

SFF Project 404831 - Increasing the Market Share for New Zealand Olive Oil

Milestones M16 and M17 Sixth and Final Focus Grove and Field Days Report

March 2019

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Introduction

The purpose of the Sustainable Farming Fund project is:

To increase the market share for New Zealand produced olive oil by identifying basic grove management practices to enable the industry to consistently lift productivity of fruit per hectare and thus also reduce costs. This will allow the New Zealand industry to compete effectively with imported olive oils to increase market share.

The objectives to achieve the purpose are aimed at practice changes that enhance tree and grove productivity.

The methods use expert tree crops horticultural advice focusing in two key aspects of grove management.

1. Improving tree health by disease control using affordable protectant spray programmes to eliminate foliage diseases that defoliate olive trees, a primary cause of low productivity in NZ groves.
2. Introducing practical, affordable tree pruning regimes that improve light distribution for stimulating flowering and fruit growth, aiding effective spray coverage and inducing adequate annual shoot growth to provide the required bud sites for new flower production – on an annual basis.

Subsequent to the Focus Grove and Field Day visits in October 2018, an updated Anthracnose Bulletin was issued based on advice from experts from Horticulture. The successful results of the changes recommended was observed at all Focus Groves visited and others who had followed the updated recommendations.

This report outlines the progress made by the Focus Groves and is based on the final review from the sixth and final round of Focus Grove visits and Field Days held in March 2019, carried out under the Project Extension Approval. This sixth round of visits was carried out by the two consultants engaged as part of the projects; Dr Stuart Tustin from Plant and Food Research and Andrew Taylor from Forty Groves Ltd. Also attending were Craig Leaf-Wright, President of Olives New Zealand and Gayle Sheridan, Executive Officer for Olives New Zealand. Josu Amelibia from Spacesonic Ltd, Greece attended all but Hawke's Bay to demonstrate the Atrax 4 electric olive harvester. This was timely given the need for many grove owners to take on responsibility for managing their own harvests. Dr Vera Sergeeva from Australia (plant and disease specialist) attended all except Hawke's Bay and Nelson to gather data for her new book.

This report is based on the comments from the Focus Grove visits by the project consultants and Focus Grove owners coupled with discussion at the Field Days with attendees.

Focus Groves Status

Ngatarawa (Aquiferra), Hawke's Bay

Bob Marshall and Shona Thompson welcomed 26 people to the Field Day held on Monday 18th March. In addition to olive growers, also in attendance were representatives from Hortplus and the SFF Advisor from MPI, Fiona Clark.

Andrew Taylor noted that there was no sign of Anthracnose after following the recommended new regime at flowering with Protek. He explained that this was the fungicide used in apple orchards to prevent summer rot. The result has been all catkins have developed into fruit. As per the recommendation, Protek was applied along with Manzate at the first sight of flowers and then a second application 10 days later and a third another 10 days later. There is an Anthracnose Bulletin on the Olives New Zealand website under the Focus Grove tab with full details.

Andrew pointed out that there were now bunches of fruit (up to 10 berries) vs single fruits. There was a high level of fruit set evident and no sign of dead catkins. He said Ngatarawa was looking at least as heavy a crop load as 2018, potentially greater.

There had been anecdotal reports from some groves with poor crops this year and this has been because of poor fruit set caused by Anthracnose. This was seen as brown petals rather than white flowers.

Stuart Tustin commented on the healthy canopy with dappled light. He pointed out the new growth with healthy leaves and new flower buds for next year evident. The trees are in very good shape because of the aggressive pruning regime 2 years ago.

However scale has appeared in the grove perhaps because of unusually longer wet followed by hot weather. Spraying is required in December/January - Mortar, Movento or Applaud. There are other insecticides that are cheaper but there is an issue with retention/residue in oil. Scale needs to be monitored earlier and comes in on plants from the nursery, it may be suppressed and take many years to spread. Evidence on fruit now but can only be addressed at pruning time in summer. The message being that people need to be out in their groves and looking at trees regularly.

It was noted that there was now a need to start irrigation in the grove, which is much later than has been typical.

Bob Marshall said they were very happy with the crop load across the grove, however the important factor is the crop harvested. He said that cercospora has now been got on top of again and there is very little sign of unhealthy leaves. Bob commented on 2m of branch with no canopy and Stuart says that this enables light and spray penetration and can be addressed during the subsequent pruning programme.

Representatives from Hortplus had asked to attend to talk about the service they could offer to the olive industry. They have 80 weather stations across New Zealand that can provide advice on weather predicted for the spraying programme. Access is through smart phones and they are already working with other tree crops. Predictive information would assist with spray programmes because the diseases affecting olive trees are wet weather diseases. Therefore need to predict wet weather for spraying and then after spraying. Noted the recommendation was 20:20; every 20 days or after 20mm of rain. It was noted that many groves manage this currently with rain gauges and their spray diary. Hortplus offered to discuss their services further with anyone interested.

The afternoon concluded with a BBQ and an opportunity for discussions to continue informally.



Attentive audience at Ngatarawa



Laden tree, fruit from top to bottom



Stuart very happy with bunches of fruit



Scale on leaves



Minor scale on fruit

Olives on the Hill, Northland

There were 27 attendees from Auckland, Northland, Waiheke Island, Hawke's Bay, Wairarapa and international visitors, who were welcomed to Olives on the Hill by owners Chris and Linda Smith on Tuesday 19th March. In attendance was a couple interested in establishing a new grove in South Auckland.

The coppiced and grafted trees have blossomed, see photo. It was noted that coppicing trees was a fast track to get trees into shape especially given the size, height and width of the trees in many groves. If coppicing, it was best to do a row or several at a time because of need for spray effectiveness.

Chris and Linda say in hindsight they maybe should have coppiced the full grove and brought in bulk oil to continue satisfying market demands and to protect their brand. Stuart commented this approach would avoid a grower ending up with a huge crop and no established market. Stuart said the coppiced trees with some thinning will become model trees.

Andrew said the aim at Olives on the Hill has been to rework trees but maintain a level of production over the 4 year period. There had been a mixed approach across grove, including coppicing and reworking trees. Generally trees were now widely open in a vase shape with the next prune evident.

Stuart said there was very little leaf loss, nor any evidence of peacock spot and cercospora. These diseases have been progressively suppressed.

Andrew said Northland was pushed to harvest early because of rain and threat of Anthracnose. The climate is not typical of olive growing regions internationally because of wetness and vigorous growth. Trees in our climate out-perform other tradition growing regions, a point agreed to by our visitor from Greece.

The other challenge is that olive trees require farming management 12 months of the year and a grower cannot back off particularly the spray regime.

Olives on the Hill is still in mode of continuing with major branch removal because of some branches that are out of range of the sprayer and harvester. However, trees looking so much healthier across the grove. The success of the pruning is shown in the photos looking at branch cuts and regrowth. Most trees have now been totally rejuvenated progressively with regrowth now compensating in production. After harvest major branch removal will continue. Extension growth is facilitated by tree health, leaf health.

It was noted that there is potentially a larger crop than last year. However some scale apparent now and will be able to be seen clearly when pruning.

Andrew said given the success of the current project, it is now important to look at what next to maintain and potentially increase productivity. For example soil/tree nutrition, maybe opening tree out more. However, he added that in the Northland grove there is no sign of nutritional issue.

In summary Stuart said that Olives on the Hill has vastly improved over the term of the project and the signs are that this improvement is continuing.

Josu Amelibia from Spacesonic Ltd then demonstrated the ATRAX 4 battery operated harvester. He explained that this had extension poles to 4m. The harvester offered effective fruit removal with minimal leaf loss and no damage to branches. He recommended to start at top of tree and work down. Long prongs reach into branches and don't damage fruit making the harvester idea for both table olive and oil olive harvesting.

The afternoon concluded with afternoon tea and an opportunity for people to talk more about their experiences.



Out in the grove



Coppiced tree now regrown



Laden tree, fruit from top to bottom



Bunches of fruit



Impressive new extension growth



Stuart showing new branches



Healthy new growth



Attentive audience



ATRAX4 Harvester demonstration

Leafyridge, Wairarapa

Craig and Ruth Leaf-Wright welcomed more than 50 people from Northland to Marlborough, including the Horticulture representative, to Leafyridge Olive Grove on Friday 22nd March. There was a two minutes silence observed in respect to the terror attack one week ago in Christchurch.

Andrew started by recapping on project rationale, hypotheses, methodologies and results to date. He emphasised pruning and spraying as being the focus criteria because of challenges in growing olive trees in New Zealand.

Stuart discussed the restructuring underway at Leafyridge. Transformation has occurred across the grove. Trees are notably smaller and healthier and more vase shape. Noted no bare limbs, plenty of leafy canopy and fruit from top to bottom, plus the extension growth for next season with buds apparent. The initial recommendation of taking out major limbs to allow new growth to develop has been extremely effective for all of the Focus Groves.

The Focus Grove Project target had been to consistently harvest 15kg per tree with a national average of less than 10kg. Leafyridge now at 25kg per tree and with another 2 years to reach optimum. Consistency is key and biennial bearing has been addressed in Focus Groves and others following the methodologies.

However while the trees at Leafyridge have an excellent crop, trees are now showing some stress and irrigation required if possible. Noted that some groves do not have access to water for irrigation.

There was discussion around difference in pruning for mechanical machine vs hand harvesting with battery operated harvesters.

Andrew explained that the project had been 3 years but 2017 year weather had adversely impacted on trees and harvest. An extension was approved by the Sustainable Farming Fund for another 12 months to prove the project, which has been successful.

Linda spoke of their Northland grove where trees had been neglected and overgrown. With typical biennial harvest of 25kg one year and no harvest the next year. Now their average is at least 25kg per year consistently with 2018 best crop ever and current crop load looking as good. Andrew talked about the issue in Northland in being able to get out in grove to spray safely in wet conditions. He said there was a similar issue for Nelson groves.

Stuart talked about adding to the organic layer around trees by putting mulching back around trees. This will aid water retention and also better use of water.

Stuart said the ideal tree size is up to 5m for effective and efficient management and production. In response to a question on addressing biennial bearing, he said the answer is to get trees healthy through the spray program. Improvements should be seen in second year and thereafter.

Stuart emphasised the need for continued spray program. That while *Cercospora* and

Peacock Spot had been addressed, this has highlighted the problem with Anthracnose. Previously this problem had been masked. New recommendation appears to have been effective but more work required to ensure ongoing effectiveness.

Stuart said the Growsafe programme, which he recommended to growers, says there is no with holding period for glyphosates. Horticulture suggest a month before harvest, essentially for effectiveness.

In response to a question about using Copper, Stuart said Copper as a heavy metal accumulates in the environment and will reach a threshold. Currently there are limits on how much can be used in some crops, maybe 1 or 2 applications per annum and noted only effective for 6 hours.

There was talk about GAP and Global GAP being a good reference point.

Josu then gave a demonstration of the of ATRAX 4 harvester.

In conclusion Craig acknowledged the contribution by project consultants and gave them each a small acknowledgement of appreciation. In response Stuart said it had been exciting and rewarding to see the progress the Focus Groves and others had made. This exceeded his initial expectations.

Afternoon tea was available and provided an opportunity for more discussion.



Attentive audience at Leafyridge



No sign of disease



Healthy new growth



Impressive laden branch



Identifying next cut



Looking at impact of cuts



Stuart showing regenerated tree

Bel-Hamed and Terrace Edge, Canterbury

The Canterbury Field Day was held on Monday 25th March and commenced at the Bel-Hamed grove because the owners had been following the Focus Grove principles for crop management for the last five years. Their trees look extremely healthy with very good four-year leaf growth. Biennial bearing had also been eliminated. This provided a great example of the benefits of following the focus grove programme. Noted that Bel Hamed trees looking to have more than 25kg.

The principle visit was then conducted at Terrace Edge which is the Canterbury Focus Grove situated 5 km away and hosted by Bruce and Jill Chapman. There were 25 people and the visit started with a shared lunch and an opportunity to recap on the Project, recommendations and Fact Sheets. Also noted that 2018 had been a bad year for Canterbury with Anthracnose ruining a number of crop loads. Niall Holland as Canterbury Branch Chair made a presentation to the Project Consultants to acknowledge the appreciation of the Canterbury region.

Out in the grove at Terrace Edge the crop was looking light this year on Frantoio and some trees have very little crop but with better indication for next year. Regrowth and regeneration looking good across the grove. Leccino looking more improved and maybe 10kg per tree. Smaller fruit noted and need more water. Pendolino has bunches.

Cercospora, Peacock and scale evident. Latter is much reduced, following spraying two years in a row, and a change in is recommended which should see off the scale. Note that December/January is the only effective time to spray scale.

Anthracnose also appears reduced. This was a significant issue last year where fruit was infected, appeared ok but rotted rapidly once harvested.

Stuart commented the grove was much improved on last year across all varieties. Trees now opened up and most trees have lush leaves and reasonable fruit load. Irrigation is underway and a good rain would help the fruit develop. There was a difference noted in shorter rows. Double line now was now in place for irrigation.

Andrew noted that groves across North Island and Nelson, following the Project, are consistently producing more than project target of 15kg per tree and more like 25kg. He said that a healthy canopy is the key criteria and without this no point in looking at other aspects.

Stuart noted this is an "on year" for Canterbury. Also Canterbury is quite different than other regions because of lack of rain. For example fruit is significantly smaller. Use of Protek in other regions at flowering has resulted in bunches of olives rather than individual fruit. Recapped this has been driven by Anthracnose and there is an Anthracnose Bulletin on the Focus Grove section of the Olives NZ website. He noted that bunches of olives harvest easier than single fruit.

Stuart said given lack of rain, the crop is still looking pretty good with some trees on track for 10+kg.

What is especially good is the new extension growth and this should see good return flowering. Stuart said this was a significant step forward from last year. There may be a challenge with expecting Terrace Edge to produce same volumes as other regions because of dry and windy climate.

New growth does not show disease but at high risk of being infected by rain splash from infected branches.

Andrew said it is much better to thin the crop in January to manage load to what is sustainable, especially if access to water is going to be an issue. Also will help prepare trees for the next year and ensure ongoing viability.

He commented that not only are Project groves producing significantly more than nationwide average but yield also appears increased.

Craig spoke about the need to continue the Field Days and monitor and share progress. Now that there is a good baseline we can look at sustainable and alternative approaches as well as continuing with current methods. Also to look at nutrition and the impact on harvest and yield.

Noted that later harvest has higher yield but earlier has more robust flavour.

Jan Whyte commented that having Field Days on weekdays precludes some people attending and also would have preferred not to be in March. For example 10 apologies received for today. Niall added that the Canterbury Branch at AGM agreed the desire to continue Field Days.

At the end of the Field Day, there was opportunity to take our two international guest to visit the two award winning olive groves at Akaroa.



Out in the grove at Terrace Edge



Bunches of fruit



Laden branch



Healthy new growth



Still some disease apparent



Impressive new extension growth



Identifying next cut



Josu demonstrates the ATRAX4 Harvester





Laden tree, fruit from top to bottom at Bel-Hamed



Laden branch at Bel-Hamed



Healthy new growth at Bel-Hamed



Scale on branch

Kakariki, Nelson

Approximately 25 people were in attendance at the Field Day held at Kakariki Olive Grove on Tuesday 26th March, including several from Marlborough, plus a number of apologies. The afternoon started with a BBQ lunch hosted by Ray and Brenda Gregory.

Andrew commented that the grove is looking green and healthy despite the proximity of recent fires. There was lots of fruit top to bottom, good clusters good extension growth. There is potential for their best ever harvest, 25-30kg per tree. Some trees looking to be 35kg.

Stuart commented that laden trees may not be ready to harvest until a week or so after usual. With more rain predicted prior to harvest, fruit will plump up with good yield. He said that this grove has largest crop-load of all Focus Groves even accepting the trees are also the largest.

The trees now in their final stage of restructuring, typically only one branch left for removal. This will actually take out productive wood but it is not needed and will open trees up more.

Andrew said that after major cuts there is a need to leave regrowth for a couple of years for new branches to self-select the survivors. The observation is that one or more branches may flop over and will need removing. It would not make sense to remove new growth prematurely as it was not evident which are going to be the best.

Andrew said that Kakariki had used Protek at flowering and results were evident. They had also applied Boron and looking to do lime, based on soil tests.

Overall a good clean canopy, with very little evidence of disease. There was minor sign of Anthracnose evidenced by a few brown buds or sticks but very difficult to find.

It was recommended to get a spray on immediately after harvest, if possible, but the issue with unsafe wet conditions was recognised.

The creeks and large drains have been cleaned out which has improved air movement across the grove.

Trees that had been coppiced 4 years ago are now rejuvenated and look to have similar crop load to other trees in grove. Now ready to have internal branches removed.

Need to get scale spray on at hatching time, December/January.

Andrew recommended to harvest Picual early for flavour and to avoid the threat of Anthracnose and frost. Harvest Frantoio then for volume.

Note this is the only Focus Grove to operate their own mill on site and thus have more control over harvest timing.

Stuart summarised that Kakariki is looking very impressive and the results of the adoption of the project recommendations is apparent and should be very encouraging for other grove owners.

The afternoon concluded with afternoon tea.



Out in the grove at Kakariki



Healthy new growth



Stuart showing new branches



Impressive new extension growth



Bunches of fruit



Coppiced tree regrowth



Susan Pine tries out the ATRAX4

General Comments

At all of the Field Days Andrew Taylor acknowledged the contribution of the Focus Groves to the success of the Project. From their initial involvement and the capital investment required, for example in an orchard sprayer and appropriate tractor, which many required. Also their own increased operational costs in implementing the spray programme and pruning regime. He commented that the Focus Grove owners had allowed open access to their groves, warts and all, and also been open for all comers to hear the comments (sometimes quite pointed) and recommendations. They had also facilitated social activities and several had hosted the consultants and other guests overnight.

At all of the Field Days there was extremely positive comments from attendees about the knowledge and advice transferred and gained. There was overwhelming support for a new project to continue with the focus on increasing and maintaining grove productivity.

Dr Vera Sergeeva commented that she was unbelievably impressed that all of the Focus Groves she had visited and others following the same programme, had no sign of disease. She said she would not have thought this possible and is certainly not the situation in Australia.

Summary

All of the Focus Groves and several others visited as part of the Field Days, that have been following the recommended programme for proactive disease management and canopy management, are showing dramatic improvements. Indeed most of these groves have reached an exemplary stage and are exemplars for the wider olive growing industry in New Zealand. The others groves are well on their way to this same condition.

At earlier Field Days all Focus Groves showed a loss of flowering due to Anthracnose infection, with northern groves reporting a substantial loss of fruit due to this infection. This is a real threat for all olive groves and Stuart Tustin of Plant and Food Research undertook to investigate and make appropriate recommendations. This has resulted in the release of an Anthracnose Bulletin with appropriate recommendations. The recommendations have been hugely successful, not only has Anthracnose been averted, the trees are now producing bunches of fruit rather than single berries.

The project target of 15kg per tree has been met and typically exceeded by all Focus Groves and other groves who have implemented the methodologies. Most are now reporting an average of at least 25kg per tree across their grove, exceeding the target by 70%. Some hand harvested trees are exceeding 35kg.

The vastly improved tree health is apparent across all of the Focus Groves with very little or no disease and plenty of lush leaf.

The tree structure across the Focus Groves has dramatically improved, enabling light and spray penetration and ease of effective harvest.

The 2019 crop-load is looking impressive and the harvest tonnage should prove unquestionably the success of the project. Conversely note that other groves, not following the project recommendations, have reported a poor crop-load and some will have no harvest at all.