growers / Industry Group** | | | |
| Total no. of family FTE's | | | 83.2 |
| Total no. of employee FTE's | | | 559.5 |
| Average % of family FTE's of total | | | 12.9% |
| Average % of employee FTE's of total | | | 87.1% |
| | | | |
| % Australian employees of total | | | 65.4% |
| % Backpacker employees of total | | | 15.6% |
| % Asian / Indian employees of total | | | 15.9% |
| % Pacific Islander / PNG employees of total | | | 0.1% |
| % Other employees of total | | | 0.0% |
| % Don't know employees of total | | | 3.0% |
| | | | |

| All Growers / Industry Group Benchmarking Report (Non-Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| **Farm Statistics – All Growers / Industry Group** | | | |
| Average farm size (ha) | | | 52.36 |
| Average unplanted banana area (ha) | | | 3.42 |
| Average planted area (ha) | | | 48.94 |
| Average age of all plantations (years) | | | 4.25 |
| Average block size (ha/block) | | | 4.97 |
| Total banana area (ha) | | | 2,202.4 |
| Total unplanted banana area (ha) | | | 153.8 |
| Total banana area (ha) | | | 2,356.2 |
| **Planting Material – All Growers / Industry Group** | | | |
| % Tissue culture of total planted area | | | 20% |
| % Tissue culture (own nursery) of total planted area | | | 1% |
| % Bits – own plantation of total planted area | | | 71% |
| % Bits – another plantation of total planted area | | | 5% |
| % Pots of total planted area | | | 2% |
| **Irrigation Method – All Growers / Industry Group** | | | |
| % area utilizing a travelling irrigator (%) | | | 1% |
| % area utilizing furrow irrigation (%) | | | 0% |
| % area utilizing high volume sprinklers (%) | | | 7% |
| % area utilizing micro sprinklers (%) | | | 59% |
| % area utilizing dripper tape (%) | | | 19% |
| % area utilizing no irrigation (%) | | | 0% |
| % area utilizing overhead irrigation (%) | | | 13% |
| **Plant Density at 1st Ratoon – All Growers / Industry Group** | | | |
| % of blocks with plant density of <500 plants/ha (%) | | | 1% |
| % of blocks with plant density of 500-749 plants/ha (%) | | | 0% |

| All Growers / Industry Group Benchmarking Report (Non-Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| % of blocks with plant density of 750-999 plants/ha (%) | | | 0% |
| % of blocks with plant density of 1,000-1,199 plants/ha (%) | | | 4% |
| % of blocks with plant density of 1,200-1,399 plants/ha (%) | | | 13% |
| % of blocks with plant density of 1,400-1,599 plants/ha (%) | | | 19% |
| % of blocks with plant density of 1,600-1,799 plants/ha (%) | | | 41% |
| % of blocks with plant density of 1,800-1,999 plants/ha (%) | | | 20% |
| % of blocks with plant density of 2,000 plants/ha (%) | | | 2% |
| **Species Grown – All Growers / Industry Group** | | | |
| % of area planted to Cavendish (%) | | | 97% |
| % of area planted to Lady Finger (%) | | | 3% |
| % of area planted to Ducasse (%) | | | 0% |
| % of area planted to Gold Finger (%) | | | 0% |
| % of area planted to Plantain (%) | | | 0% |
| % of area planted to Other (%) | | | 0% |
| **Soil Testing Prior to Planting – All Growers / Industry Group** | | | |
| Every time (%) | | | 80% |
| Frequently (%) | | | 13% |
| Occasionally (%) | | | 2% |
| Never (%) | | | 5% |
| **Preferred Planting Month (Start) – All Growers / Industry Group** | | | |
| January (%) | | | 4% |
| February (%) | | | 0% |
| March (%) | | | 4% |
| April (%) | | | 2% |
| May (%) | | | 2% |
| June (%) | | | 2% |

| All Growers / Industry Group Benchmarking Report (Non-Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| July (%) | | | 11% |
| August (%) | | | 31% |
| September (%) | | | 29% |
| October (%) | | | 7% |
| November (%) | | | 7% |
| December (%) | | | 0% |
| **Preferred Planting Month (Finishing) – All Growers / Industry Group** | | | |
| January (%) | | | 0% |
| February (%) | | | 2% |
| March (%) | | | 0% |
| April (%) | | | 0% |
| May (%) | | | 2% |
| June (%) | | | 2% |
| July (%) | | | 0% |
| August (%) | | | 7% |
| September (%) | | | 24% |
| October (%) | | | 31% |
| November (%) | | | 13% |
| December (%) | | | 18% |
| **Preferred Banana Sucker Removal Method (Plant Crop) – All Growers / Industry Group** | | | |
| Non-chemical (%) | | | 1% |
| 24-D (%) | | | 4% |
| Diesel (%) | | | 4% |
| Kerosene (%) | | | 6% |

| All Growers / Industry Group Benchmarking Report (Non-Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| Diesel / Kerosene (%) | | | 53% |
| Barring (%) | | | 2% |
| Shovel / gouge (%) | | | 2% |
| Cane knife (%) | | | 28% |
| Other (%) | | | 0% |
| **Preferred Banana Sucker Removal Method (Plant Crop) – All Growers / Industry Group** | | | |
| Non-chemical (%) | | | 0% |
| 24-D (%) | | | 30% |
| Diesel (%) | | | 2% |
| Kerosene (%) | | | 3% |
| Diesel / Kerosene (%) | | | 25% |
| Barring (%) | | | 10% |
| Shovel / gouge (%) | | | 23% |
| Cane knife (%) | | | 9% |
| Other (%) | | | 0% |
| **Frequency of Solid Fertiliser Application – All Growers / Industry Group** | | | |
| Variable as needed (%) | | | 10% |
| Every week (%) | | | 3% |
| Every two weeks (%) | | | 11% |
| Every month (%) | | | 50% |
| Every 6 weeks (%) | | | 6% |
| 4x per year (%) | | | 13% |
| 3x per year (%) | | | 2% |
| 2x per year (%) | | | 0% |

| All Growers / Industry Group Benchmarking Report (Non-Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| Nil (%) | | | 6% |
| **Soil Borne Pests – All Growers / Industry Group** | | | |
| Have you treated for nematodes in the last 12 months – Yes (%) | | | 33% |
| Have you treated for nematodes in the last 12 months – No (%) | | | 67% |
| Have you treated for cane beetle in the last 12 months – Yes (%) | | | 46% |
| Have you treated for cane beetle in the last 12 months – No (%) | | | 54% |
| Have you treated for weevil borer in the last 12 months – Yes (%) | | | 69% |
| Have you treated for weevil borer in the last 12 months – No (%) | | | 31% |
| **Agronomist Services – All Growers / Industry Group** | | | |
| Have you used the services of an agronomist in the last 12 months? Yes – private / company individual (%) | | | 34% |
| Have you used the services of an agronomist in the last 12 months? Yes – employee of a chemical company (%) | | | 30% |
| Have you used the services of an agronomist in the last 12 months? Yes – inhouse (%) | | | 6% |
| Have you used the services of an agronomist in the last 12 months? No (%) | | | 29% |
| **Average Pesticide / Fungicide Spray Frequency (Summer) – All Growers / Industry Group** | | | |
| 2x week (%) | | | 0% |
| Weekly (%) | | | 0% |
| 10-12 days (%) | | | 13% |
| Fortnightly (%) | | | 71% |
| Monthly (%) | | | 7% |
| Bi-monthly (%) | | | 4% |
| Quarterly (%) | | | 2% |
| Nil (%) | | | 2% |

| All Growers / Industry Group Benchmarking Report (Non-Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| Variable – as needed (%) | | | 0% |
| **Average Pesticide / Fungicide Spray Frequency (Winter) – All Growers / Industry Group** | | | |
| 2x week (%) | | | 0% |
| Weekly (%) | | | 0% |
| 10-12 days (%) | | | 0% |
| Fortnightly (%) | | | 56% |
| Monthly (%) | | | 33% |
| Bi-monthly (%) | | | 2% |
| Quarterly (%) | | | 7% |
| Nil (%) | | | 2% |
| Variable – as needed (%) | | | 0% |
| **Principle Pesticide / Fungicide Application Method – All Growers / Industry Group** | | | |
| All aerial (%) | | | 52% |
| Mostly aerial / some ground (%) | | | 19% |
| Equal aerial and ground (%) | | | 2% |
| Mostly ground / some aerial (%) | | | 10% |
| All ground (%) | | | 14% |
| Other (%) | | | 2% |
| **Period of Time to Bagging from Bell Injecting – All Growers / Industry Group** | | | |
| Same time (%) | | | 0% |
| 1-5 days (%) | | | 0% |
| 5-7 days (%) | | | 21% |
| 7-10 days (%) | | | 48% |
| 10-14 days (%) | | | 28% |

| All Growers / Industry Group Benchmarking Report (Non-Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| 14-21 days (%) | | | 0% |
| >21 days (%) | | | 0% |
| Not applicable (%) | | | 3% |
| **Principal Bag Type Used – All Growers / Industry Group** | | | |
| Single use plastic (%) | | | 27% |
| Multi use plastic (%) | | | 52% |
| Cotton sown (with plastic) (%) | | | 12% |
| Cotton unsown (%) | | | 10% |
| **Bunch Age Identification Method – All Growers / Industry Group** | | | |
| Bag colour (%) | | | 38% |
| String colour (%) | | | 18% |
| Paint (%) | | | 15% |
| Bag / string (%) | | | 14% |
| Bag / paint (%) | | | 7% |
| String / paint (%) | | | 3% |
| Bag / string / paint (%) | | | 2% |
| No method used (%) | | | 0% |
| Other (%) | | | 2% |
| **Packing Equipment Type – All Growers / Industry Group** | | | |
| Rotary wheel (%) | | | 68% |
| Trough wheel (%) | | | 0% |
| Belt conveyor (%) | | | 0% |
| Water & belt conveyor (%) | | | 30% |
| Other (%) | | | 2% |
| | | | |
| | | | |

| All Growers / Industry Group Benchmarking Report (Non-Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| **Packing Equipment Type – All Growers / Industry Group** | | | |
| Do you know the time product is precooled prior to transportation – Yes (%) | | | 45% |
| Do you know the time product is precooled prior to transportation – No (%) | | | 55% |
| Do you know the storage temperature product is precooled to prior to transportation – Yes (%) | | | 38% |
| Do you know the storage temperature product is precooled to prior to transportation – No (%) | | | 62% |
| **% Sold to Each Marketing Channel (next transaction point) – All Growers / Industry Group** | | | |
| Sold direct to major chain retailers (%) | | | 2.6% |
| Sold direct to other chain retailers (not WW or Coles) (%) | | | 0.0% |
| Sold direct to independent retailers (greengrocers) (%) | | | 0.1% |
| Sold to metropolitan wholesalers (agent or merchant) (%) | | | 65.4% |
| Sold via a broker (%) | | | 25.4% |
| Sold to regional wholesalers (%) | | | 0.6% |
| Sold direct to public (%) | | | 0.3% |
| Sold to processors (%) | | | 0.0% |
| Otherwise value added prior to resale (%) | | | 0.0% |
| Customer not known or unavailable (%) | | | 5.6% |
| **% Sold to Each – All Growers / Industry Group** | | | |
| Queensland (%) | | | 11% |
| New South Wales (%) | | | 32% |
| Victoria (%) | | | 15% |
| South Australia (%) | | | 8% |
| Tasmania (%) | | | 0% |

| All Growers / Industry Group Benchmarking Report (Non-Financial)* | | | |
|---|---|---|---|
| | | | |
| **KPI** | **Minimum** | **Maximum** | **Average** |
| ACT (%) | | | 0% |
| Northern Territory (%) | | | 0% |
| Western Australia (%) | | | 10% |
| Customer not known or unavailable (%) | | | 24% |
| Sales Method with Principal Customer – All Growers / Industry Group | | | |
| Weekly fixed price (%) | | | 5% |
| Pooled returns (%) | | | 15% |
| Merchant transaction (%) | | | 40% |
| Agency transaction (%) | | | 25% |
| Hybrid transaction (%) | | | 2% |
| Brokerage (%) | | | 12% |
| Don't know (%) | | | 0% |
| | | | |

** One growers' figures excluded due to start up nature of business causing abnormalities in the calculation of minimum and maximum values.*

# Appendix 5 – List of Financial and Non-Financial All Growers / Industry Group Charts

| All Growers / Industry Group Financial Report Title |
| --- |
| % Consultant Fees of Total On-Farm Costs - 2009 |
| % Contract Packing of Total On-Farm Costs - 2009 |
| % Contract Spraying of Total On-Farm Costs – 2009 |
| % Electricity & Gas of Total On-Farm Costs – 2009 |
| % Fertiliser & Chemicals of Total On-Farm Costs – 2009 |
| % Field Consumables of Total On-Farm Costs – 2009 |
| % Finance Costs of Total On-Farm Costs – 2009 |
| % Freight & Storage of Total Off-Farm Costs - 2009 |
| % Fuel & Oil of Total On-Farm Costs – 2009 |
| % Insurance of Total On-Farm Costs – 2009 |
| % Legal & Accounting of Total On-Farm Costs – 2009 |
| % Levies of Total Off-Farm Costs - 2009 |
| % Marketing Fees & Commissions of Total Off-Farm Costs - 2009 |
| % Miscellaneous of Total On-Farm Costs – 2009 |
| % Packaging of Total On-Farm Costs – 2009 |
| % Packaging of Total On-Farm Costs – 2009 |
| % Ripening Fees of Total Off-Farm Costs - 2009 |
| % Telephone & Internet of Total On-Farm Costs – 2009 |
| % Wages (employees) and Contract Labour Services of Total On-Farm Costs – 2009 |
| % Wages & On Costs - Owners of Total On-Farm Costs – 2009 |
| Consultant Fees - $ per carton – 2009 |
| Contract Packing Fees - $ per carton – 2009 |
| Contract Spraying - $ per carton – 2009 |
| Electricity & Gas - $ per carton – 2009 |
| Fertiliser & Chemicals - $ per carton – 2009 |
| Field Consumables - $ per carton – 2009 |
| Finance Costs - $ per carton – 2009 |
| Freight & Storage - $ per carton - 2009 |
| Fuel & Oil - $ per carton – 2009 |
| Insurance - $ per carton – 2009 |
| Legal & Accounting - $ per carton - 2009 |
| Levies - $ per carton - 2009 |
| Marketing Fees & Commissions - $ per carton - 2009 |
| Miscellaneous - $ per carton – 2009 |
| Packaging - $ per carton – 2009 |
| R&M & Replacements - $ per carton – 2009 |
| Ripening Fees - $ per carton (08/09) |
| Telephone & Internet - $ per carton – 2009 |
| Wages (employees) & Contract Labour Services - $ per carton - 2009 |

| All Growers / Industry Group Financial Report Title |
|---|
| Wages & On Costs - Owners - $ per carton - 2009 |
| |
| Cost of Goods sold per Planted Ha - 2009 |
| Gross Profit Margin - % - 2009 |
| Gross Profit per Planted Ha - 2009 |
| Net Profit Per Planted Ha - $/ha – 2009 |
| Net Profit Margin (%) - 2009 |
| Total Cost per Carton – 2009 |
| Total Off-Farm Cost Costs - $ per carton – 2009 |
| Total On-Farm Cost Costs - $ per carton – 2009 |

| All Growers / Industry Group Non-Financial Report Title |
|---|
| % Banana production by Variety – 2009 |
| % Cavendish Pack Size – 2009 |
| % Ducasse Pack Size – 2009 |
| % Gold Finger Pack Size – 2009 |
| % Lady Finger Pack Size – 2009 |
| % Plantain Pack Size - 2009 |
| Area Planted to Selected Varieties - 2009 |
| Average Period of Time from Bell Injection to Bagging – 2009 |
| Banana Irrigation Method – 2009 |
| Banana Unloading Method – 2009 |
| Destination of Bananas by State - 2009 |
| Frequency of Pesticide and Fungicide Applications in Summer – 2009 |
| Frequency of Pesticide and Fungicide Applications in Winter – 2009 |
| Frequency of Solid Fertiliser Application - 2009 |
| Off-Farm Banana Production Costs x Expenditure Class - $ per carton – 2009 |
| Off-Farm Banana Production Costs x Expenditure Class – % of Total – 2009 |
| On-Farm Banana Production Costs x Expenditure Class - $ per carton – 2009 |
| On-Farm Banana Production Costs x Expenditure Class – % of Total - 2009 |
| Packing Equipment Type - 2009 |
| Pesticide / Fungicide Application Method - 2009 |
| Plant Density at 1st Ratoon – 2009 |
| Preferred Banana Sucker Removal Method for Plant Crop – 2009 |
| Preferred Banana Sucker Removal Method for Ratoon Crop – 2009 |
| Principal Bunch Age Identification Method – 2009 |
| Principal Type of Banana Cover Used – 2009 |
| Source of Labour for Selected Growers – 2009 |
| Sources for Planted Material - 2009 |

| All Growers / Industry Group Non-Financial Report Title |
| --- |
| Transaction Type Between Grower & Customer – 2009 |
| Average Age of Plantation (years) – 2009 |
| Cartons per Planted Ha – 2009 |
| Net Banana Sales per FTE - 2009 |
| No. of Cartons per FTE – 2009 |
| No. of FTE's per Planted Hectare - 2009 |
| Total On-Farm Costs per FTE - 2009 |
| % of Total Cartons Sold to Each Marketing Channel |

# Appendix 6 – List of Qualitative Benchmarking Reports

| Qualitative Report Title |
| --- |
| % Suckered |
| Contract packers – Location of packer |
| Contract packers – Packing charges |
| Contract packers – Packout advice and communication system |
| Contract packers – Packout advice and calculation mechanism |
| Contract packers – Services including packing charges |
| Contract packers – Why this contract packing facility? |
| Average no. of bunches per trailer |
| Average no. of trailers filled per day |
| Average no. of times each bag used |
| Bunch maturity assessment |
| Bunch support method |
| Bunch trimming strategy |
| Cost per bag (min) $/bag |
| Cost per bag (max) $/bag |
| Deleafing strategy |
| Disucss nematode control methods |
| Discuss nurse suckering method |
| Discussion on agronomist services |
| Discussion on bag cost |
| Discussion on bagging process |
| Discussion on bell injection method |
| Discussion on bunch age identification method |
| Discussion on cane beetle control methods |
| Discussion on employment levels |
| Discussion on herbicide application strategy |
| Discussion on irrigation scheduling |
| Discussion on operation of the harvest team |
| Discussion on pest management |
| Discussion on sucker removal – plant |
| Discussion on sucker removal – ratoon |
| Discussion on sucker selection |
| Discussion on transportation method |
| Discussion on weevil borer control methods |
| Do you practice nurse suckering? |
| Factors influencing choice of bag type |
| Factors influencing choice of irrigation method |
| Factors influencing choice of planting density |
| Factors influencing planting date |

| Qualitative Report Title |
| --- |
| Fertigation application strategy |
| Fertiliser application strategy |
| Frequency of fertigation application (normal crop) |
| Frequency of foliar fertilizer application (normal crop) |
| Ground preparation program |
| How is the nurse sucker removed? |
| How often is leaf analysis undertaken? |
| How often soil analysis undertaken? |
| HR management strategies or principles |
| If you use agronomy services, how often do you use these services? |
| In the 12 month period did you use the services of an agronomist |
| Inspection protocol for emerged bells |
| Irrigation method (details) |
| Marketing – Confirmation of returns (customer 1) |
| Marketing – Confirmation of returns (customer 2) |
| Discussion on customer breakdown and location |
| Marketing discussion – general |
| Payment terms (customer 1) from date of supply |
| Payment terms (customer 2) from date of supply |
| Sales method (customer 1) (or transaction type basis) |
| Sales method (customer 2) (or transaction type basis) |
| No. of irrigations per week – summer (when dry) |
| No. of irrigations per week – winter (when dry) |
| No. of crew per harvest team |
| Other activities undertaken by harvest team |
| Own packing shed (pack own fruit and others) - % of bananas that are contract packed |
| Own packing shed (pack own fruit and others) – Bunch unloading method |
| Own packing shed (pack own fruit and others) – Cost per carton (ex GST) |
| Own packing shed (pack own fruit and others) – Discussion on bunch unloading process & technology |
| Own packing shed (pack own fruit and others) – Discussion dehanding process |
| Own packing shed (pack own fruit and others) – Discussion on packing formats |
| Own packing shed (pack own fruit and others) – Discussion on palletizing process |
| Own packing shed (pack own fruit and others) – Discussion on temperature management |
| Own packing shed (pack own fruit and others) – Discussion packing operation |
| Own packing shed (pack own fruit and others) – Factors influencing choice of packing equipment |
| Own packing shed (pack own fruit and others) – Factors influencing choice of transportation method |
| Own packing shed (pack own fruit and others) – Length of time precooled prior to transportation (min) |
| Own packing shed (pack own fruit and others) – Length of time precooled prior to transportation (max) |
| Own packing shed (pack own fruit and others) – Maintaining pallet integrity method |

| Qualitative Report Title |
| --- |
| Own packing shed (pack own fruit and others) – No. of growers packed for |
| Own packing shed (pack own fruit and others) – Packing charges |
| Own packing shed (pack own fruit and others) – Packing equipment |
| Own packing shed (pack own fruit and others) – Precooling of bananas after packing |
| Own packing shed (pack own fruit and others) – Services including in packing charges |
| Own packing shed (pack own fruit and others) – Temperature monitored prior to dispatch |
| Own packing shed (pack own fruit and others) – Transportation cost discussion |
| Own packing shed (pack own fruit and others) – Why provide contract packing services? |
| Own packing shed (pack own fruit only) – Bunch unloading method |
| Own packing shed (pack own fruit only) – Cost per carton (ex GST) |
| Own packing shed (pack own fruit only) – Discussion bunch unloading method and technology |
| Own packing shed (pack own fruit only) – Discussion on dehanding process |
| Own packing shed (pack own fruit only) – Discussion on packing formats |
| Own packing shed (pack own fruit only) – Discussion palletizing process |
| Own packing shed (pack own fruit only) – Discussion on temperature management |
| Own packing shed (pack own fruit only) – Discussion packing operation |
| Own packing shed (pack own fruit only) – Factors influencing choice of packing equipment |
| Own packing shed (pack own fruit only) – Factors influencing choice of transportation method |
| Own packing shed (pack own fruit only) – Length of time precooled prior to transportation (min) |
| Own packing shed (pack own fruit only) - Length of time precooled prior to transportation (max) |
| Own packing shed (pack own fruit only) – Maintain pallet integrity method |
| Own packing shed (pack own fruit only) – Packing equipment |
| Own packing shed (pack own fruit only) – Precooling of bananas after packing |
| Own packing shed (pack own fruit only) – Temperature monitored prior to dispatch |
| Own packing shed (pack own fruit only) – Transport cost discussion |
| Period of time from bell injection to bagging |
| Pest management application methods |
| Preplant fertilizer strategy |
| Principal irrigation method |
| Site preparation |
| Solid fertilizer application strategy (normal crop) |
| Sourcing new labour – Why use these methods? |
| Spray frequency – summer |
| Spray frequency - winter |
| Transportation method |
| Why do you or why do you not practice nurse suckering? |

# Appendix 7 – Example of Qualitative Report

| Qualitative Responses | Discussion on Bunch Age Identification Method |
|---|---|
| **Grower ID** | **Response** |
| 15 | 5-6 colours depending on the turn around. Colour bag for 4 weeks. May still be cutting that colour so may need 5/6 colours. And string colour 4 string colours. Weekly within the bag colour. At one time may be checking 1 bag colour and up to 3 string colours in one place |
| 16 | Paints the trees with a colour / number. No 2 colours in a 3 month cycle. No doubling up of the paint. 4 or 5 colours with a number for the week. Grower does not rely on bag colour at all for bunch identification |
| 17 | String & colour coded bags. Bags all white coaux, Red, black, green purple & yellow. 4 different string colours. Try and run bag colour for 4 weeks. Each week change the string colour |
| 19 | Same type of bag but with 6 different coloured strips. Use a single bag colour per month. Use two string colours per bag colour (approximately 2 weeks each). By having this number of bags / strings the system is simple with no potential for overlap. |
| 20 | Paint trees. 4 colours of paint, one month every colour. Use a code 1, two dots, line across and then dot (4 codes) and then go on to the next colour. Don't use all numbers as can causes confusion. Also use 3 different colour bags (for 6-8 weeks). Will use 4 different colour strings which are used for 2 weeks on average. |
| 21 | Grower not concerned with bag colour. Uses 5 different string colours which are used for a period of 3 or 4 weeks per cycle. Prefers this method as can have a lower level of stock and reduced storage requirements. Grower harvests a maximum from a max of 2 string colours. Don't use paint as believes too messy and if done at bell injection the person has to get off their bike. Grower believes it is the simpliest and less complicated. |
| 22 | Combination of string colours & paint. Grower will use a single string colour for a month. Within that string colour the grower will paint a letter code, A, B, C, D (&E). By using this method harvesters are easily able to see one of the identifers. Don't use bags as difficult to get the right quality bag and so needs to have a system which allows flexibility in bag selection (as manufacturers all have different bag colours). |
| 24 | Farm is in transition. Did use paint and bag colours, however now just moving to the use of painted numbers. Grower uses a paint colour and the number 0-9 which relate to bell injections. Move away from bags as different bags are suited to different times of the year (to either protect the bunch from sun or to get colour). Stock management of bags gets too difficult. Believes numbering system is simple for workers to follow. |
| 25 | Bags & string. Need to change system for cotton. Use a colour strip of bag for 2 weeks and the string for a month. Running for 4 different coloured bags (black, green, red, green) & 4 string colours. |
| 26 | Paint - Same colour for 1 month with the number corresponding to the month eg. Yellow & 6 (Yellow / June). First 2 weeks is number & nothing and then the next two weeks is a number & a dot. Still use coloured bags & string for a month. Provides a number of differnet ID systems although grower acknowledges really only needs one. |
| 28 | Do not rely on bag colour although tend to use similar bag colours in a blocks. Main method is the use of paint colour & symbols. Every month has a colour and then a colour for a week (1-5). Simple system which works well. |

| Qualitative Responses | Discussion on Bunch Age Identification Method |
|---|---|
| **Grower ID** | **Response** |
| 29 | Do not rely on bag colour although tend to use similar bags colours in a block. Main method is the use of paint colour & symbols. Every month has a colour and then a colour for a week (1-5). Simple system which works. |
| 30 | Bag colour. Different numbers of bags = diff colours. 3 weeks at the most. 1 week. |
| 31 | Use a single bag colour for 2 weeks. |
| 32 | Will use a string colour for 2 weeks in summer and up to 3 weeks in winter. Has a total of 6 colours. Does not use bag colour as has a preference for clear silver. |
| 33 | Bags & string. Use a bag colour as long as can and change the string colour every 2 weeks. Therefore string colour the primary bunch identification source |
| 34 | Has no fixed program of bag colour use. Will buy 6 rolls at a time. |
| 35 | Tend to use the grey / silver bags. May change bags based on cost or availability. Do not use bags for bunch identification. Use string as an approx ID method as buy a pallet at a time and then change when that runs out. This places a higher degree of reliance on workers when harvesting. |
| 36 | 6 colours 5 different colour strings. 30 different combinations. Use to paint but now using a motorbike. Would prefer to use paint as then don't have to keep track of so many different string / bag combinations and less costly. May in future go back to painting method. |
| 37 | Colour coding the covers. Change colour every 2 weeks. |
| 38 | Do try and use a colour of bags although due to the size of the farm and the fact that family members operate not that concerned about bag identification. |
| 39 | As a sole operator bag colour not that important as the grower is able to select bunches. |
| 40 | LF tattoo the fortnight they have been bagged. Use letters. 26 in the alphabet which corresponds to the number of fortnights in a year. |
| 41 | 1 month per colour. If heavy bagging more be done to two weeks. Yellow string easier to find. Coax blue outer and blue inner with a colour strip. Same sun protection alll the way round. That way if the bag moves the bunch won't burn if the protectant part of the bag moves to the shady side. |
| 43 | Run bags for a month. Sole method for bunch age identification. |
| 44 | Change letter every week. Change colour of paints every 4 weeks to a month. Same colour bag as the letter. Change colour string for the baggers every time around. Eg. Green bags with a white string. Green bags with a green string. |
| 45 | Change colour every month, Blue, green, white, silver, yellow. Paint was more expensive. - lose cans of paints. Went to string - if changed strings fortnightly. Holding too much stock. So now just using bag colours as system is simple and easy to understand. At any one time may have up to 5 colurs as fruit may hang up to 22 weeks hang in winter at worst, 9 weeks from summer (there 2 bag colours). |
| 46 | Bag colours run for a month. Double lined for the winter fruit (cotton lined)because in the growers opinion it produces fruit that is less dull. Normal top bunch covers and coax is white with a strip. Top bunch covers 12 weeks covers. Good to see through. |
| 48 | Bag colour for 3 weeks. And 2 different string colours. Blue string, then yellow string for week 2 and week 3 and then rotate around again for a different bag colour. |
| 50 | Grower uses 5 colours. Will do a run of 5,000 bags which takes about a month to put out. Does not string so bag the only ID method. |
| 51 | Change colour every month, Blue, green, white, silver, yellow. Paint was more expensive. - lose cans of paints. Went to string - if changed strings fortnightly. Holding too much stock. So now just using bag colours as system is simple and easy to understand. At any one time may have up to 5 colurs as fruit may hang up to 22 weeks hang in winter at worst, 9 weeks from summer (there 2 bag |

| Qualitative Responses | Discussion on Bunch Age Identification Method |
|---|---|
| **Grower ID** | **Response** |
| | colours). |
| 53 | Does not use a bunch identification method. |
| 55 | Grower uses Patchspy and inhouse built program which involves the barcoding of every banana plant. By barcoding the plant the grower via a hand held data capture unit is able to enter a variety of banana production activities eg. Fertiliser applications, date of flowering etc. The grower has then developed a bunch harvest forecasting system. The grower is able to identify those bunches which are due to be harvested if required. |
| 56 | Use the letters of the alphabet, one for each week. Grower will typically spot harvest one letter per week (eg. B) and harvest all of the fruit remaining from the previous week (eg. A). Simple effective system. Very uniform harvest times. |
| 59 | Bag colour changed every 3 to 6 weeks depending on the rate of use of bags. Will typically change the string colour every 2 weeks. |
| 60 | Paint a number with a symbol which is changed every week. For example if March will put a three for the month. Straight 3 for the 1st week. Dot underneath the 2nd week, line underneath 3rd week. Dot on top for the 4th, if the 5th 2 dots. |
| 61 | Bag colours changed every 2 weeks. Grower has 6 colours and in winter maybe more so as to be able to get a complete cycle. No preference in respect of colours for different times of the year. |
| 62 | Bag colour. Change every month. When heavy with fruit will change with fruit. Used to spray paint but too much issue with tracking of the numbers. |
| 63 | Change bag colour every 3 weeks and then change string colour every week. So has 3 string colours. Grower will harvest a particular bag colour / string combination over 1 to 3 weeks. Very simple system. The string colours are consecutive over the period of the 3 week turnaround period. |
| 64 | Paint and bagging. Paint a 1-9 with a single bag colour and then change. Change the number each week. Change the bag colour when you run out. Top bunch cover - green and colour is the preferred. Best colour for colouring of the fruit and fill. |
| 65 | 2 weeks for a colour but this may run out earlier if bunching heavily. By having a large number of colours the number of bunches the cutter has to inspect is reduced as they don't have as many bags if say the grower only changes colours every month. May have up to 15 colours. |
| 66 | Bag colour. Change colours every month. When heavy with fruit will every change every few weeks. Used to spray paint but too much issue with tracking of the numbers for the workers. |
| 67 | Each month has a colour and then the grower paints a number 1 to 5 to denote the week. Grower typically only has 3 bag colours. |
| 70 | Grower uses a single bag colour with 3 different string colours. Each string colour is used for 2 or 3 weeks. Once the cycle of string colours have been used the grower changes the bag colour and repeats the cycle. The grower has 2 different coloured bags. |
| 71 | Grower uses 4-5 bag colours. Each colour is rotated every 4 weeks. No other bunch ID method is used. |