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**Recalling management changes in the New Zealand kiwifruit
sector as response to external and internal drivers:
Preliminary analysis of ARGOS retrospective interviews**

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**Lincoln
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Te Whare Wānaka o Aoraki



*Haven't you read all the PR about kiwifruit ...
It's probably the most the successful horticulture crop we have in New Zealand.*

Organic Orchardist

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Chapter 1: Introduction: Background, Objectives and Outline

1.1 Background

The overall aim of the Agriculture Research Group on Sustainability (ARGOS) is to investigate and compare the environmental, social and economic effects of different farming systems (Organic, Integrated and Conventional) in the sheep/beef, kiwifruit and dairy sectors. Thirty-six farms from the sheep/beef sector (12 in each panel—organic, integrated and conventional), 36 orchards from the kiwifruit sector (12 in each panel—KiwiGreen Hayward, KiwiGreen Hort 16A and organic Hayward) and 24 farms from the dairy sector (12 in each panel—conventional and organic) have been selected for study. The panels appeared to be generally typical of their sectors in terms of characteristics such as size, level of production, etc. ARGOS was established in October 2003 and is now in the second stage of the project (ARGOS2) that is intended as a longitudinal panel study.

1.2 Research aim and objectives

The first six year research period (ARGOS1) identified a range of factors that can impact on the sustainability of farming systems, largely focusing on the contemporary farm conditions. Research during the period identified distinct responses to different types of pressures and shocks (what, in this report, we refer to as drivers of change): economic, social and environmental. The associated impacts of these drivers varied between sectors, farm systems and farm type. Results and findings from ARGOS1 were presented to relevant stakeholders in each sector, who advocated a closer investigation of the impact of key shocks and pressures in future research plans. To facilitate planning and more effective response to future shocks, ARGOS2 aims to provide an understanding of the impacts of different types of driver on farming systems. Moreover it seeks to clarify the types of responses and the extent to which these are explained by the farm sector, regions and other segmentations identified in ARGOS research to date. This report aims to provide a first step, using semi-structured retrospective interviews from ARGOS2, toward understanding the different drivers of change and their impact on farm management decisions.

This report presents a descriptive driver-and-response-based perspective at the family farm level. It focuses on the impacts of and the response to external and internal stress factors over the last 40 years, drawing on interviews with farming families participating in ARGOS. A historic narrative framework of a timeline (collaboratively designed by ARGOS researchers) was used to provide an overview of farmers' response and the context in which this should be seen.

The overall goal of this report was to explore potential key drivers of change in farm management among kiwifruit orchardists identified by their response to specified events (economic, climatic, etc.). This was done following the main objectives listed below:

- To identify key drivers of change mentioned by farmers over a time period between 1970 and 2010
- To identify farm management adjustments in response to identified key drivers over the same time period
- To present an overview of drivers and response useful for further, more comprehensive analysis of the interviews

1.3 Key concepts used

The driver-and-response perspective used in this report is further highlighted briefly in this subsection.

Drivers of change in the context of agriculture can be defined as ‘any natural- or human-induced factor that directly or indirectly brings about change in an agricultural production system’ (Hazell and Wood 2008). Examples of drivers to be considered include environmental change, policy changes, economic and social changes. Four scales of drivers can be identified to understand the forces driving change in farming systems and farmers’ response: global, national, regional and local (Table 1). Where global drivers can influence a large group of farmers, local drivers will only affect a smaller group of farmers living in a same geographical area.

Table 1. Overview of different scales of drivers (after Hazell and Wood, 2008)

Scale of driver	Description
Global	Affecting all agriculture around the world (to varying degrees) including trade expansion, climate change and agricultural support in the organization for Economic Co-Operation Development (OECD) and the World Trade Organisation (WTO).
Country	Affecting all agriculture within a country through governmental policies and regulations (such as the removal of SMPs).
Regional	Affecting agriculture within a specific region through local governments such as the Resource Management Act (1991).
Local	Specific to each local geographical area (e.g. climate and soil fertility), agricultural production system and community characteristics.

The nature of reaction or response to a driver can be categorised on the basis of both the extent to which it involves an alteration of existing practice and the robustness and stability of the resulting set of practices. For example, *adjustment* can be defined as a means to reallocate resources in adaptation to change; it is a *response* to any type of change induced by a driver. The term adaptation has its origin in the natural sciences and particularly in the discipline of evolutionary biology where it was used to indicate the successful response of a species to its environmental context (Smit and Wandel 2006). Adaptation therefore generally involves a more passive response, rather than an attempt to change the impact or intensity of the driver. *Perseverance*, on the other hand, is distinct from adjustment, referring to a steady and continued action or belief in the face of a driver of change, usually over a long period and maintained despite difficulties or setbacks. Based on the timing of the response relative to the stimulus or the driver of change, adaptations can be grouped as either *reactive* (after), *concurrent* (during) or *pro-active* (anticipatory). Response has also been differentiated according to its temporal scope, adaptations being tactical (short-term) or strategic (long-term) (Smit, McNabb, and Smithers 1996). A further characteristic of response involves its relative *resilience* which Holling (2001) describes as a system’s capacity to absorb and utilize change: it is the adaptive capacity that can be used as a measure of its vulnerability to unexpected and unpredictable shocks.

Despite utilising a driver-response framework in the analysis, it is not our intent to establish a direct and unilinear relationship between a given driver of change and the response of farming families. As stated by Hopkins et al. (2004), the farm household structure is a complex system of inter-relationships between and amongst a variety of endogenous and exogenous variables. As a result, any given driver may elicit very different response trajectories as a result of unique context of decision-making found in a particular farming family. To gain insight to this nonlinear relationship, it is necessary to point out the key drivers affecting agriculture, how they are perceived by farmers and how those perceptions are translated into agricultural or household decisions.

1.4 Outline of report

Chapter 2 briefly outlines the research design and its considerations. Chapter 3 is divided into two parts: the first presents a narrative following a timeline of important events (some of which are referred to as shocks) experienced by the kiwifruit sector from 1932 till present; the second provides an overview of participants' opinions, responses and attitudes towards drivers of change not associated with a specific past event. Chapter 4 presents an overview of this report's results and identifies general points of discussion. Chapter 5 offers conclusions and discusses suggestions for subsequent analysis and research in light of both the data from the retrospective interviews and the limitations of that data.

Chapter 2: Methods

2.1 Structuring of the timeline

ARGOS research team members collaboratively designed a timeline dated from 1932 until 2010 with important events, which they anticipated to be shocks (sudden, rapid and intense effects) and stresses (long-term, persistent and relatively moderate effects) in the kiwifruit growing sector. These were specifically chosen events—such as price crises, deregulation and re-regulation of the industry, GLOBALG.A.P certification and the introduction and implementation of TasteZESPRI—thought likely to have provoked a response from orchardists. The completed timeline was used as a tool for structuring the interviews and allowing for subsequent comparative analysis.

2.2 Interview

Qualitative data was collected using face-to-face interaction in the form of interviews which allowed the participants greater freedom to express themselves and articulate important drivers and responses. A semi-structured interview was set up with the goal of investigating the social dimensions of past and present shocks experienced by ARGOS orchardists. To accomplish this, the timeline developed by the research team was used to guide the interview, with orchardists asked to recall the occurrence of the listed events and the effect each had on their orcharding system (Appendix I). From March to June 2010, two ARGOS researchers carried out 32 interviews of individuals, couples or families participating in the ARGOS program. The interviews ranged in duration from 60 to 90 minutes. They were recorded and transcribed to allow for further analysis and coding.

The value of semi-structured interviews was established in previous ARGOS research, where they provided the opportunity for researchers to pursue particular topics in more depth (Rosin et al. 2007). An example of the interview process is given below:

A: Going back to the timeline...how did you survive through the crisis of 1992?

This approach plays an important part in the researchers' understanding of the complexity and nuances of the decision-making process and the resulting actions pursued by the participants. This method also enabled the research team to identify key issues that had not been anticipated in the construction of the timeline. Orchardists were invited to add events to the list if, in their opinion, the timeline seemed to be incomplete.

2.3 Coding

Coding was conducted with NVivo software, specifically designed for qualitative data. It allows for the collection of changing and growing records, built up from observations, interviews and document analysis (Richards 1999). More specifically, NVivo allowed for the coding of selections of text considered important in a careful reading of the interviews. Subsequently, these selections of text were grouped according to themes called nodes. These nodes could then be organized into hierarchical 'trees' and linked to memos carrying further explanation or researchers' comments and reflections. The timeline used in the interviews provided an important structure for coding and was developed as a tree node prior to the rest of the coding.

The remaining nodes were developed during the process of coding as themes, associated with drivers of change and farmers' response to these drivers, emerged in the interviews. Drivers were

grouped in subcategories with the same characteristics forming the five main drivers on which this report focuses: economic, governmental, environmental, household and personal and societal (Table 2).

Table 2. Grouping of different drivers and examples

Driver	Examples
Economic	Price fluctuations, access to capital, debts and mortgages
Government	Policies and regulations
Environment	Droughts, Snow, Excessive rainfall, Access to water, Pests and diseases
Household and personal	Succession, personal vision and orientation, farm style, life cycle
Society	“Dirty dairying”, media, public opinion
Management	Advice, manager

2.4 Analysis

After completing the coding, NVivo enables the researcher to develop an overview of all the references coded under a specific node. With the use of a matrix tool, a table based on search criteria was made with time period nodes as rows and coded response as columns. In addition, the matrix tool enables the researcher to quantify responses. The word searching query was used to double-check the accuracy of coding for important nodes.

For this report, the analysis was limited to the descriptive presentation of the combined response in the interviews. Existing literature was consulted to produce a historic narrative to form a context for farmer’s responses to drivers of change. Any attempt at explanation of the variation in response awaits further analysis and grouping of response trajectories.

Chapter 3: Results

3.1 Historic narrative

This chapter uses a historic narrative derived from literature to form the context in which orchardists' responses to drivers (as expressed in the retrospective interviews) should be seen. Each subchapter represents a pre-defined period following the timeline used in the interview (Appendix I). Orchardists' response to specific drivers are listed in a table and cover the driver, the orchardists' response and the number of farmers with the same response divided by management system: Organic (O), Integrated (I) and Conventional (C). All quotes from the interviews referenced by superscript numbers in the text can be found in Appendix I.

Because the participating orchardists started management of kiwifruit orchards at different times throughout the timespan on which this report focuses, there are a lower number of responses in earlier time periods. Table 3 below shows the year in which orchardists first assumed control of management decisions on an orchard between the early 1970s and 2010.

Table 3. Overview of the number of orchardists in the interview starting orchard ownership grouped per period of time divided per farm system: Organic (O), Green (GR) and Gold (GO)

	Time period													
	prior to 1970s	1970-1972	1973-1975	1976-1980	1981-1984	1985-1987	1988-1989	1990-1992	1993-1994	1995-1996	1997-2001	2002-2004	2005-2008	2009-2010
O	0	1	0	1	0	3	0	1	2	2	0	0	0	0
GR	0	0	1	1	0	1	1	1	2	0	3	0	0	0
GO	1	0	0	2	1	1	0	0	0	1	2	1	0	0
T	1	1	1	4	1	5	1	2	4	3	5	1	0	0

Prior to the 1960s: Early stages of kiwifruit production

According to an official history of the sector (ZESPRI 2011), kiwifruit was introduced to New Zealand in the beginning of the 20th Century when Isabel Fraser, headmistress of the Wanganui Girls' College, brought back kiwifruit (yang tao) seeds from a trip to her sister's mission station in China. The plants, then known as "Chinese gooseberries", were offered for sale by a number of nurserymen at the beginning of the 1920s in Auckland, Fielding, Wanganui and Tauranga. In 1932 the first seven acres of Chinese gooseberries were planted in the Bay of Plenty region. A small number of orchards around Te Puke was able to produce 13 tonnes of Chinese Gooseberries for the first commercial export shipment to England in 1952. By the 1960s the name was changed from Chinese Gooseberries to 'kiwifruit'. In the same period San Francisco, California received its first 100 cases of kiwifruit from New Zealand.

1970-1983: Growers' representation

Until the 1970s, not more than 60 percent of the total kiwifruit production was exported, due to both the domestic market demand and the developmental stage of international marketing efforts. In the following years, exports steadily increased and by 1978 had reached over 80 per cent of domestic kiwifruit production. A similar trend characterised the 1980s.

The emerging export market encouraged a rising number of export companies during this period. Competition between these companies, who undercut each other in markets, and the lack of coordination in regard to the timing of and destinations for delivery caused concern within the industry. These conditions reinforced demands for a controlling body among growers (Lees 1993). In response to such grower concerns, the New Zealand Marketing Licensing Authority (NZKMA) was established in 1977 under the Primary Product Marketing Act of 1953—which provided control mechanisms for growers to market their products. The NZKMA formed a compromise between growers (who did not want any representation of the exporters in the controlling body) and the exporters supporting ‘free market’ principles (wanting retention of the status quo). As a solution, the NZKMA licensed only a limited number of companies to export kiwifruit and exerted control over the coordination of exports. In addition, the NZKMA set quality standards for the industry, controlled marketing and packaging and funded research and development (Willis 1994). Compulsory levies on growers and exporters funded the operations of the NZKMA. The NZKMA would operate until a major restructuring of the industry in 1988 that led to the creation of the New Zealand Kiwifruit Marketing Board (NZKMB) (Kilgour et al. 2007).

1984: Deregulation of the primary sector

The new Labour Government of 1984 adopted a neoliberal policy orientation that focused on dismantling costly centralised support schemes for farmers. In a short period of time New Zealand removed all financial controls, floated its exchange rate, undertook major privatization of state enterprises, relaxed labour market controls and removed most import tariffs and regulations (Johnsen 2003). The value of the New Zealand dollar rose dramatically and impacted negatively on exporters. Efforts by the Treasury to reduce inflation resulted in an increase in interest rates on mortgages to extreme levels by 1988 (Lees 1993). The value of farmland fell, which led to an equity crisis for primary producers and significantly affected arable and kiwifruit production (Johnston and Sandrey 1990). Emerging kiwifruit production in Italy, France, Japan and the USA introduced strong competition in export markets. The combined effects of monetary instability and increased world supplies contributed to a major crisis for the industry between 1987 and 1989 (see 1987-1992 kiwifruit crisis below)(Lees 1993).

1985: Commercial introduction of HiCane™

Historical context

Hydrogen cyanimide (known as HiCane™) was first applied to kiwifruit vines in 1983 to overcome a lack of winter chilling (Walton 1985). Major benefits of the product in experimental research included an increased and synchronized bud break and an increased number of flowers per shoot (Henzell and Briscoe 1986; Linsley-Noakes 1989). On-orchard trials continued and HiCane™ quickly developed into a common commercial orchard practice from 1985 onwards.

Driver	Response	O	GR	GO	Total
HiCane™	Public health awareness	1	5	8	14
	Positive	0	1	0	1
	Burning problems	0	0	1	1
	Good tool, poor practise	0	1	0	1
	Search for alternative	0	1	0	1
	Never tried without	0	1	0	1

Orchardists' response

With the exception of the organic orchardists who are prohibited from its use, all of the ARGOS orchardists, save one, use HiCane™ on their orchards. Adoption of the product has become so widespread that it is a generally accepted element of orcharding practice. The orchardists were also aware of public health concerns around the usage of HiCane™, and emphasise its proper usage as a means to avoid the side effects caused by spray drift.

1988: NZMKB

Despite a general trend away from producer boards and policies aimed at de-regulation during the early 1980s, kiwifruit growers successfully lobbied the government to re-regulate the industry. A report compiled by Coopers and Lybrand was influential in the growers' efforts, arguing against a 'free market solution'. As a result the NZKMB became a 'single desk' operator in 1988 with monopoly powers to purchase, distribute and market kiwifruit in all international markets except Australia. In addition, it was obliged to buy all fruit offered by growers that met export standards (Kilgour et al. 2007).

1991: Italian Residue Crisis

The confrontation with the Italian Residue Crisis in 1991 led the way to the introduction of a new Integrated Pest Management (IPM) approach to kiwifruit growing; the new KiwiGreen program was aimed at reducing the use of chemicals. Italy had argued that New Zealand kiwifruit contained pesticide levels exceeding local standards, while New Zealand claimed they were in fact well within the requirements for European regulation (Anker-Kofoed 2008). The fact that Italy belonged to one of New Zealand's biggest competitors led some to believe such actions were indicative of an emerging trend of greater protectionism in agriculture on the basis of environmental claims, also referred to as 'green protectionism' by Campbell (1996). Prior to the Italian Residue Crisis, the NZKMB had already been receiving enquiries about the possibilities of supplying 'greener' kiwifruit from the UK, Switzerland, the Netherlands and Japan. With the Italian Residue Crisis as a strong incentive, the NZKMB as a single desk seller was able to force the total kiwifruit production towards KiwiGreen. Within the current KiwiGreen program pesticide application is only permitted when there is a demonstrable need, and then only with a restricted list of more benign products. Under the programme, pest monitoring runs from January until close to harvest with responsibility devolved to the pack houses (Campbell, Fairweather, and Steven 1997).

1987-1992: Kiwifruit price crash**Historical context**

The industry was hit hard by a price crash in kiwifruit markets during the 1992 selling season. The fall in prices caused a decline in returns estimated at 10 per cent of the \$6.08 per tray received in 1991. This crisis impacted on the industry beyond the growers as both the NZKMA (prior to 1988) and the NZKMB (after 1988) had used a high level of pre-payments for fruit. With the European market crash, significant overpayment to growers became evident. In January 1993 the NZKMB announced a trading deficit of NZ\$80 million and it remained unclear at the time who would be responsible for the debt resulting from overpayment (The Orchardist, 1993). The NZKMB needed the government to quickly establish the right to recover overpayments from growers and also to be able to take into account outstanding debts when setting grower payouts in the subsequent season. John Falloon, the Minister of Agriculture, made a policy decision that enabled the NZKMB to come to a suitable debt

agreement with a consortium of 17 banks (The Orchardist, March 1993). Through this decision, the 1992 trading deficit could be covered and it offered an initial payment for the 1993 harvest. The following two seasons, growers received a reduced payment per tray as money was directed towards repayment of the debt.

The price crisis led to a positive restructuring for the NZKMB. Not only was the NZKMB able to recover outstanding debt, they were able to reform their pre-payment system as well. The pre-payment system changed from an initial \$3.50 per tray in 1992 to a new \$1 per tray with further payments being more closely aligned to market returns. Due to the restructured payment system, the NZKMB ceased to be the main financial provider and growers had to turn to outside funding from banks to cover temporary operating deficits (Campbell, Fairweather, and Steven 1997).

In the same year (1992) the New Zealand Agrichemical Education Trust was formed by primary producer groups aimed at developing and maintaining good practice standards for agrichemical use. The subsequently established GROWSAFE program trained orchardists to use their agro-chemicals with greater attention to health and safety implications. From 1992 kiwifruit orchardists were required to have GROWSAFE certification (GROWSAFE 2011).

Driver	Response	O	GR	GO	Total
Price crisis	Reducing costs	2	2	1	5
	Off farm work	1	3	0	4
	No debts, no serious issues	1	1	1	3
	Diversified	0	0	3	3
	Converted to organic	2	0	0	2
	Borrowing money	0	1	1	2
	Family labour	1	0	1	2
	No effect	0	1	0	1
	Own packing	0	0	1	1
	Hang on	0	0	1	1
	Selling	0	1	1	1
	Off farm income	1	0	0	1
Growsafe	Positive	0	3	3	6
	Awareness	1	2	0	3
	Pride	0	1	0	1
	Cost reduction	1	0	0	1

Orchardists' response

... and it probably gave me the sense that kiwifruit was a bit of a dodgy operation. But I'd been through booms and busts farming, too. Um, never, perhaps, to quite the same depth as the kiwifruit industry plummeted to in 1990, was it?

Gold orchardist

A few orchardists reduced operating costs as a response to the kiwifruit crisis between 1987 and 1992 and 'put the cheque book away for a couple of years' to make sure they did not owe any money¹. For some, the reduced capital availability resulted in delayed orchard maintenance (e.g. hedge trimming and pruning). One orchardist even stopped pruning for two or three years as a response to the crisis². Another, in addition to minimal pruning and self-packing, responded by converting to T-bar support in his orchard to decrease the costs of production³.

One orchardist related the change to a more cautious approach, which included borrowing only small amounts to develop at a manageable level which enabled them to cope with the situation⁴.

Others indicated that they had been lucky enough not to have had big debts at the time, reducing the impact that the crisis had on the orchard.

Well, the crash didn't affect us so much I don't suppose, because we actually didn't have any borrowings on it I don't think.

Green orchardist

Diversification into other crops such as lemons and avocados⁵ as well as into deer⁶ or dairy⁷ was adopted by a small group of orchardists to “stay in an area where we want to stay”. A few orchardists described their personal approach⁸ of coping with the situation in order to deal with the grim situation of the kiwifruit sector in this time period.

Well those years that it fell back right, with the increase in production that we were getting, we were able to just underpin it all the time, you know we're still ahead of the game and yeah, if we were still down what we were doing when we first took over the other two orchards, yeah we'd be finding the pinch just the same you know, so it's just believing in things as we go.

Gold orchardist

For two orchardists, the situation provided the impetus to convert their orchard to organic production to take advantage of the higher payout for organic kiwifruit. One of them indicated that the decision to convert was based on financial incentives alone⁹, while the other was clearly attracted by the organic philosophy as well. To generate extra income, a few orchardists searched for off-farm work to provide external financial means to support the orchard¹⁰ ¹¹. Another subdivided and sold his orchard in order to purchase a smaller orchard and generate cash flow¹². “Battling on”¹³, trading properties¹⁴ and relying more on family labour¹⁵ were examples of other short-term strategies applied by orchardists to overcome the big crisis.

Over the following two seasons, in addition to the deregulation of the primary sector and the crash in kiwifruit prices, the orchardists faced the necessity of repaying the accumulated debt of previous overpayments by the NZKMB¹⁶. Orchardists would remember this time as particular harsh and “hard for a lot of people”¹⁷.

Yeah, and that could've only been a year to be honest, so we were actually left floundering with no money still trying to run the orchard etc, so things had to suffer obviously, you know.

Green orchardist

Despite these times of hardship, kiwifruit orchardists were socially very active and well organized as a group as one organic orchardist remembers: “And we didn't feel hard done by. Ironically in those days even when we were working like that, we were involved with maybe more people”¹⁸.

1991: RMA introduction

Historical context

In 1991, a rising level of environmental awareness (the consequence of such factors as declining water quality and biodiversity with regard to agriculture) caused a shift of policy mandate from central to local government through the Resource Management Act (RMA). The expectation was that local control, as compared to centralised regulation, would be better able to incorporate the social and environmental context of resource use.

Orchardists' response

But it's a big change from our old days. If you wanted to put a damn in, you took the bulldozer and you damned a valley, and that was a damn there. ...and I hear of all sorts of problems farmers are having down in the central North Island ... even cutting the Manuka and that kind of thing, now, ... which was normal maintenance then. And they've gotta get resource consents from the local Regional Authority to cut scrub, ... which is extraordinary I think.

Gold orchardist

Driver	Response	O	GR	GO	Total
RMA	Problems	0	0	2	2
	Extra costs	0	1	0	1
	Paperwork	0	0	1	1
	No problems	0	0	1	1

Five orchardists were asked specifically about the impact of the introduction of the Resource Management Act on their orchard practices. Their responses were generally negative¹⁹ with only one stating that the RMA did not really affect their management. Others claimed to have encountered new conflicts around management decisions that previously would have been taken autonomously by the orchardist but were now subject to interference from the council²⁰. The result of this policy, according to these orchardists, involved additional expenses²¹ and paperwork.

1993: Introduction of ultra-fine mineral oils

Historical context

Scale insects such as greedy scale (*Hemiberlesia rapax*), latania scale (*Hemiberlesia lataniae*) and oleander scale (*Aspidiotus nerii*) are, together with leafrollers, considered the key pests of kiwifruit (Steven et al. 1994). Prior to 1993, scale was managed using calendar spray programs based on regular applications of insecticides, mainly organophosphates. The introduction of ultra-fine mineral oils in 1993 was an important step in Integrated Pest Management under the new KiwiGreen programme, providing orchardists with an alternative to control scale (Tomkins et al. 1996).

Driver	Response	O	GR	GO	Total
Scale	Successful usage of ultra fine oils	3	0	0	3
	Problems monitoring (KiwiGreen)	0	0	2	2
	Took shelterbelts out	0	2	0	2
	Into organics after introduction oils	1	0	0	1

Orchardists' response

Especially for the organic kiwifruit growers the introduction (and approval) of ultra-fine mineral oils in 1993 was an important event. Prior to these alternatives management of scale within organic systems was not widespread or overly successful. One farmer even stated that, without the new introduction of mineral oils, organic production would not be possible; he immediately converted to organics when the oils were allowed²².

1996: KiwiGreen

Historical context

A further result of the reassessment of the practices of pesticide application (see Italian Residue Crisis section) was the development of the KiwiGreen programme as the basis for producing pesticide residue-free kiwifruit. Initial testing of the viability of the pest control strategies utilising an IPM approach began in 1991, with industry-wide compliance achieved in 1996. The uptake was surprisingly quick given the radical change from pest control based on calendar spraying.

Driver	Response	O	GR	GO	Total
KiwiGreen	Positive	3	3	3	9
	- Safer Sprays	1	2	2	5
	- Positive for the industry	1	1	0	2
	- Less hassle	0	0	1	1
	- Mindset	1	0	0	1
	No effect	4	0	0	4
	Awareness	0	0	2	2
	Problems with scale	0	0	1	1
	Difficult to differentiate with organic	1	0	0	1

Orchardists' response

Regulation and monitoring of the new KiwiGreen program (set in place after the Italian Residue Crisis and in response to the rising demand from export markets for pesticide residue free kiwifruit) was conducted by the kiwifruit pack houses. Monitoring occurs within specified timeframes and spraying is carried out using pest and diseases thresholds. While there is general satisfaction with KiwiGreen, some orchardists note that the programme impedes their ability to respond to pest outbreaks quickly²³. Safer sprays were a part of the implementation of KiwiGreen that was positively received by orchardists²⁴.

It's outstanding and ... 'cause I do the majority of the spraying and to not be using... Like we stopped using Lorsban years ago and, um ... used alternatives. And to not be spraying horrible things like that, it's just fantastic, you know. Yeah, no. And you look at the organic guys and you see their results... You know that they can achieve; and it's better than what we're achieving as a, you know, as an industry.

Gold orchardist

While not significantly altering practice on their orchards, the programme elicited distinct responses from the organic participants. One organic orchardist was positive about the changing mindset with regard to spraying in the kiwifruit sector²⁵ as a result of the KiwiGreen programme. Another, however, found the introduction of KiwiGreen to be negative as it was more difficult to differentiate from organic production. According to this latter orchardist, ZESPRI was doing too little to distinguish between the different market segments represented by KiwiGreen and organic. He claimed that, from the consumer's perspective, kiwifruit produced under the programme was "quasi" organic fruit²⁶, a factor that raised confusion and negatively impacted on the organic market share.

KiwiStart

Historical context

Those supplying early-harvested fruit to the pack houses began to receive a price premium under the new KiwiStart programme initiated in 1996. The intent of this programme was to encourage the supply of fruit early in the season and, thus, expand the marketing window. Because earlier picking reduced the size of the fruit, encouraging participation necessitated the provision of the financial

incentive. The fruit supplied within the KiwiStart programme is required to meet specified maturity criteria in order to ensure the delivery of ripe fruit. As a result, participants in the programme are largely confined to more favourable growing sites. Given the manner in which returns are distributed to growers, the fairness of such an incentive that is not considered equally accessible to all can be challenged.

Orchardists' response

Only a few orchardists (4) were asked on their opinion about the KiwiStart premium programme and none respond positively. According to a few, kiwifruit taste was affected by a pre-mature harvest early in the season. Some orchardists even went as far as saying the early KiwiStart kiwifruit tasted like potatoes²⁷; others were concerned about the image of the industry as a whole and kiwifruit as a product.

I've never seen that it's different and I've never believed in it. Even with the conventional orchard I won't go for it. [...] because I'd rather have fruit that is a good advertisement for kiwifruit than stuff that's just filling a space on a shelf and doesn't look very good and tastes like crap.

Organic orchardist

Driver	Response	O	GR	GO	Total
KiwiStart	Negative	1	2	0	3
	Taste	1	1	1	3
	Unfair	0	1	0	1

One orchardist, less concerned about taste issues, expressed his doubt regarding the fairness²⁸ of the choice of kiwifruit orchardists allowed to take advantage of the KiwiStart scheme as he reckoned that participation (to be part of KiwiStart premiums) depended more on connections than on fruit qualities.

1997: Rebranding NZKMB to ZESPRI

Historical context

By 1996 the NZKMB created the (computer generated) ZESPRI brand name to distinguish New Zealand kiwifruit from fruit produced by other countries using the 'kiwi' name that had not been trademarked. The Kiwifruit Industry Restructuring Act was passed in September 1999 and from 1 April 2000 established the NZKMB's commercial operations, ZESPRI, as a company with shares tradable amongst producers. Under the Kiwifruit Export Regulations of 1999, ZESPRI continued to be recognized as a single-desk exporter exclusively authorized to export and market New Zealand kiwifruit overseas except to Australia. With the new branding, the KiwiGreen scheme was renamed the *ZESPRI System* and then expanded through the introduction of additional environmental factors, hygiene and ethical trading practices. The new system essentially inspected the entire supply chain from orchard to market. The different stages of the scheme are monitored and audited by the Ministry of Agriculture, which facilitates the traceability of commodities (Anker-Kofoed 2008).

Driver	Response	O	GR	GO	Total
Single desk	Positive	4	6	3	13
	Negative	1	1	0	2
T & G	Negative	4	5	4	13
	Positive	1	0	0	1
	Neutral	0	1	0	1

Orchardists' response

A group of orchardists (15) were asked their opinions about the current single-desk exporter status of ZESPRI and the role of Turners & Growers, which was challenging the legality of the existing trading structures. The majority of orchardists responded positively to ZESPRI's single-desk²⁹ status, noting that "single is the only way"³⁰. The most common rationale for ZESPRI's control of exports was the small size of the kiwifruit industry which required growers to work together for everyone's benefit "in a proven system"³¹.

And, ah, I think if we didn't have the single point of entry today, ah, we probably, half of us probably wouldn't be here now.

Gold orchardist

A: What about the single desk marketing, you know, kiwifruits single desk?

F: Totally agree with it. Mmm, totally agree with it.

Green orchardist

Favourable comparisons were made with other successful single-desk operators such as the Dairy Board³² and the former Apple and Pear Marketing Board³³. Some recalled the days before re-regulation when, according to one orchardist, six different agents came to his boss' place each offering different prices for the kiwifruit on the vines. This orchardist believed that the current system was much better organized with a single interest trying to get the best price for New Zealand kiwifruit³⁴. Another recalled the time before re-regulation as being highly stressful³⁵. A few, however, argued that the power of ZESPRI as a single-desk operator was negative and forced orchardists to comply with new rules and regulations without any choice³⁶. Another orchardist did not approve of single-desk marketing, advocating for the healthy competition of additional players operating in the market³⁷. Orchardists in favour of the single-desk market also held negative opinions of the possibility of Turners and Growers (T&G) entering the kiwifruit industry.

And, you know, I liked the Dairy Board and ZESPRI. ... So I'm not a Turners and Growers fan at all.

Green orchardist

Overall orchardists felt intimidated by the growing influence of T&G and shared a very negative attitude accusing T&G of lying^{38,39}, acting as a potential threat to overthrow ZESPRI^{40,41} and being "the last thing the industry would need now"⁴².

A: So you think the Turners and Growers.

F: I think they should go and concentrate on doing the apples. And look at their performance and talk to some of the apple growers, and trouble that they've been in, I believe that they're not quite so bad at the moment but their crops might be, but no, no, Turners and Growers can go, I think we should stay with what we've got, may not be perfect but things rarely are, those are the best interests of, I believe it's in the best interests of the industry.

Green orchardist

1999: Gold kiwifruit

In 1999, ZESPRI International introduced the tropical-sweet, yellow-fleshed ZESPRI GOLD™ kiwifruit variety and rebranded the Hayward fruit as ZESPRI GREEN™ kiwifruit (ZESPRI 2011). The creation of Gold began in the late 1970s with plantings in the Te Puke research orchard of seeds collected from the Beijing Botanical Gardens in China. ZESPRI filed for Plant Variety Rights in order to protect the Gold kiwifruit variety and to regulate its production internationally (Kilgour et al. 2007). In the same

year, Varroa mite was found in South Auckland. Prior to April 2000, the Varroa mite was thought to attack honeybees in all major beekeeping countries with the exception of New Zealand, Australia, Hawaii and parts of Africa (ZHANG 2000).

2001: TasteJapan

Historical context

By 2001 the importance of taste in consumer preference and repeat purchase levels had become more strongly advocated by marketers and reinforced through consumer research (Anker-Kofoed 2008). Previous research conducted on the Japanese market demonstrated that Japanese consumers preferred high dry matter fruit as well as indicating a willingness to pay more for taste (McAneney n.d). A significant drop was observed in exported Green Kiwifruit, providing the initiative for the TasteJapan programme in 2001. Because of an observed relationship between dry matter percentage and flavour profiles associated with a premium price for kiwifruit, research was conducted to establish the impact of orchard management on dry matter levels. In 2005 TasteJapan was rebranded to TasteZESPRI and expanded to other markets, including Korea, Taiwan and China (ZESPRI 2005).

Orchardists' response

A substantial group of orchardists expressed their concern over the implementation of TasteZESPRI and the associated price premium for dry matter. To obtain higher dry matter in their fruit, orchardists felt

Driver	Response	O	GR	GO	Total
TasteZESPRI™	Vine health concerns	4	4	4	12
	Positive for industry	1	2	6	9
	Complicated	3	3	2	8
	Summer pruning	1	2	2	5
	Negative	1	2	1	4
	Positive: Higher income	2	2	0	4
	“Just do it”	0	0	1	1
	Move to low vigour	0	0	1	1
	Neutral	0	0	1	1
Girdling	Trunk girdling yes	4	5	6	15
	Trunk girdling no	1	4	1	6
	No: Vine health	0	1	1	2
	No: No need	0	1	0	1

they had been pushed⁴³ or forced⁴⁴ into trunk girdling—“we have to girdle”⁴⁵. Several orchardists identified the negative impacts of girdling, such as a decrease in root mass and loss of vigour in the vines. A few were practicing alternatives to girdling, such as summer pruning⁴⁶. Overall the effectiveness of girdling was debated by several, who wondered if it would really increase dry matter and whether it would be sustainable over the long term.

If they can tell us what to do and if we don't do it, you miss out — which is fair enough; but they can't tell us exactly what to do here. That's frustrating for me. 'Cause, you know, I've effectively done everything other than effectively ring barking them — which I did the first time, only half of it this year. I mean we do everything; and even they said exactly what you should do to get it. And we don't.

Green orchardist

Despite such concerns about vine health, a substantial group of orchardists considered the TasteZESPRI programme to be very positive for the kiwifruit industry. Consumer satisfaction⁴⁷ with the fruit and a growing export market were seen as potential benefits of the program.

TasteZESPRI™...I'm in favour of it, actually. 'Cause, you know, it's all about putting a good product in the market. And if you can put a tasty kiwifruit, a sweet kiwifruit, in the market, then they're gonna come back and buy it, aren't they? Have a bad experience, then they don't come back.

Green orchardist

Ah, it's just like, if we didn't have the TasteZESPRI system, I hate to think where we would be right now ...

Organic orchardist

One farmer supported the TasteZESPRI programme as a means to avoid the sale of kiwifruit that "tasted like potatoes" because some orchardists "just applied growth 'promotants' onto them". At the same time, he also expressed concern about the effects of girdling on the long-term health of his vines⁴⁸.

Among some orchardists, the change from Brix sugar testing⁴⁹ to a payment system based on dry matter was considered overly complicated^{50,51,52}. This perception was reinforced by the lack of clearly defined orchard management practices for achieving high dry matter levels.

When it was 6.2 [Brix], it went on the market and gone. But now, there's so many different criteria involved in getting good fruit to the market. I don't fully understand it 'cause the manager's handling it now. And we've got sugar levels, and Brix's and dry matters and seed colour and... So he's managing the orchard to a point to try and get the best return for us on those areas, which is a different pruning system. It's a lot more time-consuming and costly for summertime pruning.

Gold orchardist

Others did not believe the dry matter in their crop was something over which they had any control, claiming it was dependent on natural factors. They found it hard to "meet goals when you actually can't"⁵³ and described their inability to achieve consistently high dry matter as frustrating^{54,55}. Some orchardists, however, expressed more positive perspectives in regard to the TasteZESPRI programme, associating an increase in income from kiwifruit with the scheme's introduction.

A: Now TasteZESPRI™... how has that impacted on you?

F: Good.

A: Yeah?

F: Because it's brought me a lot more income. I'm lucky, I've been sitting in the top three, and then I became... I've always been sitting in the top three for taste, so it's brought me extra income.

Green orchardist

Another orchardist was very pleased with the dry matter based payments and had been receiving a high premium, although he was unable to link it directly to management and considered himself lucky to be in a good situation⁵⁶.

Orchardists varied widely in their opinion about the practice of girdling. The evidence that girdling had been part of kiwifruit management practices over centuries in places like China was mentioned by one orchardist as a reason not to be worried⁵⁷. Another indicated that girdling was simply the thing to do in order to "chase that dollar" while closely monitoring the vines' health⁵⁸. For one orchardist, girdling was a "godsend", saving at least one round of expensive pruning to control vine

vigour⁵⁹. Another was afraid that the practice would make his kiwifruit orchard more susceptible to *armillaria*⁶⁰. (N.B. The vine disease, PSA, had not yet been identified as a problem at the time of the interviews and, thus, was not associated with the practice of girdling by interview participants.)

2002: Fuller’s Rose Weevil

Increasing problems with Fuller’s Rose Weevil led to the development of a monitoring system and trunk banding. Despite emerging as a potential challenge to the IPM strategies of the KiwiGreen programme, the successful response to the situation demonstrated the adaptive capacity of the approach.

2003: EurepGAP certification

Historical context

EurepGAP (now GLOBALG.A.P) started in Europe as an initiative by retailers belonging to the Euro-Retailers Produce Working Group (EUREP) to exert greater oversight of their supply chains as a response to concerns regarding social and environmental impacts from both consumers and producers. Increasing consumer concerns about product safety, environmental sustainability and labour rights eventually led to the development of a common certification standard (GLOBALG.A.P 2011). In May 2003, ZESPRI acquired certification for having a Produce Marketing Organization system that met the requirements of the internationally recognized standards of the EurepGAP. Following the regulations, growers must comply with management aims and audited criteria such as reducing the application of agrichemicals and recognizing an acceptable level of health and safety for workers (Patel 2003).

Driver	Response	O	GR	GO	Total
GLOBALG.A.P	Paperwork	3	7	7	17
	‘Just do it’	2	4	6	10
	Negative	2	4	2	8
	-“Over the top”	1	4	2	7
	- Extra costs	1	0	0	1
	Positive for the industry	1	2	2	5
	Used to do audit (BioGro)	3	1	0	4
	Awareness	1	2	0	2

Orchardists’ response

The majority of orchardists, when asked their opinion about the introduction of GLOBALG.A.P, stated that additional paperwork^{61,62} was the main impact on their management system. A substantial group of orchardists felt that the audit had become a necessary part of kiwifruit production. Some suggested that the process increased awareness of potential problems, while others claimed it had no particular effect on their orcharding practice⁶³. Those who were less positive generally questioned the value of additional regulation and felt that the detail involved in GLOBALG.A.P was over the top⁶⁴.

Yeah I think there’s always a component in that, but [...] we’ve got OSH and we’ve got ACC and we’ve got a whole lot of our own agencies here in New Zealand looking at that. And I question why we need to bring in another overseas agency to sit over the top as well. So it’s this duplication of regulation that drives us mad out here in the orchard. It’s bad enough dealing with the Labour Department, OSH and ACC [...] then EurepGAP comes over the top with another whole lot of stuff. You know, this is over the top.

Gold orchardist

A small group of orchardists recognized the need for the GLOBALG.A.P audit, viewing it as the only accepted pathway to export kiwifruit. These orchardists generally did not feel that the audit conflicted with their orchard management⁶⁵. A few orchardists went so far as to express their pride in the kiwifruit industry, referring to GLOBALG.A.P as a positive example of its forward-looking approach^{66,67}.

Health and safety

Driver	Response	O	GR	GO	Total
OSH	Positive	2	1	1	4
	Awareness	2	0	0	2
	Negative	0	0	1	1

Orchardists' response

A few orchardists were asked their opinion on the introduction of Health and Safety requirements and the perceived effect of these on their orchards. For the most part, these were considered a positive action with orchardists claiming that it had changed their awareness⁶⁸ of potential health risks.

Yeah, OSH and health and safety [...] you know, like a few years ago, you know, I wouldn't mind people using chain saws and things; but now it's [...] you know, [...] you're very wary of any equipment like that ... anyone using it. So [...] there's positives and negatives in that, I think.

Organic orchardist

Another orchardist strongly expressed his feeling that introduced certification and audits were not the best means of disciplining orchardists.

F: But, ah, and, and trying to have, um, good safety systems in place. I, I guess the problem with, ah, those sorts of things is they, I, I was thinking about that the other day, having those kinds of checking systems don't make up for having good practices in the first place.

FW: No.

F: It, it's a bit like if you have teachers teaching you in, in a classroom, you could have all the teachers, all the, all the checking systems you want, all the valuation systems you want, but what they're about is checking to make sure that the kids in the classroom are getting taught properly. If the kid's not been taught properly in the first place you can do all kinds of things with these checking systems, but they're, they're after the fact.

Organic kiwifruit

2010: New Cultivars

Driver	Response	O	GR	GO	Total
New cultivars	Reluctance to new investments	4	4	1	9
	Challenge	1	2	3	5
	Negative about trying	1	3	1	5
	Positive about trying	0	1	2	3
	Postponing	0	1	1	2
	Reluctant to try	1	0	1	2
	Half of orchard	0	0	1	1
	Lack of information	0	1	0	1
	Lack of finance	0	1	0	1
	No ambition	1	0	0	1
Succession	1	0	0	1	

Orchardists' response

The interviews coincided with the promotion of new cultivars developed and licensed by ZESPRI and largely intended to replace some of the existing Hayward production, making this an important topic for the orchardists. In discussing their plans in regard to these new cultivars, a substantial number expressed their reluctance to commit to the high investment costs and the period of lower return while the orchard was in transition. Some of these felt they simply could not afford the investments in new cultivars at this particular stage^{69,70}. Others were still improving⁷¹ their existing orchard and had already incurred debt that they did not want to increase.

So, no, the new cultivars have not stimulated my interest or invigorated me to say, 'yeah let's sit here and let's take the punt and go'. Because it comes down to where's the cash to do it. Am I going to throw myself into OD [over draft] big time to do it? And then you've got the loss of income over three years. Um, no, you'd need someone that's got the monetary backing to step in and do it.

Green orchardist

At the other extreme were those orchardists willing to invest in new cultivars out of a sense of challenge and excitement^{72,73}, seeing it as the right thing to do with a view on succession and keeping the orchard up-to-date⁷⁴ or as a step forward for the industry.

So there's that incentive to carry on with more kiwifruit. The other thing is that it's exciting, being involved with development of new varieties. And we are very committed to the future of kiwifruit. And, to us anyway, it's obvious that that future has got to lie with new varieties.

Gold orchardist

A: And do you consider that...sort of...the promotion of new varieties...do you see that as a positive?

F: Ah, yes. Yeah, if you look at the apple industry...and we'd stayed in Granny Smith, we wouldn't be in the apple industry.

Gold orchardist

One strategy for avoiding a large investment while still adopting the new cultivars was to convert only a part of the orchard⁷⁵. Not everyone, however, shared the same feeling of excitement towards the newly introduced cultivars as some were reluctant to try.

I just can't do two varieties at once. You know, it's just too hard.

Organic orchardist

In addition to the orchardists with doubts related to the financial risk and the new knowledge required for the introduced varieties, there were those who doubted⁷⁶ that the new cultivars could meet expectations.

They told us at the field days (where they showed it to us), that it had been trialled overseas and it was fairly acceptable to those that had tried it. But I don't think there's anywhere near enough out there to really know what's going on. And the [new] green [variety], well, they couldn't even show us, you know. All they've got with green is just a few plants, or grafts, that are just beginning to grow. Well, you know? Okay DSIR and HortResearch have been working on it for years; but it doesn't give us much idea.

Green orchardist

The issues raised by Turners and Growers in their challenge to ZESPRI's position were considered by a few orchardists to be a further reason to delay investing in new cultivars. Some were under the

impression it was due to the pressure exerted by Turners and Growers that the ZESPRI cultivars had been brought into the market too early and without sufficient trialling.

They took a risk and it took them a long time to get them [gold varieties] right. And that's why I'm a bit concerned about these new varieties — that they're pushing it out there too early, mainly because Turners and Growers are forcing their hands. And I've said that to the ZESPRI fellas again. And they go, 'oh no'. 'Cause, I mean like, if you go for the new gold [variety] this year and you tender and you get it, they don't even know which male you've gotta plant. You've gotta graft different males this year because they don't know which one does it. As far as I'm concerned, that's sort of telling you that they're doing it a bit early.

Green orchardist

3.2 General opinions, responses and attitudes towards drivers of change

3.2.1 General response to environmental drivers

Driver	Response	O	GR	GO	Total
Hail	No need to cope, no effect	0	0	3	3
Frost	Frost system	4	4	2	10
	No issues	2	1	0	3
	Spraying nitrogen & mowing	0	1	1	2
	Seaweed	0	1	0	1
	Convert to organic	1	0	0	1

Overall, climatic (environmental) drivers such as hail and frost appeared to be manageable events for the orchardists. Frost protection systems were put in place by a group of orchardists, while others stated that they did not experience any problems due to frost. One orchardist explained that the reason behind converting to organic management was that the delayed growing season helped to avoid problems with frost in the locality. Alternatives to the capital intensive frost protection systems included spraying of nitrogen, mowing and applying seaweed tonics.

3.2.2 General response to economic drivers

Driver	Response	O	GR	GO	Total
Input prices	Reduce costs not adopted	6	5	2	13
	Low(er) input policy not adopted	3	3	3	9
	Low(er) input policy adopted	2	1	3	6
	Reduce costs adopted	1	3	1	5
	Alternatives	2	0	1	3
	Hang on	0	1	1	2
	Off farm income	0	0	1	1
	Overdraft	0	1	0	1
Kiwifruit prices	New varieties	0	2	4	6
	Off-farm work	2	1	1	4
	Invested in Gold	0	0	4	4
	Hang on	1	1	1	3
	Cut labour costs	1	1	0	2
	Diversification	0	1	1	2
	Pack house	1	0	1	2
	Buying extra land	0	0	1	1
	Off-farm income	0	0	1	1
	Leasing out	0	0	1	1
	Selling out	0	0	1	1
Convert to conventional	0	1	0	1	
Exchange rate	Passive: no control	1	3	0	4

The majority of orchardists did not cut back on expenses as a response to increasing input prices. According to this group, cutting back by not pruning, for example, would eventually come back to haunt them^{77,78}. Similarly, orchardists felt the adoption of a low input policy as a result of increasing fertilizer prices was not the right decision^{79,80} as this would likely cause problems in the longer term.

We're not so stupid as to think, you know, the income's down so we'll only put on half the fertilizer. There's no logic in that. Although I know some people...

Green orchardist

Look, I tell you what if you're gonna go broke, go broke doing it well.

Gold orchardist

Those asked about the perceived impact of the exchange rate on their orchard management felt as if they could only passively respond to the fluctuating dollar.

No, I've just gotta accept and just hope that ZESPRI are doing their job with managing exchange rates and it's all I can do. I can't do their job for them. [...] get the best that you can by forward planning or whatever with playing money markets and things like that. And I can't do that. I can just grow kiwifruit.

Green orchardist

A: What about exchange rate fluctuations?

F: They're just the biggest curse to being an exporter in New Zealand, and within our industry. In fact, I was at a political meeting on Saturday, and that's the very question that I raised as the greatest concern I had. We can do all the extraordinary things in our orchard to up yields and quality and all the rest of it, and that can be negated overnight with a re-evaluation of the New Zealand dollar. Our return is governed purely on what the exchange rate is at any given time when we're selling our fruit. And it's the thing I have no control over. It frustrates the hell out of me. In fact, if I was heading into business again, I probably wouldn't with the New Zealand currency structure that we have here. Because it is just a nightmare, it is. It really, really frustrates me.

Organic orchardist

Overall orchardists referred the effect of lower income and higher input prices⁸¹, although those in the Green panel would especially emphasise that the current payment was very low and unsustainable⁸².

F: No, no, no. You wouldn't be doing this at the moment as a business; I can't see how anybody can grow green kiwifruit and make much of a profit out of it.

A: And it's been like that for the last, what, 2 or...

F: 2 or 3 years, yeah.

Green orchardist

To increase profitability from the orchard, some were actively looking in the direction of new cultivars, or investments in Gold kiwifruit. Off-farm work was seen as an option to generate extra cash flow, while others had expanded their income generation with investment in dairy or even orchard tourism.

3.2.3 General response to personal and household drivers

Orchardists commonly mentioned management adjustments and decisions that were a response to household drivers such as health problems, lifestyle and retirement plans and aspirations. A few orchardists dealt with decreasing strength and deteriorating physical abilities by hiring extra labour to share the workload, especially in times of pruning⁸³.

Driver	Response	O	GR	GO	Total
Health	Hiring replacement	1	2	0	3
Lifestyle	Into kiwifruit	3	2	1	6
	Hiring orchard manager	1	1	1	3
	Convert dairy into kiwifruit	0	0	1	1

Retirement	Into kiwifruit	1	2	3	6
	Options out of kiwifruit	0	1	1	2
	Partnership formation	0	1	0	1
	Leasing out	0	1	0	1
Attachment to place	Sense of attachment (family heritage)	2	0	1	3
	Exchangeable	0	3	2	5

For a group of orchardist, the decision to enter the kiwifruit sector was based on lifestyle⁸⁴, with location⁸⁵ and the ability to hire an orchard manager^{86,87,88} being mentioned as important aspects of this.

A: So why did you choose to go into kiwifruit at that point?

F: Uh, lifestyle reasons probably more than anything ...

Organic orchardist

Orchardists differed in their sense of attachment to the place: for some the orchard had been owned by the family for many years and the objective was to continue living there for as long as possible; others would sell the orchard the minute a promising buyer appeared^{89,90} or when they wanted to develop a new orchard⁹¹.

3.2.4 General response to societal drivers and advice

Driver	Response	O	GR	GO	Total
Public Vision	Careful spraying	3	5	8	16
	No effect	2	5	3	10
	Negative	0	2	1	3
	Positive	3	0	0	3
	Converted to organic	1	0	0	1
	Awareness	0	1	0	1
	'Hang on'	0	0	1	1

Orchardists were asked about the effect of external social drivers on their orchard management practices. The most common response was to cite the care they took when spraying the orchard, including investing in the latest 'state-of-the-art' low-drift nozzles and informing their neighbours about their spraying plans, in light of increased awareness in the community of the effects of spraying. Even greater precautions were taken when applying HiCane™, due to concerns raised about possible health impacts. Three organic orchardists perceived public perception as a positive driver, which applauded them for being organic.

A: Do you notice anything about the views of townspeople or city people that impact on what you do on the orchard?

F: Well, not...

A: There's a rural/urban divide...

F: Ah, well, everyone thinks we're wonderful when we're going organic...

Organic orchardist

There were, however, a few orchardists with negative perceptions about the effect of community concerns on their management practices. As one explained, they had to invest in an irrigation system for frost protection after one neighbour had threatened to shoot the helicopter out of the sky⁹². Another stated that people's perceptions about spraying were hard to shift and generally exaggerated. This same orchardist felt limited in his rights as a grower to decide when or when not to spray.

But the use of agri-chemicals is a big issue. And people's perceptions are very hard to shift. There's [people who] strongly believe that chemicals in the air are a bad thing. The minute [they] hear a sprayer starting up within earshot, spraying some water, [they]'ll break out in a rash. [...] That's what has happened. It has actually happened. [...] And we don't have any rights. We've got absolutely no rights. As an industry we have no rights.

Green orchardist

3.2.5 General response to managerial drivers

	Response	O	GR	GO	Total
Source of info	Others	5	4	4	13
	Consultants	4	3	5	12
	Field days	2	3	3	8
	Father	2	2	3	7
	Pack house	1	3	2	6
	Experimenting	2	2	0	4
	Discussion Groups	1	1	0	2
	Son	1	0	0	1
	Competitions	0	0	1	1
	Kiwi-book	0	1	0	1
	Books and magazines	0	0	1	1

Based on the experiences of the interview participants, kiwifruit orchardists appear to be intensively exposed to different sources of information and knowledge. Advice was commonly gathered from other growers or consultants and a large group of orchardists visited field days (hosted by either ZESPRI or one of the pack houses) on a regular basis to gain insights to the newest developments in the industry. In addition, father-son transmission of knowledge was an important source of learning for orchardists. Another important factor is the presence of a manager (1,1,4) to take over orchard responsibilities and to provide the orchardist with advice. It is also possible to distinguish the types of management practice that were altered in direct response to external advice (see below).

Driver	Response	O	GR	GO	Total
Advice	Strip males	0	2	1	3
	Soil sampling	0	1	2	3
	Pergola support	0	0	1	1
	Manure application	0	0	1	1
	Chieftain	0	1	0	1
	Invest in Gold	0	0	1	1
	Enter kiwifruit sector	1	0	0	1
	Vine shelter	0	0	1	1
	T-bar	0	0	1	1
	Spraying techniques	1	0	0	1

3.2.6 Attitude towards innovation

Within the interview context, 15 orchardists were asked if they had developed any new ideas or techniques that would help them to maintain their position as an orchardist. As a group, they differed in their approach to innovation. Only a few considered themselves as being purposefully reluctant in their approach to new techniques, preferring to represent themselves as more conservative than colleagues (0,2,1).

Be conservative. Yes we've probably adopted a conservative management style.

Gold orchardist

More orchardists (3,0,2) claimed to be evolving and adapting around management practices to keep 'up to speed'.

I guess you'd try it, you go down a track and if it's not gonna work and can you see it's not working, well you've gotta back up and branch off to go down another track. I mean it's just part of knowing that or you can do better, you know, more efficiently, more, you know cost effective or whatever, we can do better and we must do better to keep up with inflation, you've just gotta do better and we can do it.

Gold orchardist

In addition, a smaller group (2,1,3) felt they needed to be in the forefront of change to be able to keep up with changes in the industry and had a more pro-active approach compared to some of their colleagues.

Well, I'd much rather be on the front foot than the back foot ...

Gold orchardist

Chapter 4: Discussion

The main objective of this report was to provide a descriptive presentation of the initial coding of the retrospective interview conducted with kiwifruit orchardists who are participating in the ARGOS project. As such, the report offers a preliminary overview of the drivers (including both shocks and stresses) experienced in the sector as well as the pathways to change to which it has been exposed. The perceived effect and impact of policy restructuring, evolving industry standards and internal and external stress factors since the start of kiwifruit production in New Zealand have been of particular relevance. In this report it is not assumed that all orchard adjustments were a direct response to a particular driver. However, by focusing on the key drivers for an identified adaptive response it is assumed that general insights can be drawn and these are discussed in more detail below.

4.1 Derived drivers and responses for change

Orchardists varied in their adaptive response to changing economic, political, environmental, managerial and social drivers and this was illustrated by the variety of different responses. The diversity in their approach to and understanding of these drivers (both those experienced as long-term stress and as immediate shocks) reflects the distinct contexts (social, financial and cultural) within which they, as individuals or as members of families or wider communities, confronted the pressures to change. While the data fail to demonstrate overwhelming evidence of uniformity in response, it is possible to draw some generalisations about the orchardists' response. These involve the identification of the primary historical source of change in the sector; innovation and contemporary sources of information; the impact of auditing and other forms of regulation; and the role of climatic events.¹

In comparison to sheep/beef farmers, the restructuring of New Zealand agricultural policy in 1984 was not recognised as the predominant external impact on orchard management practices. The kiwifruit orchardists (with the exception of those who had not experienced it personally) consistently identified the crash in kiwifruit prices in the early 1990s as a greater shock to, and driver of change within, the sector. As a result, the period between 1987 and 1992 was seen as having the largest effect on kiwifruit orchard management. (It should be noted, however, that those who did not manage to survive agricultural restructuring, floating of the exchange rate, high mortgage rates and falling land prices of the 1980s would not have been included in this study.) The most common response by orchardists to the crisis in the early 1990s was a short-term form of perseverance to reduce costs including the postponement of orchard activities such as pruning. In addition short- and longer-term involvement in off-farm work was sought in order to generate cash flow. Disappointment and bitterness directed toward the government and its policies was observed to a lesser extent than among sheep/beef farmers. It remains unclear the extent to which this is a result of the fact that, for the kiwifruit orchardists, the crisis was temporally more extended and caused by a mix of different factors.

ZESPRI has commonly relied on financial signals (price premium schemes) to promote particular fruit characteristics or to encourage change in management practice. From the interviews, it is apparent that two of these schemes—KiwiStart and TasteZESPRI—did not receive overwhelmingly positive response from the orchardists. Unlike the uniform regulation and communal benefits associated

¹ Note that the appearance of PSA disease (*Pseudomonas syringae* pv *actinidiae*) occurred subsequent to the completion of the interviews and, thus, is not included in this list.

with GROWSAFE, KiwiGreen and GLOBALG.A.P, KiwiStart and TasteZESPRI provided mechanisms to reward the individual grower and potentially reinforce unalterable geographic advantages (or disadvantages). As a result, the 'fairness' of the premium allocation used in this programmes is subject to contestation. TasteZESPRI, in particular, raised a diverse set of opinions: a large group of orchardists could understand the idea behind the scheme to produce better tasting fruit but did not agree with the current scheme structure. As a management tool to increase dry matter content, ZESPRI had recommended (or, according to some, pushed) the use of trunk girdling in orchards. The practice of trunk girdling was, however, heavily debated by orchardists concerned about vine health and the questionable effectiveness of this management tool. Despite leading some orchardists to question ZESPRI's actions, the perceived problems with the TasteZESPRI programme did not encourage orchardists to support the efforts of Turners & Growers to challenge the single desk marketing status of ZESPRI.

An interesting ongoing development involves the introduction of new kiwifruit cultivars in the near future. The orchardists' responses to the promotion of new cultivars, especially as replacement for existing Hayward (Green) vines, could roughly be divided into four groups. The first consists of orchardists who are eager to try new kiwifruit cultivars, seeing these as an exciting development in the industry and as an integral part of the pleasure they derived from growing kiwifruit. A second, less excited group are committed to investment in new varieties as a necessity given the competitiveness in international markets and the desire for the continuity of their orchards. For a third group, concerns about the financial impacts of the three year reduction in income while the re-grafted orchard regains productivity limits their enthusiasm about the new cultivars. Most in this group do, however, indicate a willingness to use the new varieties. The final group is generally reluctant to adopt the cultivars because of their uncertainties about management practices, the likely success of new products in the market or the legitimacy of the breeding program. These attitudes reflect the range of differentiation in the orchardists' approach to innovation. A small number articulated a more conservative approach of "holding on to what they know and what works", while others tried to stay at the forefront of developments. Overall, kiwifruit orchardists had access to a number of different sources of information, which they eagerly apply to their practice. ZESPRI and the pack houses play an important role in keeping orchardists updated about the latest developments.

As a response to rising input prices, the majority of orchardists did not employ cost reduction strategies or low input policies, which were seen as likely to result in poor orchard performance in the short and long term. This is the opposite approach of that identified for sheep/beef farmers in previous research (see van den Dungen, et al. 2011), where a majority of farmers adopted low input policies and reduced costs to mitigate the impact of lowering income. In order to combat decreasing kiwifruit prices, orchardists employed a range of strategies, including the embracing of new varieties, diversifying into other agricultural or orchard tourism activities or engaging in off-farm work to produce cash-flow for the orchard.

GLOBALG.A.P certification was mostly seen as a bureaucratic audit that, while not favourite aspect of orcharding, just had to be done. A few proponents claimed it had increased their awareness of potential problems or dangers associated with management. Others largely perceived of it as a good means by which the industry was able to increase traceability of the product. Several claimed that they only complied with the audited because it was a required practice if they wanted to export

their product. A small group of orchardists voiced more directly negative perspectives of GLOBALG.A.P certification, arguing that the audit went “over the top”. Altogether the majority of orchardists seemed to have accepted GLOBALG.A.P as part of standard orchard management practices, which could be delegated to another family member or a paid consultant to do the paperwork if necessary. As was the case with sheep/beef farmers, kiwifruit orchardists were not positive about the introduction of RMA consents and associated new rules and legislation although it was generally not considered to have a major impact on their management. Besides an increase in paperwork (mentioned mostly by sheep/beef farmers), a few orchardists noted a shift in the council position from past support and empathy for agricultural activities to “townie sympathizers” causing conflicts resulting in fines and extra costs.

The retrospective interview confirms the positive perception of the KiwiGreen programme that has been identified in previous research (Rosin et al. 2009; Campbell, Fairweather, and Steven 1997). Orchardists recognize the value of the scheme, are positive about the shift to ‘softer’ sprays and accept the involvement of pack houses. However, several incidences involving problems resulting from (perceived) inappropriate pest thresholds and timing conflicts in regard to monitoring and control activities, all of which are likely the result of an unfortunate individual in a pooled monitoring situation, were recorded. Another negative comment regarding the KiwiGreen scheme involved its potential to limit the distinctiveness of organic kiwifruit in the market (predicted by Campbell in 1997). Despite this challenge, many organic orchardists praised the change in mindset away from calendar sprays and harsh chemicals that the scheme promoted. GROWSAFE certification and Health and Safety requirements have been introduced over the years and are now an accepted part of orchard management. Most of the orchardists were content with the current structure of the schemes, which are seen to contribute a positive increase in awareness about spraying and employer safety issues, respectively. Only one orchardist was critical of OSH, making a strong statement that “checking systems don’t make up for having good practices in the first place”.

Droughts, frost and hail were only mentioned by a few orchardists as drivers of change. Orchardists appeared to have the capacity to control and manage climatic extremes to a high degree with strategic investments in frost protection systems, irrigation and nitrogen spraying. This is in accordance with previous research (Benge 2006) where very few orchardists identified environmental constraints. In addition, a range of technological innovations such as HiCane™ in 1985, have enabled orchardists to overcome the impact of irregular winter chilling on vine productivity. Orchardists did, however, emphasise concerns about public health and consequently public pressure in relation to HiCane™ spraying. The majority of orchardists seemed to be anticipating such public pressure by investing in low drift nozzles and informing their neighbours when they were spraying. Although only mentioned by a few orchardists, the introduction of ultra-fine mineral oils was a very important step in scale management for organic farmers in particular. From the orchardists’ perspective, varroa mite issues have mostly been solved and Fuller’s rose weevil seems to be under control.

5. Conclusion and Future Research Directions

5.1 Conclusion

This preliminary analysis of the retrospective interview with kiwifruit orchardists in the ARGOS project has purposefully focused on providing a primarily descriptive overview of narratives of transition they provided. The overview of orchardists' response and management adjustments was further structured according to key drivers of change within a standardised timeline. This approach highlighted the fact that orchardists are exposed to an ever-changing environment of internal and external drivers and that their response to such drivers is characterised by great diversity. Key drivers identified by the orchardists included the kiwifruit market crash of the early 1990s, the implementation of TasteZESPRI and the recent introduction and promotion of new kiwifruit varieties. The orchardists' representation of their response to the kiwifruit crash provided a relatively uniform transition in comparison to more recent drivers. Those who had experienced the crash as orchardists provided a shared narrative of perseverance and survival involving short-term reduction of costs (including the postponement of orchard activities such as pruning) and short- and long-term engagement in off-farm work to generate cash flow. The crisis is also commonly viewed as the origin of the successful KiwiGreen programme, which introduced less chemically intensive pest management strategies.

By comparison, recent ZESPRI policy in response to changing market conditions in regard to the taste qualities of kiwifruit and the timing of supply elicited more divergent narratives. A large group of orchardists agreed with the principles of the TasteZESPRI initiative which was intended to promote the delivery of better tasting kiwifruit to the market. The use of dry matter percentages as the basis for a large portion of the current payment structure was, however, more contested. The lack of clear and proven management practices that increased dry matter in fruit and the reluctance to trunk girdle can be listed as the most important reasons for negativity. For several orchardists, the extent of financial incentive left little alternative other than to utilise unproven and less palatable management practices. The very recent introduction of new varieties has introduced additional uncertainty to what had been perceived as a safe and secure agricultural investment. The orchardists are responding to this in various ways, ranging from those who are proactively in the front line and eager to engage the challenge to those who are more reluctant to be exposed to the inherent uncertainties (financial, management or skill) associated with an unfamiliar crop.

Although many orchardists felt that they were pushed into ZESPRI's schemes without viable alternatives, they continued to support the organisation's role as a single-desk exporter. For example, despite having further potential to challenge ZESPRI's legitimacy, orchardists seem to have adapted quite well over time to the new bureaucratic audits such as GLOBALG.A.P that currently form part of standard orchard practices. Awareness and anticipation of public concerns show that orchardists consider themselves to be integral parts of the community, although they still perceive some negative bias in council decisions. Overall orchardists seemed to position themselves as members of the larger group that is the kiwifruit sector, rather than as individual growers.

5.2 Follow up research

This report provides the first step in the broader analytical framework established around the retrospective interviews within the ARGOS programme. It is intended mainly as a descriptive reporting of the external and internal drivers of change and responses mentioned by farmers in the

interviews. Subsequent analysis will be focused on a more comprehensive interpretation with the objective of providing theoretically informed explanations of farmers' response trajectories. This process will seek to determine whether the complexity of responses and strategies adopted by orchardists can, in part, be explained by such factors as orchard typology, life cycle of the orcharding family, level of debt, and regional differentiation using available information from the ARGOS database. In addition, the ARGOS research hypothesis that there are no differences between the management systems (Organic, Green and Gold) in how orchardists respond and act will be tested. The ARGOS National survey will potentially provide means to establish the alignment of the ARGOS participants' responses with the broader horticultural population in New Zealand and indicate the extent to which results and findings can be extrapolated.

In subsequent research, the impact of existing repertoires of capacity, skill and resources on farmers' response to drivers is expected to provide valuable insight to viable pathways for promoting change in management practice. As part of the knowledge building process, a decision support framework will be developed as a tool to assist stakeholders identify the most appropriate strategy to address sustainability issues.

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Appendix I: Quotes

- ¹ F: We certainly...um...put the wallet away for a couple of years...ah, the cheque book away for a couple of years. But...um...we were in a...a pretty...pretty good...we didn't owe anybody any money, so I think that's...that's...you know...that's why we sort of came through it. And we're...we had reasonably good production at that stage, so...um... There was no profit in it.
- A: Did you...yeah, did you lower your inputs at all?
- F: No, we didn't, actually...not a hell of a lot.
- FW: Not really.
- F: You know, like...things like...little things like...um...yeah, well...you know, expenditure...um...you know, improving things and that...we stopped doing. Little things like hedge-trimming, and that.
- FW: Yeah.
- F: So, we sort of...ah...
- FW: Delayed that for a year or two?
- F: Yeah...yeah. But it was only for a...you know, it was not a huge...period of time, actually...before we...you know, before the...the banks were paid back...and then...um...ah... (*Green orchardist*)
- ² A: So do you remember the whole, oh yeah we talked about all the different pack houses, I'm just thinking before the single desk [1.18.44] marketing was introduced, anything ___...
- B: Yeah I wasn't so much involved, I was just more in the growing of it involved rather than what happened afterwards, I know that the orchard where I was over the highway, it would've been in the '80s when everything fell over, we just didn't prune it for 2 years or 3 years, and then the last year I ___ [1.18.18] prune it because, I think they'd decided they had to do something, it was just going to go completely, you know, ___ [1.18.11] or not, bloody mad and so it was, that would've been in the late '80s, early '90s and things were just starting to sort themselves out again, well we actually did prune it again, but persimmons is what kept them going and they were, the guy I know is a surgeon in Auckland and so it was a tax (*Organic orchardist*)
- ³ B: Yes. In those initial years, because there was um, we looked at a low cost system which is why we went to t-bars initially, because it was a lower input, lower cost establishment, although ___ [15.30] they were established at that point. But it just seemed that if we were only going to be able to get this much money out of the market, the only variable was the inputs that we put in at the bottom. And so t-bars was the way we went initially to try and hold down our cost of production. And we tried to run it as low a labour input, so our pruning regime was minimal, we packed ourselves in those early years, because I had put up a shed to pack citrus and tamarillos as a cash crop with the citrus, so we had to grow a packhouse and a grader. So we packed our own kiwifruit on the basis that the more vertically integrated you could be, if you could grow it and pack it and send it to ZESPRI and market the local market stuff ourselves then that was saving ourselves 20 or 30 cents a tray, which in those days actually meant something. Today 20 cents is very little. Um, so it influences there um, yeah so it was low input, (*Gold orchardist*)
- ⁴ B: And then the '87 share market crash came and then we went through the crash in the early '90s of kiwifruit prices again, and um so yeah we've ridden out the ups and downs. Some of those peers that had bought new yachts and wives and orchards found that they weren't able to survive some of that rough weather that came along. We'd taken a more cautious approach. And um, well we did borrow to develop, but um, we kept it to a more manageable degree. We didn't sell land and then borrow a whole lot more to develop as a lot of people had done. We were just developing our own block, and we did some each year, and did if not out of income, certainly um at a rate at which we could service the debt out of income quite comfortably. (*Gold orchardist*)
- ⁵ B: Yeah, so probably during that '90s period when the kiwifruit were looking pretty grim we had an avocado nursery here. My son was running that. So we were selling avocado trees, and planting up and surviving. Because we could do that with very little expense really. (*Gold orchardist*)
- ⁶ C: Yeah...there were a few other things going...but we...we were only deer then...and we was getting very good prices ___ city investors that were using it as a tax dodge. Well, we were using it as a cash flow.

-
- A: Yeah.
- C: And so that affected us pretty badly as well. ___ coming out of deer, but...um...but that was cash flow ___.
- A: Yes, at that time.
- C: And we grew...we grew ___...we grew melons and...ah, you know...those squash...tamarillos...and all those sort of things to sort of...ah, get some cash flow. And...yeah, it was pretty messy for a couple of years.
- A: Yeah, so you diversified.
- C: Well, we had to...because...ah, property this size with no income is impossible. (*Gold orchardist*)
- ⁷ A: It seems...what...from...sort of leaning towards the late '80's and then into the early '90's again...was sort of a low period in...as far as price goes for...for kiwifruit. How did you...sort of weather that storm? Was that a...?
- B: Kept on looking at the dairy farm.
- A: Okay.
- B: Kiwifruit's never been a major...part of our income.
- A: Okay.
- B: It's always been a...a means to stay in an area we want to stay in. And if we get a good return, well that's a bonus. (*Gold orchardist*)
- ⁸ B: And, so you've really gotta be a very good grower, ah, with some reasonable yields and taste to try and, you know, stay in front. (*Gold orchardist*)
- ⁹ B: Well that was probably early '90s when it was, what, real down and that's when I then decided that I had to do something and I looked at organics, the return seemed a bit higher and that's when I changed really, and I've got to be honest, I changed for the money originally, yeah I couldn't see any point in saying where I was, oh I think it was about \$4 a tray or something like that, the returns were shocking but yeah, I made the decision then well I'm gonna have a go at organics, I can't see why it couldn't be done, yeah. (*Organic orchardist*)
- ¹⁰ B: And, ah, my wife was lucky she had a job in a shop in town that paid her cash ...
- A: Mmm, yeah.
- B: And, and I was growing beans, you know, for cash ... (*Green orchardist*)
- ¹¹ B: Well, yeah that's right, as I said, far from it that we had wealthy families to back us up, we've done everything by ourselves my wife and I and as I said, we worked 5 or 6 jobs at one stage, so we've done everything ourselves and haven't had to rely on anyone so it's been quite good in that way but no, still here today. (*Green orchardist*)
- ¹² B: And doing other little jobs, but, you know, anything to get through. Um, so we were virtually forced into a sale ... Um, during that Rogernomics time, so we did subdivide, sell, sold the house and then, um, we, and then we sold the, the, this part, so we could buy an orchard with a house on it ...
- A: Mmm hmm, right.
- B: But we sort of sold it in the, a low market but we also brought in the low market. (*Green orchardist*)
- ¹³ C: So, um...and the kiwifruit industry was in the doldrums in the late '80's and early '90's...and, um...you know, we had a big outlay here.
- A: Yes.
- C: And, um...you know, technically we were probably almost bankrupt at one stage, but...we sort of battled on, and...and at that stage, um...somebody asked me if I'd stand for what was the kiwifruit ____. And I did...and I got elected in 1991...which was the year of the big crash! (*Gold orchardist*)
- ¹⁴ B: See we were very, very lucky when we first started out because we had a, you know like, we were lucky that the prices were low when we came in, we had enough, we bought and sold a couple of houses and we made, through those times of high inflation in the late '70s, early '80s inflation was around 20% and the interest rates were even higher, we were able, like when we were buying and selling property and

land, the increase of value was phenomenal and you were able to make, you know if you were buying and selling and trading, and we were young and were able to do that, but that established us. And then, you know we bought this, as I said at the right price and you know, it just gives you, your equity just went from there to there in a very quick time and you know, then we did a bit of speculating, things were good and we sold the other orchard at the highest of the high, so it was just [...]

Yeah, it's your timing and how you went about things. It's not all luck, but you know, timing is everything, you know like, this was buying on a high, which I have done, I bought a house on the high but it's still there, you know what I mean, yeah timing is everything and it's a few basic business rules, you know sell on the high and buy on the low, it's not rocket science. But it depends on your circumstances and where you're at at the time and what you want to do. (*Organic orchardist*)

¹⁵ C: No, no...it was worse than that. It was...you know, I had to spend a lot of time on governance matters with the Board...and away a fair bit...but, um...we actually couldn't afford to have more staff...so I had to come home and...we used to stay all night...and all that. ___ do it...but, um...you know, later on it comes a bit tough. But, so we worked very, very hard...just to survive. And...you know, it was the same for their mother. And [my partner] too...she was...you know, ___ the orchard all the time...and she used to ___ driving a tractor and doing all those sort of things. (*Gold orchardist*)

¹⁶ B: To be honest, I couldn't tell you, we were sort of back in 1989, '90s, we were heads down, bums in working off orchard to pay back the kiwifruit marketing board money so it was mainly left to other people just to get in and get it done and yeah, to be honest, my management skills weren't as applicable as what they are today, that's for sure so to answer your question in short, no most probably not.

A: When you say to pay back the kiwifruit marketing loan, was this the payback?

B: Yeah, I can't remember exactly what it was, \$1.50 or \$1, but we had to pay that back, you know, they overpaid us, as you're all well aware of, so we had to pay that back, so I mean when our production wasn't huge anyway, so we physically couldn't pay that back, we had to ___, it was a while ago now so it's a bit hard for me to remember to be honest.

A: And you were able to pay it back over several years?

B: Is that right?

A: I don't know.

B: What do other growers say, I can't remember, I think it was only one season or two seasons, I can't remember. Yeah, no, yeah I would say it would be three years.

C: I got to interview one of the orchards yesterday that sort of, you know he wasn't happy that it happened that way but...

A: Yes, he seemed to imply it was very sudden wasn't it?

B: Yeah, I think how we paid it back from memory once again was that our payments basically weren't dried up and it was taken out of our pay structure...

A: It was taken out.

B: Yeah, and that could've only been a year to be honest, so we were actually left floundering with no money still trying to run the orchard etc, so things had to suffer obviously, you know. (*Green orchardist*)

¹⁷ B: Ah, repaid the debt, which was a pretty hard call for a lot of people, um, and then we've quality grown it to, back to where it is today. (*Gold orchardist*)

¹⁸ B: An adversity actually gives you a strength that maybe you can use further down the line. We certainly proved that case for us. And we didn't feel hard done by. Ironically in those days even when we were working like that, we were involved with maybe more people. Socially we were very active. And there was a battle going on, it's like fighting a war I suppose. You get the troops together, it's a good common cause, that camaraderie sort of stuff is there. So actually you're getting a good quality of life. You're getting something more out of life that you wouldn't have. When I think about it now, I've just thought of that. But yeah. (*Organic orchardist*)

¹⁹ A: Are you aware of any impact on what you ___ through the Government policy? Resource Management Act, the whole Growsafe thing's come out of Government policy.

C: No, I resent the resource management act. (*Gold orchardist*)

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- 20 Councils are probably our biggest issue. And again, I'll just use an example of a stock crossing on our dairy farm where the Council sent us a letter saying that we have to pay \$100 a year to register our stock crossing. No consultation. Just made a decision that stock crossings, even though they'd been used for years and there were no complaints, there was no reason for them to come and talk to us. But they just put a regulation in place, a by-law saying all stock crossings had to be registered and we would have to put down a mat or wash the road down after stock had crossed the road. And when we discussed this with Council, they said "Oh well you know, this is the year 2010. You can't just walk stock along the road. You've got to move with the times." And we said "Well we're still doing the same thing we've been doing for years, and there are no complaints." "No, we have decided that people shouldn't have to get cow shit on their cars because live up and down the road." Now 10 years ago when we put that stock crossing in down there, I talked to the Western Bay Council guys and we did a report and we spent a heap of money on getting it right, and straighten the road and put in lights. And I said to the guys then "What about the neighbours up and down the road?" and he said "If they choose to come", this is the Western Bay guy. (*Gold orchardist*)
- 21 A: On what you've done...Resource Management Act, and...
B: Well, they keep...they keep using my credit card! Yeah, it has affected it...but that...I think probably more as a group than...than me personally. (*Green orchardist*)
- 22 And immediately we got a control for scale, a scale insect in those days was a big no no in the pack house. All the alarm bells went off. So I thought well unless there's a control and this failed, biologically we won't be able to grow it organically successfully. So as soon as they relaxed the importation or exportation of a few scale on fruit that helped. Those restrictions eased a bit and the ultra-fine oil was made available to control scale insects. And immediately that happened um I was into organics. I started the conversion straight away. So we've been organic for over a decade now. But I was a natural organic person to answer your question, but I don't have a beard and I don't wear the sandals necessarily yeah. (*Organic orchardist*)
- 23 B: Probably more difficult to get in and do a scale cleanup, but saying that, you know the scale problem has been horrendous over the last two years down there on that same block, and we're still running at 20% scale level. But that's... and I guess that's due to the KiwiGreen concept, because you spray to need now. So until you've got 4%, or whatever the trigger point is on scale, um then you can't spray. And so the packhouses don't monitor scale until you get through into January or somewhere thereabouts. And you do your first scale monitor and hello, you've got 20% scale. Well why didn't you monitor for scale two months ago? No we don't do that. We don't start on scale until January, the packhouses tell us. (*Gold orchardist*)
- 24 B: [...] no it was good. And with the monitoring, you know it's brilliant. It takes responsibility off us. We just pool for a monitoring and they go in there and tell us you know what we need to spray and it's great. And it's actually made it easier for us. All we've got to do is make sure we get the monitoring in at the right time, so the timing is important for us. But um that's the kiwifruit, in every aspect time is everything. (*Gold orchardist*)
- 25 B: Um, they don't, so I, I think one of the things that's been great for kiwifruit industry is having something like KiwiGreen ... Ah, I think that itself has been very good for the kiwifruit industry and the sorts of disciplines that teaches and encourages people to ...
A: Yeah.
B: Ah, get involved with, um, it's, but, yeah, it's, I, I suppose having the right kind of practices and, and cultures on, on orchard in the first place is what's key. It's not so much about the checking system ... Though sometimes it can bring about cultural change. (*Organic orchardist*)
- 26 And my criticism is with the marketer really, is they're not trying hard enough to satisfy those demands over there. They're not differentiating between the organic kiwifruit and the conventional green kiwifruit. Although they adopted that name 'green' because of the colour. But as it's turned out they bought into an environmental ??patent??. And so the customers over there, inadvertently I believe,

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- think it's a quasi organic fruit anyway. So if then the customer asked well what's this organic fruit, because we thought this KiwiGreen was organic, they have a dilemma. So they actually don't want that questioned. It took me a few years to wake up to really what the problem was. Why the marketer didn't buy wholesale into this organic stuff, because we represented only 3-4% of their sales. And we were damned well detracting from the value of this quasi green kiwifruit. (*Organic orchardist*)
- 27 I went over before Christmas and saw him and they keep sending different signals, they keep, about early start, you know the early start fellas are getting huge payments which we don't get, and they say about this dry matter that you have to have good taste and they say they've done all the studies about repeat buying, that you have to have good dry matter so they can repeat and they keep ramming us down the throat and I actually said to at the first ___ meeting a while ago, and I heard ___ well just about this time last year or a bit later and he personally said that he's been overseas and tasted some of the early start and it tasted, his words were crap, and I said up in a meeting and I said, you're telling us to do all this and then I said, I've heard ___ say it tastes like crap, you tell us that in one sense and then you go and tell us we have to have good tasting fruit for repeat buy, well I said if you're selling all this fruit off early, those fellas are never gonna come back and buy I said, I mean how do we know what to do and they agreed, but they do it for shelf life but then they keep telling us... (*Green orchardist*)
- 28 Apparently there is an area in the ??Matapay?? area which is usually early start, and a lot of that's not gone through. So you know, whoever's controlling the strings is sharing it about or something. (*Green orchardist*)
- 29 B: ___ up to me that they change it, I think ZESPRI's or single desk situation is the only way for this industry to go, same as the country. I can't see ___ ___ ___ doing anything else ... (*Green orchardist*)
- 30 B: It's interesting with Turners and Growers what's gonna happen. I mean there again, even though I mightn't be that happy with ZESPRI, I mean I still, single desk ___ is the only way. It's gonna kill it, I reckon, if they do open it up. (*Green orchardist*)
- 31 B: On the world market, we're quite small and so that's why we need to be together. You know, you go to a market, we are small so we need to be together; and then as I said, everybody would benefit for it. There'd be more money coming in for everybody; whereas it's the same with the sheep and beef and that sort of thing. Ok, you've gotta set up a proper system to do it; but it can be done It's been proved. ZESPRI have proved it. Yeah, so I'm happy with it. (*Organic orchardist*)
- 32 B: And, you know, I like the Dairy Board and ZESPRI [...] So I, I'm not a Turners and Growers fan at all. (*Green orchardist*)
- 33 A: So you approve of the single desk?
B: Ah, yeah...I do, yeah...um, not only because of...observation in kiwifruit...but, ah...you know, in the old days of the New Zealand Dairy Board and Apple and Pear Marketing Board...I think they seemed to work very well...um, and some of those boards...you know, like the Apple and Pear Marketing Board, have...I think the growers had...be probably...wishing they could go back to the good old days, when they had a single desk. (*Organic orchardist*)
- 34 Um, what decision do you make under de-regulation? I mean I go right back to the '80s there, Lesley, I can remember in one day six different agents turning up at my boss's place offering six different prices for the fruit on the vines. And he was tearing his hair out. Someone would come and say "I'll give you that" and Bruce would think oh that's better than the last guy, and at the end of the day he's going well the deal's gone backwards from when I started. You know he had six different offers to choose from. Well OK you could argue that's great, because it gives you choice, but it's not going to say which of those organisations is going to do the best job for doing a good job and selling it for you. (*Green orchardist*)
- 35 I was um, quite young and I wasn't really following it, but I did pick up a lot from conversations with my parents and grandparents of what was going on, and it was just a mess. It was a nightmare. They

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- under-cut each other and basically it could have been the end of the kiwifruit industry really, if basically the individual growers, there's a huge resource of individual people up there that are very, very switched on. (*Organic orchardist*)
- ³⁶ B: Would certainly help...put it that way. But then again...they could come along and say to us, which they already have through your EurepGAP and your spraying thing and one thing and another, KiwiGreen. They can say, they say to you, you have to do it, otherwise we're not gonna sort your fruit. You got no choice really, have you?
A: And that seems to be the power of the single desk operator, isn't it?
B: Ah, for sure...for sure. (*Green orchardist*)
- ³⁷ B: I think they can improve there. There's too many players in the market. I don't all agree with this single desk; but I do not agree with having too many either. You've got to have that balance and I think they've just got too many there. (*Gold orchardist*)
- ³⁸ B: Absolutely. Yeah I've been that track with Turners and Growers and they're a bunch of lying... I can't really say that word. [Laughs]. ... yeah, in my experience anyway. (*Gold orchardist*)
- ³⁹ B: I hope not too many people are believing the Turners and Growers lies, you know ... (*Organic orchardist*)
- ⁴⁰ B: You know, there again, it puts doubt in your mind, doesn't it? You gotta think, ah Jesus Christ...we got these jokers running the show, and he hasn't a clue. You know, it's all right to say...ah, just forget about it...you know...so...no...no...you know, well that's our bloody living. (*Green orchardist*)
- ⁴¹ B: Oh yeah, I'm quite happy the way it is now, I get a bit nervous about Turners & Growers having a go; and that will bugged us, yeah, if that ever happens. I can just see where it will fall over. You cannot have someone else trying to sell them to say, Japan, at the same time and get the same returns for the growers. (*Organic orchardist*)
- ⁴² B: Quite exciting. There are some uncertainties in the industry, though, at the moment. I definitely wouldn't be rushing off and buying anything until I hear the outcome of the court case with Turners and Growers. [...] Because...I wouldn't know whether other people are mentioning that; but, I see that as seriously destabilising...and, ah...very concerning...not helpful at all...last thing the industry needs now. (*Gold orchardist*)
- ⁴³ A: And have you used girdling?
B: I don't believe in trunk girdling whatsoever.
C: We have done it twice under pressure.
B: Under pressure.
C: Two years apart. But we haven't done it for three years I think.
B: I can't see that that's doing the plant any good whatsoever. You're ring barking the tree in other words, so that's how you kill them. No, I don't really... Yes, you might get a slight increase in your dry matter. I don't think that we got a great increase in the dry matter. And we actually lost some plants that we've had to replace. Whether you can say that's down to the trunk girdling or not I don't know. But I think there is a possibility. (*Green orchardist*)
- ⁴⁴ C: Which we're being forced into because they're paying premium for the taste now which forces you to do things like that which people like us have done for the first time this year...
B: I double girdled.
C: We resisted it, we resisted it and we resisted it because we didn't think it was good for the vine and we were concerned about how it would affect the fruit but at the end of the day we had to do it because such a high component of the price you ____ dry matter... (*Green orchardist*)
- ⁴⁵ A: And...so you girdle as well, or...?

- B: Yeah...although we've...like many growers we sort of...we've...ah, slackened off a bit...um...I did a trial this year of...one ___ was only cane girdled...not trunk girdled...um, because...with...you know, with the vines losing vigour, etcetera. So...but without it...'cause we have a problem here, producing fruit with...with average weight as it is...and without some form of girdling, then we've...ah, then we're...you know, we're in a real trouble with the weight. So we...so basically we really have to use...we have to girdle...um, whether it be cane girdle or trunk girdle...um, otherwise our fruit weights are just far too low...in this location. (*Organic orchardist*)
- ⁴⁶ A: Oh, and I guess another, um, ah, what, another means of encouraging change ___ ___ ___ is, uses is, ah, through their, sort of their financial incentives. I guess most recently it's been around, ah, taste and dry matter
- B: Yes, yes.
- A: How, how do you see that type of, ah, is that, do you see that as positive way to encourage change or?
- B: Yeah, yeah, well, you start with, um, ugh, your winter bud, so you start with, um, with your number of fruit ... And, and those fruit you want to get them up to the biggest size you can ... And, and the best taste. I think the, the, um, the negative side of it is we're, we've been trunk-girdling ... And the trunk-girdling, um, I'm sure is having affect on, on the size, ah, shape of the fruit ...
- A: Oh, right, OK.
- B: And, and we're getting a lot more flats and fans that what we're used.... So, um, pushing the taste is, is making people trunk-girdle ... Which is, which is, ah, adding to the cost of thinning.
- A: Ah ha.
- B: So, if you could get it, if you could, if there was some way of, of getting your taste up without trunk girdling ... it would be a, it will benefit. But, um, it's, yeah, it is a, the sort of a third part of the equation for your payments ... So, and taste, ah, numbers, um, size and then taste.
- A: 'Cause I know some people suggest that sometimes, you know, it works to get people to change ... Because obviously people respond to, ah, the pocket book in some way ... But I, I guess some people also wonder if it perhaps doesn't, um, focus almost too narrowly, ah, on one aspect of the fruit ... Which perhaps means that you neglect something else with the, with the management. Do you think that is a potential danger there as well or?
- B: It's, ah, yes, um, well, we're focused on fruit numbers to start with ... Fruit size and then the taste, so to get the taste you really need, you know, to get the best benefits is to keep the canopy open, so you've gotta spend the money on your summer pruning. Keep your canopy open, so the sun gets in. Um, but of course if you're a bit tight your summer pruning might get neglected ... to your detriment affect of, of, um, of a TZG. So, that, I don't know whether that answers your question.
- A: Yeah, well, yeah, no, it, it gets there, so it's fine.
- B: Yeah. So, yeah, yeah, well, it all depends on, on, on the amount of money available for certain jobs ... So if you haven't got the money you can't do your summer pruning. Um, so that, that I feel is not a way of getting your, your, ah, taste up by keeping a nice open canopy and you could possibly do away with your girdling. But if you haven't got the money you're reverting back to the, your girdling ... 'Cause it's a cheaper option. (*Green orchardist*)
- ⁴⁷ B: So...and philosophically, I think it's a good way to go. Certainly...you know, it's no good producing fruit...like the apricot industry...apricots...you look at them in the shop...well, I...the ones I've bought have just been rubbish. They look brilliant on the shelf...and you get them home...and eat them...and it's just mush and...sort of cardboardy...and there's no taste...and...you know, I think...well, what's the future of an industry like that, if that's the experience the consumer has. The future...you know, as well as for kiwifruit...as well as being in new cultivars...is in producing a good taste experience. And to me that's a no-brainer. And therefore it's a no-brainer that you've got to reward...people who produce the right...quality in the fruit...yeah. (*Gold orchardist*)
- ⁴⁸ You know, we were growing fruit that tasted like potatoes, but were big...just by pouring growth promotants onto them. And, ah...you could do that, but...um...there was actually...had some other positive spin-offs by the move to higher dry matter...in that we're actually getting bigger crops than we used to...through the use of girdling and...yeah, that must be the biggest change that...probably dry matter incentives brought out. I don't know how long we can girdle them before we kill them, though...that's another question. But we have had some fantastic crops...since then. (*Gold orchardist*)

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- ⁴⁹ B: Actually...to me...I don't understand these things. It used to be...worked without it...these are...just we go for the brick level, you know.
C: Brix, yeah.
B: That's it. Brix level okay...that's...we pick. And now that's...___ I don't understand it...what's happening. I can't...I can't do that...no, that...that's a... (*Gold orchardist*)
- ⁵⁰ B: Probably not a whole lot. It was just something else that was too bloody complicated to try and understand but it just, how they derive the formula was you know, but I mean it was, I just worked it out just recently what I can't get here in, up here in size or volume, I make up in my taste price, like the base price I think for a organic kiwifruit is about \$8.50 or something a tray. The best I can do with the actual fruit is \$5.50 but then I'm always right up there with the taste payment so I'm sort of getting the base price anyway, but if I was getting the base price and then getting that taste price, then I'd be doing really well, (*Organic orchardist*)
- ⁵¹ B: No, I don't think I have, no because if you still haven't got the yield, you've got nothing and if you still have got small fruit, you need size too, so it's just weighing up that thing in between there really. But it's pretty tough really, it's a hell of a challenge because, so you still want size and in this area, that means you've gotta water quite a bit, now how much watering does that affect my taste, no-one can give you the exact answers. They tell you that too much watering does, but if you don't do enough watering, what size are you gonna get, oh yeah not sure, yeah. So you've still gotta look after the other parameters, yeah. (*Organic orchardist*)
- ⁵² C: Trouble is, we don't know exactly what...why it did it.
B: We did try a method...a way...but there...two methods...but we don't know which one was the right one...and it could be a combination of both. And...we just got one mature here, we tested...Saturday?
C: Last week...Saturday, yeah.
B: And...the TZG's up again. And they're one method we didn't do...this year. And, so the TZG's still up...ah, ___.
C: Maybe it was the other thing! (*Organic orchardist*)
- ⁵³ B: Don't really like it, no, because ZESPRI hinge a lot of money on it and I believe that it's not something that you can actually go out and do. What they say, to have a certain taste band, you cannot just go out in the orchard and you'll get that taste band. It's nature, once again, plays a huge part and as a grower, I find that hard to actually meet those goals that they set there when you actually can't, there's no written formula to do it, so I think it's actually, it's unfair, yeah. It can see what they're trying to do but is it achievable? And I'm saying well if mother nature has its way, you don't really know, see like, an example is this current season, all my blocks were at the top level, why, now we had a hot dry summer, we did our normal irrigation whereas any other year, you know mother nature would come along and drop a dollop of rain at some stage and it may not have been the correct period to affect the dry matter or whatever, yeah so I actually find that frustrating. (*Organic orchardist*)
- ⁵⁴ B: That's right, yeah and just set a parameter on the dry matter, you're dead right, yeah, I can see why they do that but as a grower it is quite frustrating to think well you know, all the comments we've had and the years we've been in it, yeah. (*Organic orchardist*)
- ⁵⁵ A: And so it's more a matter of what, in your particular experience, do your dry matters just sort of fluctuate quite a bit?
B: All do fluctuate, average amount I'd say fluctuation, we try the different things that ZESPRI have recommended like their ??sincturing?? and ring barking and all that and I see now they're starting to back down on that already and I was actually very reluctant to take that up, so I've only done that in the last couple of years, this is the trunk girdling and that sort of thing, because my thought was well how can a plant survive when you do that to it each year. Well I believe now that some of the results are saying you can't, you know the plant is suffering, which to me was something logic, so once again, you see that's why I find that whole dry matter thing quite frustrating. (*Organic orchardist*)

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- ⁵⁶ A: The whole dry matter issue...how's that been for you...and how's that impacted on what you do?
B: Ah, yeah fortunately...yeah...and I've...I think it might be partly location as well ... we tend to have quite ... probably higher than average dry matter. And I can't really put it down to any management particularly.
A: [laughs] You're probably more honest than some!
B: Ah, yeah so...we've been doing...um, probably quite well with the dry matter. But this year...well, this year's a very...is a high dry matter year, but our...our trunk ___ fruit was point 86...which is huge. And even in ... We're usually an early start orchard, and we're usually a little bit higher than average, at that time of the year as well. So the dry matter price has been probably a benefit. (*Organic orchardist*)
- ⁵⁷ B: Certainly brings your dry matter up. So it's just a fantastic tool for us, of course we don't know what it's doing to the root system but I've been doing it for now five years and things are still pretty good, so touch wood, it won't be a problem, a lot of the Japanese fruit growers have been doing it for 1000 years, so it can't be that bad. But some growers do it two or three times a year which I would be reluctant to do that, but once again, they're still going. (*Organic orchardist*)
- ⁵⁸ B: Yeah, the way that a payment system's set up is for dry matter, you gotta chase that dollar you know, and if you don't, well you don't get paid so you have to go with whatever's happening at the time, you've gotta go with it otherwise yeah, like girdling and yep, you've just gotta go with it. But you've also gotta sit back and look at the on orchard as well, like doing two trunk girdles in a season, is it sustainable for that particular plant, can it handle it and one year you might only do one and the next year, nah I'm only gonna do a can girdle, you know you've gotta look at your plant health as well and what that plant's ___ the last season, so yeah you've gotta be more adaptable to what you do. (*Gold orchardist*)
- ⁵⁹ We got into trunk-girdling extremely early as well...ah, through Basil Crook at Katikati...I don't know if you know that name...he was one of the first to do it in Katikati. So I spent an afternoon with him and...had a good old chat and a look around and that sort of thing. So, in the past this orchard did have quite high dry matter, but it was low yield, so it was very easy to keep high dry matter with low yield. And so, when yields started climbing, our dry matter started reducing. It's also a relatively vigorous orchard, especially late in the season after usually a bit of a cold ___ early on...the vines take off later in the season, so trunk-girdling actually was a godsend for us. It reduced at least one round of quite expensive summer work ... (*Gold orchardist*)
- ⁶⁰ C: Yeah that's our biggest fear, especially when you've got, the other part you've got *Armillaria* which compromises your plants anyway and often you don't know that they're sick until they tip over so the last thing you want to be doing is going around double ring barking the plant so it could be sick anyway, so he certainly doesn't do them, the ones that he knows aren't very good anyway, and that's one of the reasons we avoided doing it as well because you know, we don't want half the orchard to die. (*Green orchardist*)
- ⁶¹ B: It's had very little impact on the orchard. It's had an impact on what sits around my desk...um...pretty much a paper-shuffling exercise in having all the right little bits of paper when the inspector comes. If your orchard was a bit sub-standard, there would have been things you had to do on your orchard to right them. But a lot of that's good sense anyway. You don't want bits of wire hanging down, where children get poked in the face with them, and...um...you know, you wanna have a toilet where the staff can get at them and wash their hands, and...ah...it's ___ agricultural practice where it answers most of the concerns of the...ah, if you've got a substandard block with poor facilities, then you might have had to make some changes... but otherwise it's a matter of keeping the right paper. (*Gold orchardist*)
- ⁶² B: That's what it did...become some...so there is...you know, you're finishing with a lot of paper to work around with GLOBALGAP, but...um...it's imposed by our markets, so...if we wanna sell fruit, then we've had to ___ off and get on with it, really. (*Gold orchardist*)
- ⁶³ It's not designed to be a big brother type thing, it's to make as much, it's to make you aware of how you're doing and if you're aware of what you're doing, then you're more likely to be doing it properly,

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- and it probably did more good than it was negative or neutral, for me it didn't make much difference at all. (*Organic orchardist*)
- ⁶⁴ B: Oh just I don't have to spend so much time on it now. Everything's in place from the first year, like I've separated spray sheds and fertiliser sheds and all my signs up around the place and my fire extinguishers in the right places, and everything's set up for it, but yeah I don't see how a European consumer needs to know that I've got a sign telling my workers how to wash their hands in every detail, you know that's just bureaucracy for you. And we don't really need it in any industry you know, it's not helping. It's just a big sucker gone down the toilet as far as I'm concerned. And um at the end of the day, the only thing the Europeans really want to know is there's no residue on the fruit, and we're doing that yeah. And that's only one little piece of that folder. No I don't like it. (*Gold orchardist*)
- ⁶⁵ B: Well it's there, it's in place, you have to do it otherwise you're not gonna export your fruit so, we were pretty good in the first place anyway, we never really had any issues with it at all, as long as it doesn't get to the ridiculous ___ it's fine, you know, it's keeps growers involved, make them more aware of what they're doing and how they're doing it and so no, it really hasn't been an issue for us, no. (*Green orchardist*)
- ⁶⁶ I see the kiwifruit industry in New Zealand is a leader. And he said, he told me you're not wrong [...], he said the rest of rural New Zealand have got a lot to yeah, we're being the leaders in change to the kiwifruit industry when it comes to chemical management. (*Green orchardist*)
- ⁶⁷ So yeah, it comes right back to that, as I said, there's that GrowSafe, the GLOBALG.A.P, it's made us more... we know what to do, what's right, then I'd say we're probably, the horticulture industry is probably at the forefront of that. With our minds... OK there's always going to be bad growers that are going to dump chemicals somewhere, but I'd say the majority of us, it's brought us um, I can talk to a lot of growers here and we'll say oh we did this 30 years ago, but we now know it's not acceptable to do, you know what I mean? (*Green orchardist*)
- ⁶⁸ B: More safety conscious...and more...
C: Paperwork-conscious.
B: Yeah.
C: Keeping records...tightening up on your record-keeping and...
A: Keeping records, okay.
B: Yeah...basically. (*Organic orchardist*)
- ⁶⁹ Also had a look and said ___ new variety of field days but we're not really in the right position for it here (*Organic orchardist*)
- ⁷⁰ A: How about the I guess the question we didn't really ask, what, ah, with the new variety is that something that you look at at all?
B: We did, yes, we did look at that and, um, and the two blocks down the back, um, ah, E and H ... G, H, G and H, um, would, would suit new varieties ... But financially we just cannot really afford to go into it ... 'Cause we still need the production to, um, to, to pay the debt.
A: Yeah, yeah.
B: But, um, we, we are seriously looking at it, not, not this coming season but next year. So, yeah, if we can afford to go into a new variety we will. (*Green orchardist*)
- ⁷¹ I've got no land and I don't have the ambition to go and buy more land to try a new variety. I'm still working on improving what I've got here. (*Organic orchardist*)
- ⁷² A: And again, that sort of follows that...the line of the...the diversification that...is that...sort of...in order to diversify your income...is...that's...?
B: Ah, yeah...a challenge.
A: A challenge as well, okay.
B: Yeah...yeah...challenge. It's quite exciting times, actually...for the kiwifruit industry. (*Green orchardist*)

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- ⁷³ A: How about the I guess the question we didn't really ask, what, ah, with the new variety is that something that you look at at all?
B: We did, yes, we did look at that and, um, and the two blocks down the back, um, ah, E and H ... G, H, G and H, um, would, would suit new varieties ... But financially we just cannot really afford to go into it ... 'Cause we still need the production to, um, to, to pay the debt.
A: Yeah, yeah.
B: But, um, we, we are seriously looking at it, not, not this coming season but next year. So, yeah, if we can afford to go into a new variety we will. (*Green orchardist*)
- ⁷⁴ C: And I mean, it's in our best interests to keep it up to its optimum...'cause if you ever wanted to sell it...you know, it's gotta be at peak performance to get a good price.
B: So we are keen on the new varieties...for sure. (*Organic orchardist*)
- ⁷⁵ A: So you're fairly keen on moving into the new varieties?
B: Yeah, I wouldn't go completely, but I'd like to get some. We've got three hectares, well two and a bit of gold and half a hectare of the G14 green hybrid here. And we've got another couple of hectares of entitlement to come out of this planting here. So that would then give us um, five or six hectares of new varieties and we might buy some license and convert some of our existing... but I think I'd still like to have a chunk of Hayward at this stage. It's an expensive exercise moving into the new varieties. (*Gold orchardist*)
- ⁷⁶ Um, but I do think it's a bit of a red herring. I think they've hung this one, well the third one was that they can do so much green at the present moment, and if they can get people to graft across the green, it will take the pressure off the green. (*Green orchardist*)
- ⁷⁷ B: [laughs] The problem with...with doing that sort of thing...if you try and cut corners, it bites you in the arse. For instance, pruning...um, trying to miss out on a prune...or delay a prune...or...or thinning...um...which would be your two main costs, I imagine...um, fertiliser input...we always do the...you know, we don't scrimp on that...sprays we don't scrimp on. It's a thing, if...ah, yeah...has to be done. You know, you can't really cut corners. It'll hurt you eventually—worse in fact, double it, you know. Like a thinning, if you don't do a round of thinning, then, you know, you get kicked in the shed. (*Green orchardist*)
- ⁷⁸ B: And I mean, the same with the work, you can't do the pruning or thinning if you're not gonna make ___ 'cause it's gonna hit you in reverse and then, it'll be even worse, so you've still gotta do it. (*Green orchardist*)
- ⁷⁹ A: ... so as a response to economic change, which of the following management strategies have you considered and which have you adopted? Have you ever considered or adopted a low input policy?
B: No, no, we tend to be more high input rather than low input. (*Organic orchardist*)
- ⁸⁰ A: OK, as a response to economic changes, which of the following management strategies have you considered and which have you adopted? Ah, low input policies?
B: It doesn't work.
A: OK. Ah, so either increasing or decreasing the, oh, sorry.
B: Everywhere I've tried to save a dollar has come back to bite me on the backside a couple of years down the track.
A: [laugh] OK, yeah. So you tend to?
B: Look, I tell you what if you're gonna go broke go, go broke doing it well. Ah, if you go broke by cutting corners everybody out there will tell you why you went broke. (*Gold orchardist*)
- ⁸¹ B: Ah, you just have to tighten your belt up a bit and...have to be careful...for what reason...you know, we're not getting a lot of money for what...our returns at the moment...for what we're putting into it. (*Green orchardist*)

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- ⁸² B: No I don't think it's mainly the recession. I think a lot of it's down to the recession. I think a lot of it is down to the fact that the returns for green kiwifruit in particular are very low.
- C: We don't think really that the green growers get a fair deal. Um, a lot of the, well the original money came from the green, and it's been promoting the gold. (*Green orchardist*)
- ⁸³ But with six people doing everything, some people would prune brilliantly, others have pruned roughly, and the other way I was looking at, because I took \$10,000 out, I actually matched the packhouse quote, so I took \$10,000 out of the budget, this year I was looking at taking \$6,000 out of it, and that would be through me doing no pruning. No pulling out. I was looking at just marking where the cuts were to go, so I didn't physically and mentally exhaust myself. I was working with a builder's crayon actually, just going along and marking where the other person's cutting. But that's about it. That's as efficient as you can get. (*Green orchardist*)
- ⁸⁴ A: And so...the shift from dairy into kiwifruit...was largely because...?
- B: Lifestyle. (*Gold orchardist*)
- ⁸⁵ We have a very attractive environment to live in, and we host a lot of ZESPRI media tours and so forth and marketers come here as much as perhaps for the market to present the environmental type aspect of an orchard. So yes we go out and we look at the canopy and the fruit and all that sort of stuff, but it's the ambience of the place here that seems to capture people. We have the meal outside on the courtyard and that sort of stuff. So it's used as a bit of a marketing ploy. (*Organic orchardist*)
- ⁸⁶ A: So, in that sense I guess you would say that the management that you do on the orchard is largely...
- B: Lifestyle. (*Gold orchardist*)
- ⁸⁷ C: I think if you were younger and you could do a lot of the work yourself, but when we came here there was plenty of money to pay people and there was a little bit left over which was all we really wanted. We didn't expect to make a fortune. (*Green orchardist*)
- ⁸⁸ B: Um, yeah, a lot of that, that labour side of it's handled by the orchard manager. And, so it's kind of made it a bit easier too, and given us the lifestyle as well. You know, we'd be out pruning all the time. (*Organic orchardist*)
- ⁸⁹ So, I mean I've never really thought about...I mean, if somebody came in tomorrow with the right dollars, it would be his...in that space. But it would have to be the right dollars. But I've never really thought about it...no. (*Green orchardist*)
- ⁹⁰ A: So, in that sense, as you're saying, it would be easier for you perhaps to give up the orchard if the finances weren't right now than at an earlier period when you were still more involved with it.
- B: True. Whether it's converted back to grass or whether it's just to sell it to someone else that might want to take it on. Yeah, I wouldn't feel a great sense of loss at all. (*Gold orchardist*)
- ⁹¹ B: In a few years, when this probably develops. [I'll] go do something different.
- A: Right...yeah. So...so this is...yeah, so it's...you're looking at...
- C: ... this is like having an income, but still being able to relax more, and do things; and know that the money to keep doing what we wanna do sort of thing, but...
- A: But you don't see yourselves here until you're...?
- C: No...no.
- B: Things can change. (*Green orchardist*)
- ⁹² A: Do you feel as an orchardist, do you respond to, what, some of the community concerns in some ways that impact on management practice?
- B: I guess it's a fairly simple example: as I explained, we were running helicopters for, ah, frost control ... Um, but the neighbours complained and they threatened to shoot the helicopter out of the sky [group laugh], and I knew these guys probably would, might even try and do that. So we very quickly, that's

why we ended up spending \$100,000.00 and putting water systems in. Now I don't regret having done it, but make sure we had to do it in a hurry. (*Organic orchardist*)