

SFF&F Project 19025 – Meeting the increasing demand for New Zealand Extra Virgin Olive Oil

Milestone MS03 Focus Grove and Field Days Report

October 2020

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Introduction

The purpose of the Sustainable Food and Fibres Futures project is:

To increase the production of established olive groves to meet the increasing demand for New Zealand Extra Virgin Olive Oil. The target is an additional 5kg (20%) per tree.

A second objective is to develop an alternate/more organic approach to improving grove production.

The project uses five focus groves in each main growing region that have demonstrated a commitment to best practice principles. These groves have already implemented the recommendations of the previous Sustainable Farming Fund Project and have demonstrated their success. They will now implement and trial new approaches, measure outcomes and host field days to share their experiences with other growers.

The project also includes a number of groves who wish to trial a more organic approach to improving tree health and benefit from increased crop loads. These groves will also implement and trial recommended new approaches, measure outcomes and host field days to share their experiences with other growers.

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

1. 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.
2. Introducing an appropriate nutritional programme that will ensure there are sufficient nutrients for plant growth which will impact on yield.
3. Improving tree health by disease control using affordable protectant spray programmes to manage foliage diseases that defoliate olive trees, a primary cause of low productivity in NZ groves.
4. Developing an alternate/more organic programme methodologies that will improve tree health to manage foliage diseases as above.

This report outlines the progress made by the Focus Groves and is based on the third round of Focus Grove visits and Field Days held in October 2020, carried out by the specialist consultant engaged as part of the project; Dr Stuart Tustin ex Plant and Food Research.

This report is based on the comments from the Focus Grove visits by the project consultant, Branch Chairs and Focus Grove owners. Many thanks to others who provided photographs. The 2020 harvest figures in this report are taken from the 2020 Grove Census Harvest Data Report, attached separately.

Focus Groves Status

Northland

Olives on the Hill

There were 14 attendees from Auckland, Northland, Waiheke Island and President Craig Leaf-Wright from Wairarapa, who were welcomed to Olives on the Hill with a sumptuous morning tea by owners Chris and Linda Smith on 1st October 2020.

This grove is one of the original Focus Groves and has benefited from continuous improvement to overall grove health and increased grove production. In 2020 Olives on the Hill produced on average 16kg per tree and with 16% yield. The Northland regional averages were 10.92kg and 17.1% respectively.

It was noted that the productivity trends at Olives on the Hill are increasing harvest tonnage per tree and also increasing oil yield percentage. In 2020 there was a 66% increase in harvest tonnage, from 9 tons to 15 tons. However the overall oil yield increase of 86% from 1400 litres to 2600 litres was higher than simply equal to the increase in fruit yield. There was also a 3-10 fold increase in polyphenols. These results represent multiple gains, the combination of higher oil yields of higher quality oil from larger crops.

Since the March Field Day, the weather was unusually dry for this area, which meant a reduction in the spray regime in autumn, but also commencing disease control spraying earlier than usual because drier land/soil conditions allowed machine access earlier than usual during winter and early spring. As a result, Olives on the Hill mostly kept to the 21 days rule for protective disease management. According to the soil test done earlier there was nothing to add in the way of nutrition, except for Boron, which Chris has administered in his latest spray just preceding bloom.

Chris and Neil have pruned the Frantoio and half the Leccino so far. They still have the rest of the Leccino and the Ascolano to do and are hoping to get that done in the next month. Currently flowering appears light on Frantoio and conversely heavy on the Leccino. But early days as yet and the pruning regime has been adapted to account for the respective flowering responses.

Stuart noted that Olives on the Hill is now close to the objectives of the Focus Grove Project. The last phase of tree restructuring is being completed this year. There is particular encouragement for Olives NZ members to see that when the grove improvement regimes are being followed, both fruit yield and oil yields are increasing by greater proportions.

Thank you to Chris and Linda for hosting the visit.



Out in the grove at Olives on the Hill



Buds appearing with very healthy leaves

Hawke's Bay

Aquiferra

Bob Marshall and Shona Thompson welcomed 16 people to the Field Day held on Friday 2nd October. In addition to local olive growers, there were attendees from Northland and Wairarapa and several apologies received.

Aquiferra was one of the previous Focus Groves and is regarded as an exemplary grove. It again leads grove production nationally. For 2020 the average harvest at Aquiferra was 21kg per tree and with 19% yield. The regional averages were 14.65kg and 16.6% respectively.

2020 Harvest Discussion

Bob explained that the grove is 18 years old and 2020 is an "on" year. The grove was irrigated all summer through the severe drought experienced in Hawke's Bay. The oil yield was higher this year at 19% average, although it had been hard to get the olives off the trees at harvest due to the drought. Some varieties had produced up to 50% higher yield and the total litres produced was overall 20% higher than previously recorded.

Bob estimated that up to 15 kg had been left on trees. This was effectively around 30% of the estimated crop load. Drought had delayed ripening. It was noted that in Hawke's Bay irrigated groves got great yields, but those that had no irrigation got low (5%) yield.

Grove Discussion

Bob said there were typically 18 sprays of Manzate per year with 3 sprays including Protec over flowering (to prevent Anthracnose).

Stuart noted that flowers were just becoming visible and indications were for a good return bloom. He pointed out the absence of any disease and that the remnants of the scale infestation now appeared to be controlled.

Stuart said new research highlighted that organic groves could try using Serenade Optimum for Anthracnose control. Serenade Optimum is a bio-fungicide/bactericide to aid in the control and suppression of powdery mildew and botrytis and sour rot in grapes, fire blight in pip fruit, botrytis on berry fruit, kiwifruit, persimmons and onions, and anthracnose and various diseases on avocados, citrus, and diseases of lettuce and turf. Serenade Optimum is suitable for use in organic production systems and has BioGro certification. Serenade Optimum is exempt from residues and has zero days withholding periods.

There was discussion around strip spraying and the need to remove weeds to reduce competition for fruit trees (water). Cultivation of the soil, as an alternative is not recommended. Glyphosate application can be limited to as few as 2 x per year. Discussion covered the possibility to reduce the width of the spray strip to inside the zone where feeder roots occur at the outer edge of tree canopy. It was noted that roots are all intermingled across the grove when trees are mature. Using mechanical mowing/line-weeding with specialist mowers was discussed as a possible alternative method of controlling weeds in the tree row soil strip if there was a preference to not use herbicide weed control.

Fertigation is noted as an expensive method to set up and apply nutrients compared with normal solid fertilizer applications. It was discussed that nutrient uptake depended on available water solution in the soils hence the value of good irrigation. The common belief that roots will grow towards irrigation water zones was discussed as being not correct. Original Israeli studies developing drip irrigation techniques showed that roots only move towards water zones preferentially when the water supply is enriched with nutrients i.e. fertigation, not just irrigation.

You can mulch weed strips to improve soil organic matter and provide some water retention benefits. However applying green (un-decomposed) mulch does consume nitrogen as it composts in place and is not recommended.

It was noted that the Focus groves testing of olive oil showed zero Manzate residue.

You can reduce or withhold irrigation during 2-3 weeks of pit hardening as there is no fruit growth during this time, with no negative effect on fruit growth, as a means of rationing water use. Magnesium is used by the tree in ripening and therefore is an important component. However, any fertiliser application should only be done after leaf analysis (to correct issues). Magnesium is commonly deficient in NZ soils and can be corrected by soil and later foliar application in response to leaf testing.

Over flowering spray it is recommended that Protek be added to the Manzate sprays, as described in the Disease Management Fact Sheet on the Olives NZ website. A refinement of the recommendation was to make the first Protek application just prior to flowering for improved anthracnose control. Boron should also be added at this time to improve fruit set.

Stuart said that the pH ideal is 6-6.5 for olive groves and the pH affects the soils solubility of other minerals. It was noted that the discussion typically was mostly about soil management of the ground at the root zone of the trees rather than the leaf/flowering/spray program. Is this a sign of grower acceptance of the 'Conventional' spray program?

The afternoon concluded with an EVOO tasting session, led by Branch Chair Geoff Crawford, and an opportunity for discussions to continue informally.

Thanks to Bob and Shona for hosting the visit.



Attentive audience at Ngatarawa



Stuart discussing regrowth from major cuts

Nelson

The Focus Grove visits and Field Days were held on Tuesday 6th October 2020 as follows. Thanks to Nick Dalgety from MPI, Nelson who supplied many of the photos below.

Kakariki Olives, Redwood Valley

Approximately 12 people, including the local MPI Senior Advisor for Regional Economic Development and Partnerships, were welcomed to Kakariki Olive Grove by owners Ray and Brenda Gregory.

Kakariki was one of the original Focus Groves and has shown outstanding improvement to grove health and increased production. This is an exemplary grove.

In addition to leading grove productivity in 2019, Kakariki became the first Focus Grove to win a Best in Class at the New Zealand Extra Virgin Olive Oil Awards in 2019. As a result, that oil was entered into the 2020 New York International Olive Oil Competition, the most prestigious of international olive oil competitions. Kakariki, along with six other New Zealand entries, won the most esteemed of awards – Gold Medal.

For 2020 Kakariki has produced on average 13kg per tree and with 17% yield. This compares with the regional averages of 9.27kg and 16.8% respectively.

Grove tree restructuring continues with the challenge being to try and minimise any production loss given that Kakariki is a commercial grove. Some large limbs have been retained as a result but will be dealt with in time.

Ray said that they had difficulty with machine harvesting this year and estimated that about 30% of the possible crop load had been left on the trees. It was not cost effective to go back and hand harvest. Since harvest there has not been as much rain as usual so Ray has been able to resume the full Manzate spray programme. However, given that many trees are still tall he is concerned about the reach of the spray and may look at buying a new sprayer. Subsequently Ray has discussed with Stuart an upgrade of their sprayer technology to give better disease management of tall trees.

Stuart noted that it is early in the season with flower buds just emerging. It looks to be a good return flowering.

There is excellent disease control and Stuart said that the dry winter had resulted in more spray applications than was usually possible.

It was noted that there was a major fertiliser investment over 2020 based on soil test results. The applications have been split over September and January taking account of the soil type which does not have a high nutrient retention capacity

Thanks to Ray and Brenda for their hospitality.



Out in the grove at Kakariki



Flowering coming on



Rejuvenated tree



New growth coming on from major cut

Neudorf Olives, Upper Moutere

Susan Pine welcomed fellow growers to their grove. The Pines are taking an alternate approach by following the Focus Grove pruning recommendations but limiting the Manzate spray programme to monthly applications.

In 2020 Neudorf has harvested on average 10kg per tree and with 17% yield. Susan said she is happy with the tonnage produced.

Susan has just finished the big winter prune. The trees are well set up for hand harvesting. Stuart suggested removing some layering of older shaded 'underneath' branches to reduce the bushy canopies (to improve hand harvesting and disease control) but noted the grove is looking really good. Tree structure in this grove is managed for hand harvesting so lower flatter canopies of multiple pendant weaker limbs are trained.

Stuart said there has been good disease control with the dark green leaves showing that the foliar fertiliser regime is working. The fertiliser programme in this grove is mostly foliar-applied nutrients.

He noted that the grove management improvements have not caused any short-term reductions in production.

The afternoon concluded with refreshments and many thanks to Susan Pine for her hospitality.



In the grove at Neudorf



Neudorf grove has responded well to major pruning and spray programme



Stuart explaining next cuts to be made

Canterbury

Terrace Edge, Waipara Valley

Bruce and Jill Chapman welcomed 10 growers to Terrace Edge on Wednesday 7th October. This included members of the Canterbury branch of Olives New Zealand and one contemplating member. The low attendance was due to it being school holidays.

Terrace Edge is one of the original Focus Groves and, while facing challenges in following the recommendations, has still managed to produce double the average harvest for the Canterbury region. In 2020 Terrace Edge harvested on average 11kg per tree and with 14% yield. The Canterbury regional average harvest was 5.44kg per tree and with the same yield. Bruce had once again only harvested about 50% of the trees.

The day commenced with a round table discussion of the opportunities for moving towards a more biologically compatible approach to grove management, referred to as 'Organic' farming. The Terrace Edge vineyard is organic, and Bruce is very keen to move the olive grove in the same direction. Stuart provided wide ranging advice on soil management and appropriate spray regimes. Clarification of the organic sulphur plus copper organic disease control regime was discussed. Organic control of anthracnose using the product Serenade was also introduced to the discussion.

Foster Stihl Products had a representative on site to demonstrate the wonderful electric chainsaws now available. These are revolutionising pruning for most growers. The small toothed chains provide exceptionally clean cuts. The motor instantly starts when needed and is only on while a cut is being made. No more stinky petrol mix is needed. Being much quieter than a petrol saw, no earmuffs are necessary. For better or worse this allows much more discussion about the most appropriate cuts.

Following the discussion, the team moved onto the grove to observe the outcome of the pruning cuts made at the last field day and to determine the next steps. The chosen trees were all showing a good response with new growth near the pruning points.

Attendees were able to observe the traps that can arise from failing to make the hard decisions. Failing to completely remove a mature branch leads to bare centres and new fruit growing from further and further up the tree. Attendees were able to observe how the best cuts encouraged regrowth from near the trunk. It was a timely reminder that, in trying to preserve a harvest from mature branches you can impede and delay the development of young branches on old trunks. Moreover we start producing a crop that is too high to be caught in the harvesters net.

Stuart said that the grove is well pruned with the trees being close to ideal. He noted that regrowth needs stimulating still. There was lower disease apparent but the heavy scale infestation persists. Stuart recommended the application of Applaud in spring to address this. He said that it is a bit early to tell, but flowering looks to be adequate.

Stuart then generously entered into talks with individual growers to address their specific needs. It was an excellent day of learning for all those who participated.

A shared lunch was enjoyed by attendees and thank you to Bruce and Jill for hosting the Field Day.



Out in the grove at Terrace Edge



Discussing bigger cuts

Wairarapa

The Focus Grove Visits/Field Days were held at Wairarapa on Friday 9th October, the day preceding the Olives New Zealand Conference. As a result some attendees had come earlier so as to attend the Wairarapa Field Days – from Northland and Waiheke Island, Hawke's Bay and down to Marlborough and Nelson. Out of towners commented on the excellent value they received from visiting groves outside of their own region.

Leafyridge Olive Grove, Masterton

Craig and Ruth Leaf-Wright welcomed more than 70 people to Leafyridge and especially those who had come from further afield.

Leafyridge is one of the original Focus Groves and has followed an aggressive pruning regime to get the trees back into the desired shape and size. Whilst this approach had initially impacted on harvest tonnage, the benefits of this are now becoming apparent. In 2020 Leafyridge has harvested on average 18kg per tree and with 15% yield. The Wairarapa regional average was 7.06kg and 13% respectively.

Stuart remarked on how it was particularly evident that the Frantoio and Leccino trees in the front field had responded well to the additional fertiliser program as a result of the soil test analysis. These trees produced an average harvest of over 25kgs/tree this year. Regrowth as a result of opening the canopy was most impressive. In addition the overall health of the trees was markedly improved with abundant leaf and little evidence of any disease.

Leafyridge has recently installed their own processing plant and noted the huge benefits that this has brought around. Not only in convenience, control and speed to processing, but also in the ability to go back and hand harvest remaining fruit on machine harvested trees. Craig estimated that machine harvest left more than 30% of the potential crop behind and they had been able to recover another 15kgs off many trees through going back with the hand harvester. This resulted in some trees producing up to 40kg.

Flowers are emerging and indications are for a very good return crop. Soil management/nutrition is showing positive benefits.

Craig said that as a result of some minor Anthracnose in the early flowering Manzanilla, he intends to apply Protek a week earlier than usual and prior to flowering. Stuart thought this a good approach and worth monitoring for effectiveness. The fact sheet will be updated once responses are confirmed.

Stuart commented that Leafyridge is now an exemplary grove.



Out in the grove at Leafyridge



Note the flowering coming on



Stuart pointing out impressive rejuvenated growth



Captivated audience

Bella Olea Olive Grove, Greytown

Chris and Hilary Penman are following an organic approach and are well on their way to certification as an organic grove.

Because of the heavy pruning regime Bella Olea reported a small harvest for 2020 but were able to supplement their supply through harvesting another grove.

The restructured pruning programme is going well and regenerated growth is generally good. Stuart noted that there has been good progress in the grove. This was a general comment from attendees.

Following what would have been an off-year, a big flowering is evident. Chris said that he has implemented a new spray regime – monthly applications of *Bacillus subtilis* with other biologicals and foliar fertiliser. The field day discussed that this was the key factor for the next 12 months to see how the disease programme works and what, if any, adaptation is required. Disease presence was still extensive but it is early in the new spray regime. Chris was to investigate the strain of *Bacillus subtilis* used in his spray mix to compare with the strain that is used for the product Serenade. This is a possible difference which may influence disease management.

Understory management is done by using lamb grazing very effectively and is possible because no copper sprays are used in the organic disease management. Sheep also eat the fallen leaves which reduces the disease carryover on the ground and perform 'biological' nutrient distribution as a consequence of grazing.



Out in the grove at Bella Olea

General Comments

The participation of the Focus Groves is much appreciated and critical to the success of the project. They have shown an unquestioned willingness to follow recommendations and incur the associated costs. As well as welcoming other members to their groves and providing hospitality. Thank you all.

The 2020 harvest year was very disappointing for the majority of groves. Harvest was 25% down on 2019, which was also a low year, and 50% down on 2018. A number of factors contributed to the poor performance – a promising flowering did not translate into a good fruit set, followed by drought conditions in many regions resulting in small fruit and/or fruit drop, and then slow ripening. These factors were then compounded by harvesting/harvester issues for a number of groves. However those groves following the Focus Grove recommendations in relation to a regimented spray programme and fairly aggressive pruning programme substantially out-performed other groves in their region. Further information on 2020 harvest can be found in the 2020 Grove Census Harvest Data Report.

Olives New Zealand has taken advantage of opportunities in 2020 to promote New Zealand Extra Virgin Olive Oil via social and regular media (print and radio). The first of these was in May following the results of the 2020 New York International Olive Oil Competition where New Zealand won seven Gold medals. An extra-ordinary achievement. The second of these was in October with the New Zealand Extra Virgin Olive Oil Awards. Both of these campaigns involved the use of external specialist consultants. As well as the focus on the outstanding quality of NZ EVOO, there was also promotion of Buy Local. The social media campaigns resulted in substantial reach whilst there were also many newspaper articles and also radio interviews. Whilst it is difficult to measure the return on investment, all of this publicity is good for the broader New Zealand industry.

Harvest Data Comparisons

The following table shows Frantoio kg per tree compared to regional average for the Focus Groves. Note Frantoio is used as this was the variety used as the 'trial blocks' initially

	2018	2019	2020
Aquiferra	28	18	21
HAWKE'S BAY	22	4	4
Olives on the Hill	28.6	8.7	16
NORTHLAND	3.7	2	4.6
Kakariki	15	18.6	13
Neudorf		8.5	10.6
NELSON	4	18.6	5.8
Terrace Edge	1	5.8	11
CANTERBURY	1	1.8	1.7
Leafyridge	25	8	25
WAIRARAPA	6	3	3

Conference 2020

The Olives New Zealand Conference 2020 was on Saturday 10th October with the theme “Making a Difference in a Global Environment”. The event was sold out!

The programme was as follows.

Damian Farrelly, NZ GAP Manager for Horticulture New Zealand – An Opportunity for Olive Growers

Donald Nordeng, BioGro New Zealand – Certification and Verification

Ross Vintiner, Dali Olives, Wairarapa – Growing a Regenerative Grove

Ray Gregory, Kakariki Olive Grove, Nelson – Managing a Commercial Grove

Stuart Tustin, Focus Grove Consultant - The Focus Grove Project II (including observations from the Focus Grove visits held in October 2020)

Mike Kotlyar, @consult - Social Media Marketing.

Our presenters were well received and their presentations up to date and there was excellent feedback from attendees and the presenters themselves.

Summary

All of the original Focus Groves visited as part of the Field Days that have been following the recommended programme for proactive disease management and canopy management have reached an exemplary stage and are exemplars for the wider olive growing industry in New Zealand. For other groves following the recommendations, the results are apparent in their harvest tonnage as well as their observations on overall grove health. It is therefore difficult to understand why other groves, that chose to do nothing, accept poor production and high costs. The ability to address these issues is in their hands and there is the unfilled demand for NZ EVOO in many regions.

The vastly improved tree health is apparent across all of the groves visited with very little or no disease and plenty of lush leaf. The tree structure also across these groves has dramatically improved, enabling light and spray penetration and ease of effective harvest.

All of the Focus Groves are producing a substantially greater harvest tonnage than the regional average.

The three Fact Sheets associated with this project have been reviewed and at this stage, no updating is required. They will be reviewed again ahead of the March Focus Grove visits and Field Days.

Additional reports:

2020 Grove Census Harvest Report

2020 May Marketing NYIOOC Campaign Summary

October 2020 Olives NZ Social Media Marketing Report

October 2020 – Conference Presentation