**Agriculture Services Limited**

First Floor, Linton House, 6 Linton Street, Palmerston North, New Zealand
PO Box 1635, Palmerston North 4440, New Zealand
Telephone +64 6 350 3947
Fax +64 6 350 3948

# IDENTIFYING AND REPORTING THE VALUE-ADDED FROM TRAINING

## (ESI PROJECT 943)

# HORTICULTURE SECTOR

## (Pipfruit, Kiwifruit & Viticulture)

**Prepared by:**

Jeremy Neild
Liz Maddock
Ruth Underwood
Greg Dryden

**February 2010**

## CONTENTS

## LIST OF TABLES



## LIST OF FIGURES

## ACKNOWLEDGEMENTS

The authors wish to express their gratitude to the employers and their staff who made their time available and who contributed so freely of their experience and ideas. Their positive support for the many interviews and surveys was critical in enabling this work to be completed.

We also gratefully acknowledge and thank the Horticulture ITO who assisted by providing industry statistics and contact points. This study is at a single point in time and it is critical to read this report with an understanding of what has gone before and what is being planned for the future. The Horticulture ITO assisted the authors to understand the context for the results obtained.

Finally, we wish to acknowledge the work that led to this study – "Reporting Value Added by Agricultural Training", a report by McLeish, Gardner and Waters for the Agriculture ITO, demonstrated an approach that formed the basis for this study.

This report has been produced as part of the Industry Training Federation Project "*Identifying and Reporting the Value Added from Training"*, funded by the Tertiary Education Commission through the 2008 round of the Encouraging and Supporting Innovation Fund.

Notwithstanding the acknowledgements above, the content of this report is the responsibility of ASL.

## Please Read

# EXECUTIVE SUMMARY

## 1.1 INTRODUCTION & PROJECT OBJECTIVES

The Agriculture ITO set itself a goal of better understanding the benefits that agricultural training created for its stakeholders. McLeish, Gardner and Waters were commissioned to research a methodology that would enable this improved understanding, and their results are presented in "Reporting Value Added by Agriculture Training". This work, together with the high impact learning work of Professor Robert Brinkerhoff, has subsequently influenced the way the Agriculture ITO structures its qualifications and delivers training to its industries.

Following this seminal piece of research, the Industry Training Federation applied to the Tertiary Education Commission for funding to complete a project with the following objectives in four primary sector industries, including the extractives industry:

### OBJECTIVES

- Test applicability of the model for identifying and reporting value added from training as utilised by Agriculture ITO in other industries.

### KEY OUTCOMES

- To enable ITOs and wider tertiary groups. Industries and firms to gain a greater understanding of how they can identify and report value add by industry training
- To enable better targeted investments in education and training
- To be able to design and select better education and training activities
- To get improvements in follow-up and support for the implementation of skills gained form education and training activities
- To improve the connection between skill, productivity, profits and pay

This report covers the results and recommendations from applying this methodology to the horticulture industry (pipfruit and kiwifruit).

## 1.2 METHODOLOGY

Industry consultants were engaged to confirm the key tasks completed by employees that impact upon the performance of the orchard/vineyard. This also identified the observable behaviours, impacts on the orchards/vineyards and financial consequences for the business of various levels of employee performance from poor to best practice.

Interview surveys of employers were undertaken to identify changes in levels of performance by employees after training to which a dollar value was estimated using industry published information. Other issues affecting the impact on training were also gathered from the interviews.

Survey data was also gathered from employees/trainees to identify various issues and their impact upon training from a trainee point of view.

Across all three fruit growing sectors, 64 employers were interviewed and data was collected from 177 employees/trainees.

## 1.3 RESULTS

- The financial benefits from training in fruit production and viticulture were estimated as follows:

| | Cost Benefit Ratio |
|---|---|
| Pipfruit | 1:10 |
| Kiwifruit | |
| • Basic orchard hands | 1:4 |
| • Leading hands | 1:15 |
| Viticulture | 1:5.7 |

- There was a difference in perception among employers about the value of training in retaining employees. Kiwifruit employers believe that staff who commit to training stay longer in their jobs while viticulture employers believe that training staff enables them to become more mobile and in demand by other employers.

- Employers tend to be very satisfied with training offered in their industries, and believe that training provides good value at both industry and individual business level.

- Three critical factors for success from training are:
    - Motivation of the trainee
    - Support from the manager to coach, mentor and supervise the trainees
    - Effective leadership and a good workplace culture and organisation in the workplace

- Employees also rated the value of training citing:
    - Training makes the job more interesting and I understand the job better
    - I can do a wide range of tasks
    - It provides the theory behind the practice

- The linkage between qualifications, training and remuneration was the lowest scoring "benefit" of training as rated by employees. This suggests that there may be an opportunity to identify and demonstrate a linkage to help maintain trainee commitment to achieving qualifications.

- Trainees do rate the importance of safety and equipment training highly.

- Gaps in training were largely in personnel and business management topics rather than technical fruit growing. These included supervising foreign staff, English language and cultural diversity, conflict resolution, planning and organising and understanding market requirements and their impact in the orchard.

## 1.4 OUTCOMES

- The study showed that a dollar value can be measured on the impact of training in all three horticultural sectors studied.

- The kiwifruit study showed a higher value for advanced leading hand training reflecting the orchard area that they have effective control over. This supports TEC's call for more level 4+ training to improve New Zealand's productivity.

- Trainees also felt supported by their industry and their employers.

- The increasing employment of RSE workers has increased the demand for English language training and for staff to be trained in the management of a culturally diverse workforce.

## 1.5 RECOMMENDATIONS

- In general, employees were very happy with their training scheme.

- There is always a requirement to test the relevance of current Unit Standards and the qualification against the current and future needs of a modern orchard/vineyard to ensure each component adds value.

- There is scope to improve the training options particularly at Level 4 to cover the supervision of staff, particularly those from overseas. This role of staff/orchard supervision offers significant potential in improving industry productivity.

# 2.0 INTRODUCTION & PROJECT OBJECTIVES

## 2.1 AGRICULTURE ITO REPORTING VALUE ADDED BY AGRICULTURAL TRAINING

In early 2005 the Agriculture Industry Training Organisation (Agriculture ITO) began a research project to develop an improved understanding of the benefits created for its stakeholders (Government, Industry, Employers and Trainees) through agricultural training, beyond that generated through its regular stakeholder satisfaction surveys.

The findings of this study and the influence that it has had on the way that the Agriculture ITO structures its qualifications and delivers training to its industries is summarised in Appendix 1.

The Reporting Value Added (RVA) project has had a significant impact upon the way the Agriculture ITO carries out its work. The presentation of this information to other ITOs stimulated the demand for similar studies on other industries.

## 2.2 DEPARTMENT OF LABOUR FUNDED SCOPING REPORTS

In 2008, the Department of Labour provided funding to the Industry Training Federation to enable it to complete scoping reports for three ITOs engaged in the food and beverage industries to investigate whether the Reporting Value Added Project methodology as used in the agriculture study was appropriate and could be applied to the respective industries and what data existed to support the application of the methodology, what needed to be done to collect and utilise the data.

These studies looked at the following three ITOs:

- Seafood ITO
- NZ Horticulture ITO
- Hospitality Standards Institute

The studies indicated that, in general, the methodology could be applied to all three, particularly seafood and horticulture but that there could be some challenges in applying the methodology to a service industry but, given the importance of the service sectors to the New Zealand economy, it was desirable to test the methodology in the services sector.

The conclusion of the three scoping studies identified the scope of any study to cover the following:

| Focus | ITO/Sector | Approach |
|---|---|---|
| Literacy & Numeracy | Seafood | Case Study |
| Level 2 & 3<br>Vocational Training (Skills) | Seafood Processing<br>Horticulture<br>• Fruit production<br>• Viticulture<br>Services | RVA Methodology |
| Level 4 & 5<br>Supervision/Management<br>Certificates/Diploma | Seafood<br>Services | Case Study |

## 2.3 ENCOURAGING AND SUPPORTING INNOVATION FUND – TERTIARY EDUCATION COMMISSION – THE PROJECT BRIEF

The Industry Training Federation applied to the Tertiary Education Commission for funding to complete a project with the following objectives in four primary sector industries including the horticulture industry.

### OBJECTIVES

- Test applicability of the model for identifying and reporting value added from training as utilised by Agriculture ITO in other industries.

### KEY OUTCOMES

- To enable ITOs and wider tertiary groups. Industries and firms to gain a greater understanding of how they can identify and report value add by industry training
- To enable better targeted investments in education and training
- To be able to design and select better education and training activities
- To get improvements in follow-up and support for the implementation of skills gained from education and training activities
- To improve the connection between skill, productivity, profits and pay

This document reports the results of this project's research within the pipfruit, kiwifruit and viticulture sectors within the horticulture sector.

## 3.0 LITERATURE BACKGROUND

This project is about identifying a Return on Investment (ROI) from training and improving the connectivity between skills, productivity and profit.

McLeish, Gardner and Waters (July 2007) provided a comprehensive literature review on ROI methodology and models - in particular, Kirkpatrick's four step model and Phillips' three layer model. The Agriculture ITO's RVA study only focused on the value returned from job related skills applied to the trainees' current work situation.

Brinkerhoff and Dressler (July 2007) provided some criticism of ROI methods in that we want to use training to improve business performance. In evaluating the transfer of skills/knowledge or behaviour change from training, we are measuring the management and performance systems rather than the training alone.

The training function answers questions about instructional quality, the training programme linkage to business needs and strategy, and how well training is integrated with performance systems.

The management function looks at how much is learning applied, identifies obstacles and facilitating factors, and how effective is performance. A partnership between training and management is required for a high impact learning approach and success.

Given the study goals are focused around the contribution of vocational training to productivity gains, a number of people performance models were examined to inform the interview and survey tools applied in the study.

### 3.1 SUMMARY

The role of skill development in productivity improvement features strongly in all models. These models indicate very close alignment to Brinkerhoff and Dressler identifying that skills training must be accompanied by a range of effective management interventions if it is to be transformed into productive value in a business setting. The models support the contention that the development of managers both in higher level technical skills and supervision and management capability is a fundamental core to unlocking the real value of skills training.

These models have modified the methodology adopted to explore this hypothesis in that where there are high apparent returns from skills training, there will be a high level of management intervention and support.

Any assumption that a hands-off approach to training and people development by line managers and handing responsibility to an external trainer, or even an internal training department, is not likely to generate a high return from investment into training.

A summary of the literature background and people productivity models can be found in Appendix 2.

# 4.0 INTRODUCTION TO THE HORTICULTURE INDUSTRY

## 4.1 THE NEW ZEALAND HORTICULTURE INDUSTRY

The New Zealand horticulture industry is a $2.9+ billion (2009) export industry.

**TABLE 4.1.1: NEW ZEALAND HORTICULTURAL EXPORTS**

| Horticulture Exports | 2009 $ million | Export Volume |
|---|---|---|
| Kiwifruit | 987 | 106 million trays |
| Wine | 945 | 105 million litres |
| Apples & Pears | 457 | 17 million cartons |
| Fresh & Frozen Vegetables | 554 | 287,000 tonnes fresh<br>170,000 tonnes frozen |
| **Total** | **$2,943** | |

Source: MAF July 2009.

There is another $2.5 million of horticulture production consumed domestically.

The 2006 census indicates that there are 52,000 people in the horticulture workforce including 35,000 employees and 5,200 employers and nearly 10,000 self employed. This workforce includes food production, wholesaling and retailing and amenity, landscaping, nursery and recreational open space management and maintenance.

The issues facing the industry are:

- Labour shortfall, especially for seasonal demands
- Development of new plant varieties to maintain premium returns
- Sustainable production programmes
- Research and development

(Source: Ministry of Agriculture & Forestry Situation Outlook for New Zealand Agriculture and Horticulture & Arable Monitoring Reports.)

## 4.2 HORTICULTURE INDUSTRY TRAINING ORGANISATION

The New Zealand Horticulture ITO (NZHITO) came into existence in 1992 and has experienced rapid growth in trainees, credits achieved and National Certificates in Horticulture completed.

**TABLE 4.2.1: GROWTH IN NEW ZEALAND HORTICULTURE ITO**

| Year | Trainee Numbers as at 30 June | Credits Achieved | Credit/Trainee | National Certificates Completed |
|---|---|---|---|---|
| 1997 | 752 | | | |
| 1998 | 872 | | | |
| 1999 | 785 | | | |
| 2000 | 785 | | | |
| | **as at 31 December** | | | |
| 2001 | 827 | 13,397 | 16.2 | 71 |
| 2002 | 1,112 | 16,504 | 14.8 | 102 |
| 2003 | 1,356 | 21,716 | 16.0 | 228 |
| 2004 | 1,477 | 30,394 | 20.6 | 237 |
| 2005 | 1,529 | 44,870 | 29.3 | 491 |
| 2006 | 1,712 | 62,097 | 36.2 | 774 |
| 2007 | 2,231 | 70,877 | 31.8 | 772 |
| 2008 | 2,624 | 83,968 | 32.0 | 1,334 |

Source: Annual Report NZHITO – 31 December 2008

NZHITO has developed and registered over 300 horticultural standards with the New Zealand Qualifications Authority and offer eight National Certificates in Horticulture covering the industry sectors of amenity horticulture, arboriculture, floristry, fruit production, landscape, nursery production, production horticulture (vegetable and flowers) and viticulture.

**TABLE 4.2.2: TRAINEE NUMBERS 2009**

| | |
|---|---|
| Fruit Production | 762 |
| Arboriculture | 283 |
| Amenity | 566 |
| Viticulture | 306 |
| Nursery | 235 |
| Landscape | 244 |
| Production | |
| Vegetables | 285 |
| Floriculture | 15 |
| Floristry | 52 |
| **Total** | **2752** |

Source: CEO, NZHITO

**TABLE 4.2.3: NUMBER OF UNITS COMPLETED PER DOMAIN**

| Domain | 2007 | 2008 |
|---|---|---|
| Amenity | 2,955 | 2443 |
| Arboriculture | 2,701 | 3304 |
| Floriculture | 81 | 83 |
| Fruit Production | 2,011 | 2352 |
| Floristry | 46 | 98 |
| Landscape | 1,322 | 1583 |
| Nursery Production | 1,178 | 1255 |
| Vegetable Production | 483 | 807 |
| Viticulture | 1,613 | 1524 |
| **Total** | **12,390** | **13,449** |

Source: NZHITO

**TABLE 4.2.4: NUMBER OF QUALIFICATIONS COMPLETED PER DOMAIN**

| Domain | 2007 | 2008 |
|---|---|---|
| Amenity | 182 | 246 |
| Arboriculture | 262 | 441 |
| Floriculture | - | 7 |
| Fruit Production | 118 | 185 |
| Floristry | 12 | 6 |
| Landscape | 89 | 124 |
| Nursery Production | 84 | 151 |
| Vegetable Production | 14 | 59 |
| Viticulture | 49 | 115 |
| **Total** | **810** | **1,342** |

Source: NZHITO

# 5.0 METHODOLOGY

## 5.1 INTRODUCTION

One of the project's goals was to test the applicability of the methodology used in the Agriculture ITO's RVA project. This methodology has been applied to examine the vocational training typical of the "Horticultural Cadets/Apprentices" which is a three year programme earning a Level 2 National Certificate in the first year, Level 4 in the second year and Level 4 Advanced in the third year.

While these National Certificates are NZHITO qualifications, the survey field work covered training facilitated by NZHITO as well as training delivered by polytechnics (Bay of Plenty Polytechnic) and a PTE (Agriculture New Zealand Ltd). Given the focus of the study on industry vocational training, it was not possible to separate NZHITO facilitated training from training delivering the same qualifications through alternative pathways.

## 5.2 THE AGRICULTURE ITO RVA METHODOLOGY AND ITS APPLICATION TO THE FRUIT PRODUCTION SECTOR OF HORTICULTURAL VOCATIONAL TRAINING – ADJUSTMENTS MADE TO METHODOLOGY

Given the similarities in industry structure between the pastoral agricultural sectors and the fruit production horticultural sectors, there were fewer changes made to the original methodology.

### AGRICULTURE ITO METHODOLOGY

1. ***Focus group with farmers to identify the on-farm tasks that were significantly impacted by the ability of the employees, eg mastitis, feeding, heat detection and lameness. The groups enabled the project team to understand how farmers recognised competency and value added to their business by staff.***
2. ***The financial implications of poor through to good skill application were identified by industry (Dexcel and AgResearch).***
3. ***Survey of farmers/focus groups where farmers asked to note changes in behaviour of trainees after training compared to levels identified in (1). These ascribed a dollar value based on (2).***
4. ***Non-financial values – written survey of trainees and employers***

### HORTICULTURE INDUSTRY APPROACH

1. An initial scoping study of the Horticultural Scoping Study completed in 2008 for the Department of Labour identified four key tasks in the fruit production industries:

    - Fruit thinning
    - Tree/vine pruning
    - Harvesting/picking
    - Pest and disease identification and control

2. As part of this study, pipfruit, kiwifruit and viticulture consultants were engaged to confirm that these were the appropriate tasks and identified observable behaviours, outcomes for the orchard/vineyard (fruit yield, quality, etc) and the financial outcomes for the business of various levels of employee performance from low to best practice.

They also provided estimates of the area of orchard/vineyard under the effective control of an employee for each task.

In the kiwifruit study, two further tasks were identified and estimates made:

- Post Harvest/Market Access and Supervision

In the viticulture study, fruit thinning was replaced by canopy management.

3. Following the development of the template that describes the impact and costs of poor and good performance, orchard employers were surveyed using a standardised template to quantify how employee performance changed after training.

Other non-financial data and perceptions related to training were also gathered.

### (i) Pipfruit

Thirty three employers representing 22 enterprises were interviewed from Hawkes Bay and Nelson regions. These interviewees represented both senior managers from large corporate pipfruit growing companies as well as smaller owner/operator orchardists and contract labour managers.

### (ii) Kiwifruit

Twenty employers were surveyed, split between contractors, growers, managers and packhouse operators who also manage orchards. They represent 39% of the 2009 kiwifruit production – 31.4 million trays of green kiwifruit and 6.4 million trays of gold kiwifruit.

### (iii) Viticulture

Eleven employers were interviewed, all from the Marlborough area (40% of current trainees are in this area).

4. Written surveys were given and directly completed and handed in by trainees engaged in fruit production.

Pipfruit – 55 trainees completed the survey
Kiwifruit – 24 trainees completed the survey
Viticulture – 38 trainees completed the survey

Currently the Horticulture ITO has 65 on-orchard trainees in Hawkes Bay, 44 in Tasman and 35 in the Bay of Plenty.

# 6.0 RESULTS & DISCUSSION

## 6.1 ANALYSIS OF FINANCIAL BENEFITS OF TRAINING

### 6.1.1 PIPFRUIT ORCHARDING

The change in level of performance before and after training from the employer interviews was coupled with an analysis of the financial impact of the levels of performances for each factor. This was done for a typical pipfruit orchard in the Hawkes Bay, using the MAF Farm Monitoring data published in 2009. The financial benefit from training will vary each year depending upon apple returns for that year and between orchards depending upon the yields, packout rates and crop varieties.

**TABLE 6.1.1.1: FINANCIAL GAINS FOLLOWING TRAINING**

| Performance Factor | Financial Gain Following Training $/ha |
|---|---|
| Pruning | $11,981 |
| Crop thinning | $7,640 |
| Pest and disease control | - |
| Harvesting | $8,145 |

Pest and disease management was excluded from the economic performance because it is unlikely that anyone who had a low performance would be given an opportunity to take responsibility where the result would jeopardise access to markets.

#### SPAN OF INFLUENCE

There is a range of estimates provided for the ratio of staff per area of orchard.

Pruning: 1 person/8 ha standard trees or 10 ha dwarf trees over four months
3 ha

Thinning: 1 person/2.5 ha over six weeks
1 ha

Picking: 2 ha/picker supervised by 0.5 supervisor

Pest and Disease: 7 ha/person supervised by 0.2 supervisor

#### ECONOMIC BENEFITS FROM TRAINING

The gross economic benefits from training are $59,873.
The costs of training are estimated at $5,580.
The cost/benefit ratio is in the order of 1:10.

### 6.1.2 KIWIFRUIT ORCHARDING

The change in level of performance before and after training from the employers' survey results was coupled with an analysis of the financial impact of the levels of performance for each factor. This was done separately for green and gold kiwifruit, given the higher level of financial performance from gold kiwifruit. The basis for calculating the level of financial return associated with each skill performance level is detailed in Appendix 6. The response to training was not linear for every factor, so graphs of the level of financial return associated with performance levels for each factor were used to determine the estimated financial gain in performance following training as assigned by the employers in their survey responses. This provided the figures and totals shown in the table below:

**TABLE 6.1.2.1: FINANCIAL GAIN FOLLOWING TRAINING FOR VARIOUS ORCHARD ACTIVITIES**

| Performance Factor | Financial Gain Following Training ($/ha) | |
|---|---|---|
| | Green Kiwifruit | Gold Kiwifruit |
| Canopy management/ pruning | 5,300 | 10,300 |
| Crop load management | 700 | 1,650 |
| Harvesting | 600 | 1,600 |
| **Sub-total vine work:** | **$6,600** | **$13,550** |
| Pest and Disease control | 100 | 100 |
| Post-harvest/ Market access | 1,400 | 3,700 |
| Supervision | 1,400 | 2,700 |
| **Sub-total leading hand & supervisory activities** | **$2,900** | **$6,500** |
| **Total** | **$9,500** | **$20,050** |

The low gain following training in pest and disease control is surprising, given the critical importance of this skill area. However, there is considerable support from Zespri via their crop protection programme and also there are specialist roles in pest and disease monitoring, recommendation and application of controls, including an 0800 number hotline. Thus, the low return from pest and disease control training reflects a generally high level of performance in this skill area.

Green kiwifruit comprises 83.4% of the area of kiwifruit in the Bay of Plenty and Waikato where the survey was done. The weighted average between areas of green and gold kiwifruit was used to get the figures generalised per hectare of kiwifruit.

**TABLE 6.1.1.2: WEIGHTED AVERAGE FINANCIAL GAIN FOLLOWING TRAINING PER HECTARE**

| Performance Factors | Financial Gain Following Training $ per hectare of kiwifruit |
|---|---|
| Sub-total vine work | $7,750 |
| Sub-total leading-hand and supervisory activities | $3,500 |
| **Total** | **$11,250** |

For the 2.9 hectares per employee for vine work this multiplies to a benefit from training of $22,475 per employee in training.

For the 25 hectares per supervisor or leading hand, this multiplies to a gain from training of $87,500 per person.

### Financial Costs of Training

An indication of the financial cost of training was obtained from adding standard training measure (STM) funding to NZHITO, trainee fees and estimated costs for release time wages and travel for workers attending an estimated 12 days each year of off-orchard training. This adds to $5,580/year per trainee.

### Cost Benefit of Training

Using the benefit figures above, this indicates there is a benefit of four times the cost of training on an annual basis for trainees doing work of an "orchard hand" nature.

The gain from training for leading-hands doing supervisory and more advanced work is still significant, particularly given the larger orchard area these workers are assigned to, indicating that there is continued gain from more advanced training. The estimated benefit from training at this higher level is 15 times the cost, because of the larger area the benefit applies to.

NZHITO has around 110 fruit production trainees in the Bay of Plenty, of which over 90% (~100) are likely to be working in the kiwifruit industry. The indicative gains from training estimated here could be aggregated across trainees working in the work areas assessed.

## 6.1.3 VITICULTURE

The change in level of performance before and after training from the employers survey results was coupled with an analysis of the financial impact of the levels of performance for each factor. This was done using Sauvignon Blanc in Marlborough as a case study to allow more specific assumptions to be made rather than broad generalizations. Sauvignon Blanc represents 48% of the national vineyard area and 74% of the area in Marlborough in 2009. The average price paid for Sauvignon Blanc in 2009 was $1,637 compared with the national average for all grape varieties being $1,629. Management and yield factors used in the analysis were based on Sauvignon Blanc. As Sauvignon Blanc forms a large part of

the industry and average prices for Sauvignon Blanc are similar to national averages for all varieties this data could be used to extrapolate to 'vineyard averages'.

The basis for calculating the level of financial return associated with each skill performance level is detailed in Appendix 3. A matrix of the effect of trainee performance on yield, quality and cost was developed using production and financial information from a database of growers actual results for 2009 as well as average data available as part of the MAF Viticulture Monitoring report. The growers database allowed quartile analysis to be compared to high and low performance levels.

The response to training was not linear for every factor. The table below outlines the level of financial return associated with performance levels for each factor normalized to zero for low (survey value 1) performance.

**TABLE 6.1.3.1: LEVEL OF FINANCIAL RETURN ASSOCIATED WITH PERFORMANCE LEVELS**

| | Financial Benefit - Normalised to $0 | | | | |
|---|---|---|---|---|---|
| **Task** | **1** | **2** | **3** | **4** | **5** |
| Pruning | $0 | $590 | $1,180 | $1,770 | $2,360 |
| Canopy Management | $0 | $807 | $1,615 | $2,236 | $2,857 |
| Pest & Disease Management | $0 | $99 | $198 | $198 | $198 |
| Harvesting - Hand | $0 | $492 | $984 | $1,488 | $1,992 |
| Harvesting - Machine | $0 | $942 | $1,883 | $2,243 | $2,602 |

This was used to determine the estimated financial gain in performance following training as assigned by the employers in their survey responses. This provided the figures and totals shown in the table below:

**TABLE 6.1.3.2: FINANCIAL GAIN IN PERFORMANCE FOLLOWING TRAINING**

| Performance Factor | Financial Gain Following Training Sauvignon Blanc |
|---|---|
| Pruning | $1,239 |
| Canopy management | $1,416 |
| Pest and disease management | $79 |
| Harvesting – hand | $1,116 |
| Harvesting – machine | $1,349 |

*Little hand harvesting of Sauvignon Blanc occurs so this carries a 2% weighting in the total financial gain and machine harvesting a 98% weighting.

This equates to $4,078 per hectare benefit of training for each trainee. Applied to the 7.8 ha each Full Time Equivalent covers, this would equate to a total benefit of $31,811 per employee. The difference between the upper and lower quartiles for Cash Operating Surplus in the grower database is $6,513 which would suggest the level of performance increase by using trained employees is within the bounds of observed results.

### Financial Costs of Training

An indication of the financial cost of training was obtained from adding standard training measure (STM) funding to NZHITO, trainee fees and estimated costs for release time wages and travel for workers attending an estimated 12 days each year of off-vineyard training. This adds to $5,580/year per trainee.

### Cost Benefit of Training

Using the benefit figures above, this indicates there is a benefit of 5.7 times the cost of training on an annual basis.

## 6.2 EMPLOYER SURVEY RESULTS

### INTRODUCTION

Sixty four employer representatives were interviewed about their perceptions and understandings about the impact of training on staff performance and the impact of this on their business performance. These employer representatives included:

Thirty three employers from the pipfruit industry from 22 enterprises. The interviewees included senior managers from corporate growers and smaller owner-operator orchardists. The employers represented a range of export packed production from 45,000 to 600,000 tray carton equivalents (TCEs). Approximately half the sample was involved in producing other horticultural crops, including kiwifruit, berryfruit, hops, stonefruit, vegetables and trees. Ten enterprises also managed packhouses as part of their operation.

Twenty employers from the kiwifruit industry, including owner operator orchardists, paid orchard managers, managers of contract labour and orchard/packhouse managers. The employers surveyed represent approximately 39% of the 2009 kiwifruit crop. (31.4 million unique trays[1] of green kiwifruit and 6.45 million trays of gold kiwifruit.)

Eleven employer representatives from the viticulture industry, mostly vineyard managers but also one contracting business owner and one company viticulturalist. These employers were all Marlborough based but they represented 20% of the 2009 harvest.

### EMPLOYER INFORMATION

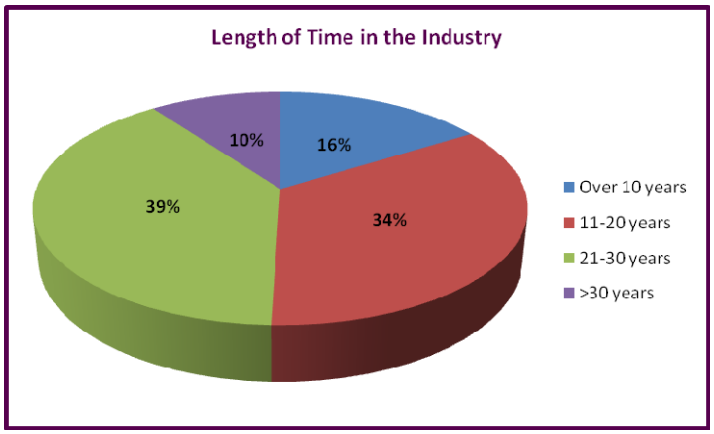
#### Length of Time in the Industry

The average length of time spent in the industry varied widely from 13 years in the viticulture industry to 22 years in the pipfruit industry and 23 in the kiwifruit industry. No doubt the shorter time in the viticulture industry reflects its rapid expansion over the last 10-15 years with only one surveyed

[1] Some people interviewed were reporting on the same kiwifruit production, such as the contractor picking the fruit and the packhouse packing the same fruit. This was identified and the total trays adjusted so none were counted twice, making the totals reported here “unique” trays.

employer being in the industry for over 20 years. For the kiwifruit and pipfruit sectors, at least half the employers interviewed had been in the industry for over 20 years.

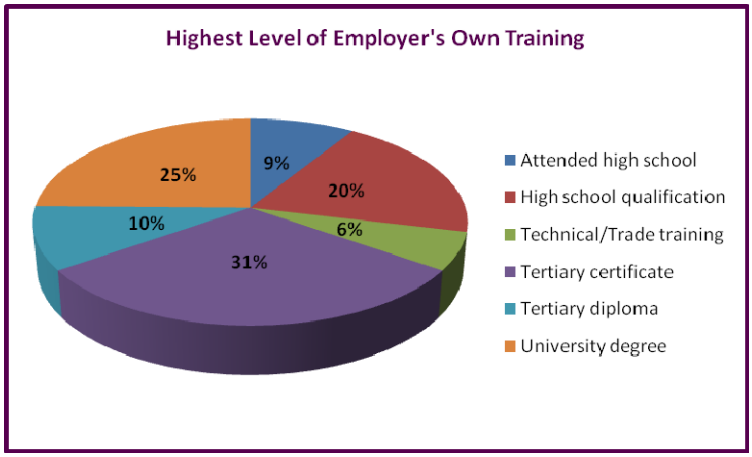
**Figure 6.2.1**




## Employer Education and Training

Twenty nine percent of employers had high school attendance or a high school qualification as their highest qualification with 71% having some form of tertiary training with an even split between Trade Qualification/Tertiary Certificate and Diploma/Degree qualifications. There was a higher level of degree qualifications in viticulture than in the other two industries.

**Figure 6.2.2**




Employers used a broad range of types of training for themselves and staff. The main difference between staff and employers is that employers used more formal assessment and regular off-site classes for staff and used industry events and compliance related short courses (GrowSafe, Approved Handler and forklift driving) for themselves.

**TABLE 6.2.1: TYPES OF HORTICULTURAL TRAINING DONE (KIWIFRUIT/VITICULTURE) BY EMPLOYERS AND EMPLOYEES**

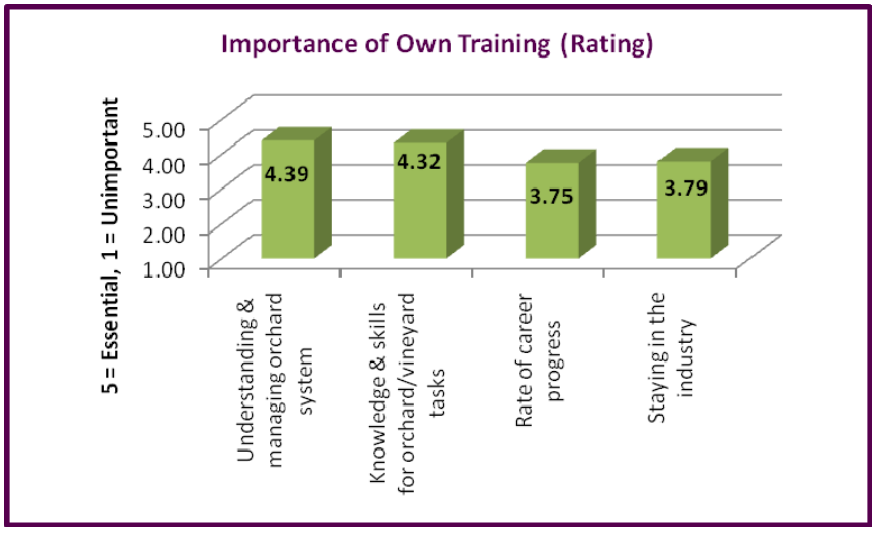
| No. of Responses | Employers | Employees |
|---|---|---|
| On-job informal | 27 | 33 |
| On-job formal assessment | 7 | 24 |
| Off-job regular classes | 5 | 14 |
| Off-job short courses | 28 | 43 |
| Industry events | 25 | 16 |
| Other | 4 | 1 |
| **No. of Respondents** | **31** | **62** |

***Employees*** **are more likely to pursue training that leads to** ***qualifications*** **than employers.**

### Importance of Own Training

Employers rated their own training in four areas. Their own training was most important in understanding and managing the orchard/vineyard and knowledge and skills to perform the tasks on the property. Their own training was less essential to progress their career and staying in the industry.

**Figure 6.2.3**



### Future Plans for Business

In terms of future plans for their business, the respondents described them as:

**TABLE 6.2.2: FUTURE PLANS FOR BUSINESS (EMPLOYERS)**

| | Pipfruit | Kiwifruit | Viticulture |
|---|---|---|---|
| Expansion & redevelopment | 36% | | |
| Expansion | 12% | 85% | 18% |
| Redevelopment | 27% | | |
| Diversification/leasing | 21% | | |
| Consolidation/stable | 3% | 10% | 82% |
| Contraction/winding down | 0% | 5% | |

The differences between industries reflect opportunities and pressures within the various sectors.

## STAFF TRAINING

### Impact on Staff Turnover Rate

Viticulture and kiwifruit employers were asked if employee training had any impact on employee turnover rates. Forty five percent of viticulture employees thought that trained staff moved on more frequently but only 16% of kiwifruit employers thought that training enabled staff to move on more quickly. Conversely, 58% of kiwifruit employers thought training encouraged staff to stay, while 36% of viticulture employers thought trained staff remained with the employer longer. This difference reflected issues in their industry.

### Kiwifruit Employers

The comments on the relationship between training and employee turnover were interesting. Some employers chose staff for training they expected to stay. Factors such as young adults wanting to travel overseas were considered more of a factor than training. Some organisations were developing an off-season "OE" with job-relevant overseas work experience and some holiday time then returning to continue their New Zealand jobs for the busiest season. Recognition of staff skills and training was considered important, with some instances cited of trained staff moving to another organisation within the industry because they felt their expertise was not sufficiently acknowledged and they were not progressing at the original employer. Wage rates in other industries were considered a factor, although one employer commented that positions for staff in formal training were better paid than was generally realised. The demand for orchard-experienced staff in post-harvest roles was also mentioned and the relative speed of progression through post-harvest careers compared to orchard-based careers. These issues arose even in organisations combining orchard and post-harvest operations.

**Kiwifruit employers believe that *staff who commit to training stay longer* in their jobs.**

### Viticulture Employers

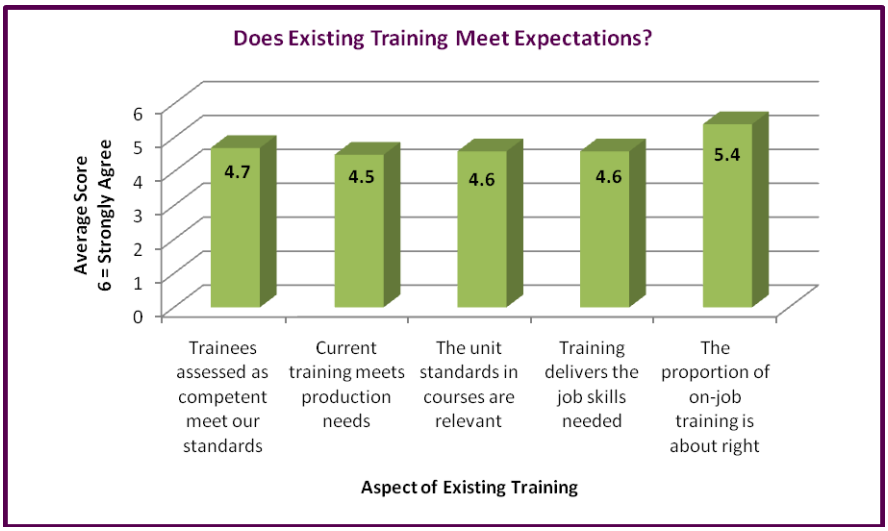
The comments on the relationship between training and employee turnover were interesting. Trained viticulture staff have been in very short supply in the recent past as the industry expanded rapidly. As such employers have experienced loss of staff due to trained staff being 'head hunted' by other employers or employees able to advance their careers more rapidly wit new employers. This appears to be changing now as new grape plantings have virtually stopped and the industry is entering a more stable phase. These two phenomenon are represented in the survey responses, largely depending on the employers' most recent experiences.

**Some viticulture employers believe *trained staff become more mobile* in the workforce. This could be a reflection of a growing industry with *skilled staff in short supply*.**

### How Does Existing Training Meet Expectations?

A series of questions were asked about how well the existing training meets employer expectations. The responses were very positive with average scores of either 4.5 or 5.4 on a scale from 1 (strongly disagree) to 6 (strongly agree).

**Figure 6.2.4**




There was some difference between the three sectors with kiwifruit having overall lower scores than the other two. Viticulture employees rated trainees assessed as competent meeting our standards and training delivers the skills needed for the job as their highest rated expectations while kiwifruit and pipfruit employers rated the proportion of on-job training is about right as their top rated expectation. Pipfruit employers gave their lowest rating for "Training delivers the skills needed for the job".

Employers' comments about their expectations:

- Communication skills are quite important.
- The level of English language is an issue for all three industries.
- A lot of detail is left to informal training.
- Some training standards are too low, eg pruning in viticulture.

## Factors Important in Achieving Great Results from Training

Employer respondents rated a number of factors on a scale of 1-6 in terms of their importance in achieving great results from training.

Those that rated mostly highly (5.4+) included:

- Trainee motivation to learn new skills
- The support of the manager to coach, mentor and supervise
- Effective leadership and workplace culture

Those with less importance were financial incentives such as:

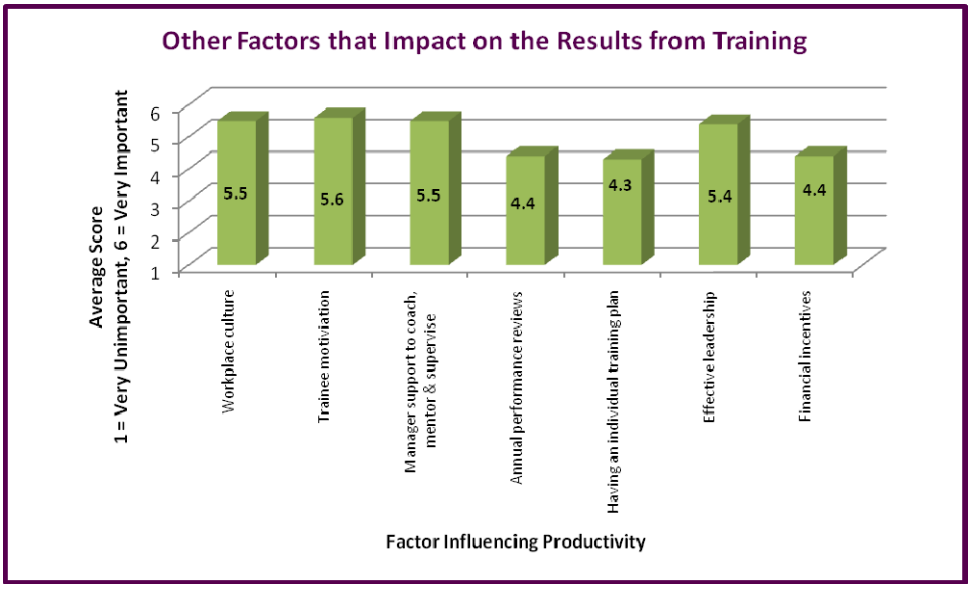
- Pay increases
- Individual training plans
- Annual performance reviews

The viticulture employees valued having an individual training plan much higher than employers from kiwifruit or pipfruit in terms of improving the outcomes from training.

Other factors influencing productivity identified by individual employers included:

- Good people management
- Pay rates comparable to peers in other industries
- Trainee willingness to learn and commit to long-term learning (seven responses)
- Follow-up after training
- Having a clean and tidy (and happy) workplace (two responses)
- Peer pressure
- Financial support for training costs (four responses)
- The quality of the trainer (five responses)

**Figure 6.2.5**



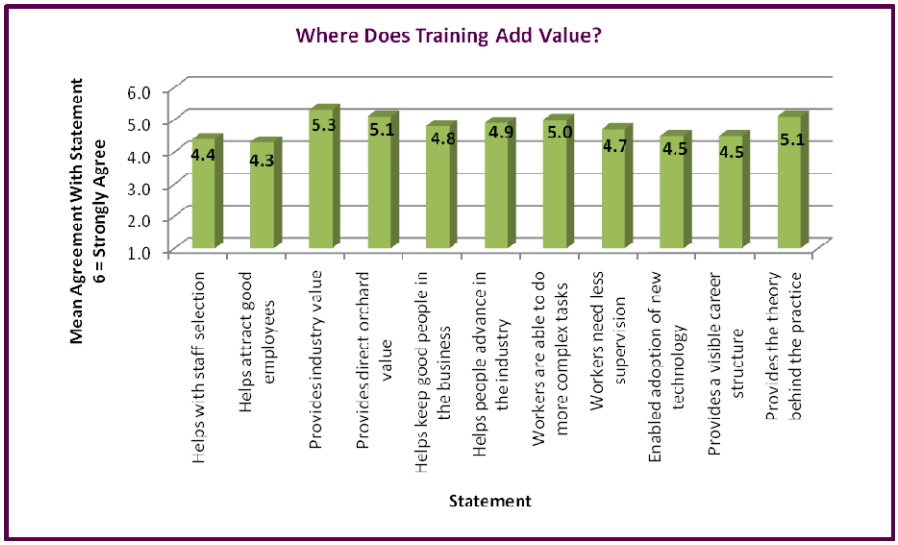
**Three *critical factors* as identified by employers to achieving *great results* from training are:**

- **Motivation of the trainee**
- **The support of the manager to coach, mentor and supervise**
- **Effective leadership and workplace culture**

### Contribution of Training to the Business

A series of questions were asked about how training contributes to the orchard/vineyard and the industry. The most positive responses were to "training provides industry value" and "training provides orchard/vineyard value".

**Figure 6.2.6**




**Viticulture and kiwifruit employers believe that industry training *provides good value* both at industry and orchard levels.**

## Quantitative Performance Increases After Training for Specific Orchard Activities

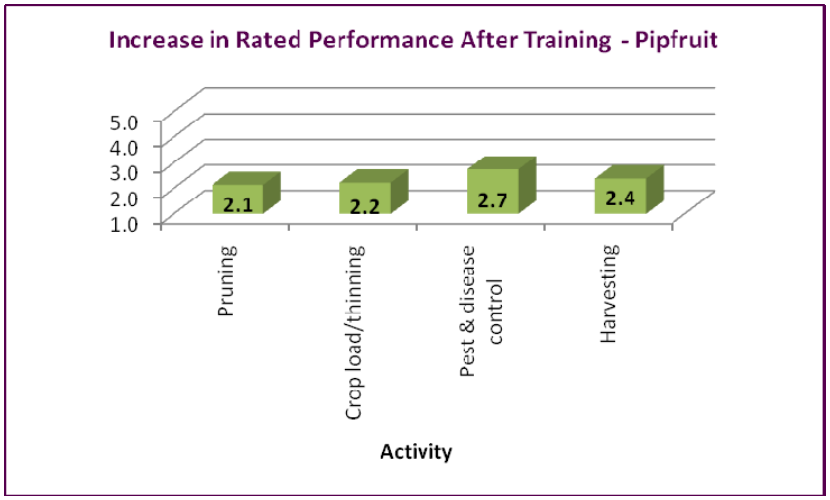
PIPFRUIT

For the specific orchard activities of pruning, thinning, pest and disease identification and control and harvesting, employers rated staff performance before and after training from Poor (rated 1) to Good (rated 5). These were averaged to give a subjective quantitative measure to use to estimate the following training economic benefits from improved performances following training in significant orchard tasks. A full description of the tasks is in Appendix 4. These are summarised in the following table.

**TABLE 6.2.3: EMPLOYER ASSESSED CHANGE IN PERFORMANCE AFTER TRAINING FOR FOUR KEY SKILLS/TASKS IN PIPFRUIT ORCHARD**

| Activity | Average Performance Level Out of 5 | | Average Change | Comments |
|---|---|---|---|---|
| | Before Training | After Training | | |
| Pruning | 2.12 | 4.25 | +2.13 | This is a skilled task that has a long term impact (compared to thinning) and it can take years to be very competent. Training can really change the perception about why you do the job. Dwarfing rootstocks are changing the techniques over the last 5 years. |
| Crop load/thinning | 1.81 | 4.03 | +2.22 | It seems to take longer for trainees to grasp why one thins (optimum size, colour and quantity) but is easier to teach. The brief changes from year to year. |
| Pest & Disease Control | 1.39 | 4.13 | 2.74 | Formal training is really helpful, as the theory is more important. Easier to link to off-orchard training. |
| Harvesting | 1.90 | 4.28 | 2.38 | There has been a big improvement over the years due to training. Getting it right on the orchard saves costs in the packing shed. |

**Figure 6.2.7**



KIWIFRUIT

For the specific orchard activities of canopy management/pruning; crop load management/thinning; pest and disease control; harvesting; post-harvest/market access compliance; and staff supervision, employers rated staff performance before and after training from poor, which rated 1, to good which rated 5. These were then averaged to give a quantitative component to couple with an economic assessment of the financial difference at each performance level (Appendix 6). All these factors showed a significant increase in performance following training. The increase in performance after training was greatest for cropload management/thinning and canopy management/pruning, both of which were rated as having the lowest performance prior to training. The results are summarised in the following table.

**TABLE 6.2.4: EMPLOYER PERCEPTIONS & CHANGE IN SKILLS BEFORE & AFTER TRAINING**

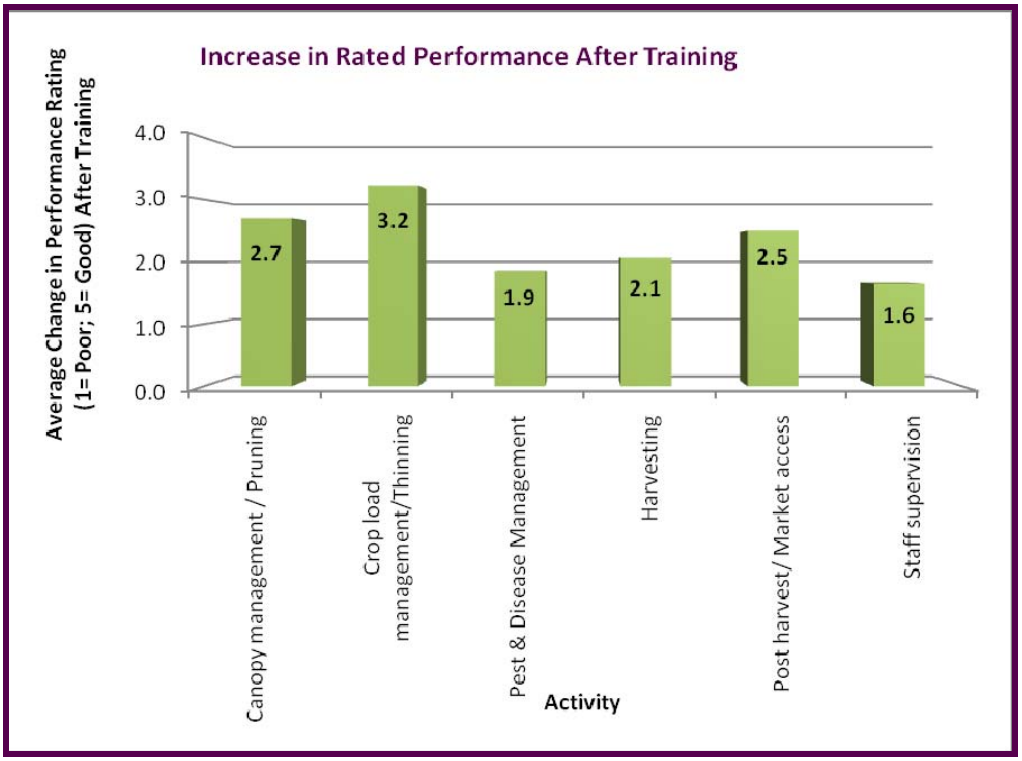
| Activity | Average Performance Level Out of 5 | | Average Change After Training * | Comments |
|---|---|---|---|---|
| | Before Training | After Training | | |
| Pruning/canopy management | 1.9 | 4.8 | +2.7 | • Mix of experienced and new workers;<br>• Good work ethic from immigrant workers;<br>• Variety mix (green and gold) and locality helps spread workload;<br>• 60% of orchard hands are new each year; takes 3 years to reach capacity. |
| Crop load management/ Thinning | 1.9 | 4.8 | +3.2 | • Brief varies from year to year;<br>• Use experienced people;<br>• Constant supervision;<br>• Language barriers;<br>• 30% each year have no experience. |
| Pest and disease control | 2.8 | 4.7 | +1.9 | • Often a specialist role. Task specialisation for example packhouse quality controllers become pest monitors; contract spraying specialist or a specialist “spray division” in larger companies. |
| Harvesting | 2.7 | 4.7 | +2.1 | • One third of staff have never picked before; harvest turnover 3-4 people per position but only one of these is not suitable;<br>• On-going and intensive task – tiredness is an issue and every day is critical;<br>• Staff coming from apples have a good understanding;<br>• Considerable training is required, especially for gold kiwifruit;<br>• Use NZ Kiwifruit Growers Inc DVD to assist with training. |

| Activity | Average Performance Level Out of 5 | | Average Change After Training * | Comments |
|---|---|---|---|---|
| | Before Training | After Training | | |
| Post harvest/ Market access compliance | 2.6 | 4.8 | +2.5 | • Specialist role, owner/manager or packhouse specialist often does this rather than an employee. |
| Staff Supervision | 2.9 | 4.5 | +1.6 | • Select supervisors based on aptitude in other roles;<br>• Work monitoring is always important; maximum 10 in a group to keep control; cultural differences. |

* Some of the "change in performance" doesn't add in this table because the change is calculated from the average difference, which excludes those employers that did not rate performance both before and after training.

The amount of data varied between factors, as some work areas were not relevant to some employers' staff. For example, many employers did not use staff for post-harvest/market access compliance and in some instances all harvesting was done by the packhouse rather than the orchard manager. Only half the employers provided ratings for pest and disease management and post-harvest/market access compliance as these tended to be specialised roles, less often done by staff. For canopy management/pruning and staff supervision, 85% of employers rated both before and after training. For harvesting, 75% of employers provided ratings and for crop load management/thinning, 65% provided ratings. The following graph shows the increase in rated performance after training for these specific skill areas.

**Figure 6.2.8**



Some employers were able to indicate the area of kiwifruit worked on by their staff. Orchard hands doing vine work averaged 2.9 canopy hectares of kiwifruit per employee. For supervisors, the average area of kiwifruit operating per supervisor was 25 canopy hectares. Seven employers provided data on the area per employee or supervisor.

**Kiwifruit employers noted a *strong improvement in performance in canopy management, pruning and thinning*, however the staff supervision topic showed a lower level of improvement.**

VITICULTURE

For the specific vineyard activities of pruning; canopy management; pest and disease control; and harvesting employers rated staff performance before and after training from poor, which rated 1, to good which rated 5. These were than averaged to give a quantitative component to couple with an economic assessment of the financial difference at each performance level. All these factors showed a significant increase in performance following training.

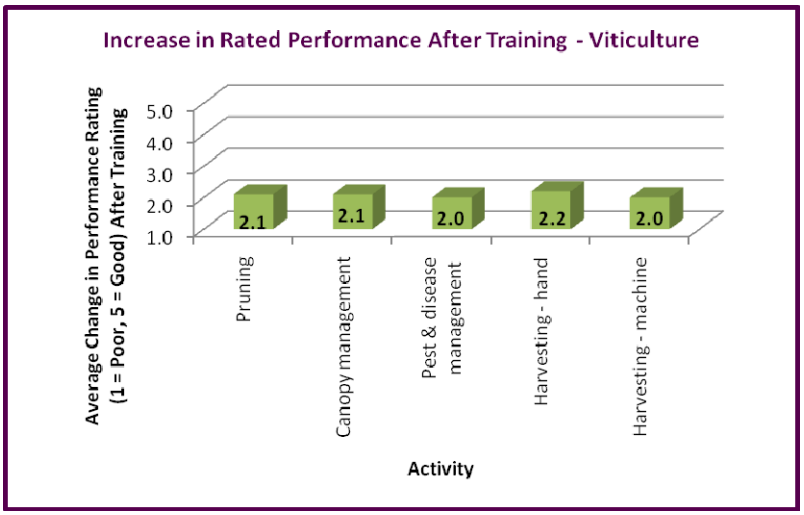
The increase in performance after training was greatest for cropload management/thinning and canopy management/pruning, both of which were rated as having the lowest performance prior to training. The results are summarised in the following table:

**TABLE 6.2.5: INCREASE IN PERFORMANCE AFTER TRAINING**

| Activity | Average Performance Level Out of 5 | | Average Change After Training * | Comments |
|---|---|---|---|---|
| | Before Training | After Training | | |
| Pruning | 2.4 | 4.5 | 2.1 | Trainees mostly supervise pruning gangs but occasionally are hands on pruners as well |
| Canopy Management | 2.4 | 4.5 | 2.1 | Trainees mostly supervise hand-on canopy management such as shoot or bunch removal or do the tractor driving for leaf plucking or shoot trimming. |
| Pest & Disease Management | 2.2 | 4.2 | 2.0 | Trainees mostly apply agrichemicals or monitor for pest and disease |
| Harvesting – Hand | 2.7 | 4.9 | 2.2 | Trainees mostly supervise hand harvesting |
| Harvesting – Machine | 2.1 | 4.3 | 2.0 | Some of the most skilled or those with good machinery skills will drive harvesters or fruit receival bins. |

The amount of data varied between factors, as some work areas were not relevant to some employers' staff. For example, some employers did not use staff for hand harvesting or pest and disease management. The following graph shows the increase in rated performance after training for these specific skill areas.

**FIGURE 6.2.9**




Some employers were able to indicate the area of vineyard worked on by their staff. This is indicated in the following table.

**TABLE 6.2.6: AREA OF VINEYARD WORKED ON BY STAFF**

| Task | Does | Supervises |
|---|---|---|
| Pruning | 7ha | 125ha |
| Canopy Management | Varies – too few responses | Varies – too few responses |
| Pest and Disease management | Varies – too few responses | Varies – too few responses |
| Harvesting - Hand | 0.7ha | 16.5ha |
| Harvesting - Machine | 120ha | - |

Employers were not able to provide specific estimates for areas that trainees influence in the areas of Canopy management and Pest and Disease Management. This is largely due to the varied nature of these tasks eg. Canopy management includes both tractor driven and hand completed tasks with very different areas influence. Likewise pest and disease management area varies depending on whether trainee was applying agrichemicals or monitoring pest and disease.

Employers generally were able to provide very good information on the number of Full Time Equivalent employees and the total area of their vineyards managed. All eleven employers were able to provide this data but 3 were removed as outliers due to atypical circumstances. This data suggests there is one Full Time Equivalent employee for every 7.8ha of vineyard.

## 6.3 EMPLOYEE SURVEY RESULTS

### INTRODUCTION

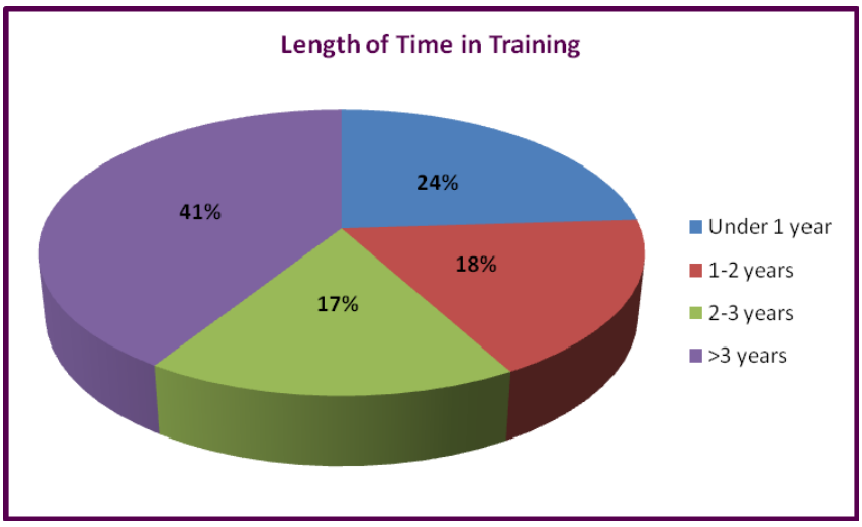
Employees in the pipfruit, kiwifruit and viticulture industries were surveyed to gather employee perceptions about the value of training to their performance in the job, career progression, aspirations and personal preferences for type of training. The surveys were short, simple and were completed directly by the employee rather than completed as part of a structured interview. The results were amalgamated for analysis and reporting in this report. Any significant differences between the three industries are noted in the commentary. Surveys were returned from 117 employees including:

- 55 from employees in the pipfruit industry
- 38 from employees in the viticulture industry
- 24 from employees in the kiwifruit industry

### EMPLOYEE PERCEPTIONS OF TRAINING

#### (a) LENGTH OF TIME IN TRAINING

**Figure 6.3.1**

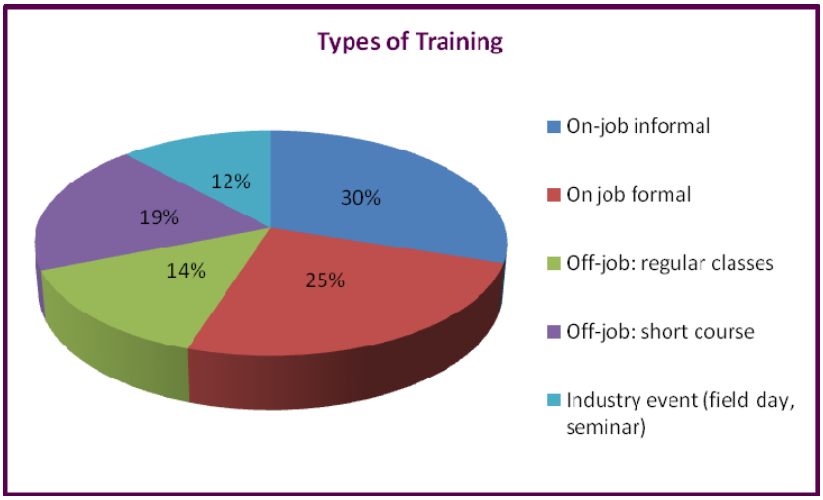



Forty one percent of respondents had been in training for more than three years or had recently completed the qualification, while 24% were in their first year of training. The rest were in their second or third year.

#### (b) TYPES OF TRAINING (KIWIFRUIT AND VITICULTURE TRAINEES)

Employees received a variety of training with most respondents recording two or three types of training with some up to four types.

**Figure 6.3.2**




In the kiwifruit industry, off-job training with regular classes and on-job informal training was more frequent, while viticulture trainees received more on-job formal and informal training. Kiwifruit trainees also attended industry events frequently.

### (c) BENEFITS OF TRAINING

Employees were asked to rate a number of statements on "What were the benefits of training for them"? (1 = Strongly Disagree, 6 = Strongly Agree). The highest rates responses were:

**Figure 6.3.3**


**The three most *highly rated benefits* of training by viticulture employees were:**

- **Training makes my job more interesting**
- **I can do a wider range of tasks**
- **Training provides the theory behind the practice**

**Pipfruit trainees value training because it makes the job more interesting and promotes better understanding of the job.**

**Trainees rate on-job and practical training very highly for skill acquisition.**

### (d) WHAT DID TRAINEES WANT FROM TRAINING?

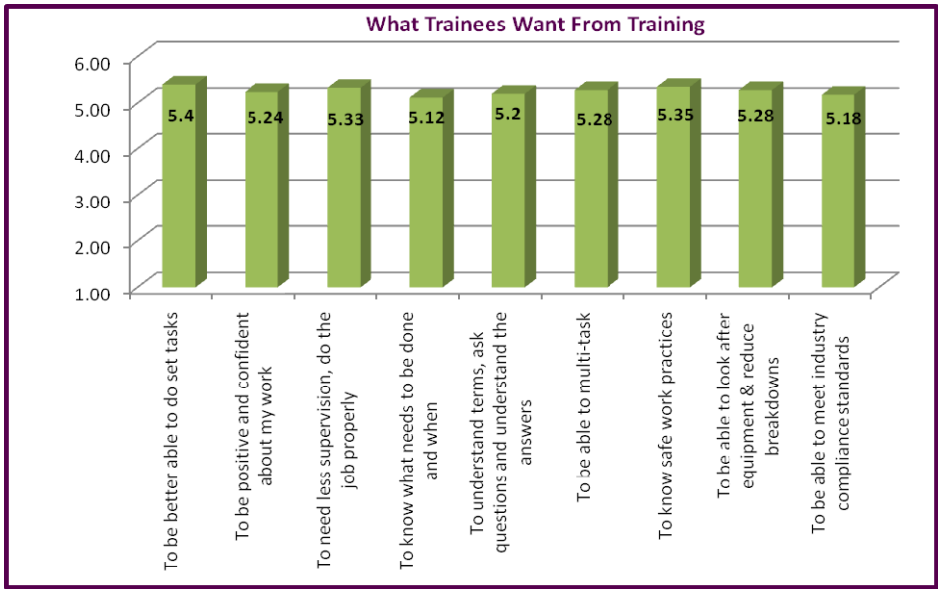
Employees were asked to rate nine statements in terms of what they expected or wanted to get out of training. Ratings were very similar across all factors from 5.12 to 5.40. Highest ratings were for:

- To be better able to do set tasks
- Use safe work practices"
- To need less supervision, do the job properly

While the least rated attributes were:

- "To arrive in the morning knowing what jobs needed to be done and when"

**Figure 6.3.4**




**There is an *opportunity* within the sector to *enhance the linkage between qualifications, training and remuneration* as this was the lowest scoring "benefit" of training as rated by employees.**

**Trainees rate the importance of *safety and equipment* training *highly*.**

## (e) RELEVANCE OF TRAINING AND NATIONAL CERTIFICATES (PIPFRUIT TRAINEES)

Pipfruit trainees valued practical training done on job to theoretical training done off job and slightly preferred training delivered in short bursts over time rather than block course delivery. Most trainees agreed that Unit Standards were relevant to the job and the assessment process was compatible with doing the job well. Most trainees also said that they were well supported by their employers in the workplace.

**Figure 6.3.5**


### Gaps in Training

Employees were asked abut gaps in training and there was consistent views across all sectors that people management and business skills was a significant weakness. These skills included:

- Supervising foreign staff
- English language and cultural diversity
- Understanding market requirements
- Managing stress in staff
- Conflict resolution in teams
- Communication
- Time management
- Planning and organisation skills
- Understanding and managing risk
- Financial skills
- Computer skills
- Pricing jobs/sales

**Trainees identified a range of *training gaps* in non-technical topics in personnel management and buisness management.**

Specific technical skills included:

- Irrigation
- Weeds, pests and diseases
- Post-harvest management
- Propagation

## (f) ON-ORCHARD TASKS

### Key On-orchard Tasks

Employees in the pipfruit industry were also asked about the four key tasks identified by industry consultants where the impact of employee skill had significant impact upon the orchard productivity and profitablity – namely pruning, thinning, picking and pest and disease management.

Employees were asked to rate the importance of individual tasks related to these four major activities, the skill and confidence in performing the task before training and after training and whether they had applied the skill with good results or not.

**Most trainees believe they are applying the skills with *good* or *great results* in the workplace.**

The results of this are shown in Table 6.3.1

## TABLE 6.3.1: Employee Perceptions About the Importance & Change in Skill & Results Achieved in the Workplace

| Activities | Knowledge of the Skill or Knowledge in Role at Work | Skills/Knowledge/ Confidence with Topic BEFORE Training | Skills/Knowledge/ Confidence with Topic AFTER Training | Change | Application in the Workplace and Achievement % | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | N/A % | Poor % | Good % | Great % |
| **1. UNDERSTANDING PRUNING REQUIREMENTS TO PRODUCE OPTIMUM CROP LOAD OF HIGH QUALITY FRUIT** | | | | | | | | |
| **Task 1:** Able to adjust pruning technique to suit the variety or vigour of the tree. | 5.18 | 3.56 | 5.31 | 1.75 | 4% | 0% | 68% | 28% |
| **Task 2:** Understands the difference in wood classes within the tree and the consequences of over or under pruning. | 5.08 | 3.46 | 5.18 | 1.72 | 7% | 0% | 79% | 14% |
| **Task 3:** Able to leave the correct bud numbers to produce the maximum crop and a canopy that will have good light penetration. | 5.24 | 3.52 | 5.18 | 1.66 | 7% | 0% | 65% | 28% |
| **2. UNDERSTANDING HOW TO THIN TO ACHIEVE THE YIELD REQUIRED, WITH EVEN FRUIT DISTRIBUTION TO DEVELOP OPTIMUM SIZE, COLOUR & QUALITY** | | | | | | | | |
| **Task 1:** Able to thin to leave the correct number of fruit on the tree as specified. | 4.94 | 3.77 | 5.19 | 1.42 | 22% | 0% | 49% | 29% |
| **Task 2:** Able to leave the fruit with the best potential on the tree. | 5.09 | 4.25 | 5.23 | 0.98 | 24% | 0% | 44% | 31% |
| **Task 3:** Thin efficiently with minimal damage to the remaining fruit. | 5.24 | 4.18 | 5.15 | 0.97 | 23% | 0% | 45% | 32% |
| **Task 4:** Understand the different wood classes within the tree and to differentially thin for those classes. | 4.96 | 3.62 | 4.93 | 1.31 | 21% | 5% | 50% | 24% |
| **3. PICKING FRUIT OF OPTIMUM MATURITY IN A TIMELY WAY AND MINIMISING ANY DAMAGE** | | | | | | | | |
| **Task 1:** Pick with variety maturity specifications. | 5.13 | 3.88 | 5.15 | 1.27 | 20% | 2% | 48% | 30% |
| **Task 2:** Able to achieve an efficient rate of picking with minimal bruising or other damage. | 5.13 | 4.04 | 5.08 | 1.04 | 23% | 2% | 55% | 20% |
| **Task 3:** Know what fruit to leave on the tree such as damaged, misshapen, diseased, and immature to achieve good packouts. | 5.26 | 4.46 | 5.38 | 0.92 | 21% | 0% | 47% | 33% |
| **4. EFFECTIVE PEST & DISEASE IDENTIFICATION, MONITORING & CONTROL** | | | | | | | | |
| **Task 1:** Able to identify major insect pests, diseases & | 4.73 | 3.35 | 4.78 | 1.43 | 11% | 4% | 69% | 16% |

| Activities | Knowledge of the Skill or Knowledge in Role at Work | Skills/Knowledge/ Confidence with Topic BEFORE Training | Skills/Knowledge/ Confidence with Topic AFTER Training | Change | Application in the Workplace and Achievement % | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | N/A % | Poor % | Good % | Great % |
| weeds in orchards | | | | | | | | |
| **Task 2:** Understand the importance of knowledge of pest lifecycles & monitoring as part of pest & disease control management. | 4.62 | 3.13 | 4.63 | 1.50 | 20% | 7% | 66% | 7% |
| **Task 3:** Understand the importance of correct control method including agrichemicals & the consequences of getting it wrong. | 4.87 | 3.22 | 4.93 | 1.71 | 18% | 4% | 53% | 24% |
| **Task 4:** Understand the importance of timing of weed, pest or disease control application, the correct choice of control method & application technique. | 4.78 | 3.20 | 5.11 | 1.91 | 17% | 7% | 55% | 21% |

In general, all the tasks identified as important by consultants were highly rated by employees except for effective pest and disease control which was rated slightly lower in importance than tasks associated with pruning, thinning and picking.

# 7.0 STUDY OUTCOMES AND RECOMMENDATIONS

## 7.1 APPLICABILITY OF VALUE ADDED APPROACH

The study showed that a dollar value can be measured on the impact of training in three horticultural industries and at a similar level as found in the original study for the Agriculture ITO.

The kiwifruit industry study also shows a much higher return for advanced leading hands, primarily because of the orchard area that they have direct influence over. This supports the direction the TEC is giving ITOs to lift the proportion of training at Level 4 and above.

The study also showed strong industry support for training. For the pipfruit industry, there is a strong sense of local ownership of the training by growers in both Hawkes Bay and Nelson areas. For the viticulture industry, there has been a close working relationship between a large national viticulture company and the Horticulture ITO to align company internal standard training documents to NZQA Unit Standards. This process has given practical on-the-job training that has a level of ownership by the employer of the training procedures and documentation.

All viticulture employers were supportive of the training and often could describe situations where training has saved money or increased productivity. Many employers also indicated safety concerns in the workplace were a key reason for undertaking training and considered training, particularly training involving machinery, was very successful in reducing accident rates and minimizing equipment damage.

A key message from the kiwifruit industry was that there is no demand for revolutionary change in approach. The response to industry training is positive. There is a range of training options available (see Appendix 7) which are being accessed by the kiwifruit industry with good results.

In general, the feedback from trainees indicated that there was strong commitment from employers to support their trainees and provide trainees with opportunities to apply their new skills and knowledge.

It was particularly evident during the viticulture employee surveys that the level of Literacy and English language skills was low. While this was worse for those trainees where English was their second language it was evident in both native English and non-English speaking trainees. Any training material needs to be written in very plain English and this need was also commented on by trainees.

This feature was also highlighted by pipfruit and kiwifruit growers, where the supervision of foreign staff (RSE) with ESOL and cultural diversity require further training support.

In viticulture, several managers also consider there is a significant on-going saving to the business in staff retention of trained employees. Time and recruitment cost savings were mentioned as significant. One large employer of RSE workers, with 85% of their 2008 trained staff returning in 2009 leading to a 19c/vine saving in recruitment, induction and training costs.

Low literacy and English not being a native language are both issues among the kiwifruit workforce. The ‘lean thinking’ workshops being promoted into the kiwifruit industry at present discuss making the workplace very visual to address this. Many people in horticulture also relate best to a ‘learning by doing’ learning process so this focus, and addressing literacy, should continue in kiwifruit industry training, particularly at the ‘orchard hand’ level.

**The low level of English language and literacy skills was evident in the research, highlighting the *need for written theory resources to be very clear and concise*.**

The kiwifruit industry also highlighted staff turnover as a significant cost.

The financial benefits of training calculated in this project provide some insight to the costs of staff turnover. The kiwifruit industry has a high staff turnover, particularly at the orchard hand level, yet the industry is expanding and labour-intensive in nature so additional workers are required. Retaining a higher proportion of existing workers would retain the benefits of these workers' training and experience into the future. Training of leading hand and supervisory staff was calculated to improve orchard results so training at this level is one way of enhancing industry performance despite staff turnover at the orchard hand level.

Some of the leading employers interviewed for this project are attempting to address these structural employment issues. They are introducing practices to even out seasonal work flow to help retain staff and also retain for the employer some of the benefits of increasing skill level, while still incentivising workers. Benefits for the employee include evening out seasonal earnings and greater continuity of work. For example, traditionally a worker may be working on an hourly wage rate while they first learn the task, but then are shifted to a contract rate as their skill level increases. Thus the benefit of the workers increasing skill passes mainly to them. Some employers are changing to an hourly rate incentivised by work rate, which splits the benefit of increasing skill between the worker and employer.

Some kiwifruit employers were also keen to see whether the results of this project could be used to support attracting staff to the industry and to better promote the benefits of training.

For trainees, a promotional focus that training makes the job more interesting may help, alongside the benefits of training outcomes themselves such as qualifications and certificates. For promotion to employers, the finding that most employers consider trained employees stay longer could be useful.

There is considerable job specialisation within the industry (see Appendix 7) which means personalising training to the work role is likely to appeal to employers, or the benefits of broad training may need some promotion. This work specialisation can mean some workers have relatively narrowly focused work roles. There can also be a bit of a 'disconnect' between training and work as many of the orchard hands work for contractors on a casual basis, and those employing the contractors do not necessarily have a requirement for formal training. In some long-term contracts such as for local body amenity contracting, a requirement for a training regime may be specified as part of the contract. The kiwifruit industry still tends to be very cost-focused when selecting contractors and short term or informal contracts are most common. The level of work specialisation also means organisations within the industry may need to actively provide career progressions that span these specialisations.

There is an increasing use of field auditors to check work specifications are being implemented as intended. This also fits with the lean thinking message of "being ruthless with standards, gracious with people"[2].

[2] From promotional material for "Get the skinny on lean to increase your bottom line" workshops organised by Enterprise Training in Tauranga, October 2009.

The length of time employers have worked in the industry indicates succession planning will become an issue over the next decade as current employers approach retirement. Employers were very keen on more new people entering the industry. They work with industry promotions and are keen for even more help to find the new people needed to enter the industry.

As always, it is hard to separate a response to training from management performance which greatly affects development of skills. Workplace factors were recognised by employers to be very important.

During one of the project interviews, a successful and longstanding orchard manager reflected on why contemporaries had left the industry. Burnout from the demands of the job was a factor. Being frequently on-call, juggling strategic and operational activities, often operating under tight financial constraints, with the added element of unpredictability from seasonal factors and labour intensive work can make orchard management a demanding job. Using systems and having able staff, such as field auditors, to help operate them and provide back-up helps to get results and reduce the risk of burnout. The scale required to do this is not available to those operating small orchards independently, but groupings around post harvest facilities have brought scale of operations to the kiwifruit industry in the Bay of Plenty despite relatively small typical orchard sizes.

## 7.2 RECOMMENDATIONS

- The linkage between qualifications, training and remuneration was the lowest scoring "benefit" of training as rated by employees. This suggests that there may be an opportunity to identify and demonstrate a linkage to help maintain trainee commitment to achieving qualifications.
- Trainees do rate the importance of safety and equipment training highly.
- Gaps in training were largely in personnel and business management topics rather than technical fruit growing. These included supervising foreign staff, English language and cultural diversity, conflict resolution, planning and organising and understanding market requirements and their impact in the orchard.

# APPENDICES

# APPENDIX 1: PROJECT BACKGROUND: FINDINGS FROM THE AGRICULTURE ITO'S "REPORTING VALUE ADDED BY AGRICULTURAL TRAINING" STUDY AND ITS IMPACT ON ITO DELIVERY

In early 2005 the Agriculture Industry Training Organisation (Agriculture ITO) began a research project to develop an improved understanding of the benefits created for its stakeholders (Government, Industry, Employers and Trainees) through agricultural training, beyond that generated through its regular stakeholder satisfaction surveys. They did this for two main reasons:

Firstly, competition for funding, market, time and resources. Stakeholders might ask why they should commit funding and/or time to training rather than the next best alternative.

Secondly. accountability – it was important to the Agriculture ITO to show that they are supporting their trainees appropriately; they are using best practice learning methods for skills and knowledge and engaging with employers and that they are meeting government and industry objectives (in literacy, numeracy, productivity, labour availability, etc); that they are building skills rather than just reporting skills that trainees already have.

## AGRICULTURE ITO REPORTING VALUE ADDED BY AGRICULTURAL TRAINING

In March 2005, the Agriculture ITO engaged Seglias Winship and AgResearch to develop an appropriate model and carry out a study that would quantify the benefits of vocational training in ways that would be valued by each of the stakeholders.

The final report dated July 2007 reported the findings of the two year research project:

- Agricultural vocational training provides both quantitative and qualitative value to trainees, their employers, the wider industry and the economy.

- The total value to the dairy farm business from training was $8,332 per trained employee. The total cost of training including trainee salary cost while training was $2,452/trainee. Therefore the net return from training spent was $2.40 per $1.00 spent.

- The total value to the sheep and beef cattle business from training was $17,400/trainee and the cost was $3,505 per trainee giving a net return of $3.96 per $1.00 spent on training.

- There were also less tangible but important benefits from training that were identified by farmer employers – more positive attitudes, better understanding of farming systems, better communication through common understanding and shared terminology and better transfer of knowledge and technology. Trained staff also stayed in the industry, if not the farm business, for longer. Employers want employees who "can do" rather than "know how to do".

- The value derived from training was largely dependent upon the employer.

- Some work in another study indicated training improves trainee earning power and improves career advancement by seven years earlier than a non-trained worker would achieve.

## IMPACT OF THE AGRICULTURE ITO RESEARCH ON THE AGRICULTURE ITO

The RVA project was informed by the high impact learning work of Professor Robert Brinkerhoff of the University of Western Michigan. These two pieces of work have and are continuing to influence the way that the Agriculture ITO structures its qualifications and delivers training to its industries (Hardy 2008)

### (a) Marketing

*Before*
The marketing proposition was based on value to the trainees in terms of job security and career progression.

*After*
The marketing proposition was shifted towards employer value and included messages about:

- Attraction and retention of staff to the industry
- Employer expectations of training
- Development of on-farm capability – "can do"

### (b) Qualification Structure

*Before*
The Agriculture ITO qualification structure was based on theory and practical but the balance tended to be weighted in favour of theory with the certificate awarded with a higher proof of competency for theory.

*After*
The new qualifications have been aligned to subjects and tasks which cover a range of tasks with a common economic driver.
The value of the on-job component has been recognised with an average increase of on-job Unit Standard credit value of 25%. This will ensure that attainment of the qualification will require a higher level of proof of on-job competency.
There are now 16 National Certificates where previously there were only eight.

### (c) Delivery Mode

*Before*
More assessment off-job – 0.85 hours/credits off-job.

*After*
Level 2 and 3 qualifications will have reduced amount of on-job learning and assessment, with the majority of the off-job classes taken up with learning and not assessment. Where possible, theory learning will be assessed on the job. 0.36 hours of off-job support/credit.

### (d) Task Based Assessment (to reflect "can do")

*Before*
Assessment based on individual Unit Standard.

*After*
Assessment based on the task, eg building a fence rather than the individual Unit Standards making up the task. The trainee will be assessed as competent when they can perform the whole tasks rather than parts of the task.

### (e) Common Resources

*Before*
Each training provider developed their own resources which varied in quality.

*After*
Best Practice resources validated by industry to support on-farm capability development.

### (f) Qualification Development

*Before*
Qualification and development reviews centred on provider and Agriculture ITO field staff.

*After*
Industry, farmers, trainees and industry experts more involved in reviews to ensure quicker incorporation of industry best practice.

### (g) Field Staff Focus

*Before*
More focus and engagement with trainee.

*After*
A shift to more focus on the employer and the needs of the business to matching training to business needs.

In summary, the RVA project has had a significant impact upon the way the Agriculture ITO carries out its functions. The presentation of this data to other ITOs has stimulated the demand for a similar approach for other ITOs.

## APPENDIX 2: LITERATURE BACKGROUND

This project is about identifying a Return on Investment (ROI) from training and improving the connectivity between skills, productivity and profit.

### RETURN ON INVESTMENT FROM TRAINING

McLeish, Gardner and Waters (July 2007) provided a comprehensive literature review on ROI methodology and models.

In summary, Kirkpatrick is generally regarded as the "father" of research into ROI on training and who developed the following four step model to evaluate training in 1959.

| Level | Evaluation Type (What is Measured) | Evaluation Description & Characteristics | Examples of Evaluation Tools & Method | Relevance & Practicability |
|---|---|---|---|---|
| 1 | Reaction | • Reaction evaluation is how the delegates felt about the training or learning experience | • eg 'happy sheets', feedback forms<br>• Also verbal reaction, post-training surveys or questionnaires | • Quick and very easy to obtain<br>• Not expensive to gather or to analyse |
| 2 | Learning | • Learning evaluation is the measurement of the increase in knowledge - before and after | • Typically assessments or tests before and after the training<br>• Interview or observation can also be used | • Relatively simple to set up; clear-cut for quantifiable skills<br>• Less easy for complex learning |
| 3 | Behaviour | • Behaviour evaluation is the extent of applied learning back on the job – implementation | • Observation and interview over time are required to assess change, relevance of change, and sustainability of change | • Measurement of behaviour change typically requires cooperation and skill of line-managers |
| 4 | Results | • Results evaluation is the effect on the business or environment by the trainee | • Measures are already in place via normal management systems and reporting - the challenge is to relate to the trainee | • Individually not difficult; unlike whole organisation<br>• Process must attribute clear accountabilities |

McLeish et al. also described Phillips' (2003) three layer model of value returned from training activity:

1. Value returned from job related skills applied to the trainee's current work situation.
2. Value of training terms of preparing the employee for their next job.
3. Developmental and cultural change within the community, business and industry to which training outcomes contribute.

McLeish's et al. methodology focused on the first layer and data from another study provided some information on the second layer.

McLeish et al. also quoted Rylatt 2003 who described the return from training in terms of:

1. Value to the individual.
2. Value to the business.
3. Value to society.

ROI/RVA is designed to calculate the return to the business but there is a strong argument that given the 70+% of funding for industry training coming from the government, there should be a measurable gain for "the taxpayer" funder. Part of this return will be more productive businesses paying higher wages to employees and both the business and the employees paying more tax but part of the return for society comes from a more flexible skilled workforce that can move between industries, can learn new skills and use new technology more rapidly and adapt to changing needs more quickly.

Brinkerhoff and Dressler (July 2002) argue that systematic evaluation of training is a tool that can help managers learn how to leverage learning and performance improvements from their training investments. This challenge will not be met by better application of Kirkpatrick's four step model rather an evaluation strategy is required that integrates performance improvement principles and methods. When learning impact on business results is assessed, there are always three categories of impact:

- Some trainees use their training in highly effective ways
- Some trainees do not apply any of it
- Most trainees are in between, trying bits out here and there

The cause of this variability has more to do with the business performance system and the organisation's environment than it does with the training design and content itself. Brinkerhoff and Dressler argue that ROI studies have three risks:

1. It undermines performance partnerships with line management by misrepresenting the role and process of training in performance improvement.
2. It ignores the performance system factors that affect the impact from training.
3. It does not provide relevant feedback that managers (the customers of training) need to improve performance.

At the Level 3 and 4 of Kirkpatrick's model, the performance improvement process is evaluated of which training is only a part. ROI methods tend to try to isolate the impact of the training alone. Given that we want to use training to improve business performance and evaluate the transfer or behaviour change from training, we must measure and evaluate the managerial and performance system, not the training in isolation.

Brinkerhoff and Dressler describe the following process to evaluate the ability of a business to enhance the capacity to leverage learning and knowledge into business value:

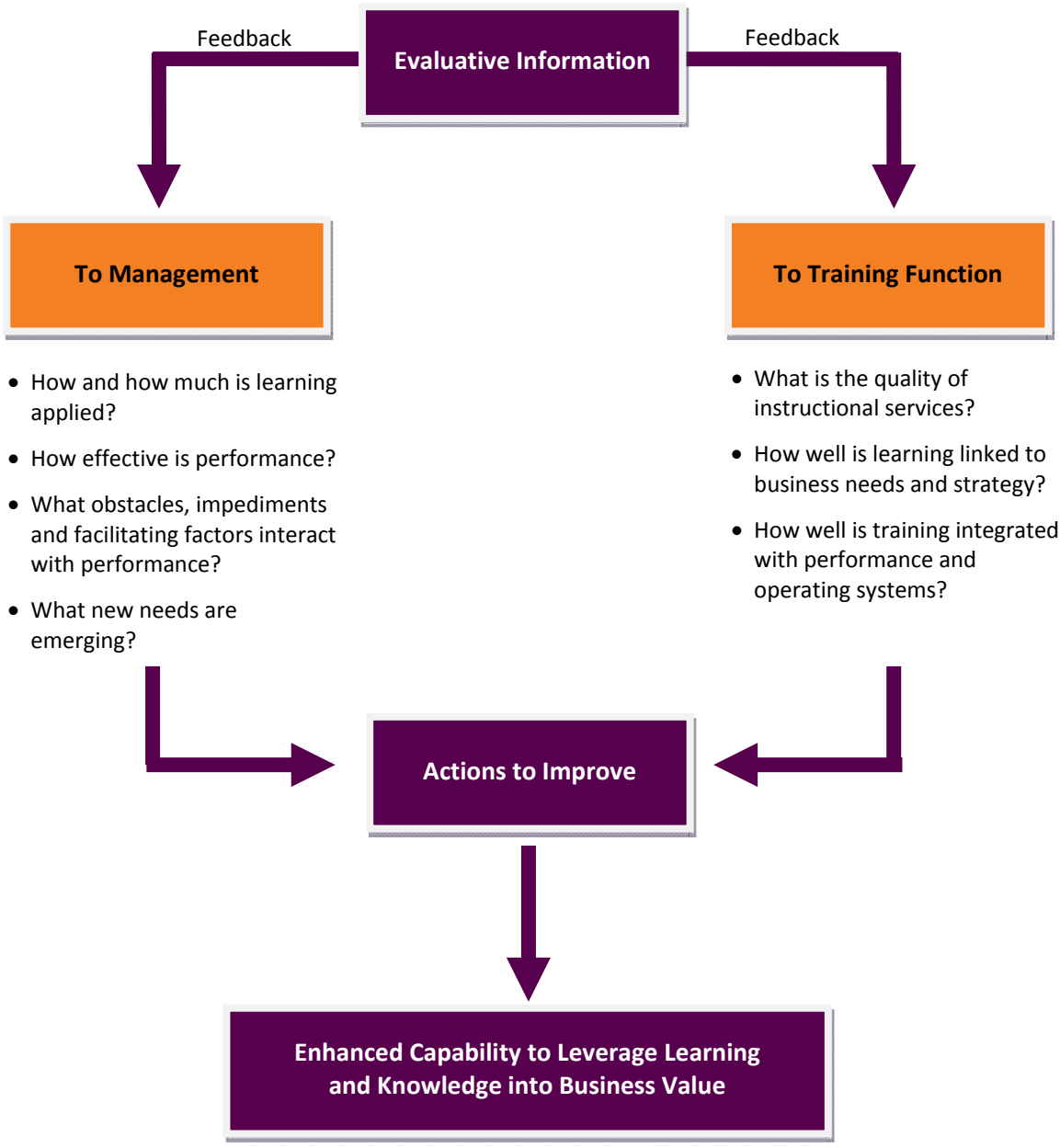



**Figure 1: Evaluation as Capability Building**

The left hand column represents the flow of information to management; the right hand channel is the flow of information to the owners of the organisation's learning structure and processes. Neither party can take the credit alone; an effective partnership is required for high impact learning approach and success.

## TRAINING AND PRODUCTIVITY

Given the project goal of linking training skills, productivity and profit, the project team considered a number of people performance models that might inform the interview and survey questionnaires. These included:

### (a) Investors in People (IIP) International Standard (Investors in People NZ)

IIP is a quality standard developed originally in the UK in 2001 that audited business organisations against 12 indicators and evidence requirements as a catalyst for continuous organisational improvement through the focused and managed development of people. The indicators of an Investor in People organisation are:

1. The organisation is committed to supporting the development of its people.
2. People are encouraged to improve their own and other people's performance.
3. People believe that their contribution to the organisation is recognised.
4. The organisation is committed to ensuring equality of opportunity in the development of its people.
5. The organisation has a plan with clear aims and objectives which are understood by everyone.
6. The development of people is in line with the organisation's aims and objectives.
7. People understand how they contribute to achieving the organisation's aims and objectives.
8. Managers are effective in supporting the development of people.
9. People learn and develop effectively.
10. The development of people improves the performance of the organisation, teams and individuals.
11. People understand the impact of the development on the performance of the organisation, teams and individuals.
12. The organisation gets better at developing its people.

### (b) The Performance Equation (CEO Group, Palmerston North)

Performance is a function of Ability, Motivation, Opportunity and Direction. All four components need to be present in order for a person to be productive.

#### ABILITY

Ability is made up of both knowledge and skill developed either through systematic training or experience. Overcoming skill/ability deficiencies is not difficult today.

#### MOTIVATION

CEO has suggested that there are no unmotivated people, only unmotivated employees. Where there is a lack of motivation and all three other factors are present, one needs to establish whether the desired performance is punishing, or non-performance is rewarding or whether performance really matters.

#### OPPORTUNITY

The individual needs to feel that they can perform and have the opportunity to do so. This includes the space, time, authority, resources, etc, to do so.

DIRECTION

This factor is often overlooked or assumed. Without clarity as to the expected outcomes, performance will be disappointing. It is important that managers describe the outcomes rather than the activities or means to the end.

## (c) Seven Drivers of Productivity, Department of Labour

The New Zealand Department of Labour has developed a model of seven drivers that build productivity. These include:

### 1. Building Leadership & Management Capability

Effective leadership is about everyone having a clear vision of where an organisation is heading. It's about identifying new opportunities and inspiring people and the teams they work in to pursue those opportunities.

Key things to consider about the leadership in your organisation:

- Leadership needs to be developed at every level of an organisation, not just amongst managers.
- Leading by example is an essential factor in creating a more productive workplace.
- Effective leadership means being able to adapt to change and motivate people.
- Leadership means ensuring staff have the skills and resources to improve their performance and go on learning.

### 2. Creating Productive Workplace Cultures

Positive relationships between staff, teams and managers are a feature of productive workplaces.

Creating a positive work environment:

- Motivates people and makes them feel valued
- Helps people commit to an organisation
- Encourages people to "go the extra mile".

### 3. Encouraging Innovation and the Use of Technology

Innovation is key to raising workplace productivity.

Innovative and productive workplaces:

- Encourage all staff to think of ways to create new products and improve existing services
- Keep up with the play and use new technology
- Plan and organise themselves well
- Employ and value people with good skills and ideas

Creating new products or services or just doing things better are vital ways of growing your business. You may be innovative on a small scale or you can introduce entirely new technology, products and services. Your company's ability to innovate will depend on a range of factors - the skills of your employees, your workplace culture, how your work is organised and a shared vision of where your business is heading.

### 4. Investing in People and Skills

The more skills your staff have, the more innovative they can be. The more skills staff have, the more they can contribute.

Skilled staff:

- Are more capable with new technology
- Work more quickly with fewer mistakes
- Require less supervision and accept more responsibility, and
- Are better communicators

An organisation's commitment to training is important for raising skills and creating a highly-skilled workforce. Effective training leads to higher skills and wages and lower staff turnover.

### 5. Organising Work

A well-organised workplace is able to get the best out of its staff and technology. It values everyone's contribution and encourages people to share information and ideas.

Productive workplaces have structures and processes that enable them to adapt and grow as products, technology and markets change.

### 6. Networking & Collaboration

You can also improve your workplace productivity by exchanging ideas and information with others in your industry.

Networking or collaborating with others:

- Reduces the cost of doing business
- Provides access to new ideas and new technologies
- Creates new opportunities for your business locally and internationally

### 7. Measuring What Matters

It is really important to assess the value of any investment your organisation makes in improving its workplace productivity.

Keeping track of this will help your organisation find out the things that are making the biggest difference. For example, how much of a difference is a new training initiative making? What is the impact of a new product or service? Has new technology brought any new efficiencies? What is the staff retention rate?

### (d) The Workplace Productivity Project (sponsored by the NZ Department of Labour and the Industry Training Federation)

This project worked with seven manufacturing companies to improve their productivity and business performance. An assessment tool was developed and used as a discussion stimulus to think about the business and its relationship to customers. This tool scores a range of attributes:

1. The strategic focus and how it is reflected in the company and product thinking.
2. Staff clarity about what they are doing and why.
3. Staff are equipped for the job (this attribute is about training needs identification, training and post-training support).
4. Leadership is valued and is at all company levels.
5. Positive working culture (good staff participation in business improvement/problem solving).
6. Constructive workplace relationships.
7. Rewards and conditions are working well.
8. There is a staff performance/development culture.

## SUMMARY

The role of skill development in productivity improvement features strongly in all models. These models indicate very close alignment to Brinkerhoff and Dressler identifying that skills training must be accompanied by a range of effective management interventions if it is to be transformed into productive value in a business setting. The models support the contention that the development of managers both in higher level technical skills and supervision and management capability is a fundamental core to unlocking the real value of skills training.

These models have modified the methodology adopted to explore this hypothesis in that where there are high apparent returns from skills training, there will be a high level of management intervention and support.

Any assumption that a hands-off approach to training and people development by line managers and handing responsibility to an external trainer, or even an internal training department, is not likely to generate a high return from investment into training.

# APPENDIX 3: CURRENT NZ PIPFRUIT INDUSTRY – ISSUES, TRAINING NEEDS AND TRAINING OPTIONS

## INDUSTRY ISSUES

- The area of pipfruit production has declined from16,000 ha in the mid 1990s to 9,000 ha now (2009); the number of growers has decreased from 1600 to 400.

- Two of the past 15 years have been profitable.

- Pipfruit crop area (ha)

| | **2002** | **2007** | **% Decrease** |
|---|---|---|---|
| Nelson-Tasman | 3,312 | 2,722 | 18 |
| Hawkes Bay | 6,201 | 5,408 | 13 |
| Total | 12,224 | 9,686 | 21 |

(MAF Horticulture and Arable Monitoring Report 2008, pp 6-7)

- Many old, non-profitable blocks have been pulled out and some have been replaced by redevelopment higher paying newer varieties with higher market demand using intensive planting systems usually on dwarfing rootstocks.

- The incidence of leasing within the industry is on the rise. An increasing number of smaller orchards are leased by neighbours and/or individual orchardists. This is in addition to the leasing which is done extensively by most of the larger corporate orchard companies.

- Leasing orchards (like share milking) is seen as a way for younger individuals to enter the industry if they want to have their own orchard rather than working for others.

- Pressures on the industry include:

    1. Financial survival: as the industry is heavily reliant on export markets and most deals are made in US dollars the exchange rate is crucial to profits. Also due to the (archaic) marketing system there is a long lead time between when costs are incurred and growers are paid for the fruit in full. For example, costs for the current crop started with winter pruning and will continue through to harvest when the final payment for that fruit will be paid to the grower in December.

    2. Increased compliance issues which are usually imposed by overseas supermarkets (Tesco Nature's Choice etc.) who are seen to be responding to consumer demands or trying to create a point of difference from competitors. The supermarkets are now seen as the gatekeepers on some issues.

    3. Increased use of computers for electronic spray diaries, irrigation monitoring, remote access to equipment, disease forecasting, record keeping, etc.

    4. Pressures of carbon footprint especially in relation to supplying overseas markets. The Apple Futures program developed by HortResearch in conjunction with industry aims to deliver nil detectable residues and is suggested as a way to reduce growers' carbon footprints (albeit only slightly).

**Industry Training Needs**

- The interviews conducted demonstrated that the industry wants knowledge to be embedded in sound decision making (delivered from good training) and there is support from orchardists to grow staff capability through training.
- The larger corporates have a greater need for training, especially higher level technical and management training solutions, as they need key people to drive profitability. There is the need for experienced, trained, motivated staff who are interested in and enjoy their work.
- The current system meets the needs of school leavers with no qualifications and those who have not succeeded in the school system. However, literacy levels remain an issue and many become swamped by the amount of writing they have to do.

**Industry Structure and Career Opportunities**

- There is more vertical integration of orchard and packhouse businesses and this is impacting career pathways in the industry as businesses drive for greater efficiency.
- There is more scope in the corporate environment for career development – larger more complex businesses with clearly identified management structures offer variety, scope and more interesting work.
- There was a view that greater focus on schools and Gateway programs to attract trainees to the industry would be helpful. This needs to embrace not only kinaesthetic learners and who have not necessarily done well in the school system, but also those capably of science and management careers.

**Training Delivery Feedback**

- At EIT (the off-job training provider) each student has a learning mentor although some elect not to have one. Literacy and numeracy tutors help in class and tutorials. The need for these tutors reflects the learning history of some students and the changing background of an increasing proportion of students for whom English is not their first language.
- Comments were made by some growers (mostly in Nelson) that some of the Unit Standards are out of date or not relevant and that at L4 there are not enough to choose from. “Not enough reflecting the trade of fruit production”.
- The orchard trainer has to be part of the process; it is just not enough to send trainees to off-job training and not ask the trainees what has been covered in class and how it relates to their job.
- Current Managers who are ex-cadets are sold on the NZHITO training programme. Is there potential to use them more in the promotion of industry training?
- In general Industry has a pride in the current “cadet” programme and this translates into a positive attitude for training.
- Some trainees and graduates use the HBFGA Young Horticulturist of the Year competition as a personal development goal. This competition also helps to develop the next generation of industry leaders.

**Other Training Related Feedback**

- Pipfruit NZ is looking to get more involved in training; for example, developing standardised supervisors’ courses linking with NZHITO (developing the course to meet industry needs and seeing what unit standards will drop out).
- Training opportunities beyond L4 as not a strong as they could be. The areas of more advanced management, including staff management and technical skill development is an opportunity for Horticulture ITO to develop.

- There is also a need to review the skill sets needed for existing staff such as cultural awareness dealing with RSE workers due to the greater incidence of international workers in orchards.
- The changing nature of the industry with increased vertical integration and corporatisation means there is a growing need to train more managers. Training needs in the industry are complex and cannot be addressed by the apprenticeship programme alone. This implies a wider range of programmes need to be considered.
- Some feedback expressed a need to raise the bar higher for trainees to make the qualification more valuable in the industry.
- One view expressed was that "good employers" consciously look for where the trainee's skill or talent lies and then look to develop opportunities around that skill..
- Training helps to accelerate the understanding why they are doing certain processes and a greater understanding of the whole process and an insight into the background of what they are doing – this improves both employee motivation and productivity.
- Managers need to be involved in the training process to ensure completion of the course. Now the managers are expected to support and mentor with assignments and this has significant benefits for the trainees. The training is tailored more to the individual and as the foreman or manager supervising has experience they know what is involved and take the time to train properly.
- Training in pest and disease management is particularly useful as they learn about the problems before they occur, i.e. they learn what to look for.
- It is better for trainees to have a year or two on the orchard before starting an apprenticeship as they then have an understanding of how an orchard works first. The school leaver is good at theory but has insufficient practical knowledge.
- A number or orchardists talked with great pride at the personal development they had observed with some of their former trainees, particularly those who had not done well at school. One described it as if the trainee had "grown another leg"! Some of these trainees had gone on to further training after finishing their apprenticeship – something that could not have been predicted as school leavers.
- One very progressive orchardist said he was interested in the quality of training and getting a good return on investment as well as seeing the person grow in the business and industry. In addition, he commented that training retains people in the industry and they become more valuable to the industry due to the training and length of time in the industry.
- Literacy, numeracy and technology issues can derail students. Many don't have access to computers at home and tend to work (on assignments) in isolation – hence the need for mentoring by their supervisor at work.
- Five orchardists mentioned problems with Generation Y trainees having unrealistic expectations and not a lot of patience. Some do not see the value in long term commitment to training. This supports other comments that at least a couple of years' experience is helpful for the long term success of many trainees.
- NZHITO services a very wide training area described as "horticulture". One industry leader commented that NZHITO and the production horticulture sector (fruit, berry and vegetables) needed to converge very soon, before the ITO loses its touch and its production base. He saw some obvious tensions and funding and resources seemed to be stretched to cover the diverse needs. There was a view that industry (both ITOs and growers) will have to think about funding short course further training, together with strategic, yet targeted training topics. TEC funding changes will impact on this.

## APPENDIX 4: FINANCIAL ANALYSIS OF VOCATIONAL SKILLS IN PIPFRUIT ORCHARDS

### Methodology

Leading Pipfruit Consultants and Managers of contract labour gangs were asked to develop descriptions of observable behaviour for poor, average and good levels of staff performance for four key orchard tasks. These were following through in terms of physical outcomes for the orchard (fruit yield and quality, packouts, etc) and then estimation of financial consequences per hectare was made.

Estimates of the influence (number of hectares) per employee were then made.

### Results

**TABLE: DESCRIPTIONS OF OBSERVABLE BEHAVIOUR, ORCHARD OUTCOMES AND FINANCIAL IMPACTS OF JOB RELATED SKILLS**

**THINNING**

| Level | Poor Ability | Moderate Ability | Good Ability |
|---|---|---|---|
| Description | • Does not understand<br>• Different wood classes within the tree and the need to differentially thin for those classes.<br>• Does not follow instructions.<br>• Damages remaining fruit by throwing discarded fruit within the canopy also breaking stalks, twigs, and branches.<br>• **T**hins off wrong fruit & takes too much fruit off.<br>• Rough – pulls off leaf spur<br>• Poor attitude, no pride & no commitment<br>• No understanding of consequences | • Has some understanding of different wood classes within the tree & the need to differentially thin for those classes.<br>• Does not completely follow instructions.<br>• Some damage to remaining fruit and stalks.<br>• Too many or not enough fruit are left on & these are not evenly spaced.<br>• Does not fully understand the consequences of not doing the job well.<br>• Good attitude but slower than expected & not effective. | • Will understand different wood classes within the tree and can differentially thin for those classes (often needed)<br>• Follows instructions<br>• Will throw fruit out of canopy & does not damage stalks of remaining fruit<br>• Fruit left on (as) specified<br>• Understands consequences<br>• Takes pride in work, good attitude & commitment to job. |
| Outcomes | • Damaged and poor quality fruit<br>• Poor packout<br>• Not sufficient foreground colour<br>• **I**f bunchy too hard to pick and inadequate spray penetration resulting in pest & disease control problems<br>• Fruit of size outside of desirable profile to maximize value (RG) | • Mixed quality of fruit due to uneven or inadequate thinning.<br>• Additional labour costs.<br>• Loss of yield or reduced packouts (or both)<br>• More supervision required.<br>• Some fruit & tree damage | • Right number of fruit/tree achieved cost effectively<br>• Fruit with best potential left on the tree<br>• Fruit spread evenly over the entire canopy.<br>• No thinning bruises for remaining crop<br>• Fruit good colour, size and easily picked. |

| | | | |
|---|---|---|---|
| | • Uneven distribution of fruit over tree & variable over entire crop<br>• Fruit volume too low or too high which affects next year's crop | | • Good volumes<br>• Good size and packout<br>• Reduced pest and disease problems |
| Financial outcomes | • ~$12,000/ha if yield reduced by 1,000 cartons/ha<br>• 20-30% below average | | • Average $500-2,000/ha to thin |

**PRUNING**

| Level | Poor Ability | Moderate Ability | Good Ability |
|---|---|---|---|
| Description<br><br>RW adjust technique to suit balance | • Does not understand the basis of pruning<br>• Not able to follow instructions<br>• No knowledge of the requirements for different varieties<br>• No knowledge of physiology; doesn't understand which wood is more productive & this results in over- or under-pruning.<br>• Trees out of balance usually with too much vigour.<br>• Wrong bud numbers left<br>• Leaves diseased wood<br>• No detail cuts i.e. no finesse | • Has limited understanding of consequences of pruning decisions.<br>• Not able to adjust technique to suit the balance of the tree.<br>• Has limited knowledge of requirements of different varieties.<br>• Has limited understanding of wood classes and biennial bearing cycle of trees.<br>• Bud numbers left not always correct.<br>• Not all wood left is appropriate for replacement or free from disease. | • Understands the consequences of cuts and tree physiology<br>• Able to follow instructions<br>• Good variety knowledge<br>• Is able to assess tree – understanding what part of the biennial cycle the tree is in i.e. not over or under pruning.<br>• Trees "calm" ( in balance), productive, growing in the right places i.e. filling the row space & height restricted for picking efficiency<br>• Replacing wood on regular basis on slow cycle.<br>• Good bud numbers left |
| Outcomes | • Trees out of balance usually with too much vigour<br>• Undesirable structures, cluttered, poor access for pickers and sprayers, inadequate colour development or reduced productivity as canopy does not fill space available.<br>• Poor fruit quality<br>• Increased shade within canopy. | • Uneven pruning resulting in mixed vigour.<br>• Some problems in fruit due to excessive shading or too much exposure due to sparse canopy.<br>• Mixed fruit quality and colour development.<br>• Below optimum pest and disease control . limiting access to | • Trees in balance<br>• Maximum crop<br>• Good colour<br>• Even distribution of fruit within the canopy.<br>• Good light penetration so able to ripen fruit throughout the whole canopy<br>• Good picker access – easy to pick |

| | | | |
|---|---|---|---|
| | • High incidence of pest and disease problems<br>• Large hand thinning job | some markets. | • Optimum spray access due to open canopy |
| Financial Outcomes | • $22,500/ha orchard gate value or, reduction in yield of 10% on standard varieties & 20% on Jazz & Fuji | • $33,750/ha orchard gate value | • $45,000/ha orchard gate value |

**PICKING**

| Level | Poor Ability | Moderate Ability | Good Ability |
|---|---|---|---|
| Description | • Bruises fruit<br>• Picks fruit that is green and leaves mature fruit on tree which will be overmature & mixed maturity in the next pick<br>• Pick too deep within the canopy so fruit is too small, with reduced size and colour.<br>• Puts everything into the bin<br>• Careless handling of fruit & trees dropping or bruising fruit, damage to spurs & knocking fruit from trees.<br>• Poor ladder placement<br>• Poor time management<br>• Inefficient use of time & energy | • Handles fruit with care but still some bruising.<br>• Does not fully understand picking requirements so can pick fruit slightly under-mature or too deep, too small or damaged.<br>• Takes longer than expected to pick due to inefficiencies such as poor ladder placement. | • Recognizes product is easily damaged & handles it carefully.<br>• Knows how deep to pick crop for colour size & maturity.<br>• Ensures the right fruit is put in bins i.e. discards damaged or misshapen fruit.<br>• Excellent efficiency - starting with the top of the tree.<br>• Often the fastest picker is the best picker<br>• Good ladder placement |
| Outcomes | • Bruised fruit<br>• Poor packouts due to bruised, damaged, misshapen, poor colour fruit put in bins.<br>• Reduced value of crop due to small size<br>• Mixed maturity resulting in a lower quality product for the consumer<br>• Fruit on ground<br>• Slow picking rate & reduced pay rate. For picker but additional labour costs for the grower. | • Some bruised & damaged fruit.<br>• Reduced packouts as more fruit should have been discarded in the orchard.<br>• Some loss of value of crop as undersized fruit included in bins.<br>• Takes longer than expected to pick so increased costs for the grower and picking time may extend over the optimum window for maturity resulting in decreased quality. | • No bruising of fruit<br>• Good packouts as undamaged, well-sized fruit of even maturity has been put in bins.<br>• Increased value of crop as undersized fruit not included in bins.<br>• Minimal fruit on the ground (except for discards)<br>• Quicker & more efficient with the ability to pick more bins/day resulting in high pay rates |

| | | | |
|---|---|---|---|
| Financial Outcomes | • 60% packout<br>• Loss to include fruit on the ground which for Braeburn can be 10-20% of the crop due to poor picking | • 70% packout | • 80% packout on the same crop<br>• (JD difference of 1% packout on 60,000 bins is $80,000. An increase in packout of 5% $effect is massive) – I will quantify this more accurately - Liz |

**PEST & DISEASE IDENTIFICATION & CONTROL**

| Level | Poor Ability | Moderate Ability | Good Ability |
|---|---|---|---|
| Description<br>3 components: identification, monitoring & chemical control | • Lack of awareness of problem<br>• Identification of problem too late for effective control or incorrect<br>• Spray equipment not calibrated correctly<br>• Poor option taking with chemical control techniques & incomplete product knowledge<br>• Poor spray penetration as canopy is too dense as it was not pruned correctly or if fruit is too bunchy as it was not correctly thinned<br>• Does not understand P & D management including lifecycles of major P & Ds.<br>• Does not understand the consequences of inadequate P & D control. | • Limited awareness of P & D problems and the consequences of not gaining adequate control.<br>• Not able to use optimum control methods. | • Understands P & D management<br>• Understands life cycles of P & Ds<br>• Understands products and features of products<br>• Knows the consequences of getting it wrong<br>• Understands the importance of timing of application, application technique, weather forecasting & machinery<br>• Passion and desire<br>• Must be able to change with the circumstances |
| Outcomes | • Increased pest & disease problems<br>• Limited access to markets due to quarantine or residue issues.<br>• Poor packout<br>• Phytotoxicity<br>• Resistance problems to effective control methods. | | • Crop that meets all market access requirements without any residues (impossible!)<br>• Longevity of chemicals i.e. resistance avoided<br>• Reduced pest & disease problems |

| | | |
|---|---|---|
| | • Nelson $3,209/ha<br>• HB $2,531?ha P & D control costs | |
| Financial outcomes | • $15-30,000/ha due to market access issues | • Below average P & D management costs. 2009 $2,423/ha HB & $2,863?ha Nelson |

# VALUE OF TRAINING – EMPLOYERS – KIWIFRUIT INDUSTRY

## Survey Background

This survey is part of a study looking at the value of training in the workplace and how it helps employers like you to improve the effectiveness and productivity of your workforce. In addition, the study aims to establish a value for the return on training dollar invested.

Employers can play a key role in this study by:

1. Assessing employees' performance before and after training
2. Identifying what training could be given that would make a difference
3. Describing what makes training worthwhile

Thank you for your participation in this survey!
Your responses are totally confidential.

**Employer Name:** _____

**Contact Details:** _____

## SECTION 1:
## ABOUT YOU: THE VALUE OF TRAINING TO YOU AS AN EMPLOYER

1.1 **Which of the following best describes you?** (choose 1)

- ☐ Orchard owner and employer
- ☐ Orchard Manager and employer
- ☐ Contracting business owner and employer
- ☐ Packhouse labour co-coordinator
- ☐ Other. Please specify _____

1.2 **How long have you worked in the kiwifruit industry?** _____

**1.3 What is the highest level of training you have?**

- ☐ Attended High School
- ☐ High school Qualification (School Cert or University Entrance)
- ☐ Technical/Trade Training _____
- ☐ Tertiary Certificate _____
- ☐ Tertiary Diploma _____
- ☐ University Degree _____
- ☐ Other _____

**1.4 What horticultural training have you done?**

1. _____
2. _____
3. _____

**1.5 How would you rate the importance of your training in the following areas?**

| | **Unimportant** | | | | **Essential** |
|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** |
| Your ability to understand and manage the orchard system | | | | | |
| Your knowledge and skills to perform tasks on the orchard | | | | | |
| The rate at which you progressed through your career. | | | | | |
| Staying in the industry | | | | | |

**1.6 Company Size and Structure:**

(a) How much kiwifruit does your company produce?

Green: _____ (tray equivalents)
Gold: _____ (tray equivalents)

(b) What area does your company manage/ contract on?

Green: _____ (canopy hectares) _____ (number of orchards)
Gold: _____ (canopy hectares) _____ (number of orchards)

(c) Does your company produce any other horticultural crops? Yes/No
If so, what quantity? _____

**1.7 Which of the following best describes your future plans with regard to your orchard/ contracting business?**

- ☐ **Growing**; seeking to improve my position (expansion, higher productivity, diversification, ownership)
- ☐ **Stable**: satisfied where I am and won't change significantly for the next 3-5 years
- ☐ **Winding down**: planning to downscale/lease/have orchard managed, but will continue to own property
- ☐ **Exiting**: Planning to sell orchard and exit industry.

**1.8 To help us understand how many new entrants need to start in the kiwifruit industry each year, how long do you think your TOTAL years as an orchard manager will be (from when you started managing an orchard/business until you stop)?**

| Less than 5 | 5 to 10 | 11 to 15 | 16 to 20 | 21 to 25 | More than 25 |
|---|---|---|---|---|---|
| | | | | | |

**1.9 Approximately how many full time equivalent employees do you currently have?**

| Full Time | Part Time | Casual | Contract |
|---|---|---|---|
| | _____ x<br>_____ %FTE | _____ people<br>for _____ weeks | |

Who is your contractor? _____

**1.10 What kinds of training do you use?** ***Tick all those that apply***

| Type of Training | Employees | Self |
|---|---|---|
| On-the-job informal | | |
| On-the-job formal assessment | | |
| Off-orchard, regular classes | | |
| Off-orchard, short courses | | |
| Industry events e.g. kiwitech, field days | | |
| Other (Please describe)<br>_____<br>_____ | | |

Comments _____

_____

## SECTION 2

This section asks questions on staff performance in specific areas of orchard practice which have a direct and measurable impact on orchard gate return.

**2.1 Canopy Management/Pruning. Employee Role: (*Tick one*)**

| N/A | Does | Supervises |
|---|---|---|
| | | |
| Hectares: | | |

Canopy management – please indicate your employees' ability to understand and effectively manage canopy management /pruning:

| **Canopy management /pruning:** | Poor | | Average | | Good |
|---|---|---|---|---|---|
| Employee before training | ☐ | ☐ | ☐ | ☐ | ☐ |
| Employee after training | ☐ | ☐ | ☐ | ☐ | ☐ |

Comments on canopy management /pruning training:

_____

_____

**2.2 Crop Load Management/ Thinning. Employee Role: (*Tick one*)**

| N/A | Does | Supervises |
|---|---|---|
| | | |
| Hectares: | | |

Crop Load Management/ Thinning - please indicate your employees' ability to effectively manage crop load/fruit thinning:

| **Crop Load Management/ Thinning:** | Poor | | Average | | Good |
|---|---|---|---|---|---|
| Employee before training | ☐ | ☐ | ☐ | ☐ | ☐ |
| Employee after training | ☐ | ☐ | ☐ | ☐ | ☐ |

Comments on crop loading/thinning training:

_____

_____

**2.3 Pest and Disease Control. Employee Role: (*Tick one*)**

| N/A | Does | Supervises |
|---|---|---|
| | | |
| Hectares: | | |

Pest and Disease Control – please indicate your employees' ability to effectively identify manage pest and disease control:

| **Pest and Disease Control:** | Poor | | Average | | Good |
|---|---|---|---|---|---|
| Employee before training | ☐ | ☐ | ☐ | ☐ | ☐ |
| Employee after training | ☐ | ☐ | ☐ | ☐ | ☐ |

Comments on pest and disease control training:

_____

_____

**2.4 Harvesting. Employee Role: (*Tick one*)**

| N/A | Does | Supervises |
|---|---|---|
| | | |
| Hectares: | | |

Harvesting – please indicate your employees' ability to harvest to provide fruit to the packhouse efficiently and in good condition:

| **Harvesting:** | Poor | | Average | | Good |
|---|---|---|---|---|---|
| Employee before training | ☐ | ☐ | ☐ | ☐ | ☐ |
| Employee after training | ☐ | ☐ | ☐ | ☐ | ☐ |

Comments on harvesting training:

_____

_____

**2.5 Post Harvest/Market Access. Employee Role (*Tick one*)**

| N/A | Does | Supervises |
|---|---|---|
| | | |
| Hectares: | | |

Please indicate your employees understanding of the requirements relating to clearance to pick, early start, export market requirements e.g. Global GAP etc:

| **Post Harvest/Market Access:** | Poor | | Average | | Good |
|---|---|---|---|---|---|
| Employee before training | ☐ | ☐ | ☐ | ☐ | ☐ |
| Employee after training | ☐ | ☐ | ☐ | ☐ | ☐ |

Comments on post Harvest/ Market Access training:

_____

_____

**2.6 Staff Supervision. Employee Role: (*Tick one*)**

| N/A | Does |
|---|---|
| | |
| Hectares: | |

Supervision – please indicate your employees' ability to effectively supervise the staff in your operation for maximum performance of your business:

| **Supervision:** | Poor | | Average | | Good |
|---|---|---|---|---|---|
| Employee before training | ☐ | ☐ | ☐ | ☐ | ☐ |
| Employee after training | ☐ | ☐ | ☐ | ☐ | ☐ |

Comments on supervision training:

_____

_____

## SECTION 3: HOW DOES TRAINING CONTRIBUTE TO YOUR ORCHARD AND THE KIWIFRUIT INDUSTRY?

**3.1 Role of Training** Please tick one in each row

| | Strongly disagree 1 | 2 | 3 | 4 | 5 | Strongly agree 6 |
|---|---|---|---|---|---|---|
| Training helps in the selection process for new employees | | | | | | |
| Training provides industry value | | | | | | |
| Training provides direct orchard value | | | | | | |
| Training helps attract good employees to the industry | | | | | | |
| Training helps people advance through the industry quicker | | | | | | |
| Training means that workers are able to do more complex tasks | | | | | | |
| Training means workers need less supervision | | | | | | |
| Training has enabled the adoption of new technology | | | | | | |
| Training provides a visible career structure | | | | | | |
| Training provides the theory behind the practice | | | | | | |
| Other (describe) | | | | | | |

_____

_____

**3.2 How does training impact your employee turnover rate?**

☐ On average trained employees move on faster
☐ Training does not impact turnover rate
☐ On average, trained employees stay on longer
☐ Other (describe)

_____

**3.3 How does the existing training meet your expectations?**
*Please circle response where 1 = Strongly Disagree, 6 = Strongly Agree*

| | Strongly Disagree | | | | | Strongly Agree |
|---|---|---|---|---|---|---|
| Trainees who are assessed as competent can do the job to our standards | 1 | 2 | 3 | 4 | 5 | 6 |
| The current training scheme meets production needs | 1 | 2 | 3 | 4 | 5 | 6 |
| The unit standards in the courses are relevant | 1 | 2 | 3 | 4 | 5 | 6 |
| Training delivers the skills needed for the job | 1 | 2 | 3 | 4 | 5 | 6 |
| The proportion of on-job (employer) training is about right | 1 | 2 | 3 | 4 | 5 | 6 |

Comments _____

### 3.4 Other factors that impact on productivity improvement

How important are the following influences in achieving good results from training?

*Please circle response where 1 = Not Important, 6 = Very Important*

| | Not Important | | | | | Very Important |
|---|---|---|---|---|---|---|
| The culture of the workplace | 1 | 2 | 3 | 4 | 5 | 6 |
| The motivation of the trainee to learn new skills | 1 | 2 | 3 | 4 | 5 | 6 |
| The support of the manager to coach, supervise and mentor the trainee | 1 | 2 | 3 | 4 | 5 | 6 |
| Annual performance reviews to provide feedback | 1 | 2 | 3 | 4 | 5 | 6 |
| Having an individual training plan | 1 | 2 | 3 | 4 | 5 | 6 |
| Effective leadership | 1 | 2 | 3 | 4 | 5 | 6 |
| Financial incentives such as a pay increases | 1 | 2 | 3 | 4 | 5 | 6 |
| Other issues (please specify) | | | | | | |
| _____ | 1 | 2 | 3 | 4 | 5 | 6 |
| _____ | 1 | 2 | 3 | 4 | 5 | 6 |

## SECTION 4

### 4.1 What impact does training have on people you employ on your orchard (full and part time staff)?

For each question we would like you to provide responses from three (3) different perspectives:

- How you thought your staff members were performing **before** training
- The **expected** performance of your employees after training
- How you think they are performing **after** training

For each of the following areas, please give a rating of 1 (very poor) to 10 (as good as could be expected) for your employees' performance **before** training, your **expectation** of them after training and their actual performance **after** training.

| | Before Training | After Training | |
|---|---|---|---|
| | | Expected | Actual |
| **Example:** The ability of your employee to ride a motorbike | 3 | 5 | 7 |
| 1. The **quality** of jobs done by your employee | | | |
| 2. The **range** or **variety** of jobs done by your employee | | | |
| 3. Your employees **knowledge** of your orchard system | | | |
| 4. Your employee **understands** how their jobs contribute to the whole orchard system | | | |
| 5. Your employees **attitude** to work | | | |
| 6. Your employees impact on your **repairs and maintenance** costs | | | |
| 7. Your employees use of **safe** working practices | | | |
| 8. Your employees awareness of **compliance** issues and **regulations** | | | |
| 9. **You** pick up new **technology or information** from your employee. | | | |

**4.2 Do you have any extra feedback to the Horticulture ITO on the value of employee training to you as an employer?**

_____
_____
_____

**4.3 Can you suggest ways the Horticulture ITO may improve employee training that would benefit you as an employer?**

_____
_____
_____

**4.4 May we do a <u>quick</u> survey with some of your employees who are doing training?**

_____
_____
_____

**4.5 Which other employers should we make sure we have surveyed?**

_____
_____
_____

***Thank you for your time and information.***

**Canopy Management/Pruning Criteria:**

**Poor Management** – Canopy is not managed in a timely way leading to excessive growth and cutting. There is either insufficient or excess cane at winter pruning for tying down for the following season. Fruit quality is poor.
**Average Management** – Canopy management is sometimes well carried out in a timely way but at other times is not consistently done to give a good balance of wood for fruit development this year and suitable wood for next year. Crop yield and quality is variable.
**Good Management** – High crop loads of high dry matter fruit are produced consistently from a canopy that is managed in a timely way with summer pruning correctly carried out at appropriate times.

**Crop Load Management/ Thinning Criteria:**

**Poor Performance** – Crop is not thinned in a timely way and is either over thinned or under thinned with poor quality control occurring on the vine.
**Average Performance** – The crop is thinned to an appropriate crop loading but reject rates remain high at the packhouse.
**Good Performance** - The crop is thinned early with good even crop loading at the desired level achieved across the orchard. Reject fruit is targeted and removed giving low reject rates at packout.

**Pest and Disease Control Criteria:**

Determine the causes of crop damage and report its presence in a timely way so that control can be effectively undertaken:
**Poor Control** – Leaf roller infestations are not noted and reported until well advanced. Sclerotinia is not anticipated and noted for action under suitable weather conditions.
**Average Control** – Pest and disease infestations are sometimes reported but this is not consistent. The employee may or may not understand the importance of pest and disease control and what to do to achieve that.
**Good Control** - Leaf Roller and other pests are noted, suggestions or action to prevent or control pest problems are undertaken. Sclerotinia infection is anticipated and appropriate actions taken to limit damage to the crop.

**Harvesting Criteria:**

**Poor Harvesting** – Fruit poorly handled resulting in damage, fruit is left behind on the vine, with bins either over or under filled and high levels of stalks and other detritus in the bin. Picking is not carried out efficiently.
**Average Harvesting** – Fruit is poorly handled at some points in the harvest process. Some pick-able fruit is left behind and other fruit that was clearly substandard is picked anyway. Some bins are over or under filled with some rubbish in the bin. Harvest process is generally efficient but with room for improvement.
**Good Harvesting** – Bins are properly filled with fruit suitable to send to the packhouse, occasional substandard fruit is frequently spotted and left behind. All other fruit is cleanly picked and carefully transferred to the bin. The harvest process is efficiently carried out.

**Post Harvest Market Access Criteria:**

**Poor Performance** – The impact on harvest date of certain spraying activities is not understood by the employee and has negatively affected operations. The employee has little understanding of the requirements of clearance to pick and options for early start. Paperwork in respect of market access requirements is inadequate and constantly having to be re-visited.
**Average Performance** – The employee has some understanding of withholding periods and will act on them but may not always link this to options for incentives for different markets. Some aspects of clearance to pick are understood. Market access/Global Gap paperwork is mostly adequate but there are always a few problems with it.
**Good Performance** – Consideration of optimal harvest date is worked through and discussed each year, the employee has a clear understanding of the requirements for the crop of clearance to pick and the advantages and disadvantages of Early Start/ market access issues. Market access/Global Gap requirements are clearly understood, the paperwork is accurately and thoroughly completed in good time. Impacts of spray activities through the season on harvest dates are noted considered before application.

**Supervision Criteria:**

**Poor Supervision** – Supervisor is unable to communicate tasks and objectives effectively to staff leading to substandard work Staff are unhappy and turnover is high. Staff have grumbled to you about the way the team is managed.
**Average Supervision** – Easily conveyed messages, tasks and objectives are communicated but other communication is not effective. Work quality is variable and there is constant disquiet in some sectors of the team which is reflected in staff turnover. There is a mixed response from staff on the supervisor's performance.
**Good Supervision** – Staff are motivated and focused on achieving the tasks and objectives set for them. Work quality is high and work is carried out in a timely way. Labour turnover is low for your kind of operation and you have received positive feedback on your first line manager's performance from staff.

# VALUE OF TRAINING – EMPLOYEES – KIWIFRUIT INDUSTRY

## Survey Background

This survey is part of a study looking at the value of training in the workplace and how it helps employees like you to understand and do the various tasks better. The Horticulture ITO is committed to improving the delivery of training to the horticultural industry. To do this effectively, they would like to understand the value of training to both trainee's and employers.

Employees play a key role in this study. Your responses are totally confidential.

Thank you for your participation in this survey!

**Employee Name:** _____

**Contact Details:** _____

**Employer Name:** _____

## SECTION 1: ABOUT YOU: THE VALUE OF TRAINING AS AN EMPLOYEE

**1. How long have you been involved in training in horticulture?**

| | |
|---|---|
| Less than one year | ☐ |
| Between one and two years | ☐ |
| Between two and three years | ☐ |
| More than three years | ☐ |

**2. The kind of orchard(s) you work on?**

| **Kiwifruit** | **Other** |
|---|---|
| ☐ | ☐ _____ |

**3. Which of the following best describes your current role and future plans with regard to orcharding?**

| | Current Role | Future Plans |
|---|---|---|
| Orchard worker | ☐ | ☐ |
| Orchard manager | ☐ | ☐ |
| Manage a packhouse or other horticultural business | ☐ | ☐ |
| Own my own orchard | ☐ | ☐ |
| Other role in kiwifruit industry e.g. work for merchant _____ | ☐ | ☐ |
| Not sure and may work in another industry | ☐ | ☐ |

**4. What is the highest level of training/education you have?**

| | |
|---|---|
| Attended High School | |
| Higher School Qualification (School Certificate, University Entrance, NCEA) | ☐ |
| Tertiary Certificate/ Trade training | ☐ |
| Tertiary Diploma | ☐ |
| Degree | ☐ |

**5. Was your tertiary training/education Horticulture related?** ☐ ☐

**6. What kinds of training do you receive?**

*Tick all those that apply*

| **Type of Training** | |
|---|---|
| On-the-job informal | ☐ |
| On-the-job formal assessment | ☐ |
| Off-orchard, regular classes | ☐ |
| Off-orchard, short courses | ☐ |
| Industry events e.g. kiwitech, field days | ☐ |
| Other (please describe) e.g. on-line<br>_____<br>_____ | ☐ |

Comments_____

_____

**7. What do you see as the benefits of training?**

Please circle the number that best reflects your **agreement** with each of the following statements:

| **Statement** | **1=Strongly disagree 6=Strongly agree** |
|---|---|
| My training has made me more valuable to my employer | 1 2 3 4 5 6 |
| My training means I can do a wider range of jobs in the orchard | 1 2 3 4 5 6 |
| Training means I need less supervision | 1 2 3 4 5 6 |
| Training makes my job more interesting | 1 2 3 4 5 6 |
| The opportunity for training helped attract me to the industry | 1 2 3 4 5 6 |
| Training helps me advance in the kiwifruit industry quicker | 1 2 3 4 5 6 |
| Training provides the theory behind the practice | 1 2 3 4 5 6 |
| A National Certificate is important to me | 1 2 3 4 5 6 |
| Training and national qualifications results in improved wages | 1 2 3 4 5 6 |

**8. As an employee, what do you want from training?**

Please circle the number that best reflects your **agreement** with each of the following statements:

| Aspect of Training | Description | 1=Strongly disagree 6=Strongly agree |
|---|---|---|
| Skills | To be better able to do set tasks | 1 2 3 4 5 6 |
| Attitude | To be more positive about my work; more confident | 1 2 3 4 5 6 |
| Work planning | To know what needs to be done | 1 2 3 4 5 6 |
| Communication | To better understand orchard terms, be prepared to ask questions and understand answers | 1 2 3 4 5 6 |
| Compliance | To be able to meet industry standards and practices eg. GAP, Clearance to pick, spray diary | 1 2 3 4 5 6 |
| Safe work practices | To know when safety equipment is required and know safe work practices. | 1 2 3 4 5 6 |
| Care for machinery & equipment | To be able to look after equipment and reduce breakdowns | 1 2 3 4 5 6 |

Comments_____

_____

**9. Training Topics**

Is there any training topic that you do not get now that you believe would help you do your job better?

**Yes** **No** **Don't know** *Please circle your response.* If yes, please outline:

_____

_____

**10. Can you suggest ways the Horticulture ITO may improve training that would benefit you?**

_____

_____

**11. Do you have any extra feedback to the Horticulture ITO on the value of training to you?**

_____

_____

***Thank you for completing this survey***

# APPENDIX 6: BASIS FOR ECONOMIC ANALYSIS

## CALCULATION OF THE VALUE OF PERFORMANCE FOR JOB RELATED SKILLS

### METHOD

An estimate of quartile performance was obtained from packhouse reports of variance between growers for their 2009 kiwifruit crop. The lower quartile indicates that 25% of orchards achieve less than this level of performance. The upper quartile indicates 25% of orchards achieve higher than this level of performance. The proportion of the difference to the quartile was then estimated for each component of the performance factor being analysed. For example, for the performance factor "Canopy management" two of the components were yield and dry matter indicator. For yield, 60% of the difference between average and lower quartile performance was attributed as due to canopy management. Other factors in quartile differences include site differences, seasonal differences (e.g. wind, frost or hail) and other performance factors such as pest control or crop load management. The basis for performance analysis is outlined in the following tables for each of the performance factors, separately for green and gold kiwifruit. Factors not outlined to change with each performance factor were kept at average levels. For example, fruit size was not estimated to change with canopy management performance and was kept at average levels.

Using the basis outlined, low, average and high scenarios for each performance factor were put through the Orchard Gate Return (OGR) calculator, available to kiwifruit growers through the Zespri grower-accessed website, to determine financial outcome for the different levels of performance for each factor. The financial return from each level of performance was able to be calculated per canopy hectare of kiwifruit. This OGR calculator used the official forecast of 2009 crop returns as at August 2009.

Direct production costs were included by using the MAF Kiwifruit Monitoring figures for the 2008/09 year, which are the production costs to produce the 2009 kiwifruit crop.

The result was the net orchard return per canopy hectare i.e. income less direct growing costs. Calculations were made separately for green and gold kiwifruit due to the different levels of performance and returns typical for each.

This financial analysis concentrates on mature vines. Calculations are made on an annual basis. Longer term effects do occur but are difficult to quantify or model and annual impacts dominate. The impact of mistakes at low levels of performance is not modeled. For example, untrained or poorly trained staff may prune off future fruiting wood. Orchards with frost risk may omit to check the system is operative and it may fail to operate when required.

The table below summarises the estimated difference in financial performance relative to the average for green kiwifruit.

**Summary of Performance Differences Calculated – Green Kiwifruit ($ per hectare)**

| Performance Factor | Financial Impact of: | | |
|---|---|---|---|
| | Low Performance | Average Performance | High Performance |
| Canopy management/ Pruning | -$3,827 | $0 | +$4,047 |
| Crop load management | -$400 | $0 | +$539 |
| Pest and disease control | -$600 | $0 | $0 |
| Harvesting | -$707 | $0 | $626 |
| Post-harvest/ Market Access | -$667 | $0 | $1,200 |
| Supervision | -$1,698 | $0 | $1,753 |
| **Total Financial Impact** | **- $7,899** | **$0** | **+$8,165** |

Comparing the total of the low and high performance calculations with packhouse reports indicates the total differences calculated between the low and average performance is about the same as the difference between the average and lower quartile performance differences for green kiwifruit. This is reassuring that the analysis is sound i.e. real orchards with all "low" or all "high" performance factors fit within the quartile performance. The total differences between the average and high performance add to around 2/3 of the difference between the average and upper quartile performance from packhouse reports. This suggests that the performance analysis is conservative and may underestimate the gains from high performance. However, there are aspects of performance related to site and seasonal factors that may also account for this difference. For example, the highest financial performers are unlikely to have been significantly affected by the hail during harvest in 2009, a seasonal factor, and are also likely to have earned significantly above average revenue incentives for early harvest.

The table below summarises the estimated financial difference in performance relative to the average for gold kiwifruit.

**Summary of Performance Differences Calculated – Gold Kiwifruit ($ per hectare)**

| Performance Factor | Financial Impact of: | | |
|---|---|---|---|
| | Low Performance | Average Performance | High Performance |
| Canopy Management/Pruning | -$10,139 | $0 | +$6,288 |
| Crop Load Management | -$2,175 | $0 | +$322 |
| Pest and Disease Control | -$736 | $0 | $0 |
| Harvesting | -$2,597 | $0 | $1,375 |
| Post-harvest/ Market Access | -$3,160 | $0 | $3,110 |
| Supervision | -$4,236 | $0 | $3,454 |
| **Total Financial Impact** | **$23,043** | **$0** | **$14,549** |

As for the green kiwifruit analysis, the total impact of the performance factors was added and compared to the lower and upper quartile indications from packhouse reports. These indicate the calculated changes are within the quartile brackets for gold kiwifruit which indicates the analysis is sound. i.e. the "high" performance factors add to around the boundary to the upper quartile. The packhouse reports were prepared using an earlier, lower, estimate of 2009 gold kiwifruit crop returns so this analysis would leave room within each quartile for impact of factors not modeled here.

Descriptions of the level of performance for each performance factor are appendixed to the employer survey. The following section details this analysis for each of the performance factors separately.

**Performance Factor: Canopy Management/Pruning**

The work done in this area has a strong relationship to the production and financial outcome of kiwifruit orchards.

The specific pruning and canopy management tasks vary from orchard to orchard but usually include:

- Winter pruning out of spent cane
- Winter tying down of new cane and spacing retained cane

Spring/summer tipping of regrowth on fruiting cane
Management of replacement cane (tipping, stringing, stubbing, removing surplus etc)
After flowering, pruning of male vines to remove surplus wood that has flowered
During summer/autumn – removing surplus vegetative female-vine growth or intruding male vine regrowth

Girdling of vine trunks or canes may be performed to influence fruit dry matter content, which attracts "taste" incentives.

During the growing season (~September –May) training of growth on young or regrafted vines.

Effects of pruning/ canopy management implementation are summarised in the following table.

| **Canopy Management/ Pruning Performance Impacts** | | |
|---|---|---|
| **Area of Impact:** | **Impact on Green kiwifruit** | **Impact on Gold Kiwifruit** |
| ***Yield/Production characteristics*** | Yield | Yield |
| ***Income per tray*** | Fruit dry matter incentives | Fruit dry matter incentives |
| ***Growing costs*** | No consistent impact overall but change in per tray costs with change in production, as most costs are incurred per hectare, i.e. marginal gain or loss on trays different from average. | |

**Green Kiwifruit Canopy Management/ Pruning:**

The basis for analysis of low, medium and high performance is detailed below.

**Yield in 2009:**
Low performance: minus 2,000 trays (difference to lower quartile from major packhouse group), assume 60% of this is due to canopy mgt => -1,200 trays
Average: 8,000 trays/ha (from Zespri Kiwiflier 286)
High: plus 2,000 trays, assume 60% of this is canopy mgt => +1,200 trays

Average forecast OGR per tray is $3.42/tray

| **Canopy Management Performance – Green** | **Low** | **Average** | **High** | **Notes** |
|---|---|---|---|---|
| ***Yield used (trays/hectare)*** | ***6,800*** | ***8,000*** | ***9,200*** | |
| ***Dry matter Indicator Used (Taste Zespri Grade - TZG)*** | ***0.48*** | ***0.51*** | ***0.54*** | |
| Basis: Difference to quartile (TZG) | -0.5 | | +0.6 | |
| Est. % of quartile difference due to canopy management | 60% | | 50% | |

| Canopy Management Performance – Green | Low | Average | High | Notes |
|---|---|---|---|---|
| Est. difference to canopy management performance category (TZG) | -0.3 | | +0.3 | |
| ***Growing Costs Used (direct) $ per hectare*** | ***$23,645*** | ***$24,101*** | ***$24,557*** | Growing costs change marginally with yield per hectare |
| ***Overall net orchard return ($ per hectare)*** | -$1,910 | $1,917 | $5,964 | |
| ***Difference to average net orchard return ($ per hectare)*** | -$3,827 | $0 | +$4,047 | |

**Gold Kiwifruit Canopy Management/Pruning:**

The basis for analysis of low, medium and high performance is detailed below.

**Yield in 2009:**
Low: minus 2,184 trays (difference to lower quartile from packhouse group), assume 60% of this is due to canopy management => -1,310 trays
Average: 10,725 trays/ha (from Zespri Kiwiflier 286)
High: plus 1,316 trays, assume 60% of this is canopy mgt => +790 trays

Average forecast OGR per tray is $7.21/tray.

Average: OGR per tray component for dry matter incentives is $3.12, which is TZG of ~0.59. Packhouse group difference to upper and lower quartiles is ~0.5 units of TZG. Assume about 40% of this is due to canopy management, makes the TZG change by + or – 0.2 for high and low performance respectively.

| Canopy Management Performance - Gold | Low | Average | High | Notes |
|---|---|---|---|---|
| ***Yield used (trays/hectare)*** | *6,800* | *10,725* | *12,041* | |
| ***Dry matter Indicator Used (Taste Zespri Grade - TZG)*** | *0.57* | *0.59* | *0.61* | |
| ***Growing Costs used (direct) $ per hectare*** | *$24,947* | *$25,136* | *$25,436* | Growing costs change marginally with yield per hectare |
| ***Overall net orchard return ($ per hectare)*** | $42,165 | $52,304 | $58,592 | |
| ***Difference to average net orchard return ($ per hectare)*** | **-$10,139** | **$0** | **+$6,288** | |

**Performance Factor: Crop Load/Thinning Performance Impacts**

The basis for analysis of low, medium and high performance is detailed below, separately for green and gold kiwifruit.

| **Crop load/ Thinning** | | |
|---|---|---|
| **Area of impact:** | **Impact on Green kiwifruit** | **Impact on Gold kiwifruit** |
| ***Yield/ Production characteristics*** | Fruit size +0.5 or – 1 count | Fruit size ~same count or – 2 counts. Say 50% due to crop load/thinning so use + 0 counts or – 1 count. |
| ***Income per tray*** | Varies with fruit size | Varies with fruit size |
| ***Growing costs*** | Pick cost + or – 1 cent/tray<br>Pack cost + 4 or – 2 cents/tray | Pick cost + or – 1 cent/tray<br>Pack cost + 4 or – 2 cents/tray |

| **Crop Load/Thinning Performance – Green Kiwifruit** | **Low** | **Average** | **High** | **Notes** |
|---|---|---|---|---|
| ***Fruit size (fruit/tray)*** | *34* | *33* | *32.5* | |
| ***Picking Costs (Cents/tray)*** | *39* | *38* | *37* | |
| ***Post harvest costs ($/tray)*** | *$3.26* | *$3.22* | *$3.20* | |
| ***Overall net orchard return ($ per hectare)*** | $1,517 | $1,917 | $2,456 | |
| ***Difference to average net orchard return ($ per hectare)*** | **-$400** | **$0** | **+$539** | |

| **Crop Load/Thinning Performance – Gold Kiwifruit** | **Low** | **Average** | **High** | **Notes** |
|---|---|---|---|---|
| ***Fruit size (fruit/tray)*** | *32* | *31* | *31* | |
| ***Picking Costs (Cents/tray)*** | *39* | *38* | *37* | |
| ***Post harvest costs ($/tray)*** | *$4.22* | *$4.18* | *$4.16* | |
| ***Overall net orchard return ($ per hectare)*** | $50,129 | $52,304 | $52,626 | |
| ***Difference to average net orchard return ($ per hectare)*** | **-$2,175** | **$0** | **+$322** | |

**Performance Factor: Pest and Disease Control Performance Impacts**

The basis for analysis of low, medium and high performance is detailed below, separately for green and gold kiwifruit.

| **Pest and Disease Control** | | |
|---|---|---|
| **Area of impact:** | **Impact on Green Kiwifruit** | **Impact on Gold Kiwifruit** |
| ***Growing costs*** | Pest control and monitoring costs;<br>Post harvest costs through reject rate | |

| **Pest and Disease Control – Green kiwifruit** | Low | Average | High |
|---|---|---|---|
| ***Growing Costs (Cents/tray)*** | *+$200/hectare* | *average* | *average* |
| ***Post harvest costs ($/tray)*** | *+ 5 cents/tray* | *average* | *average* |
| ***Overall net orchard return ($ per hectare)*** | $1,317 | $1,917 | $1,917 |
| ***Difference to average net orchard return ($ per hectare)*** | **-$600** | **$0** | **$0** |

| **Pest and Disease Control – Gold kiwifruit** | Low | Average | High |
|---|---|---|---|
| ***Growing Costs (Cents/tray)*** | *+$200/hectare* | *average* | *average* |
| ***Post harvest costs ($/tray)*** | *+ 5 cents/tray* | *average* | *average* |
| ***Overall net orchard return ($ per hectare)*** | $51,568 | $52,304 | $52,304 |
| ***Difference to average net orchard return ($ per hectare)*** | **-$736** | **$0** | **$0** |

**Performance Factor: Harvesting Performance Impacts**

The basis for analysis of low, medium and high performance is detailed below, separately for green and gold kiwifruit.

| **Harvesting** | | |
|---|---|---|
| **Area of impact:** | **Impact on Green kiwifruit** | **Impact on Gold kiwifruit** |
| ***Yield/ Production characteristics*** | Fruit loss during storage | Fruit loss during storage |
| ***Growing costs*** | Picking costs<br>Post harvest costs through reject rate | Picking costs<br>Post harvest costs through reject rate |

| **Harvesting – Green kiwifruit** | Low | Average | High |
|---|---|---|---|
| ***Yield/ Production characteristics*** | *+1 % fruit loss during storage* | *Average fruit loss during storage* | *- 1% fruit loss during storage* |
| ***Picking cost*** | *+ 1 cent/tray* | *Average* | *- 1 cent/tray* |
| ***Post harvest costs ($/tray)*** | *+ 1 cent/tray* | *average* | *Average* |
| ***Overall net orchard return ($ per hectare)*** | $1,210 | $1,917 | $2,543 |
| ***Difference to average net orchard return ($ per hectare)*** | **-$707** | **$0** | **$626** |

| **Harvesting – Gold kiwifruit** | Low | Average | High |
|---|---|---|---|
| ***Yield/ Production characteristics*** | *+1 % fruit loss during storage* | *Average fruit loss during storage* | *- 1% fruit loss during storage* |
| ***Picking cost*** | *+ 2 cents/tray* | *Average* | *- 1 cent/tray* |
| ***Post harvest costs ($/tray)*** | *+ 1 cent/tray* | *average* | *Average* |
| ***Overall net orchard return ($ per hectare)*** | $50,707 | $52,304 | $53,679 |
| ***Difference to average net orchard return ($ per hectare)*** | -$2,597 | $0 | $1,375 |

**Performance Factor: Post-harvest Market Access Performance Impacts**

The basis for analysis of low, medium and high performance is detailed below, separately for green and gold kiwifruit.

| **Post-harvest Market Access** | | |
|---|---|---|
| **Area of impact:** | **Impact on Green kiwifruit** | **Impact on Gold kiwifruit** |
| ***Yield/ Production characteristics*** | | |
| ***Income per tray*** | Incentives earned | |
| ***Growing costs*** | Additional lab tests | |

| **Post harvest/ Market Access – Green kiwifruit** | Low | Average | High | Notes |
|---|---|---|---|---|
| ***Revenue incentives*** | *-15cents/tray* | *Average* | *+15 cents/tray* | Kiwistart; Market Delivery Premium |
| ***Growing costs*** | *+ $50/hectare* | *average* | *Average* | Residue testing |
| ***Overall net orchard return ($ per hectare)*** | $1,250 | $1,917 | $3,117 | |
| ***Difference to average net orchard return ($ per hectare)*** | **-$667** | **$0** | **$1,200** | |

| **Post harvest/ Market Access – Gold kiwifruit** | Low | Average | High | Notes |
|---|---|---|---|---|
| ***Revenue incentives*** | ***-29cents/tray*** | ***average*** | ***+29 cents/tray*** | Kiwistart; Market Delivery Premium |
| ***Growing costs*** | ***+ $50/hectare*** | ***average*** | ***average*** | Residue testing |
| ***Overall net orchard return ($ per hectare)*** | $49,144 | $52,304 | $55,414 | |
| ***Difference to average net orchard return ($ per hectare)*** | -$3,160 | $0 | $3,110 | |

**Performance Factor: Supervision Performance Impacts**

The basis for analysis of low, medium and high performance is detailed below, separately for green and gold kiwifruit.

| **Supervision** | | |
|---|---|---|
| **Area of impact:** | **Impact on Green kiwifruit** | **Impact on Gold kiwifruit** |
| ***Yield/ Production characteristics*** | Yield | Yield |
| ***Income per tray*** | Revenue incentives | Revenue incentives |
| ***Growing costs*** | | |

| **Supervision – Green kiwifruit** | Low | Average | High | Notes |
|---|---|---|---|---|
| ***Production*** | *-300 trays/ha* | | *+300 trays/ha* | 15% of quartile yield difference |
| ***Revenue incentives*** | *-10cents/tray* | *average* | *+10 cents/tray* | Kiwistart/ Storage Incentives; Market Delivery Premium |
| ***Overall net orchard return ($ per hectare)*** | $219 | $1,917 | $3,670 | |
| ***Difference to average net orchard return ($ per hectare)*** | **-$1,698** | **$0** | **$1,753** | |

| **Supervision – Gold kiwifruit** | Low | Average | High | Notes |
|---|---|---|---|---|
| ***Production*** | *-328 trays/ha* | | *+200 trays/ha* | 15% of quartile yield difference |
| ***Revenue incentives*** | *-20 cents/tray* | *average* | *+20 cents/tray* | Kiwistart/ Storage Incentives; Market Delivery Premium |
| ***Overall net orchard return ($ per hectare)*** | $48,068 | $52,304 | $55,758 | |
| ***Difference to average net orchard return ($ per hectare)*** | **-$4,236** | **$0** | **$3,454** | |

## APPENDIX 7: TRAINING IN THE BAY OF PLENTY KIWIFRUIT INDUSTRY

Training in the Bay of Plenty kiwifruit industry is available at different levels and from different organisations. There has been considerable attention from the kiwifruit industry to training in the past several years to increase industry skills and formal qualifications following a period, approximately through the 1990's, when there was little co-ordination and a limited amount of formal training occurring locally in the kiwifruit industry. There is co-operation between training organisations to provide a range of training methods and levels that allows trainees who complete a low level qualification to continue training at a progressively higher level. Recognition of Prior Learning (RPL) may be used to award qualifications in whole or in part to those whose previous study or work experience is determined to be equivalent to the qualification.

**Bay of Plenty Polytechnic Certificate in Kiwifruit Orchard Skills (Level 3 and Level 3 Advanced)**

This is an orchard based programme, run since 2005 by the Bay of Plenty Polytechnic after development by NZ Kiwifruit Growers Incorporated with course development supported by the Department of Labour. The more recently formed Master Contractors Association also endorse this course. Orchard workers have an oral and practical assessment by an external assessor after completing 80 hours work on the topic for each module (e.g. winter pruning) based on employer training and previous work experience.

Student fees are $20 per module, often paid by the employer. The full course is 12 modules.

A Bay of Plenty Polytechnic Level 3 Certificate in Kiwifruit Orchard Skills is earned after a qualifying number of credits and an advanced certificate after the full course of 60 credits. The course is not based on unit standards. Around 30 students were awarded this qualification in 2008.

**'Horticulture Cadets':**

**National Certificate in Horticulture (Level 2); National Certificate in Horticulture (Level 4) Fruit Production and National Certificate in Horticulture (Level 4 Advanced)**

This course is run by the Bay of Plenty Polytechnic as a part time programme over 3 years. The programme operates in the western and eastern Bay of Plenty. Students are in employment in horticultural jobs and go to classes for about 20 days per year, scheduled outside the busiest periods of orchard work. In the first year the students can earn their Level 2 National certificate, in the second year their Level 4 National certificate and in the third year their advanced Level 4 National Certificate.

Student fees are $136 per year, often paid by the employer. The employer generally continues to pay wages to workers when they are at their training days.

The full course can include GrowSafe, Approved Handler and First Aid Certificates. The course is based around unit standards on the NZ Qualifications Framework. In 2008 around 15 students were awarded their Level 2 certificate and around 30 their Level 4 certificate, most of whom are from the kiwifruit industry.

**NZHITO Apprenticeship**

NZHITO organises a three-year apprenticeship earning a Level 2 National Certificate in the first year, Level 4 in the second and Level 4 advanced in the third year. The training is a mix of on-job training with employer or assessor assessment and off site training for 10-15 days per year. Trainees have an individual training plan and regular meetings with their NZHITO Training Advisor. Course fees are $650/year including GST, often paid by the employer. The employer generally continues to pay wages to workers when they are at their off-site training days. Apprentices may be from any part of horticulture although in the Bay of Plenty more kiwifruit industry participants have begun apprenticeships recently.

The apprenticeship is unit standards based and available nationally.

**National Certificate in First Line Management (Level 4)**

A national certificate in first line management is based on unit standards. The course may be delivered generically, in-person or on-line, or in a format tailored specifically to horticulture due to course development supported by NZHITO. The course tailored to the horticulture industry is delivered via classroom-based workshops coupled with work-based assessment work over about 12 months. The horticultural course starts with the workshops which are available on demand nationwide, delivered by Fruition Horticulture. Around 15 certificates for the horticultural course were awarded in the Bay of Plenty in 2008. Most students are working in the kiwifruit industry.

**Lincoln University Diploma in Horticulture**

This is the same course content as the 1-year full-time Diploma course offered on campus at Lincoln University. The 8 compulsory papers are offered over two years (2 per half-year), delivered by Fruition Horticulture as a part time course based around a weekly tutorial, lab or field trip, usually taken in conjunction with full-time employment. Course fees are around $636 per paper plus an annual Student Services fee of around $36. Course fees are often paid by employers. The course is available regularly in Tauranga and on-demand in Opotiki. Students with a National Certificate in Horticulture (Level 4 or Level 4 Advanced) may be awarded one or more of the Diploma papers for equivalent work in unit standards under a 'staircasing' agreement between NZHITO and Lincoln University. There is a practical work requirement to the Diploma in addition to the papers. Around 6 Diplomas were completed in the Bay of Plenty in 2008, with most students working in the kiwifruit industry.

**Lincoln University Diploma in Horticultural Management**

This is an additional 8 papers to those in the Diploma in Horticulture. Papers are run on demand – usually 1-2 per year in Tauranga – delivered by Fruition Horticulture. There is a core of 4 management papers and a choice of optional papers from a wide range of topics to complete the Diploma. Fees are similar to the Diploma in Horticulture. There is a practical work requirement to the Diploma in addition to the papers. One Diploma was completed in the Bay of Plenty in 2008.

**Massey University Diploma in Horticulture**

This is the equivalent of a one year full-time course with both core and optional papers, and endorsement in either production or landscape horticulture. The course is designed for extramural study. There is no practical requirement. The Massey University website says this programme is not being offered in 2010 and indications are that Massey will no longer offer this programme. We understand Massey intends to focus instead on Bachelor Degrees, Graduate Diplomas and professional development programmes for industry.

**Specialist Courses**

These include GrowSafe, Approved handler, forklift training, first aid training, quality assurance, tractor driving, chainsaw safety and 4-wheel-motorbike driving. Some components are included in the Certificate courses and are also available as standalone training courses from a range of training providers. Some are unit standards based. Some require regular renewal e.g. 5-yearly for GrowSafe. A current GrowSafe Certificate and/or Approved Handler is required by those applying agrichemicals to kiwifruit crops under the kiwifruit industry quality assurance programme. Course fees vary, tending to be lower where the training organisation has core funding from Vote Education.

Generic training may be used too, such as Dale Carnegie courses offered by employers, and various business and management courses offered on a regional rather than industry basis. Those eligible may be offered a wide range of training courses such as those funded through Trade and Enterprise or the Department of Labour and delivered by various contract providers. These courses generally do not have an assessment component and do not become part of formal qualifications.

# APPENDIX 8: BAY OF PLENTY KIWIFRUIT INDUSTRY EMPLOYMENT

## The Workforce

The workforce includes those permanently employed in the industry, seasonal casual workers during summer, winter and harvest (autumn). Labour from outside the immediate area supplements workers available locally. This includes seasonal workers from neighbouring districts who may travel for an hour each way each workday, particularly during harvest. Recent immigrants are also an important source of labour. In the western Bay of Plenty there is now an established community of workers originally from India doing vine work and operating as contractors in the kiwifruit industry. Temporary overseas workers are also important, particularly in the western Bay of Plenty, with informal backpackers added to by more organised schemes to supply overseas labour, particularly from the Pacific and Asia, such as the recent Recognised Seasonal Employer (RSE) scheme.

## Specialised

There is quite a bit of specialisation in the Bay of Plenty kiwifruit industry. For example, people who are quality controllers in the packhouse during harvest and packing do pest monitoring from January to harvest.

Spraying for crop protection is often done by specialised contractors.

Zespri provides a crop protection programme which outlines materials, rates and with-holding periods which provides a high level of support to growers in their decision making around pest and disease management.

Packhouses help prepare documentation for Global GAP compliance.

Packhouses generally have a specialist role in managing coolstore inventory and dispatch of fruit from a group of packhouses to meet orders and shipping timetables.

## Full Orchard Management (also orchard leasing)

Orchards may be fully managed or leased, often by packhouses, many of whom provide a complete service. Even then, much of the labour service is contracted. Packhouse groups provide packing/cool storage and other services to their clients even where the orchard is not formally managed or leased. Most common are specialised services such as crop estimation, pest monitoring and support for Global GAP audits.

## Contract Services

Many labour services are contracted, for example pruning, thinning and harvesting. This contracting puts much of the labour force at arm's-length from the orchard and packhouse businesses, large or small. Some of the initial attraction of this arrangement was delegating of paperwork such as employment agreements, employment and payroll processes. An industry focus on cost reduction also contributed to the marked move away from permanent staff to using contract labour during the 1990's.

There have been instances of illegal immigrant workers and tax fraud by some horticultural contractors generally. A Master Contractors Association has been formed by some horticultural contractors which has operational standards for members and provides confidence to clients of the legitimacy of the members' labour practices.

A grower may organise contract services themselves, or be assisted by their packhouse group. Most services are available on a contract basis, including those that could be done by growers with their own complement of equipment such as crop spraying, weed spraying and spreading fertiliser side dressings. Specialised contract services are used for activities with special skills or equipment such as shelter trimming and mulching and spreading base fertilisers.

### Larger Growers

Larger orchards usually have a component of their own permanent staff. These people may do tractor work, vine work or monitoring of vine work done by contract labour. Less often, most of the vine work is also done by permanent or casual staff hired directly by the specific orchard. Many growers who have their own staff also use some casual or contract labour at times of peak workload or to complete tasks such as fruit thinning in a timely manner. Some use contract labour for most of the vine work done on the orchard.

Where orchards have their own permanent staff, their workforce is often used more widely at harvest, for example may be subcontracted to a picking contractor or packhouse for packing.

# REFERENCES


**McLeish, Lovatt and Waters (May 2005)**

The Return on Investment from Agricultural Training – Scoping Study. A client report prepared for the Agriculture Industry Training Organisation.

**McLeish, Gardner and Waters (July 2007)**

Reporting Value Added by Agriculture Training – Final Report. A client report prepared for the Agriculture Industry Training Organisation.

**Brinkerhoff and Dressler (2002)**

Using Evaluation to Build Organisational Performance and Learning Capability: A Strategy and a Method. Performance Improvement. Volume 41. Number 6.

**Hardy, F (2008)**

The Agriculture ITO's Implementation of Learnings from the Reporting Value Added Project (RVA).

**MAF (July 2009)**

Situation & Outlook for New Zealand Agriculture & Forestry, Ministry of Agriculture & Forestry – MAF Policy.

## GLOSSARY OF TERMS

| | |
|---|---|
| TEC | Tertiary Education Commission |
| ITO | Industry Training Organisation |
| NZHITO | New Zealand Horticulture Industry Training Organisation |
| RVA | Reporting Value Added |
| ROI | Return on Investment |
| STM | Standard Training Measures |
| LTIFR | Lost Time Injury Frequency Rates |
| ACC | Accident Compensation Commission |
| RCC | Recognition of Current Competence |
| RPL | Recognition of Prior Learning |
| TCE | Tray Carton Equivalents |
| PTE | Private Training Establishment |
| RSE | Recognised Seasonal Employer |
| ESOL | English for Speakers of Other Languages |