



Summerfruit business plan

NZIER report to Summerfruit New Zealand
May 2016

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NZIER was established in 1958.

Authorship

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Key points

The aim

- this business case sets out how the summerfruit industry can achieve its aim of achieving \$250 million worth of sales in domestic and export markets.
- it is based on interviews with industry participants, past industry performance, informed consultants and our knowledge of relevant business strategy and economic analysis.

The problem: The status quo will not cut the mustard

- the current approach to strategy will not achieve the desired growth over the next twenty years. The following table shows why.
- Under current business approaches the industry will be dominated by cherries.

Performance under the business as usual scenario

All markets business as usual (BAU) projection

Summerfruit	2015	2035
Apricots	12.2	16.8
Cherries	66.3	107.2
Nectarines	12.7	14.0
Peaches	12.6	13.9
Plums	8.4	9.3
Totals	112.2	161.2

Source: SNZ and NZIER estimates

The industry-wide growth strategy offers the best opportunity to meet aims

Three strategies were examined to understand how the summerfruit industry could reach its stated goals.

- Option 1: Business as usual. Option 1 provided a steady as you go approach which did not provide a compelling case for industry development. There is also substantial risk that part of the industry will form their own grouping
- Option 2: Partnership with a local or foreign multinational. This approach hinges on picking the right partner. The risk is that over the long term the aims and objectives of participants will diverge. This is likely to greatly disadvantage summerfruit growers
- Option 3: Industry-wide growth strategy. Option 3 offers the best potential for summerfruit to hit its growth targets. Since innovation is unpredictable, focusing on aspects of the marketing chain offers the best chance to maximises success.

Growth potential

The market has no favourites. Therefore, it is vital that the industry wide growth strategy is broad enough to focus on the total marketing chain and all summerfruit. The business strategy anticipates this and seeks to build a growth plan that encompasses the whole industry. The following points can be made on growth potential:

- to achieve \$250 million worth of sales by 2035 the summerfruit industry needs to achieve sales growth almost double the levels forecast without action
- the increase will require both a massive increase in the production of orchards through the use of more intensive planting systems in tandem with the expansion of premium export markets (supported in some cases by the development of new fruit varieties) to ensure that the increased production increases grower returns
- individual summerfruit crops are at various stages of readiness to make a step-change in production and export sales:
 - cherries appear to already underway with export sales expanding consistently over the past five years and adoption of intensive growing systems being adopted by growers
 - apricots are at an earlier stage with export markets having plateaued but new varieties ready for launch and some consideration of the potential form of more intensive growing systems
 - peaches, nectarines and plums are least ready for a step change in exports with most production sold in the domestic market, some research underway on new varieties and limited research about the potential for more intensive growth strategies
- the summerfruit growth strategy seeks to address the challenge of creating viable export led growth for all summerfruit types. However, over the short period covered by the strategy (compared to the lead times for change in the sector) will mean that the results of the strategy are likely to be seen first for the summerfruit crops that are most ready for growth.¹

Implications of choosing the industry-wide growth strategy

- **Who should lead?** Summerfruit NZ has a major role in developing, coordinating, and being responsible for any new initiatives that seek to improve industry growth
- **When to cooperate and when to compete?** The test for industry cooperation occurs where a project can provide long term durable gains for industry participants: “a rising tide raises all boats” effect
- **What type of projects?** The object is to develop a portfolio including post-harvest, on-farm and support projects
- **Why is this the right pathway?** It maximises chances of success by:

¹ In most cases – but not all – growth will come from export markets.

- developing an innovation programme which incrementally improves growth prospects
- requiring clear feedback as projects proceed
- developing a spread of projects (since innovation can come from anywhere),
- careful management
- actively seeking research partners.
- **Where will the money come from?** Through the Business Growth Agenda, government has signalled that it is a willing partner to further develop land based industries. There are a number of different funds that the summerfruit industry can tap. These should be fully explored, particularly those which allow industry-led research and development projects e.g. Primary Growth Partnership Fund (PGP) which can provide 40% of research costs
- **Which projects can be partly funded by PGP?** Government has signalled that they are looking for industry to put together PGP projects right along the value chain. In the first instance the specific (orchard gate) projects on apricots should be advanced but other projects post orchard gate can be generalised to all summerfruit (e.g. seafreight and competitor analysis – see Table 5)
- **How will the benefits be delivered?** The projects are geared towards the medium and long term and focused mainly on exports price and volume increases. An illustration of how the benefits will be delivered is set out in Figure 16.
- **How will the risks be managed?** Risks have been managed to ensure:
 - projects span the value chain from market analysis through to better ways of combating bacterial diseases
 - projects do not drift. This might even require rethinking some of the projects as new research information emerges
 - that feedback loops are in place so that advice can be disseminated quickly.

To inform the business plan requires accurate and reliable data. It is vital that industry participants respond to the regular (and one-off) requests for data in a timely fashion. This will enable the business plan to be updated and also allow smoother adjustment to new developments along the marketing chain.

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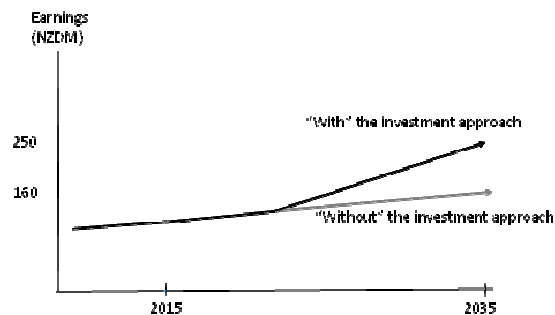
Summerfruit is a \$250 million p.a. industry by 2035



THE SUMMERFRUIT NEW ZEALAND
EXPERIENCE IS ABOUT

Premium products All natural Unique climate A committed industry

TAKING AN INVESTMENT APPROACH WILL INCREASE ANNUAL EARNINGS



Source: NZIER

PROJECT AREAS

1. Markets
2. Supply chain management
3. On-orchard management
4. Technology transfer

INTERNATIONAL TARGETS



PGP ALIGNMENT

Aligns with government
priorities under the
Business Growth Agenda
and
Regional Development
Objectives

1. What is the business need?

1.1. The vision

The aim is to achieve a \$250 million industry by 2035.² The purpose of this business plan is to identify the key changes required in the industry to achieve this objective and to suggest initiatives that would enable this objective to be achieved.

To develop its own business plan Summerfruit New Zealand (SNZ) will need to consider what contribution it can make to facilitating those initiatives and where it can add the most value.

Trends in summerfruit production and sales over the past 10 years suggest that the industry will only achieve about two thirds of the targeted \$250 million by 2035 and the growth that could be achieved will be dominated by cherry exports. Based on research into new varieties and existing export markets, apricots are the fruit type with the strongest potential to bridge the gap between the forecast and targeted level of sales by 2035. To realise the potential of new apricot varieties will need to be both marketed successfully and produced using new technologies.

The vision is for a growing vibrant industry with all five summerfruit crops contributing to the industry's growth (through both the domestic and export markets). This aim provides the focus for the industry and all policies and procedures can be geared towards facilitating the outcome. This will require a transformation of the apricot production and marketing, preservation of the growth momentum for cherries and building a foundation for future growth for the plums, peaches and nectarines.

1.2. Objective

To meet the vision requires a concerted effort by Summerfruit New Zealand (SNZ) and industry participants.

This business plan identifies the main initiatives that will be required to achieve a \$250 million industry by 2035 and suggests which industry participants should lead each project in section 4.2.2.

Meeting this objective means:

- consumers will have a high quality experience from summerfruit purchased
- the grower will receive improved economic returns from good quality fruit.

To achieve this objective:

- growers will need to improve the 'customer satisfaction' with summerfruit and also increase orchard productivity
- retailers' will need to provide clear signals to wholesalers and growers about customer satisfaction and expectations

² From both export and domestic market sales.

- wholesalers will need to improve the quality and consistency of the product they handle and encourage growers to provide the range and quality required.

The constraints to this are that:

- impediments to success (such as restrictions on market access) can be removed over time
- all identified opportunities are fully examined i.e.:
 - ensuring that opportunities for innovation along the marketing chain are investigated and gains maximised. These include continued investigation into:³
 - medium to long term freight options
 - medium to long term prospects in markets
 - medium to long term strategies of competitors
 - orchard based R&D lives up to expectations (mainly a volume impact), particularly on intensive growing systems (e.g. FOPs/UFOs)
 - new varieties live up to expectations (mainly a price impact) and that initial market intelligence is correct
- industry good functions are maintained
- the industry improves its information base to allow for a stronger degree of cohesion and take-up rates of proven technology.

1.3. Maintenance of guiding principles

SNZ will have a major role in developing, coordinating, and being responsible for any new initiatives that seek to improve the growth prospects for the industry. Its leadership will be vital in the development of industry good projects.

The guiding principles for SNZ are clear and are well understood by the SNZ Board, and growers. Any investment in research and development will have to be additional to work already under way. In fact, some work such as the work to-date on new varieties, the development of an information system, and adaption of orchard management systems are being undertaken in the status quo (albeit at a slower rate). The guiding principles include the following:

- respect and serve the levy payer
- must improve value for all industry participants
- focus on “industry good” activity
- understand that the commercial and industry good interface is fluid
- be the leadership/voice of the industry
- outsourcing is the preferred mode of activity
- SNZ people to have strong contextual knowledge

³ The aim is to investigate the options for moving a much larger volume of summerfruit to market. This is more to do with understanding the long term logistical challenge rather than freight relationships in the year ahead.

- SNZ contractors to have a strong alignment to the objectives of SNZ.

The aim is to preserve these guiding principles as the industry grows.

1.4. Continuation of the status quo

Horticulture is a growth industry; however, the summerfruit industry is at a crossroads. Apart from the recent growth in cherries, growth has been sluggish. If this sluggish growth is projected forward and business practices remain relatively constant, then the industry will remain relatively small and possibly other alternative crops might out-compete summerfruit for land at the margin.

1.4.1. Recent history

The purpose of this section is to provide a starting point for discussion of the strategy by considering the key volume and income trends in the industry which provide a basis for both forecasting how the industry might evolve in the absence of the strategy and also opportunities for the strategy to change the outlook for the industry.

The history of summerfruit production and sales over the past fifteen years shows modest export-led growth for the industry as a whole with a wide variation in the fortunes of individual fruit. Analysing the change in summerfruit revenue over the last 10 to 15 years is hampered by a lack of historical data for domestic prices.

The available data suggests two possible interpretations of recent history:

- a high-side estimate of annual average growth in industry sales revenue of about 2.6 percent per year over the period 2000 to 2015 based on data sourced from SNZ and supplemented from Fresh Facts.⁴ (This rate of growth in sales revenue is marginally higher than the estimated increase in input prices.)
- analysis of export sales and domestic production volumes for the period 2005 to 2015 and domestic sales for the period 2011 to 2015, based on data from SNZ⁵ which suggests:
 - an overall rate of growth in production of zero percent with total average annual production of about 15,200 tonnes per year with annual production fluctuating in a narrow band of 11 percent below and 6 percent above the annual average.
 - much greater volatility in the production of individual fruit types with:
 - a rise in average prices for the main export fruit (cherries and apricots)
 - sales in the domestic market have increased on average by 1 percent per year for the period 2011 to 2015.

⁴ Source: <http://www.freshfacts.co.nz/>

⁵ Source: <http://www.freshfacts.co.nz/> and Summerfruit NZ

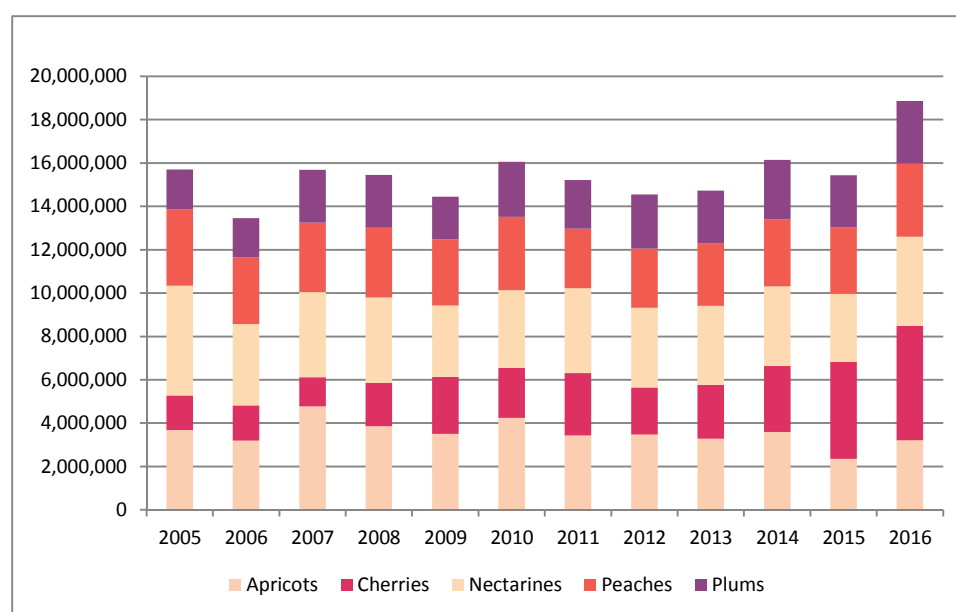
The aggregate growth rates summarised above obscure the very different sales and production histories of individual fruit types and therefore the different issues that a growth strategy has to address for each fruit type. The following charts illustrate the composition of production for the period 2005 to 2016 and total sales for the period 2011 to 2015.⁶

Although production of apricots, peaches, nectarines and plums in the 2016 season recovered from the very low levels of the 2015 season the overall themes of our story remain unchanged:

- cherry production is growing much faster than other parts of the industry and is the driver of both revenue and production growth in the industry
- the trend over the past 10 years in production of apricots, peaches and nectarines has been downward or flat while production of plums appears to be on gentle upward trend.

Figure 1 Summerfruit production by fruit type

Volume (kgs) produced over 2005 to 2016



Source: NZIER

1.4.2. Fruit dependent on domestic markets

Nectarines, peaches and plums rely heavily on the domestic market but have different production profiles and different potential for export growth:

- nectarine production volumes have fluctuated between about 3,000 and 4,000 tonnes between 2006/07 2015/16) and there have not been any material exports over the last two years

⁶ At the time of updating this report we have provisional volume data for the 2015/16 season but we do not have revenue data. Accordingly, the production charts have been updated to include the 2016 data but the revenue and price charts remain unchanged from those used in the presentation.

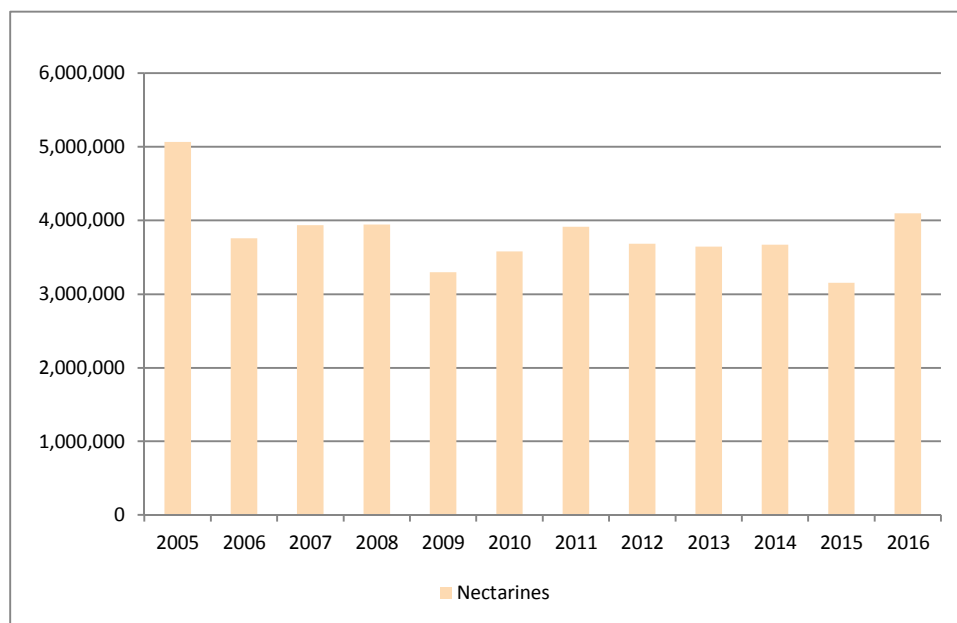
- peach production volumes appear to have been flat over the past ten years averaging about 3,100 tonnes per year with small volumes of product exported to Europe, Hong Kong, Taiwan, and Australia
- plum production volumes have increased gradually from about 1,800 tonnes in 2005 to about 2,900 tonnes per year in 2015/16 with small volumes exported to the USA.

The high dependence of these fruits on the domestic market, limits the potential revenue growth for these types of fruit to:

- general growth in domestic demand for fruit plus any substitution by nectarines, peaches and plums over the brief supply period for these fruit
- domestic price increases for fruit.

Figure 2 Nectarines rely on domestic markets

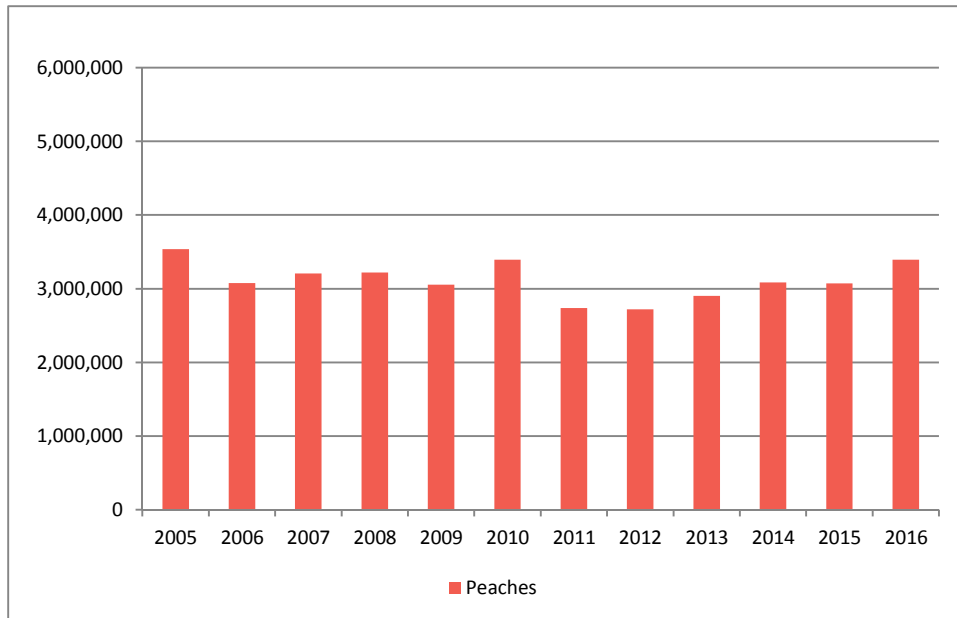
Volume (kgs) produced over 2005 to 2016



Source: NZIER

Figure 3 Peaches

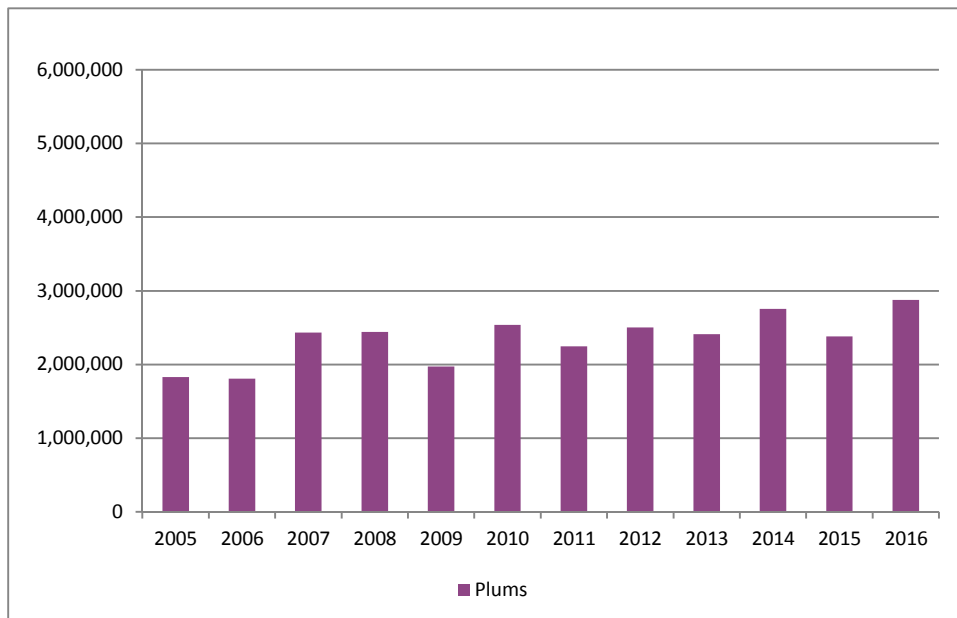
Volume (kgs) produced over 2005 to 2016



Source: NZIER

Figure 4 Plums

Volume (kgs) produced over 2005 to 2016



Source: NZIER

1.4.3. Fruit with export markets

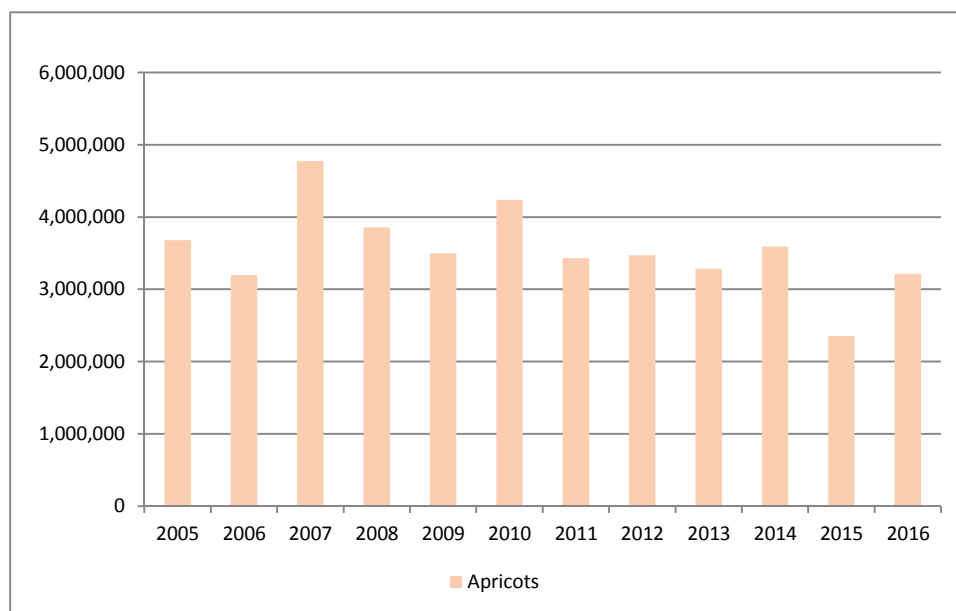
Apricots and cherries both have established export markets that are large relative to their domestic markets but while exports are driving growth in cherry revenues apricot revenues are declining and becoming more dependent on domestic markets:

- export prices and volumes for cherries are increasing rapidly and export volumes are consistently higher than domestic sales volumes
- apricot export prices are increasing gradually, export volumes are falling and are only about one third of domestic sales.

The following charts show the recent production and export price history for apricots and cherries.

Figure 5 Apricots

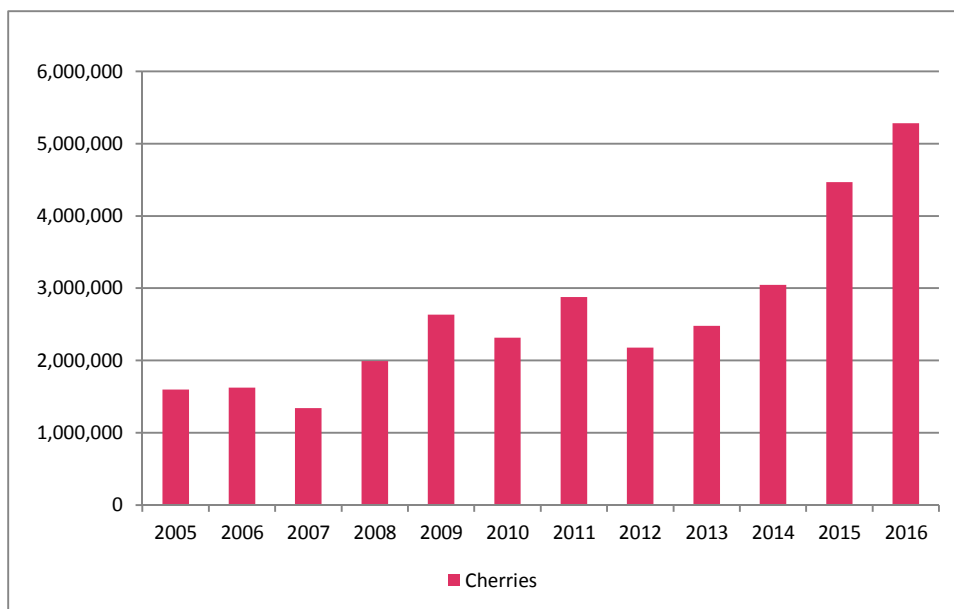
Volume (kgs) produced over 2005 to 2016



Source: NZIER

Figure 6 Cherries

Volume (kgs) produced over 2005 to 2016

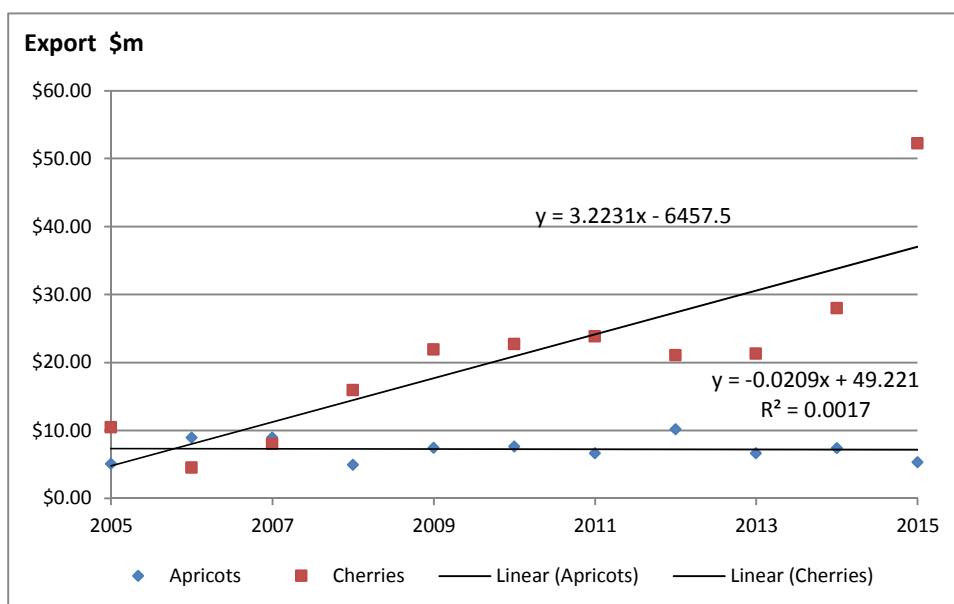


Source: NZIER

The contrast between cherry and apricot exports is shown in the following chart. The trend line for cherry exports implies an increase in export receipts of about 6 to 8 percent per year over the next 5 years driven equally by price and volume increases. The trend line for apricot exports implies a decline in receipts of about 0.3 percent per year driven mainly by falling volumes.

Figure 7 Export receipts for cherries and apricots

Estimated trends in receipts (\$m) over the period 2005 to 2015

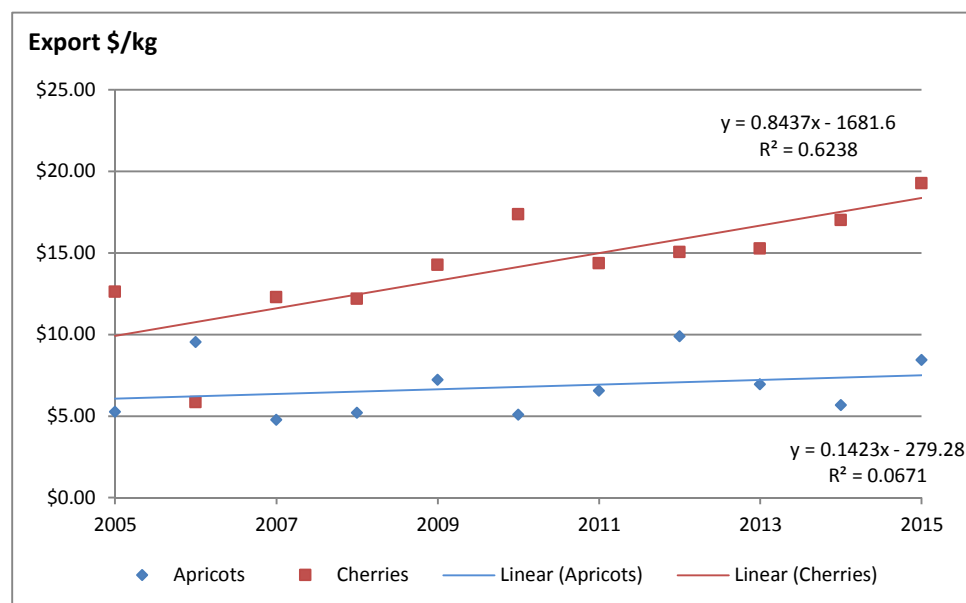


Source: NZIER

To help clarify the export story for cherries and apricots we have also estimated the trends in export prices for both cherries and apricots. Prices for both of these products are rising (as shown in the following chart) but prices of cherries are rising at a slightly faster rate.

Figure 8 Estimated export price trends for cherries and apricots

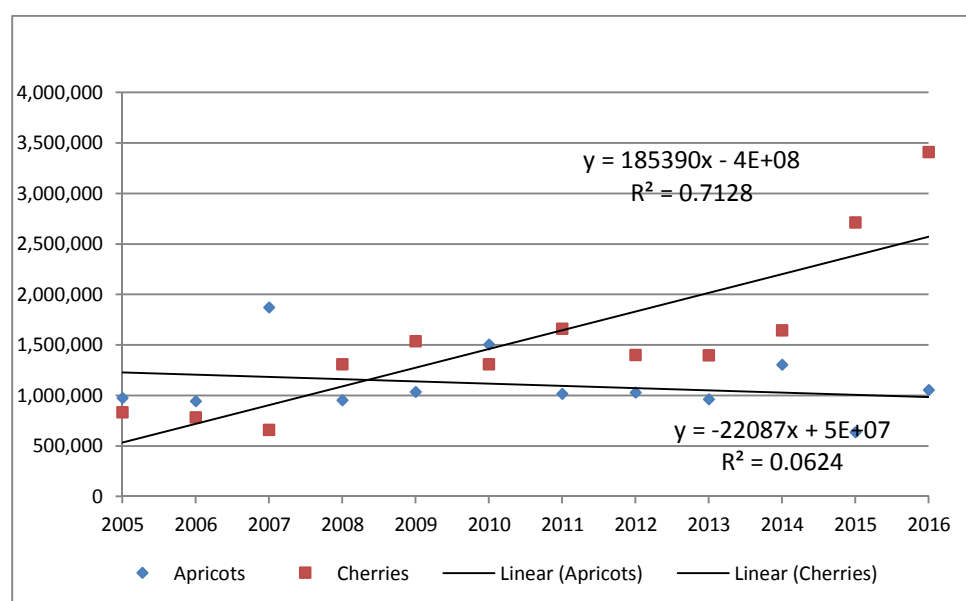
Average export prices calculated as export receipts divided by export volumes – 2005 to 2015



Source: NZIER analysis of Summerfruit NZ data

Figure 9 Contrasting volume stories

Estimated trends in export volumes 2005 to 2016

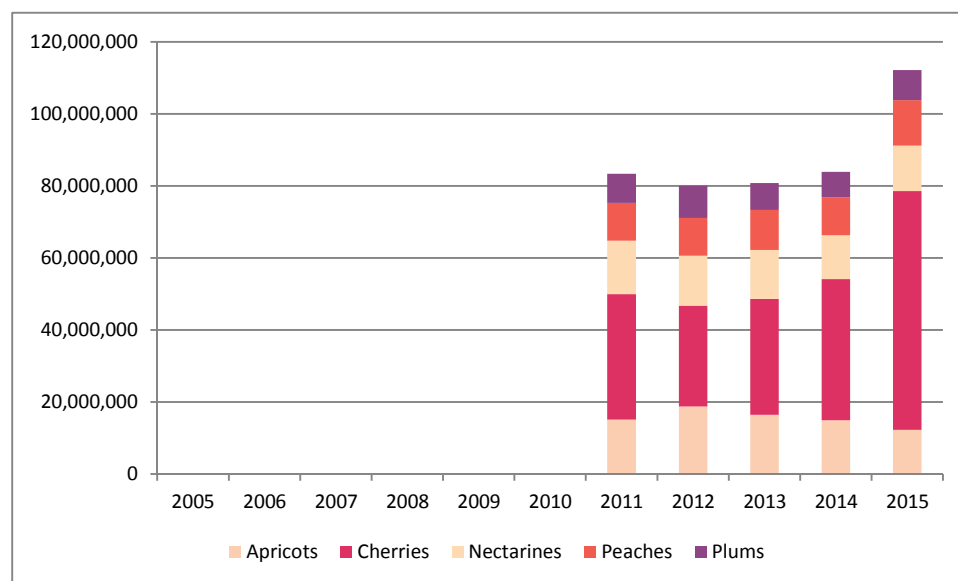


Source: NZIER

The final part of the assessment of the recent history of the summerfruit industry is the composition of industry revenue. (As domestic price data is only available since 2011 the revenue graph only covers the period 2011 to 2015.)

Figure 10 Summerfruit sales revenue by fruit type

Export and domestic sales revenue (\$)



Source: NZIER

Essentially:

- peaches, nectarines and plums are produced for the domestic market only and average sales growth over the past four years have been about zero. Although plums have the potential for export growth, initially in the US market
- apricots are produced mainly for the domestic market with about 30 percent of production exported. Sales and production of apricots have declined over the past four years. The reasons for this are not clear from the data but they are more likely to be driven by fluctuations in crop size rather than variations in export price or local demand⁷
- cherries are produced primarily for export markets and both export prices and volumes have trended upwards over the period 2005 to 2015.

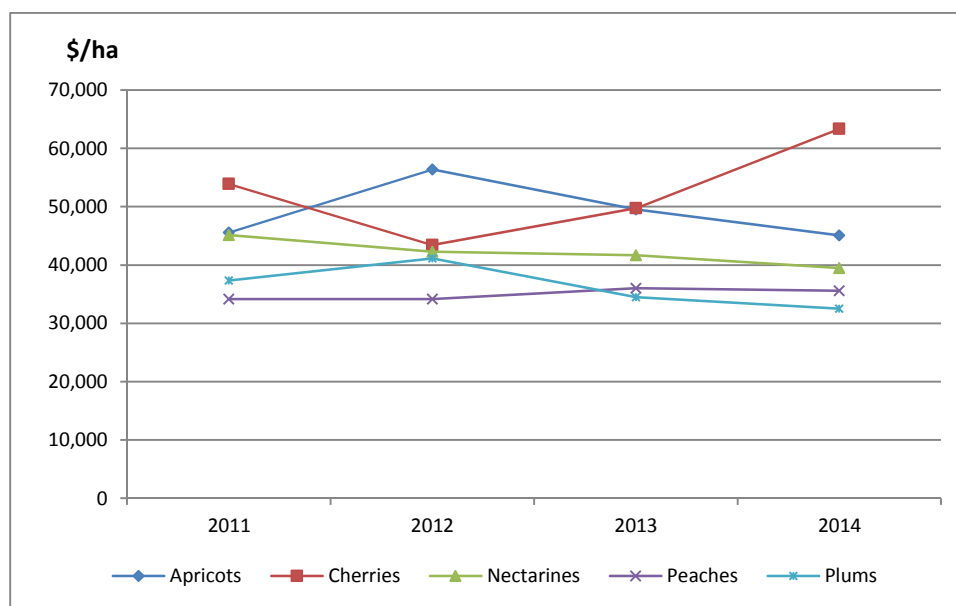
To translate the above information into an indicator of the business choice facing both existing growers and those entering the industry we have used the above data and data provided by SNZ on area planted to estimate gross revenue per hectare (shown in the following chart). The estimates of gross returns per hectare need to be

⁷ Central Otago apricot growers primarily produce for the export market whereas Hawkes' Bay apricot growers focus on the domestic market. In years of light crops, the Central Otago grower focus shifts more to the New Zealand market – however domestic returns do not match export returns. If the majority of the Central Otago fruit was directed onto the domestic market it would collapse.

treated with caution because of the uncertainty about the accuracy of the estimated area planted and also because we have not been able to adjust the data for difference in either land or production costs. However, this analysis adds a new perspective to the differences in revenue and production growth rates describe above:

- fruit types produced mainly for the domestic market, i.e. peaches, nectarines and plums have similar gross income per hectare and have declined slightly over the period 2011 to 2014
- cherries and apricots have had similar gross income per hectare over the period 2011 to 2014 that were on average at least 15 percent above the average gross returns for nectarines and at least 35 percent above the gross returns for peaches and plums
- gross returns for apricots appear to be falling toward the averages achieved by fruit supplied to the domestic market
- despite cherry prices and production increasing faster than apricots for at least the past five years, the gross return per hectare for cherries did not significantly exceeded the gross return per hectare for apricots until 2014.

Figure 11 Estimated gross revenue per hectare



Source: Summerfruit NZ and NZIER

The key implications from the above analysis for the growth outlook for the industry are:

- fruit types produced primarily for the domestic market have limited opportunities for either supply growth or industry driven price increases
- apricot prices are increasing in export markets but production is falling
- cherries appear to be the only summerfruit that has been able to increase production and increase supply.

1.4.4. Status quo outlook

Based on the recent history of summerfruit sales, we can form a 'top-down' and 'bottom-up' forecast of the potential outlook for the industry over the next 20 years under a 'status quo' scenario.

Top-down

If we assume that summerfruit industry sales revenue will continue to grow at the same average rate as it has since 2000, i.e. approximately 2.6% per annum, the impact in 2035 is approximately \$160 million in value.⁸ The top-down approach does not specifically consider the outlook for cherries, which have achieved exponential growth over the last 15 years and increased production by 50 percent in the four years to 2015.

Bottom-up

If we build the 20 year 'status quo' forecast up from the prospects for the five key fruit types we would make the following observations:

- sales of peaches, nectarines and plums will be limited to growth in the domestic market say 0.5 percent per year
- sales of apricots would recover to the average achieved over the last four years and then grow at 0.5 percent per year. Apricot export receipts decline very slowly
- growth in the sales of cherries reverts to the trend midway between the trendlines including and excluding 2015 (where receipts were unusually high due to production well above average).

⁸ In the jargon this is called the counterfactual or what would have happened without the proposed business plan. It is crucial since it is what we measure progress against.

Table 1 Comparison of industry today with 2035 forecasts

Actual and bottom-up forecasts of sale (\$m) by domestic and export market by fruit

Fruit	2015	2035 Forecast	Comment
Domestic			Little room to increase growth (domestic)
Apricots	6.9	9.5	
Cherries	14.1	17.4	
Nectarines	12.6	13.9	
Peaches	12.1	13.4	
Plums	8.2	9.1	
Sub-total domestic	53.9	63.2	
Export			
Apricots	5.4	7.4	
Cherries	52.3	89.9	Only significant growth
Nectarines	0.1	0.1	
Peaches	0.5	0.5	
Plums	0.2	0.2	
Sub-total export	58.3	97.9	
All markets			
Apricots	12.2	16.8	
Cherries	66.3	107.2	
Nectarines	12.7	14.0	
Peaches	12.6	13.9	
Plums	8.4	9.3	
Total	112.2	161.2	

Source: NZIER

This sets up a realistic base case from which we can measure the value of other alternatives. The base case is heavily dependent on the ongoing expansion of cherry exports and assumes that export activity will not alter materially for apricots, peaches, plums and nectarines.

It should also be understood that the future scenario could be a lot worse than this, since sluggish growth and other opportunities to create more value from the same land may mean an exodus of growers from the industry eroding the industry base further.

We acknowledge that setting up a sluggish growth scenario is difficult because there is:

- limited baseline data from which to measure any change
- uncertainty about what initiatives could be trialled in the absence of improved use of technology along the marketing chain, quicker adoption of new varieties, new production methods and further improvements in supply chain management.

Therefore, there are potentially a number of credible business-as-usual scenarios. The one we assume here is open to question, but gives a rough and easily understandable approximation of the possible industry size in 2035 without any action.

In the status quo, some growers will be progressive and drive their businesses forward but as a whole, industry alignment and the adoption of technology will be patchy and industry investment will be more difficult to generate from outside the industry.

This approach to summerfruit production by stakeholders will be characterised by:

- inconsistencies across regions and growers/exporters. Some will be “state of the art” growing and marketing operations while others will hold on to traditional production methods and older varieties
- some pockets of investment will occur but there will be a chronic lack of investment across the industry.

What is lacking in the status quo is an impetus to generate incremental change over and above what already exists. This lack of an impetus can potentially limit the industry in its ability to capitalise on the advantages that can lead to small or even much larger gains in value.

1.4.5. What could affect the outlook

In this section we discuss how to estimate the potential effects of intensive growing systems, such as future orchard planting systems (FOPs) and new varieties of apricots on the base case scenario. We have limited our discussion to these two partly proven options due to the long lead times for innovation in the industry.

Innovation lead times

The lead times for change in the industry are relatively long compared to the 20 year period covered by this business case. Based on our discussions with industry stakeholders it seems to us that:

- lead times for a major innovation ‘beach-heads’ such as proving a new growing system, switching to a new variety or developing access to a new market are relatively long (7 to 10 years)
- lead times for widespread adoption of these innovations are hard to estimate but may well be longer
- lack of capital is the main constraint on the capacity of existing growers to either adopt new growing systems or plant new varieties
- new entrants to the industry will find it easier to adopt new technologies but may not have the skill and experience required to achieve the full potential of the new technologies.

These innovation lead times suggest a couple of possible transition stages for the industry from current sales levels to the potential sales levels once the innovation is fully adopted. For example:

- growers bringing new land into orchard production are likely to be 'early adopters' as they do not have the opportunity cost of loss of existing orchard income streams
- growers converting orchards from less profitable or shorter lived fruit crops are likely to be fast followers as they have the second lowest opportunity cost
- growers replacing existing trees as they age or to introducing new varieties of fruit are likely to be the slowest group to adopt the change primarily because they are likely to be applying the new technology to only 5 to 10 percent of the orchard area at any time.

The rate of adoption by each of the above groups will also be influenced by their confidence in the new as opposed to traditional systems and varieties.

We can combine these comments on the rate of adoption into a table to 'forecast' the effect of innovation on potential industry output. Alternatively, this type of table could be used to 'estimate' the rate of innovation required to close the gap between the base case scenario and the SNZ objective of \$250m by 2035.

2. What are the options

As part of the analysis, we have examined potential alternative transition paths to achieving the stated goal.

2.1. Alternative summerfruit strategies

We have chosen three alternatives. There may be more; however, these three scenarios represent the type of choices that summerfruit industry participants could potentially face. The alternatives are:

- option 1: business as usual
- option 2: partnership with a local or foreign multinational
- option 3 pro-active industry-wide strategy.

Each of these approaches is looked at through the lens of likely industry structure, business strategies, and performance.

2.2. Option 1: Business as usual

The business as usual approach sets out the likely industry impact without a pro-active industry strategy to change or guide the mix of innovation that occurs. It does not mean that growth will not occur, but it is likely that innovation will not occur as fast as it might in other alternative strategies. Most of the background work to the status quo is set out in section 1.3.

2.2.1. Industry structure

Market structure covers aspects of markets that change slowly over time, such as grower concentration, exporter concentration, scale and other factors.

Over time the number of growers will be reduced following the trend in all horticultural industries over the past thirty years. This has been dictated by the economics as industries become more dependent on exporting and higher quality (and safety) standards in the domestic market. There is higher risk, higher fixed costs, and to remain competitive economic holdings are becoming larger and more mechanised to reap economies of scale and scope.⁹

The number of exporters is expected to remain relatively static. Other dimensions of market structure such as the degree of diversification, vertical integration, and production differentiation are likely to move slowly at the same rate as over the past fifteen years reacting to market trends rather than anticipating what is likely to occur. Diversification could mean that growers move out of summerfruit into other products (such as apples).

⁹ The impact of imports was considered. Current summerfruit imports are only from the USA in our off season. An approach by Australia to gain access to New Zealand for summerfruit was recently abandoned. There is no evidence of interest from Chile - the only other summerfruit producer in our seasonal window. Competition is likely from import of other crops in the same window – e.g. mangos etc.

2.2.2. Industry Behaviour

Behaviour is about how firms use strategy to develop their business i.e. choosing the quality, prices, and output levels. Also levels of R&D, investment, product promotion and the type of business attitudes that prevail.

In the business as usual scenario the market behaviour will mimic behaviours over the past 15 years. The quality of summerfruit in the domestic market, particularly at the beginning of the season, and the levels of R&D and investment (a part from cherries in the short to medium term) will remain patchy.

For an increasing number of industry participants summerfruit will become a side line and decisions about summerfruit will be dependent on other crops.

On some issues the industry is likely to come to together as with market access arrangements, however there will not be a fully coordinated effort across the marketing chain to maximise returns to industry participants.

Although exporters will continue to cooperate (possibly more than other industry participants believe they do) the general information on which they base their more specific marketing plans will be patchy.

2.2.3. Likely performance

Efficiency, profitability, and product variety will remain at similar levels to the past 15 years. In the business as usual approach the average value (price x volume) growth over the last 15 years has been used to project the value change over the next 15 years. This has been chosen for its simplicity and transparency. The growth has been calculated at 2.6% per annum in value terms. By 2035 it reaches \$160 million.

The Table below shows the likely impact on each of the summerfruit varieties. The dominant feature of this Table is the overwhelming impact of cherries. This may have implications for the summerfruit industry organisation since the dominance of cherries could change the function and purpose of industry good functions and the attitudes of participants.

Table 2 Performance under the business as usual scenario

All markets business as usual (BAU) projection

Summerfruit	2015	2035
Apricots	12.2	16.8
Cherries	66.3	107.2
Nectarines	12.7	14.0
Peaches	12.6	13.9
Plums	8.4	9.3
Totals	112.2	161.2

Source: SNZ and NZIER estimates

2.3. Option 2: Large company partnership

Partnering with a large business (either owned locally or by foreign concerns) is potentially another alternative. The key to option is picking the right partner – one that shares the values and concerns of the summerfruit industry over the long term.

2.3.1. Industry structure

The market structure changes radically. Assuming that Commerce Commission approval¹⁰ is given and operational details can be worked out we have assumed that there is one buyer of summerfruit for export and multiple growers.

The large company would be responsible for exports (other than Australia) similar to Zespri or the now disbanded Apple and Pear Marketing Board. The industry would be highly concentrated with only a few key players making the strategic calls for the industry.

2.3.2. Industry behaviour

Industry behaviour is dominated by a single export buyer. They will decide the quality (including the varieties grown), prices, and output levels. Also levels of R&D, post-harvest investment, product promotion and the type of business attitudes that prevail.

The advantage of this partnership is that it might be able to build a summerfruit brand that breaks into markets that by themselves the summerfruit industry could not achieve e.g. the way that Heinz were able to do for Heinz Wattie. The Wattie brand tried to break into the Japanese market but failed. Heinz Wattie were able to use Heinz's existing branding to succeed where Watties failed.

However, this structure is unlikely to be popular amongst growers and exporters therefore the potential for disruption is quite high. Also many exporters/growers have experienced the turmoil in the apple industry and are aware of the difficulties and downsides of a single export buyer. Of particular concern was how slow a marketing board was to adapt to changing market signals.

A few key decision makers can make things happen and sometimes those decisions can have a positive or negative impact on industries. Resources can be directed into areas where they are most needed or equally they can be used on issues that only marginally address industry profitability. Therefore, this is a highly risky approach and is highly dependent on behaviour of key individuals making the decisions. When the "right" decisions are made this can be highly efficient; however, this is unlikely to happen over time since industry politics, resistance to change, and changing markets conspire to derail efficient decision making.

¹⁰ A non- trivial exercise.

2.3.3. Likely performance

The performance of a large firm that dominates the summerfruit industry is difficult to pin down. With one or a small group of people making the decisions the risks of getting it wrong are quite high. Equally, good decisions could be very profitable. On balance the chances of getting it right in an assortment of summerfruit industries with different drivers is unlikely. The small volumes involved and the nuisances associated with the market mean that growers, wholesalers, domestic sellers and exporters require very detailed knowledge of the market segments for progress to be made. Further the signals about what should be produced need to be heeded by managers and growers. Therefore, for success, the incentive alignment needs to be with market signals not the views of a single executive team.

A crucial issue is how would you know whether the large firm was doing the best it could; given market changes and growing circumstances? Monitoring performance is a major issue and not easily solved with a large firm controlling exporting, particularly as market prices in any particular year depend on weather conditions, market access requirements, and marketing strategies.

Performance, therefore could be worse than the business as usual scenario (less than \$160 million in 2035) or much better (over \$300 million in 2035). The probability of achieving the \$300 million is less certain since it is unlikely that industry and large firm goals and values will align over time.

2.4. Option 3: Industry wide growth strategy

The proactive industry-wide approach aims to focus the summerfruit industry on responding more quickly to innovations and attempting to maximise value wherever it may occur in the marketing chain. In many cases the market is the best way of ensuring innovation occurs, however in some cases having a pro-active plan and resources to test new ideas can further assist industry to grow.

For such a strategy to work it requires pressure to innovate all along the marketing chain since how innovation unfolds is uncertain and a clear understanding of where companies should compete and where they should cooperate is required.

2.4.1. Industry structure

The market structure is similar to that of the business as usual scenario however with a heavier emphasis on supporting new products and diversification driven by industry participants.

Similar to the business as usual scenario, grower and potential exporter concentration are likely to increase along with scale. Although this will only happen slowly since families and tightly held private firms are likely to still dominate.

2.4.2. Industry behaviour

The most noticeable change from the business as usual approach will be the focus on innovation and up-take rates. This will be facilitated by improved information on

specific varieties and practices. The strategy is geared at ensuring that successful innovations can be practically adopted throughout the industry.

This will require an increase in the amount of R&D with particular emphasis on the “D” since some innovations are likely to have different impacts in different regions and other innovations will impact on the whole industry.

In the proactive strategy the changes from the status quo are likely to be relatively small, with aim of improving participation in R&D processes and changing business attitudes incrementally.

As part of this process there is more investment in industry good activities and further encouragement of single participants or groups of participants to push innovation further.

Also SNZ will take more of a lead into areas which shape the long term future of the industry i.e. further understanding of markets, investigating how to ship the doubling of the crop, and the introduction of new on-farm management techniques.

2.4.3. Likely performance

Efficiency, profitability, and product variety will improve over and above what they would have been in the status quo because of the focus on R&D. This gives the best chance for the industry to reach or exceed its goal of \$250 million by 2035. Key to this process is to ensure that there is a broad innovation focus along the marketing chain since innovation that boosts industry value is unpredictable. Too much focus on one area concentrates risk of failure.

Contributing to this process will be the systematic development of information that further informs exporters, domestic market participants, wholesalers, and growers on the relative success or otherwise of specific innovations.

3. Why a particular option is preferred from the others?

The preferred option is the pro-active industry wide growth strategy. This approach sets out the most risk adverse way of achieving the growth targets set by the summerfruit industry.

The following Table sets out a potential benefits, costs, risks, and other considerations.

Table 3 Summary of different strategies

	Option 1: Business as usual	Option 2: Partnership with foreign multinational	Option 3: Industry wide growth strategy
Structure	Static number of exporters, reducing number of growers, patchy diversification and growth	Radical change in structure with one major buyer and many growers.	Similar to business as usual but with more new entrants and potentially an increase in scale.
Behaviour	Continuation of innovation and marketing initiatives but the degree of coordination and information diffusion is patchy	Decisions taken by a small group of managers, increasing the risk that the industry will not keep pace with market developments	Increased emphasis on supporting information flows between industry participants, particularly on specific innovations and a focus on R&D
Performance	\$160 million by 2035	\$150 - \$270 million industry depending on decisions making by the few	\$250 million by 2035
Costs	Minimal costs	Loss of industry control/direction <u>or</u> stronger more vibrant industry (but this is less likely)	Increased investment in R&D
Risks	Industry fracturing as some crops do well and others do not	Possible uncertainty. Non alignment of interests between growers and investors	Risk that innovations oversold – must take opportunities where they arise
Other considerations (a) alignment with industry and industry good objectives (b) wider social contract issue	(a) Low growth may put pressure on industry good functions. (b) Does align with social contract associated with orchards and the right to farm, although low profitability could jeopardise ability of orchardist to meet public expectations	(a) Uncertain if industry and industry good function met for all crops and participants (b) Risk that social contracts would be broken since foreign ownership is a touchy subject	(a) A successful high growth strategy will reinforce industry and industry good objectives (b) Will require careful management
Summary	The steady as we go strategy does not offer a compelling case for industry development. While it may appear to be comfortable, there is substantial risk that part of the industry will break away looking for more economically robust solutions	The partnership approaches hinges crucially on picking the right partner. The risks are that the players have divergent views (over time) as to the development of the industry.	The proactive research strategy offers potential to grow all summerfruit crops. While success hinges on successful adoption of new technology all along the marketing chain

Source: NZIER

3.1. Benefits of the preferred option

The key benefits of the preferred proactive research strategy are:

- a stronger focus (with more resources) on innovation as an engine of growth and how it can be practically applied
- better information on specific innovations across the marketing chain for industry participants
- better information that leads to improved up-take of innovation and improved diffusion of innovation
- better information can lead to “faster failure” where innovation is dropped where costs outweigh benefits
- improved returns to industry participants.

3.2. Costs

The main cost will be the resources required to develop a comprehensive innovation programme and deciding on the priorities for the programme. Below we set out the potential costs of developing a coherent approach to innovation across the marketing chain.

Table 4 Potential costs of projects

Cost centre	Timing and cost	Lead by who	Comments
Market access	On-going, \$30,000 per annum	SNZ	Continued contact with MPI ensuring summerfruit interests are advanced
Competitor analysis	Once every five years, \$200,000	Exporter	Recognising the dynamic nature of the market and the need to up-date long term understanding of how competitors are responding to the New Zealand offering and the implications for New Zealand
Market analysis	Once every five years \$200,000	Exporter	Recognising the dynamic nature of the market and ensure that market access priorities align with long term market demand
Domestic market settings	On-going, \$20,000 per annum	SNZ	Focused on retailers (pamphlets Focused on retailers (pamphlets, videos and visits)
Storage and handling	On-going, \$200,000 per annum	Exporter/grower	Would depend on the type of innovation proposed and who it benefited
Developing an understanding of the best use of sea and air freight	Two to three year study - \$250,000 per annum	Exporter/SNZ	How to move a larger crop and maintain quality
Intensive growing systems (e.g. FOPs/UFOs and rain covers)	On-going, \$80,000 per annum	SNZ/Grower	Fundamental driver of quality, production and consistency
New varieties	On-going	SNZ/Grower	Closely linked to storage and handling. Setting out the characteristics of new varieties
Managing diseases (bacterial, brown rot etc.)	On-going, \$50,000 per annum over 10 years	SNZ/Grower	On-going process of demonstrating how to minimise orchard disease issues
Pollination	On-going, \$40,000 per annum	SNZ	Timing is critical for pollination. Being able to control pollination has major implication for meeting “trade windows”
Maintaining and extending current industry good functions	On-going	SNZ	
Information portal	One off. On-going review every five years	SNZ	
Up take of new technology	On-going over three years \$150,000 per annum	SNZ	Up-take rates of new technology are crucial to meeting targets. A better understanding of how technology is used by industry participants and how they go about adopting technology is crucial for industry success

Source: NZIER

4. What factors are critical for a defined successful outcome?

4.1. Constructing a practical vision: it's about innovation, information dispersal, and alignment

Incremental innovation is the life blood of any industry. It drives industries forward and can spur greater value capture. Therefore, encouraging and facilitating individuals within the industry to focus on incremental improvements that can create growth momentum is crucial.

There is no crystal ball: we do not know – for sure – what the sources of innovation will be that sustains the industry and makes it thrive. Therefore, to maximise the chances of a successful growth strategy a focus and pressure must be kept on all parts of the marketing chain rather than a specific area.

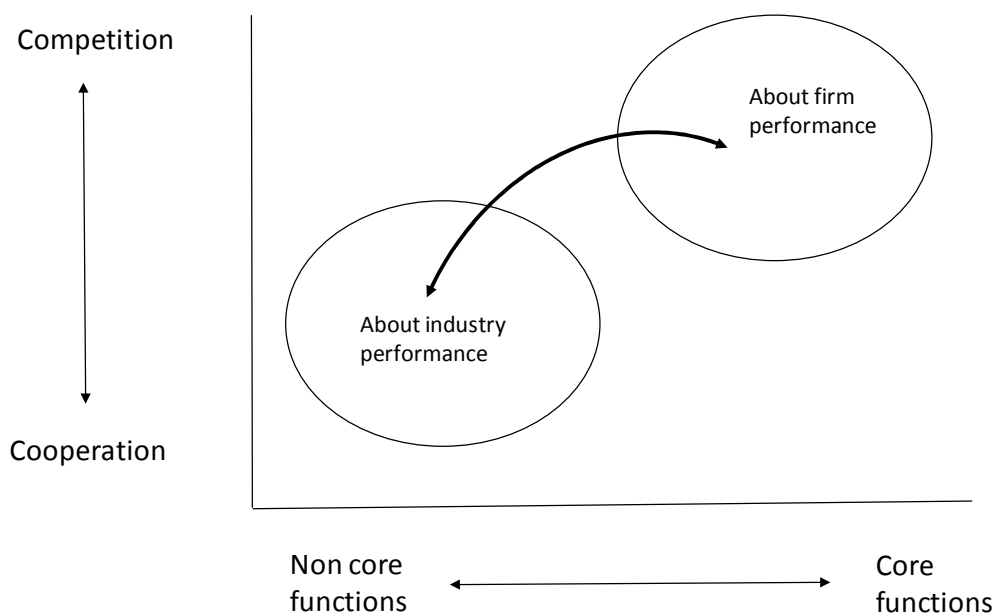
Crucial to the process is to ensure that detailed information is available as quickly as possible to those who need it. This is particularly so for the growers because of the long implementation lead times. In all parts of the marketing chain participants will have to make decisions about whether they compete or cooperate. This is discussed in the next section.

Further, there needs to be market alignment: there is no point having the right product if it cannot be delivered to the market, market access is limited or non-existent, or worse still we are beaten to the punch by a better product from a competitor.

4.2. Understanding the boundaries of industry good

A fundamental question is to set out the boundaries of industry good. What should growers/wholesalers/exporters do individually and what should be undertaken by the collective industry under the leadership of SNZ. The following diagram shows at a high level where entities can efficiently compete and where they can cooperate.

Figure 12 Approach to where to cooperate and where to compete



Source: NZIER

In a market, competition is preferred to cooperation in most instances, however there are some areas where cooperation can improve total industry performance: “a raising all boats effect”. The rule of thumb is where there is market failure¹¹ or collective industry benefits then cooperation is likely to be beneficial.

In the summerfruit context, it is unlikely that strategies that growers, wholesalers and exporters are employing in the short term (this coming season or the next one) would result in positive industry good outcomes (there may be exceptions such as a biosecurity incursion or something where collective action is required urgently). Also the relationships that firms have built up over time in the marketing chain should not be considered as industry good priority areas.

Where cooperation could be significant depends on whether a particular project can provide durable long term benefits for industry participants that create competitive edges that competitors outside New Zealand cannot replicate. The scant literature on the subject suggests that prime candidates for cooperation are:

- improving the R&D base within the industry
- improving the human resource base of the industry
- improving the industry knowledge base particularly around long term competitor strategies and potential markets
- improving standards by sharing knowledge.

Successful co-operation relies on transparent and efficient mechanisms for industry participants to share information on some business activities which they may currently regard as a basis for competition. The basis for co-operation would be

¹¹ A situation where the market left on its own fails to allocate resources efficiently.

recognition by the majority of growers, distributors, exporters and retailers that the potential gains from a co-operative approach to expanded export markets exceed the gains they could achieve from competing for a share of the cherry oriented summerfruit industry.¹²

4.2.1. What type of projects?

We have set out the candidate areas for possible projects that support a growing vibrant industry.

- proactive approach to market access negotiations ensuring that access occurs within reasonable timeframes
- an industry wide understanding of changing markets and likely long term competitor strategies
- robust distribution, handling, and storage systems that allow for the adoption of proven new technology with an emphasis on how the doubling of volumes can be handled
- an information system that services industry participants. Making information on new innovations available to those who can best use them
- linking innovations market tastes and opportunities to the breeding programmes. Including specific information on:
 - specific information on the variety of summerfruit and likely performance
 - commercial release information (terms and conditions of release, availability of trees/root stock, and risks of commercialisation)
 - tree and cropping performance (growth, flowering, yield traits, colour, optimal picking times, and packout rejection rates)
 - fruit characteristics at harvest and quality after storage
 - consumer responses to specific varieties
- the likelihood that “inside” and “outside” investment will be forthcoming
- strong partnerships with research providers providing new varieties from different sources
- further incremental improvements to orchard management approaches and a continued fostering of a culture of incremental improvements. This includes:
 - continued adaption of intensive growing systems (e.g. FOPs/ UFOs) to maximised production
 - a better understanding of bacterial disease management by all growers
- a specific understanding of the skill shortages.

For this to be achieved requires:

¹² Sharing best practice knowledge is essential to achieving outcomes. Growers and other industry participants will require information from SNZ but equally to be effective SNZ needs information from growers and other industry participants e.g. currently SNZ struggles to get growers to complete the growers survey on tree planting. Receiving data from growers is a vital part of SNZ planning/ success measurement and these feedback loops will need to be improved.

- a strong cohesive industry where there is agreement – in most cases – on where to compete and where to cooperate
- improved up-take rates by market participants based on detailed information about specific varieties and backed up by information system that enables rapid tech-transfer
- improvement in skills
- new varieties and a research and development system which generates further new varieties
- new production techniques that not only allow for increased volumes but also allow for a quicker transition between varieties
- pressure to innovate along the marketing chain.

4.2.2. Who should lead the projects?

Who takes the lead in each project depends on the nature of the good or service being offered. Any research and development work undertaken must be useful for those who might use the outputs. So while it will be done under the auspices of SNZ those who direct and evaluate the research must understand its value.

Therefore, any long term market analysis undertaken must have exporters' involvement in commenting on the research outputs. In the same way that research into on-orchard activities requires on-farm expertise in both scientific and practical application.

Table 5 Candidate projects for industry cooperation

	Industry	SNZ	Potential for PGP funding
Market access	Some industry input	Mainly SNZ	Industry
Competitor/market analysis	Lead by industry	Some SNZ input	PGP, generalised across the industry
Transport bottlenecks	Lead by industry	Some input from SNZ	PGP, generalised across the industry
Storage & handling	A balance of industry and SNZ		PGP, generalised across the industry
Optimal picking times	Some industry input	Mainly SNZ	PGP, specifically on apricots
Intensive growing systems e.g. FOPs/UFOs	Grower input	Lead by SNZ	PGP, specifically on apricots and plums
Root stocks	Grower input	Mainly SNZ	Industry
New varieties	Industry participation and evaluation	Mainly SNZ providing research and detailed information on varieties	PGP, specifically on apricots
Bacterial disease management	Grower input	Mainly SNZ providing research and detailed information on varieties	Industry
Pollination	Grower input	Mainly SNZ providing research and detailed information on varieties	Industry
Information system	Industry participation	SNZ lead	Industry
Up-take rates	Grower participation	SNZ lead	PGP, generalised across the industry

Source: NZIER

The incremental approach means that each summerfruit type should follow an approach formulated and dictated by its own unique needs. Because so many

uncertainties are involved, no stakeholder can predict the precise way in which any of the summerfruit industries will ultimately evolve, much less the way participants will interact to create the industry's overall strategic position. Consequently, each summerfruit type requires incremental management in order to keep focused on its own goals.

The preferred option emphasises the importance of innovation in each industry. Therefore, the critical factors that may facilitate incremental growth over and above what might be achieved otherwise are based around innovation and improving the access to innovation. The strategy is to develop an industry innovation system that:

- spans the marketing channel
- details how industry participants will benefit.

The following issues need to be addressed to underpin the innovation system that have the potential to drive further success.

4.3. Choosing the subjects for further investigation

From the interviews and other information gathered, we have identified the critical success factors required for reaching the chosen goal for the five fruit crops. While a goal of achieving a \$250 million industry has been agreed upon, SNZ has identified a number of issues that will need to be addressed along the marketing chain that will be required to meet this objective.

Setting out what needs to be examined is part of a proactive innovation system. While there will be many views on what should be examined, one way is to focus on the customer for the specific innovation (i.e. grower, wholesaler, exporter or domestic retailer). That is identifying the strategic areas that combine the following:

- R&D that assists many potential industry participants to address issues that other competitors are not doing very well
- either a technology that will enable industry participants to do that job much more easily, cheaply, or conveniently, or a change in the economic, regulatory, or social landscape that is greatly intensifying the need for that job
- some special capability of the New Zealand summerfruit industry that competitors cannot easily replicate giving the industry an advantage in seizing a particular opportunity.

Identifying strategic opportunity areas will direct the scarce resources of the industry into what really matters. Possibly it could also help highlight where people might be wasting their time.

Below we have outlined the potential areas for innovations along the marketing chain. This list will require some review and refinement.

4.3.1. The markets

Exports

Export markets are where the greatest return can be made for the summerfruit industry. This does not mean that the domestic markets are not important or profitable; focus however needs to be kept on maintaining and improving market returns. Key work is required on:

- maintaining and improving of access to markets. Ensuring that the most important market access agreements are maintained and those with the biggest potential are given priority (e.g. possibly apricots into China) are key to maximising returns from market access arrangements¹³
- **long term** consumer research into (e.g. Asian and US) markets. Better information is required on the markets summerfruit is being sold into (China, Hong Kong, Singapore, Thailand, and Taiwan) as well as markets that specific summerfruit do not have market access to. Detailed information on preferred varieties, taste profiles, and optimal timing and how other fruit have been successful in the market is required
- **long term** competitor analysis. While it is known that competition is gearing up for New Zealand cherry exports to Asian markets, not much detailed information is available on the strategies of competitors and the ability to carry out those strategies. Better understanding of the evolving competitor challenge over time (e.g. from countries such as Chile and states such as Tasmania) will assist the New Zealand summerfruit industry understand the potential.

Domestic market

The domestic market issues mainly revolve around quality, particularly at the beginning of the season. This is important since reliable quality could provide an increase in demand by New Zealand consumers.¹⁴ Other comparable industries have tackled this issue and are making progress. Further investigation is required on:

- the strategies employed by other industries (such as avocados) to mitigate the patchy quality problem
- consider whether these techniques could be adapted for summerfruit and sit alongside efforts already made.

Consumer information and a license to farm

Horticulture and particularly summerfruit have a number of health benefits that are sort after by consumers – particularly consumers with growing incomes. Information supporting the health benefits and further research contacts need to be developed with researchers involved in nutraceutical research and development to explore the

¹³ SNZ have a significant resource in this area already and are pushing hard to improve market access arrangements (as part of the status quo). This needs the support not only on the science-based issues but also further understanding market potential.

¹⁴ Although volumes in the New Zealand market have not risen significantly over the last ten years (industry interviews).

development of further processed summerfruit in the growing health industry market.¹⁵

An issue of concern in agriculture generally is ensuring that summerfruit maintains its license to operate. Of particular issue are the use of chemicals and proper use of water all along the marketing chain. Being a good corporate citizen is becoming more and more important.

In both areas initial work will need to be carried out over the medium term to ensure that summerfruit maximises its health message, examines more closely its added value opportunities and maintains its license to farm.

4.3.2. Transport to markets

With a much larger predicted crop in 2035 for summerfruit exports (possibly double) it becomes important to understand how air and sea freight are used to ensure that the different types of summerfruit arrive to their markets in the best possible condition.

Work is required to:

- understand the availability of airfreight over the medium term to long term i.e. we know that more tourists will come to New Zealand however the planes that bring them here may not have the same airfreight space as in the past
- what might the role of sea freight be and how will it change between export crops and the feasibility of extending the shelf-life of different types of summerfruit so that fruit quality is preserved when being transported.

4.3.3. Storage and handling

Postharvest R&D technology is not an area where New Zealand providers have a comparative advantage. Possibly there may be a few niche areas where storage and handling challenges can be addressed, however in most cases importing technology is cost effective.

For industry-wide action to be taken on post-harvest technology careful consultation will be required with those who are most affected. Since most innovations come from off-shore and the summerfruit industry has no particular advantage in being involved in development e.g. new storage configurations.

A part of the postharvest R&D is the production of Variety Information Guides that will assist industry participants to make better informed decisions on which of the new varieties to plant, optimal picking strategies and potential for consumer demand. The guides would include the following types of information for the new varieties emerging from the industry funded breeding programme:

¹⁵ If FOPs/UFOs increase production, then more fruit will be available for processing. However, care needs to be taken with this option since increased fruit production is likely to force the price of fruit for processing down further.

- a technical summary of the cultivar attributes. This includes fruit: appearance, eating, disorders, growth and productivity, disease susceptibility and flowering and pollination descriptions
- performance includes production, any biennial bearing issues, colour development, optimal fruit handling, provision for pollination
- commercial release information that sets out terms for release (minimum and maximum plantings, conditions of fruit sale, royalties, and termination clauses)
- a consumer assessment summary including general information on likely markets, competition, and access arrangements.

These guides will summarise information from different projects coordinated by SNZ.

4.3.4. Orchard management

Intensive growing systems and rain covers

Intensive growing systems are showing promise. However, it may be for each summerfruit crop different configurations will be required and more work will be needed to demonstrate how they can be applied to each crop. Two systems are up and running in cherries. Upright Fruit Offshoot Systems (UFOs) and Future Orchard Planting Systems (FOPs) are new orchard tree configurations designed to boost production and reduce costs. FOPs and UFOs in whatever form are potentially a significant innovation that could have an impact on horticulture, in general, if successful.

Although yet to be proven, FOPs/UFOs plantings are projected to reach 750 hectares within five years in Central Otago. The aim of on-going research is to:

- improve production per hectare
- improve quality and therefore value per hectare
- improve the ability to mitigate against the worse aspects of the weather through the use of rain covers
- develop systematic methods for pruning and training (reducing labour costs)
- minimise the environmental footprint by reducing use of pesticides and satisfying informed consumers
- the ability to change varieties more quickly once the root stock is established.

This is emerging technology and a number of different orchard tree configurations are possible. If the technology is successful or even partially successful, the key will be to demonstrate to growers the proven advantages of taking up this technology. Therefore, understanding how faster take up can occur will be crucial in determining how innovation is turned into improved returns. Key elements for ensuring rapid take-up will be working out how to tailor the technology to different fruit types and regions and then creating fast and effective feedback loops so that individual growers can identify and adopt 'best practice' without have to repeat the trial and error learning of other growers.

New varieties

As in any market new products are important. New products keep the interest of the consumers and generate excitement and a willingness of consumers to pay a premium.

From previous research, new apricot varieties are emerging that may be more suited to the Asian palate. This research needs to be reinvigorated so that the:

- industry can capitalise on the research already completed and the value from the new varieties is extracted
- that capital is generated from royalties to be reinvested to develop new varieties.

Further research is required to ensure that the potential for the new varieties is maximised.

Managing bacterial diseases and brown rot

Bacterial diseases and brown rot will always be a problem. The key to reduced damage is ensuring that the best management techniques are applied. This means:

- ensuring that the latest techniques are applied to manage bacterial and fungicide disease
- that ways are explored to improve the up-take of disease management techniques

Continuing research and practical application of that research to specific orchard circumstances offers the best potential for improved on-orchard management of these diseases.

Pollination

Further understanding of pollination and how to “turn pollination on” and improve the consistency of pollination from year-to-year could have major ramifications for the industry since it could improve the ability to maximise the available market “windows of opportunity”.

While achieving this ambition is a long term goal taking those tiny steps on the long research road is a necessity and a vital part of any R&D programme.

4.3.5. Maintaining and extending industry good functions

Care needs to be taken to ensure that the current functions of SNZ are maintained and where necessary enhanced. Currently the functions include:

- providing advice, information and support for our growers
- developing industry strategies to address key issues
- communicating with growers through a magazine, weekly email newsletter, monitors weekly sales (exports and domestic markets), and holds seminars and workshops and annual conference

- promoting summerfruit to the New Zealand consumer
- providing SummerGreen facilitators in Central Otago and Hawkes Bay
- representing the industry in discussions with the government and government departments

Two areas where further work may be required are:

- the interface with government, particularly with the development of the Government Industry Agreement (GIA) associated with biosecurity and a growing need demonstrate to city voters, growers “license to farm”
- the development of skills to drive the industry forward.

In both these case preliminary investigations will be required to understand exactly what the needs are and what the best role is for SNZ.

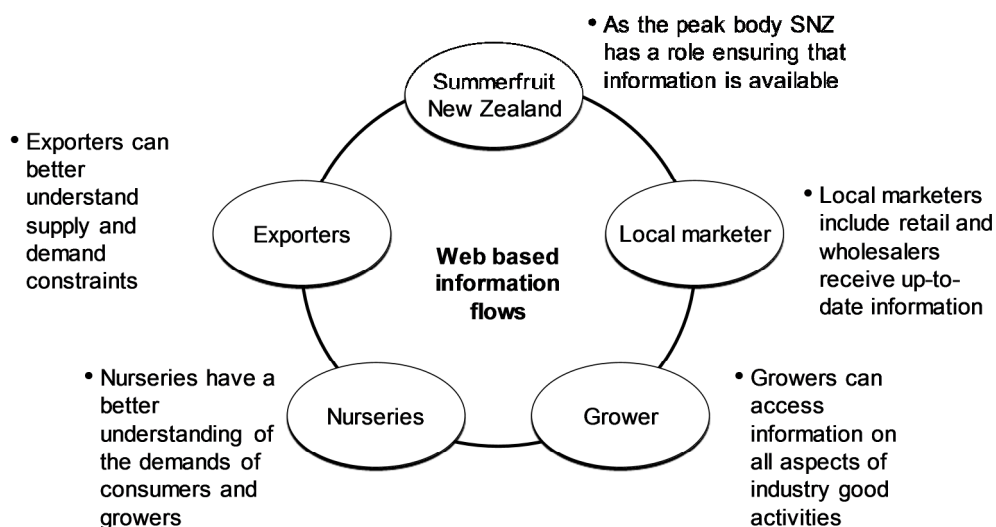
4.4. Improved access to information to underpin up-take

Underpinning the innovation system is an industry that has good information (see Figure below). To develop a \$250 million industry requires:

- ensuring that innovation is not trapped in silos and best practice is documented (along with benchmarks) and accessible to industry participants
- relationships are broadened so that all industry participants can engage in industry issues
- a better understanding of current and future local and export market conditions by industry participants.

To achieve faster up-take of proven technology requires a portal that is coordinated with other activities (such as field days or practical demonstrations of technology). The aim is to develop a systematic approach to capturing innovation that occur and ensuring it reaches participants in a useable way.

Figure 13 Information flows



Source: NZIER

Work is already underway on this project.

4.5. Understanding take up within the summerfruit industry

Increasing the adoption of proven technology by orchardists means the more likely the industry will meet its growth targets and flourish. This is a major issue in all land based industries because of the inherent risk and uncertainty in the activities undertaken. A number of factors are involved including climate, specific location of production, management skill, and other factors (which change from industry to industry).

Developing a better understanding of these factors will:

- help understand what the barriers to take up are (identify what is already known)
- determine the degree to which our existing knowledge informs how the industry might overcome the barriers to take up
- determine where there are gaps in our knowledge and determine the importance of those gaps
- set out the research/practical steps that can be employed to further mitigate up-take constraints.

5. Is this the right pathway?

5.1. What are features of the preferred strategy?

The key emphasis in the preferred approach is to incrementally improve the focus on R&D and R&D take up all along the summerfruit marketing chain. Incremental focus on R&D is the most appropriate model because it helps the summerfruit industry to:

- improve the quality of information utilised in strategic decisions
- cope with the varying lead times, pacing parameters, and sequencing needs of the various summerfruit industries
- build industry awareness, understanding, and commitment necessary for effective implementation of the strategy. Two key features of this process are:
 - ensuring that roles are defined: when is it best for industry to lead and when is it best for SNZ to lead?
 - clearly understanding where stakeholders should compete against each other and where they should cooperate
- decrease the uncertainty surrounding such decisions by allowing for interactive learning between stakeholders
- improve the quality of the strategic analysis and choices by involving those people closest to the situation

Specifically, the strategy emphasises the development and practical use of research and the importance of improving up-take rates. The purpose of the approach is to:

- be proactive about prompting innovative action
- demonstrate where innovations work (from whatever part of the marketing chain)
- disseminate successful innovation as fast as practicable.

5.2. Why will this approach maximise the chances of success?

A focus on incrementalism is the most credible way of maximising R&D success. Although each strategic issue will have its own peculiarities, a common series of processes are required for driving strategic changes.

The incremental approach for an improved focus on innovation requires:

- building awareness and identifying the best approach to innovation. As we don't know where innovation will come from it is sensible to focus on all aspects of the marketing chain
- legitimising viewpoints, amplifying understanding where innovation is proven by using an information portal

- broadening support for specific approaches, particularly where they have worked in other like industries
- creating pockets of commitment around particular innovation processes. In some situations, some stakeholders may wish to take higher risks (with consequent higher returns, relative to others, if successful). Ensuring that there is a facility to create these clubs of interest through SNZ is important.

The aim of this process is widen the feasible set where innovation can occur and be adopted as quickly as practicable. In this way we can maximise the chances that the incremental innovation process pays off for industry participants.

6. How will funding be provided and is the cost affordable?

A key aspect of the development of the preferred option is SNZ's management and the most appropriate changes that need to be made to ensure efficient and effective management of the strategic direction. Considerations include:

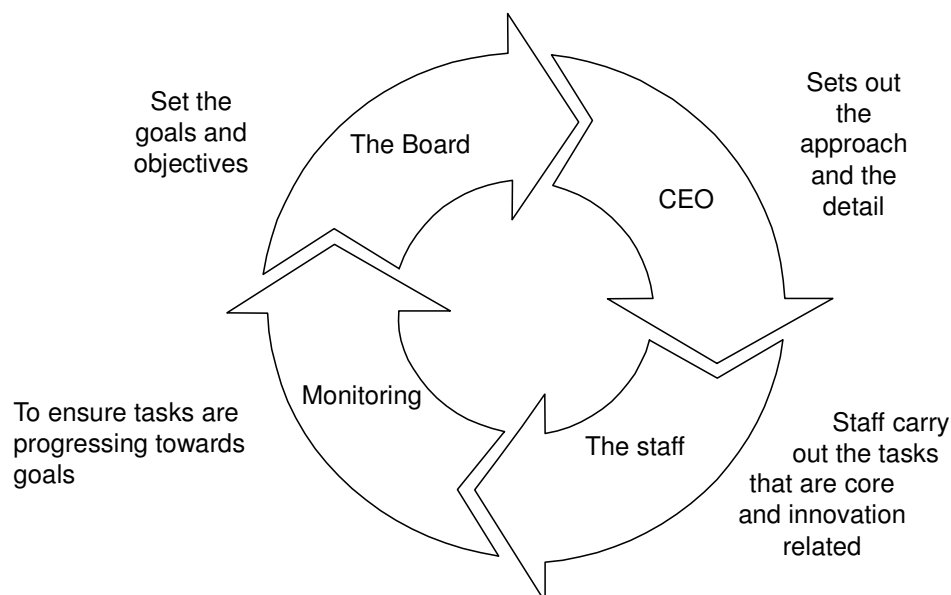
The interface between SNZ and outside parties (including allocation of funding to and monitoring of providers such as MPI).

The first and most important consideration is to ensure that the focus of SNZ remains on its core business and that any other activity fits into the SNZ structure. We expect that food safety, the license to farm, and biosecurity to become much more important and will need to be underpinned by further research – and will continue to need industry funding

The primary objectives of application for PGP funding will be the regeneration of the export apricot industry through the co-ordinated introduction of new varieties, development of new growing systems, expansion of existing export markets and negotiation of entry to and development of new export markets.

While the structure is flat already the key point to be made is that the extra focus on innovation does not undercut or crowd out other functions. To ensure this occurs requires increased monitoring of activities so that the Board (through the CEO) has the right information to set the organisational objectives.

Figure 14 Approach to “staying on course”



Source: NZIER

The interface between SNZ and the research process in the preferred option (including the conversion of research outputs into a form that can be applied by the industry and facilitation of the adoption of these outputs by the industry).

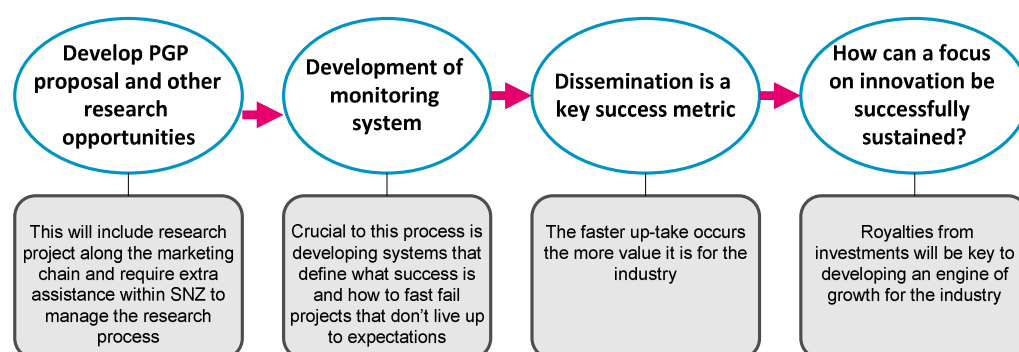
Initially, the importance of tapping outside funds to develop the PGP proposal will require significant focus (see Figure below). This does not mean that other avenues of research money should not be tapped (e.g. MBIE, Sustainable Farming Fund).

If this process is successful then SNZ and industry will need to construct a monitoring system over time that reflects success or otherwise of the research effort. The monitoring system will need to be flexible enough to incorporate the details of each project since they will have different drivers and timeframes, different expectations about success (e.g. we may only be talking about the best way to manage bacterial diseases and brown rot).

Dissemination is also a key issue. Once a technology is proven, how quickly it can be disseminated through the industry becomes important since it impacts on effectiveness and R&D success.

Even more importantly is the need for parts of the R&D to be self-sustaining. This is particularly so for the generation of new varieties. Since it is the development of new varieties that drive the industry forward and impact on what is grown.

Figure 15 Process for developing innovation system



Source: NZIER

Risks and funding diversification are dealt with in Section 8.

7. When and how will the benefits be delivered?

The approach is to examine all opportunities for innovation along the marketing chain. This requires looking at the detail of the leads and lags associated with the innovation processes, particularly for innovation behind the orchard gate. Therefore because of research that has already occurred some crops are in a better position to capitalise on innovation in the short term.

We have developed a timeline that details (in a preliminary way) the expected outcomes from the preferred strategic direction and other SNZ functions and show how these will be delivered. This requires:

- understanding the expectations of SNZ
- understanding what new opportunities can provide
- understanding grower perceptions
- detailing the extension process, possible take-up rates, and incentives for growers to participate (given other horticultural innovations).

Strategies to achieve the Summerfruit 2035 strategy need to be export driven as the domestic markets do not offer sufficient growth potential (in most but not all cases). Also given the short time frame – 20 years – available to achieve the increase of \$90 million in sales targeted by the strategy, delivery of the strategy has to rely primarily on known methods to increase production or new varieties that have already been developed and are ready for market testing.¹⁶

This reasoning suggests the achievement of the strategy will need to be focused on:

- cherries and apricots as they have established export markets. There may also be opportunities to apply the lessons learnt from increasing the sales of these fruit to plums, peaches, and nectarines. These initiatives would assist in rebalancing and diversifying the industry
- innovations in production volume or fruit varieties that are available now such as intensive growing systems (e.g. FOPS/UFOs) for cherries and in some form to new apricot varieties and plums.

Regardless of the growth option chosen, generic problems of increasing export demand (in existing or new markets) and increasing freight capacity will also need to be addressed. However, the nature of these problems will be affected by the mix cherry and apricot export growth that is used to achieve the strategy. We also expect some research spillovers for plums and possibly nectarines and peaches.

In respect of the readiness of these intensive growing systems we understand that:

- FOPS/UFOs for cherries can increase yield by 200% after 8 to 10 years but requires about twice the capital cost of traditional orchards

¹⁶ Our comment is based on the assessment that it requires approximately 8 to 10 years for new crops to reach full production leaving about 10 years for the techniques and varieties. This will boost export production and demand to be proven and then adopted by the industry.

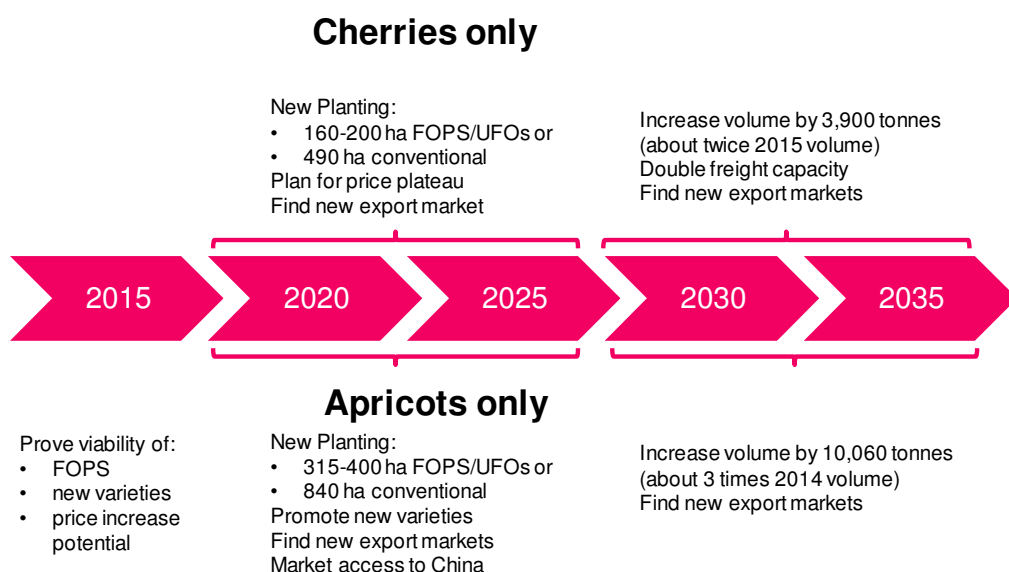
- FOPS/UFOs not yet proven for apricots and plums. The time required to develop and prove the technique may be more than 5 years
- new apricot varieties that are expected to markedly increase demand are currently being tested and could be ready in 3 to 5 years.

The range of options for the delivery of the production increase required to increase sales by \$90m can be illustrated by considering what would be required to achieve the strategy by relying exclusively on either cherries or apricots. Our high level scenarios for these options are:

- cherries only: assume prices 25% higher in 2035 and production increase of 3,900 tonnes (almost double) which would require new planting (based on summerfruit yield estimates) of:
 - 160 hectares under FOPS/UFOs
 - 490 hectares under conventional system
- apricots only: assume new variety price 20% higher in 2035 and production increase of 10,060 tonnes (almost triple) which would require new planting (based on summerfruit yield estimates) of:
 - 315 hectares under FOPS/UFOs (assuming the technique can be proven within 5 years)
 - 840 hectares under conventional system

The following figure illustrates a suggested timeline for the achievement of the strategy using either of these two options.

Figure 16 Cherry and apricot expansion options to achieve 2035 objectives



Source: NZIER

8. What are the risks and how will they be managed?

All innovation is uncertain therefore we do not expect all projects to succeed – if it were certain and profitable it would have already been done. Therefore, a number of things need to be put in place as part of the strategy to manage the risks (of which the probabilities are well known) and uncertainty (where the chances of success are unknown).

If it is unknown where innovation will come from then focusing on the whole marketing chain maximises the chances of success “wherever it may come from”. This means setting up an innovation system that takes into account:

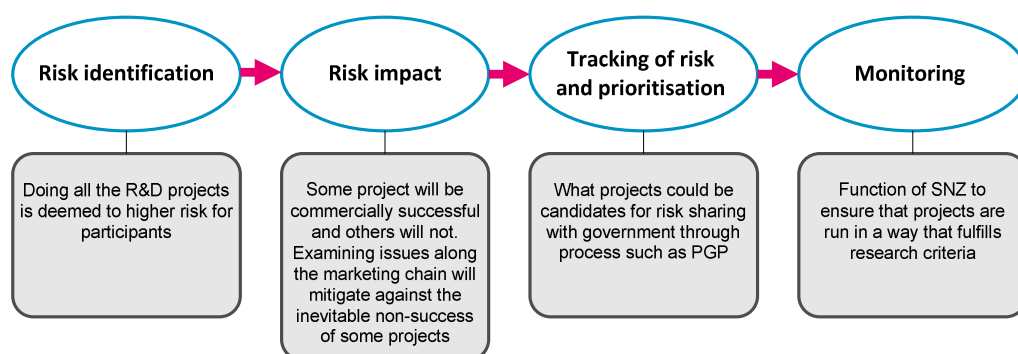
- innovation issues that span the marketing chain from market access and competitor analysis through to (bacterial) disease management and pollination
- ensuring that projects do not drift. Criteria for success and failure are firmly established prior to project commencement. Key actions include:
 - the development of intermediate measures that identify progress (or lack of it)
 - the nature of these metrics will depend on the identified critical success factors. However, they will need to ensure that quality and context are measured
 - graduated response to either return delayed or drifting projects to a re-negotiated timeline or stop the project and redeploy resources and effort to more attractive opportunities
- ensuring that the appropriate feedback loops are in place so that information on innovations can be disseminated quickly (between the participants in the innovation process and if successful the industry as a whole).

Given the details of each innovation programme will be different we expect some iteration to ensure the structure of each innovation programme can be judged against a realistic criteria.

There will always be risk associated with innovation. Therefore, ways of mitigating that risk for the industry, groups of stakeholders or individual stakeholders who are prepared to further invest in innovation is important.

The Figure below sets an approach to risk.

Figure 17 Approach to risk



Source: NZIER

The most important issue is to find a research funding partner. The industry is already doing this on a case-by-case basis. Agricultural and horticulture funds have been successfully tapped for many years (e.g. AGMARDT and the Sustainable Farming Fund among others). We expect this type of partnering to continue.

The focus on incremental innovation also means that the industry should consider other sources of funding that suits the risk appetite of the summerfruit industry.

A possible candidate for risk sharing is the relatively new Primary Growth Partnership (PGP) fund being run by the Ministry for Primary Industries. The fund has been set up because the government believes that the private sector is not spending enough on R&D. That is the government believes that more should be spent on R&D and they are willing to bear some of the risk. It will fund up to 40% of the costs of research programmes that focus on fostering innovation along the marketing chain.

The development of new apricot varieties, further FOPs/UFOs development specifically for apricots, the need to further understanding of the market development means that apricots are in a good position to capitalise on the funds available for qualifying projects.

Understanding risk and uncertainty is crucial to this process because of the uncertain nature of innovation. Drawing on the interviews with SNZ, stakeholders, and scientists we highlighted the following issues:

- an unsatisfied demand for new varieties of cherries, apricots and other summerfruit both in the domestic market and international markets. While the domestic market is important the main focus is on international demand for summerfruit
- we have developed conservative assumptions made about prices and up-take rates
- we have assumed only marginal growth in domestic consumption. It is also unlikely that peaches and nectarines will be exported in large quantities.

We have been deliberately been conservative about the approach to innovation. The risks/constraints are set out in the following table.

Table 6 Risks associated with the preferred strategy

Risk/constraints	Rating (probability x impact)	Management
Innovation does not produce commercial benefit	Medium x High	No innovation is certain. Conduct research along the marketing chain to diversify risk.
Risk that programmes will carry beyond useful commercial life	Small x Medium	Strong oversight from the customers of the research will mitigate the chances of doing research for the sake of research.
Take up is slow	Medium x Medium	Every effort will be made to ensure that information on innovations are disseminated as quickly as possible
Over hype what will be produced	Small x Medium	Conservative up-take assumptions have been used along the likely impact of the research.

Source: NZIER

Appendix A Industry structure

A.1 Introduction

In this appendix we describe the changes in markets, prices and area planted for each of the major fruit crops over the past ten years for export markets and the past four years for domestic and export markets.

The key aspects of the industry that are considered are:

- export markets, domestic volumes and area planted (data from 2005 onwards)
- domestic prices and total returns per hectare (data from 2011 onwards).

This analysis is intended to provide a context for comparing the scenarios for forecast growth in the industry.

A.2 Recent history

Returns to summerfruit has varied widely across crops over the past 4 years:

- revenue from cherries has grown at a compound annual average growth rate (CAGR) of 17 percent due to rising prices and increased sales volumes in both export and domestic markets.
- revenue from peaches has grown at a CAGR of 5 percent reflecting similar returns of volume and price growth primarily in the domestic market
- revenue from plums has grown at a CAGR of 1 percent apparently due to volume growth and steady prices
- revenue from nectarines has declined at CAGR of 4 percent

The cumulative effect of these changes on the relative shares of revenue for each of the crops is shown in the following table.

Table 7 Recent change in share of summer fruit revenue

Ranked by CAGR over the period 2011 to 2015

Crop	Revenue (\$m)		Revenue Share (%)		CAGR
	2011	2015	2011	2015	
Cherries	34.8	66.3	42%	59%	17%
Peaches	10.5	12.6	13%	11%	5%
Plums	8.1	8.4	10%	7%	1%
Nectarines	14.8	12.7	18%	11%	-4%
Apricots	15.1	12.2	18%	11%	-5%
Total	83.4	112.2			

Source: NZIER

The difference in performance materially affects the condition that would need to hold true for the SNZ growth forecasts to hold true.

The following table compares the SNZ forecast with the starting position in 2015.

Table 8 Expected change in share of summer fruit revenue

Ranked by CAGR over the period 2015 to 2035

Crop	Revenue (\$m)		Revenue Share (%)	
	2015	2035	2015	2035
Cherries	34.8	66.3	42%	59%
Peaches	10.5	12.6	13%	11%
Plums	8.1	8.4	10%	7%
Nectarines	14.8	12.7	18%	11%
Apricots	15.1	12.2	18%	11%
	112.2	509.6		

Source: NZIER analysis of SNZ forecasts

The key drivers of the SNZ forecasts are:

- massive increase in production due to doubling in the area planted in summerfruit with new area using FOPs which on average produces at least two and a half times the volume of traditional planting systems
- massive increases in the exports of apricots and cherries (at least eight times the current volume of exports) and development of larger export markets for plums
- expansion of the domestic market for peaches.

A.3 Future Orchard Planting System (FOPs)

Future Orchard Planting Systems are forecast to enable summerfruit growers to approximately double crop yields. However, to realise the benefit of this innovation growers will need to consider the following:

- timing of the innovation – choosing between introducing the new system to replace trees as they mature or implementing the system early¹⁷
- access to export markets in which to sell the additional fruit (as the increase in production could not be readily absorbed by domestic markets without lowering prices).

¹⁷ The estimated rate of productivity increase for FOPD used in the Summerfruit NZ 2015 forecasts varies between 2 and 3. This estimated increase seems to be substantially higher than the potential productivity increase of 1.8 to 2.0 which seems to apply to pip-fruit particularly apples. It is also our understanding that Summerfruit NZ projections approximate Stuart Tustin's (Plant & Food) projections for cherries and apricots.

The following table indicates the estimate payback period for replacement of productive trees with new trees using FOPs based on the difference in production alone and assuming:

- a 10 percent discount rate
- a post FOPs production recovery profile during the first five years of the conversion as follows:
 - years 1 and 2 – zero production
 - year 3 – 50 percent of mature FOPs output
 - year 4 – 75 percent of mature FOPs output
 - year 5 onwards 100 percent of mature FOPs output
- no allowance for the increased capital costs (posts, wires or trellis) of establishing a FOPs
- no allowance for cost savings in orchard management and picking that arise from FOPs.

Table 9 FOPs implementation benefits

Comparison of estimated payback period by crop

Crop	FOPs production increase factor	Estimated payback period (years)	
Cherries	3.00	5	
Apricots	2.67	5	
Peaches/Nectarines	2.40	6	
Plums	2.00	7	

Source: NZIER

In practice we understand that:

- the productivity gain from FOPs is about 12 percent higher for cherries than apricots and 50 to 100 percent higher than for the other summerfruit¹⁸
- application of FOPs type approaches has been more thoroughly tested for cherries than apricots and barely tested for peaches, nectarines and plums.

¹⁸ Based on Summerfruit industry forecasts the FOPs output 2005 higher for cherries, 167 percent higher.