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## Contextualising horticulture in post-quake Kaikoura

Clothier B

November 2020

## Confidential report for:

Beef + Lamb New Zealand

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## Executive summary

### Contextualising horticulture in post-quake Kaikoura

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November 2020

This report presents the findings from a selection of interviews with farmers in the Post-Quake Kaikoura (PQK) region regarding current and future horticultural practices. Of the 14 interviews conducted, one was with a person who had considerable experience of horticulture in Canterbury.

The other 13 interviews were classified into the following three groups:

- Farmers who wish to initiate new horticultural plantings, where there might only currently be small historic plantings of trees around the homestead (5 of 13).
- Farmers who have some minor horticultural activities that are adjunct to the main operation of the farm (4 of 13).
- Enterprises where there are successful, full-scale horticultural activities either stand-alone, or in tandem with other activities (4 of 13).

For a variety of reasons, only the detailed results from 10 of these interviews are discussed in this report.

The findings showed that there was cautious optimism and enthusiasm for the future potential of horticulture as a new and complementary part of the farming landscape of the PQK region.

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# 1 Introduction

Fourteen interviews were carried out across the Post-Quake Kaikoura (PQK) region to assess the current presence of horticultural activities, and to provide a context and ground-truthing for the desk-top modelling of horticultural crop suitability that had previously been carried out. Thirteen of these interviews were held face-to-face, and two of these had telephone interviews beforehand. One interview was by phone only. The first set of interviews was carried out on 11 and 12 December 2019, with the second set between 18 and 20 January 2020.

For a variety of reasons, only the detailed results from ten interviews are presented here.

The reporting here is simply in the order of the interviews. The information presented in this report has been checked by the interviewees and they have given their consent for the reports to be released.

## 2 Interview reports

### 2.1 Esses Wine Vineyard, Kaikoura Peninsula, 11 December 2019

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In 2008, Mel and Aaron Skinner purchased an established vineyard originally planted in 2000/2001, with a planted area of 1.6 ha. There is the potential to plant another 1.5 ha, totalling 3.1 ha. They have enough machinery to service up to 40 ha. Mel Skinner studied viticulture at the Eastern Institute of Technology in the Hawke's Bay. The Skinners noted that the once-common plantings of Sauvignon blanc have now been removed, as there is insufficient warmth here to bring the soluble solids concentration (SSC) up to a harvest-level maturity of 21° Brix. There were up to 13–14 vineyards in the district previously. There are very low risks from frost. Our desk-top modelling had also suggested that the growing degree day (GDD) warmth here was marginal for Sauvignon blanc.



Figure 1. Esses Wine Vineyard on the Kaikoura Peninsula with Mt Fyffe in the background. The grapes are Chardonnay and Pinot noir.

The Skinners decided to plant Chardonnay and Pinot noir (Figure 1), and grow these for 'bubbles' as they can be harvested at a lower SSC of around 18–19° Brix. Bud break is around 20 September, with flowering at the end of November and a late-season harvest in mid-April. Professional contractors are brought down from Marlborough to carry out pruning and harvest.



No irrigation is used. The grapes are vigorous and need regular trimming. The vines are not on root stock; however, the Skinners now have grafted seedlings and they will be planting more Chardonnay, mainly to infill gaps. There is some risk of botrytis with autumn rains, as our desk-top modelling also suggested. Powdery mildew can also be a problem, so efforts are made to keep the canopies open for good ventilation.

Because sparkling wine is being produced, there is a 3-year lag in revenue. The 2014 vintage is only now being released. These wines compete with French Champagne. There has been international interest, but as yet there is no exporting, although the Skinners are looking at testing out the Sydney market.

The Skinners also have a solitary hop plant that is used for hobby brewers (Figure 2). Hops are a bine where the stems themselves twirl around the support string, unlike a vine where the tendrils attach the vine to the support structure.



Figure 2. A solitary hop bine at Esses Wine Vineyard.

## 2.2 The Eastmonds, Hazelnuts, Waiau, 11 December 2019

Mark and Caroline Eastmond have been growing hazelnuts on their 10-ha property near Waiau for 23 years. In the past they have been involved in other activities such as rural tourism. The Eastmonds came to Waiau in the early 1990s. They planted a range of horticultural crops, including almonds, walnuts, apricots and apples, along with the hazelnuts. In 1992, there was a 1500-mm snowfall, which was followed by severe frosts. The hazelnuts survived best of all. The Eastmonds now have 1100 trees across 2 ha. The hazelnut cultivar is 'Whiteheart', a cultivar developed by the Deans family from two US varieties and a European cultivar. It is a reasonably dwarf tree, easily maintained by pruning. It is considered a healthy nut with good oils and low rancidity.



Figure 3. The Eastmonds' hazelnut orchard. The inset on the left shows the developing nut, and the inset on the right shows a shelled hazelnut picked up from the orchard floor that had been missed 6 months' earlier.

The Eastmonds also run a hazelnut nursery. Originally the nursery comprised 80% of the business, but it is being downscaled and now only contributes about 50% of the revenue. At one stage they had 10 people working the nursery, and have over time sold 400,000 trees. They are now selling about 3000-5000 trees a year, and they are sold out 2 years' in advance.

They noted that during the first 10 years there is a lot of activity and work, but virtually no income. The next 10 years they said were the reverse, as the trees only need minimal pruning and the yields are higher at around 3–5 kg per tree, so revenue is good. Some irrigation is used, sometimes up to 3 times a year, but never near to harvest.

The nuts fall to the ground in the shells. Unlike walnuts, hazelnuts are very resilient to rots in their shells on the ground (see Figure 3), and so they can be left on the ground for 4–6 weeks before being collected in one single harvesting action. The nuts prefer settled hot dry weather in February and March to reach maturity before they drop. Mr Eastmond is an engineer, and he built a 'vacuum cleaner'-like attachment for the power take-off of his tractor to suck up the hazelnuts from the ground. The nuts are then stored in 20-kg onion bags in the shed for the nut to separate from the shell.

Mr Eastmond also built a machine to shell and de-husk the hazelnuts. He then sold it to Alan Mathewson of the Hazelnut Co. near Aylesbury in Canterbury. The Eastmonds now send their nuts to Aylesbury. The Eastmonds think there is a bright future for hazelnuts. The Hazelnut Co. now directly



exports 15% of its nut to Asia. There is a growing demand for hazelnuts, and there is a demand for young trees that the Eastmonds cannot meet.

The Eastmonds consider hazelnuts are profitable, easy to manage, easy to harvest and store, prior to their bulk despatch in-the-shell to Aylesbury. There are little disease pressures, and they have little use of fertilisers. The Eastmonds apply seaweed-based foliar spray for tree nutrition, and apply sulphur for disease control, and this keeps the ladybirds, which can control the aphids.

There is a range of perennial horticultural tree crops surrounding the homestead (Figure 4).



Figure 4. A range of perennial horticultural crops around the Eastmonds' homestead.

## 2.3 The MacDonalds, Leader Road, 11 December 2019

Jason and Tracey MacDonald farm Chedder Valley Station on Leader Road near Waiau. The 2300-ha property is a sheep and beef farm. There are also stud sheep, and some calf rearing for dairying. Tracey is interested in developing some horticulture, possibly apples or pears, and maybe some nuts. This would, she considers, add resilience to the farm and provide a business activity for her. She had considered that horticulture might be an option on the north-facing slope on the hill to the north-east of the homestead, or on the flat land immediately to the north-east of the house. The MacDonalds provided the land use assessment report carried out by LandVision. An excerpt of the Land Use Capability (LUC) map is presented below as Figure 5.



We consider horticulture to require land to be of LUC Classes I, II and III. There are 60 ha of Class II, plus 77 ha of LUC Class III. Most of this comprises the flat land to the north-east of the homestead. This land could be prone to frost, and some mitigation by wind turbines might be needed.

In a subsequent email conversation with Tracey, she noted that there had been a heavy frost on 5 May 2020. Further investigation shows that is not unusual, as an analysis of data from Virtual Climate Station Network (VCSN) site 20370 reveals (Figure 6). This VCSN station is centred on Cheddar Valley Station.



Figure 6. The 5 x 5 km grid-square for Virtual Climate Station Network site 20370.

We analysed data from this station in our previous Post-Quake Report. From this VCSN station we found that the average first frost is on 29 May. However, the 20th percentile (2 years out of 10) date of the earliest frost is 11 May. And over the 46-year VCSN record, the earliest ever frost was on 19 April. So a 5 May frost, as happened this year, will happen 15–20% of the time.

Would such an early frost be an issue for apples? This is unlikely, as in Table 16 of our report, we predicted that apples would be harvested on 22 March.

Tracey is going to keep monitoring frosts.

We will work to develop a plan to initiate a trial planting on Chedder Valley Station.

## 2.4 Kara Palmer, Sherwood Road, Mt Lyford, 12 December 2019

Kara Palmer and her partner farm some 545 ha at the end of Sherwood Rod, on the north bank of the Lottery Rover near Mt Lyford. They also farm some leasehold land. It is a sheep and beef farm. They have farmed this area since 2001, and moved onto the farm in 2011 when they built their 'off-the-grid' house. The land surrounding the house is land use capability (LUC) Class III. Some 9% of the farm is LUC Class III. The soil near the house is a loessial silt loam, and has imperfect drainage. The flat land around the house is also exposed to the nor'wester wind. Despite these constraints, Kara has planted a number of horticultural trees that are doing well. These include figs, gooseberries, nashi pears, and apples (Figure 7).





Figure 7. Fruit trees, including apples and figs around the Palmers' house near Lottery River, Mt Lyford.

Kara noted that she thought the first autumnal frost used to be as early as March, but now tends to be in May. Our analysis of VCSN 20367 (Mt Lyford) finds that the average date of the first autumn frost is 7 May, and that the 46-year earliest frost was on 17 March. We predict that apple harvest here would be on 14 April, such that the probability of frost before harvest would be 15%, which could be mitigated because of cold-air drainage, and possibly a wind turbine. Kara considered the last frost to be in October, and we find from the VCSN data that in 8 years out of 10, the last frost would be before 22 September. We predict apple flowering to be in October, so there would be a 17% chance of a frost after flowering. Mitigation is possible.

Down on the river flat near the ford across the Lottery River there is a large un-pruned apple tree, which Kara thinks could be about 100 years old (Figure 8).





Figure 8. An old apple tree, possibly 100 years old, on the banks of the Lottery River on Kara Palmer's farm near Mt Lyford.

The tree continues to produce an apple crop every year.

## 2.5 Jeremy Stace, ex-Dunluce, Kekerengu, 13 December 2019

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Jeremy Stace and his wife used to farm both Dunluce (homestead block) and the adjacent Parikawa farms. These were sheep farms. In 1996, the Staces sold Parikawa to the Throssals, and then they sold Dunluce to the Throssals after the earthquake. Dunluce fronts State Highway 1, and is within 500 m of the sea. Along the front of Dunluce there are ephemeral streams within three shingle fans that were, in the past, traversed by fording.

On Dunluce, the Staces planted 200 'Meyer' lemon trees, 8 avocado trees, and 600 grape vines. The current number of lemon trees are shown in Figure 9, along with a view looking towards the sea from the gate of Dunluce. Being so close to the sea, this area is essentially frost-free.



Figure 9. The remnants of the lemon orchard at Dunluce, Kekerengu (left), and looking towards the sea from the gate of Dunluce (right).

Every fortnight some 250 kg of lemons were picked on a Wednesday by Jeremy, then polished, graded, and labelled. He would then drive south to Christchurch on Thursday afternoon, first dropping off 40 kg of second-grade lemons in Kaikoura. The remainder were sold to restaurants and premium outlets in Christchurch, primarily in Merivale. This harvest during April–June was complementary to fresh lemons being supplied from the North Island. Jeremy had three separate orchard locations so that there was a progressive picking calendar that enabled him to supply newly picked and un-waxed lemons for 12 months of the year. The pick was reduced from April through July; however, this period corresponded with the bulk of the North Island lemons flooding the market. This ended when the Staces sold the farm



Figure 10. The Three Fords labels used on the Staces' premium lemons, and two bottles of wine also using the Three Fords label, which allude to the erstwhile three fords over the shingle fans on State Highway 1.

The avocados were a moderate success, although cool spring temperatures occasionally interfered with flowering. About 300 avocados a fortnight were harvested and taken to Christchurch during the harvest season for about 6 months of the year. Spring flower bulbs were also grown and supplied to a wholesaler in Christchurch between April and August. In the early 1990s, grapes from the vines were harvested by hand and wine-making was carried out in Waipara (Figure 10). This lasted for nine vintages between 2004 and 2012. Pressures on time meant that the viticultural activities ceased.

This diversity of horticultural activity highlights the niche micro-climatic value of this sea-side location at Kekerengu. More importantly, it highlights the horticultural vision, niche entrepreneurship and indomitable energy of a sheep and beef farming family. Jeremy noted that these ventures were lucrative side-lines, and that the demand was there, and they could have expanded into larger operations.

## 2.6 John Hickman, Taimate Vineyard, Ward, 19 December 2019

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The Hickmans' farm is 700 ha, and the bulk of this is a sheep and beef operation. More details can be found at <https://www.rabobank.co.nz/our-story/our-clients/john-and-paul-hickman/>. John's brother looks after the stock, and John looks after the vineyards. The farms and vineyards are a common business managed as two parts. The total land area is in a Family Trust. The family have been on the farm since 1905. A great-uncle won it in a ballot, and gifted it to John's great grandfather as a wedding present.

They have their own dam that can irrigate 150 ha, and they have also subscribed to the Flaxbourne Community Irrigation Scheme. As well as sheep and beef, the Hickmans have tried olives, although did not find the industry that strong. They have also trialled growing onions for seed, although a wet season meant they did not follow up. They are growing lucerne for feed and seed.

In 2006, they had a large 11-ha block of Sauvignon blanc grapes, and then in 2012 a 9-ha vineyard of Sauvignon blanc grapes was bought. There were another 5 ha of grapes in 2014, then 18 ha in 2018, plus 42 ha in 2019. There are now 85 ha of grapes. All are Sauvignon blanc, and all are irrigated. The smallest block is the coldest and there are overhead sprinklers for frost control. There was a frost late in October 2019 at bud swelling, before bud burst. All frost-control systems worked. John is in the process of installing more frost fans. There are frost sensors with alarms. The overhead sprinklers need to be activated manually, whereas the fans are automatic. A Harvest Ltd weather and monitoring system is used, so the impact of frost fighting can be seen in real-time, and this system also monitors soil water, water use and electric fences. These are all live. They do get some strong northerly and southerly winds, and the latter can bring salt spray and occasional leaf salt-scalds.

The Hickmans make a small amount of wine themselves, but they are primarily contract growers.

John is settled on his future. Although with more irrigation they might consider garlic, shallots, and even onions and other small seeds. He expressed an interest in hops.

## 2.7 Alistair Malcolm, Waipara, 17 February 2020

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Alistair Malcolm now lives in Glenmark, Waipara. Originally Alistair had two orchards on the outskirts of Christchurch, one near Belfast, the other near Styx. He sold these in the 1970s–80s, as the city expanded. Alistair has served in many governance roles within horticulture in New Zealand, including the DSIR Fruit Research Committee, and served on New Zealand Fruitgrowers' Committee, and the Committee of Summerfruit New Zealand. He is vastly experienced, both in terms of practice and governance.

He notes that climate is the vital pre-requisite for horticulture to be successful, and when there are low Growing Degree Days (GDD), say around 800 degree days, there is insufficient warmth for fruit sizing and maturation. Even where the soil and weather might permit horticulture to be practiced, Alistair noted there is a capability and capacity gap. That is, there is a gap in the necessary expertise, an absence of infrastructure, and the necessary investment. Alistair expressed some doubts about a distributed horticultural industry across multiple niche locations, and he sees the need for an 'over-the-top' investor. Ngāi Tahu could be a vehicle for this investment. He also added that across the Kaikoura region there is conservatism in the rural community, and there will be a need for innovators if there is to be change. A cooperative model could possibly work he thought.

Alistair is a deep thinker about these issues, and he has some important views that will need to be considered if there is to be significant land-use change.

## 2.8 Peter and Megan Handyside, Medina Station, Conway Flat, 18 February 2020

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Peter and Megan Handyside farm 2200 sheep and 150 cattle across the 571 ha of Medina Station at the southernmost end of Conway Flat. This farm began as a soldier settlement in 1946. There are 371 ha of improved pasture across the farm. Within the farm there are 96 ha of LUC Class II land, and 53 ha of LUC Class III. There is good LUC Class II land around the homestead. Being close to the sea the winters are warm, and there is good cold-air drainage into the valleys and towards the sea to mitigate frost risks. They have a reliable source of water through run-of-river flow that could be used for irrigation. Despite the warm winters, during summer a cool north-easterly wind can put limit on peak afternoon temperatures possibly affecting fruit maturation.

The Handysides are keen to begin a trial with limes and other citrus. Megan sees the opportunity to sell the fruit through nearby towns such as Cheviot and Christchurch, direct to customers.

The Handysides already have a number of horticultural trees around their homestead, including limes, mandarins, lemons and avocados (Figure 11).





Figure 11. A lemon tree (left) and avocado tree (right) near the homestead of the Handysides at Medina on Conway Flat.

The Handysides have scoped out a paddock nearby the homestead where they hope to establish a trial planting of citrus trees (Figure 12).



Figure 12. The paddock to the north of the homestead where the Handysides hope to set up a trial with citrus. The sea is in the middle distance.

## 2.9 The Bowrons, Leader Road, Waiau, 18 February 2020

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This farm has been in the Bowron family since 1928. Geoff and Mary Bowron took over the 280-ha farm in 1972. The farm is mainly a sheep and beef operation with 2500 stock units, along with some lucerne cropping (Figure 13). Also, about 10% of the farm is planted in pine trees. The farm has access to water through the old Ministry of Works and Development (MWD) pilot irrigation scheme that became operational in 1975. There is some contoured border-dyking. Geoff is against the use of centre-pivots for irrigation. They have on-farm storage of water, and there is also a community-irrigation dam on their property. There is a weather station in the bottom paddock.



Figure 13. The Bowron's farm looking south from the homestead towards the Waiau River, which is their boundary. Incidentally, Neil and Angela MacFarlane's house is on the opposite site of the river to the extreme left. The Eastmond's property is to the right and abuts the Bowron's property.

The Bowrons are interested in diversifying their farm and integrating horticulture into their sheep and beef activities. They noted that their son works for The New Zealand Institute for Plant & Food Research Limited at Lincoln, and is very interested in plants.

The Bowrons have a wide range of horticultural trees surrounding their homestead, and these include peaches, lemons, quinces, berry fruit and currants, plus almonds and walnuts (Figure 14). Across the farm there is a range of locations with cold air drainage, which in conjunction with wind turbines could be used to mitigate frost risks.





Figure 14. The range of horticultural crops surrounding the Bowron's homestead on Leader Road near Waiau.

## 2.10 Lachie Taylor and Alley Avery, Kaka Road, Ward, 19 February 2020

The Taylor/Averys have a 1000 ha farm at the end of Kaka Road to the west of State Highway 1 just north of Ward. It is primarily a sheep and beef farm carrying 4000 stock units, with a 70:30 sheep:cattle ratio. The Flaxbourne River runs through their property, and there is one dam on the property for irrigation. They have also subscribed to the Flaxbourne Community Irrigation Scheme. Beginning in 2006, they began planting Sauvignon blanc grapes and there are now 40 ha of grapes on a flat terrace of Templeton silt loam (Figure 15). There are 83 ha of flat land on the farm, and when the irrigation scheme is operational they intend to plant more grapes. Lachie believes there is a katabatic wind down the valley in winter that keeps the vineyard terraces frost-free.



Figure 15. The Boundary Rider Vineyard block of Sauvignon blanc on the Taylor/Avery farm, looking west up the Flaxbourne Valley near Ward.

There are two full-time farm workers, one each for the vineyard and sheep/beef operation. Recognised Seasonal Employment (RSE) workers are also used as required. The grapes are highly valued, and Boundary Rider Vineyard supplies grapes to Matua, Mudhouse and Raupara Springs.

The Taylor/Averys also own a block of flat land halfway back down Kaka Road. They are keen to consider future options for this land. They consider kiwifruit might be a possibility as it is quite sheltered, especially from the cool north-easterly winds that happen during summer afternoons. They would also be interested in exploring the possibilities for other high-value crops on this land.



### 3 Conclusions

The findings from 14 interviews with farmers in the Post-Quake Kaikoura (PQK) region reveal that there is cautious optimism and enthusiasm for the future potential of horticulture as a new and complementary part of the farming landscape of the PQK region.

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