



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

Milestones M07 and M09 Third Focus Grove and Field Days Report

October 2017

Contents

Introduction	2
Focus Groves Status	3
Terrace Edge Grove, Canterbury	3
Kakariki Olives, Nelson	5
Leafyridge, Wairarapa	6
Aquiferra, Hawkes Bay	8
Olives on the Hill, Mangawhai	9
Overall	12
Appendix One – Regional Crop Comparisons	14



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.

This report outlines the progress made by the Focus Groves following the review and recommendations from the second Focus Grove visits and Field Days held in March 2017, as well as the 2017 harvest figures. These third round of visits were carried out in October 2017 by the two consultants engaged as part of the projects; one from Plant and Food Research and one from Forty Groves Ltd. Also attending were the New Zealand Extra Virgin Olive Oil Awards Head Judge and Guest Judge, both from Italy.

Because major canopy restructuring was undertaken in 2016 it was anticipated that the Focus Groves would go backwards in terms of harvest tonnage in 2017 and then go forward in 2018. This has been the general experience, however exacerbated by adverse weather conditions. This needs to be put into perspective with other groves that had even worse or no harvest in 2017. This report combines observations from the Focus Grove visits with the feedback from the Focus Groves on their progress and performance, Field Day reports and a regional comparison of 2017 harvest.



Focus Groves Status

Terrace Edge Grove, Canterbury

These trees are the smallest canopy volume trees of any of the focus groves being lower in height and somewhat windswept from the north-west. Most of these trees don't exceed 3.5m in height. Recommended pruning to date has been to undertake one to two significant pruning cuts to open the canopy to access sunlight to the internal part of the tree to begin rejuvenating the canopy. This will allow better access for spray penetration and help mitigate in the effects of the prevailing nor-wester winds on tree structure. Overall the leaf disease level in the canopy is low, the dry climate of the Canterbury assisted in combination with a fungicide programme.

During the Focus Grove visit there was disappointing evidence of increased disease because of a reluctance to follow the recommended spray programme, especially considering that the past 6 months were uncharacteristically wet for this location. The olive grove is on a block with an organic vineyard but the spray regime required for the vines has not translated to an effective disease control management programme for the olives. It was also noted that the pruning had been largely not completed through the whole grove. Equally frustrating was that the full potential crop of the grove had not been harvested. All of these factors have resulted in an apparent low crop of Frantoio for 2017.

The growers in North Canterbury have also had little experience in managing wet conditions and the intensive spray programme that is required to manage such conditions. The Focus Grove project will be instrumental in educating this group further.

From the Grove Owner

We harvested 1056kg of Frantoio which was well down on last year. This appeared to be due to alternate bearing rather than disease. There was a small amount of Anthracnose at the time of flowering but none later in the season. We also lost fruit to the birds, who seemed particularly hungry this year. The oil yield was also a bit lower at 12.2% for the Frantoio.

Field Day Report – from the Canterbury Branch Secretary



Another well attended Field day on the Focus Grove of Terrace Edge on 14 October. There were 23 growers in attendance along with Andrew Taylor, Stuart Tustin and the two overseas judges for the 2017 olive oil competitions. Dr Giuseppe Di Lecce and Domenico Castria.

The sample trees were again the focus of discussion re fungal infection and pruning. It was noted that the spray regime had been a little haphazard over this last six months due to weather and time. This showed an increase in infection of the trees. The previous pruning cuts showed some good regrowth and only secondary pruning were given to the trees this visit.

Using the trees as examples discussion was had about pruning and spraying. The need for regular three weekly spraying for fungal infections at a rate of 3kg Mancozeb per 1000 litres was again emphasized as it is only a raincoat. The need for each grove to monitor their own rainfall and to spray Mancozeb through the year on this regime but sooner if there was a rainfall over 20mm. If a known heavy

downpour was to come then spray before as this would reduce the spores of Peacock Spot and Cercospora.

The new information was around the possibility of Anthracnose causing a reduction in fertilisation and incomplete development of fertilised fruit leading to reduced cropping. The advice was to add in Difference (a more persistent and systemic fungicide) to Mancozeb at the time when the first flowers begin to open and then to have weekly spraying of Mancozeb over the next three weeks of bloom. To some extent this depended on the wet/dry conditions in that time and the need to make a judgement call based on local knowledge. A lot of discussion and questions re pruning and fungal infections came from the group. It was so valuable to get up to date advice on these as whether new or old grove owner there is always more to learn.

This field demonstration was followed by tasting of 5 olive oils led by Giuseppe and explaining the faults and good features. The local oils were good to sample and compare fruitiness and attempt to increase our knowledge of the flavours we were tasting. This was followed by general discussion and a late afternoon tea. Feed-back on the field day was very positive and grove owners keen to have more. The Focus Grove project is proving to be a great source of increased knowledge to be shared around the NZ growers.

Kakariki Olives, Nelson

This grove is grown on clay soil. It is the highest rainfall region (~1200 mm p.a.) for a focus grove. These trees are the tallest of any of the focus groves and the soil type retains moisture for the longest period. To maintain lower levels of disease infection the most intensive spray programme of the focus groves is necessary. The canopy health looks good but requires constant canopy structure improvement and a willingness to spray as the weather requires. Pruning at Kakariki is firstly driven by the need to reduce tree height. Some trees are exceeding 7 m in height which is having a shade effect to adjacent rows and the height is beyond the capability of the spray machinery to apply chemical adequately. The pruning strategy of reducing one high limb per year is resulting in rejuvenation of the trees lower down and looks positive at this stage.

From the Grove Owner

The 2017 harvest figure for Frantoio was 18946 kg.

We have done some estimates on fruit left on trees which make interesting reading.

At the end of harvest we had about 3 tons left on the Frantoio. This was consistent with other varieties with about 5 tons left on the Leccino and Minerva. Even without these we are at about the same yield of fruit as last year, however the oil percentage though is the killer. We are down nearly 1500 litres on last year. Definitely going to be a challenge keeping our customers happy for a full year.

We were very pleased with the low level of anthracnose in the grove at harvest and continue to work at getting the cercospora and peacock spot under control. Tree size and shape combined with our new sprayer will ultimately bring this under control.

Field Day Report



22 people including Andrew, Stuart and the 2 Italian judges attended the latest Nelson field day on Oct 11. It was good to see Chris Piper from Marlborough making the trip over the hill to attend.

As in previous field days the emphasis was all about pruning and spraying. The marked trees from the last visit were revisited and lengthy discussion was held as to what pruning cuts were now required.

It was noted by Stuart that good extension growth had occurred with promising flower

formation where previous pruning had been carried out. It was obvious that lack of pruning in some instances had resulted in poor extension growth. It was also obvious that a good cycle of pruning as well as spraying was necessary to maintain a healthy productive canopy.

The spraying programme was discussed at length particularly looking at cost effectiveness. Once the mathematics was sorted it was determined that the Kakariki cost was less than \$3 per tree per year. While this was generally accepted to be a reasonably cost efficient exercise there is still considerable resistance to the capital outlay necessary to buy your own equipment.

It was noted that the grove leaf health was still showing signs of infestation from peacock spot, anthracnose and cercospora. The high Nelson rainfall and the associated ground conditions made it impossible to spray regularly from harvest through to the end of September (the winter months).

Andrew pointed out that even under these difficult conditions it was still beneficial to spray regularly as soon as possible. He pointed out in particular that the protection of flowers from anthracnose during the pollination process was critical as growers in other regions found out last season.

Most of the members at the field day attended a dinner at the Moutere Inn the same evening. Members were invited to bring some samples of their oils for tasting and discussion. Giuseppe and Domenico gave an excellent analysis of those oils presented and impressed everyone with their discerning palates. Even to the extent of being able to detect an oil that had been blended with a 2016 oil. A positive response was received from all those that attended. All in all a good day.

[Leafyridge, Wairarapa](#)

An east coast Wairarapa grove with good drainage in dryer conditions. The pruning strategy that has been undertaken is removal of one to two limbs to open a portion of the canopy to begin a rejuvenation cycle and provide better drying conditions and a reduction in wind damage. Leaf disease level is low. Some evidence of yellowing leaves through the grove appear to be compounded from the severe drought of 2015/16. Unfortunately the impact of that drought has harmfully impacted the trees in 2016/2017. There had been poor extension growth, followed by a lack of sunshine resulting in the crop not maturing well and impacting on harvestability leading to a low yield.

The pruning programme has been staggered which has delayed the benefits and the effectiveness of the spray programme.

From the Grove Owner

Unfortunately our tonnage was much less than last year, not just because of the poor ripening season but we in particular were affected by the severe drought that occurred in the Wairarapa during 2016.

Good news is that the consultants were extremely impressed with the overall health of the trees in spite of the lower yield.

“Next year will be better”

Frantoio tonnage was 8,274kgs. Equating to 5.7kg per tree

Field Day Report



We had 31 attendees from the district including the two judges from Italy.

We welcomed Andrew Taylor and Stuart Tustin to the grove and once again examined some of the trees that were pruned at the last Field Day to observe progress.

Evidence was seen of how the pruning had encouraged good new growth around the cut

area.

Andrew pointed out again how we could see 3 year old leaves on new branches with no sign of disease. It is believed that this is as a result of the cumulative benefit of the rigorous spraying regime adopted to ensure that new shoots are constantly protected from disease.

We also examined trees that had not been recently pruned and Stuart explained why certain branches were being cut out and the consequences of making those cuts.

Craig gave a brief summary of the rainfall since last Field Day and the spray program adopted as a result.

Andrew noted that a new suggestion was to introduce an application of a fungicide (such as the systemic fungicide Difference) immediately after flowering begins to improve combatting anthracnose infections at bloom.

Andrew pointed out some of the fruit remaining on the trees post-harvest and how the fruit was in clusters, rather than singly, which shows good fruit set after pollination.

It was also noted that this fruit was still clinging to the tree quite tightly as a result of the previous season's late or non-ripening.

Following the grove visit, 12 growers and the judges met at the Gladstone Pub for a tasting session, led by the chief judge Giuseppe.

Oils brought by growers were individually tasted by everyone and then discussed for attributes and comments.

[Aquiferra, Hawkes Bay](#)

This grove has been sprayed regularly and shows a very low level of leaf disease. At the last field day the grove owners' pruning undertaken in spring of the 2016/17 season was discussed and considered to have been a heavy prune. Following the field day three rows were pruned in a less severe manner as a direct comparison. January 2017 the well run dry and the lack of irrigation resulted in a low crop.

From the Grove Owner

In 2017 we tried two different pruning regimes, severe and recommended. The first trees produced 1300 kg from 152 trees (8.6 kg/tree); while the second trees produced 320 kg from 25 trees (12.8 kg/tree). Much, much worse than last year.

Field Day Report



Unfortunately it was wet on the day of the Field Day but 12 people attended, including one from Wairarapa, and then 10 people attended the tasting seminar with the two Italian judges.

The tree health was very apparent and there had been excellent new growth. Stuart commented that it was the first grove where he had ever seen three year old leaf. The tree structures are looking ideal.

Andrew commented that this grove was finding the spray regime easy to manage because of the size of the block, the flat contour and relatively free draining soil. This made it easy to respond to the weather where other groves were sometime less able to have an ideal programme because it was too wet to get a tractor out into the grove.

Following the heavy pruning in 2016 only thinning will be required this year with a focus on harvestability. There is concern about the impact of drought again as the grove has very limited ability to irrigate and only for a very short period.

With the heavy flowering apparent, the trees will be reviewed again in December because crop load is looking to exceed 30kg per tree. If this proves to be the case the trees will be thinned using secondary branch pruning to reduce the crop.



The Field Day was followed by socialising and then the tasting seminar. It was very convivial and positive.

Olives on the Hill, Mangawhai

Whilst outside the scope of the Sustainable Farming Fund Project, this grove in Northland has been used as the focus point for olive growers in the upper North Island.

This is a sub-tropical location with very regular rainfall requiring very regular spraying to keep the leaf disease at an acceptable level. As with the Nelson grove the contour of the grove can make spraying on hills in wet conditions a challenge. Leaf canopy disease level has manifestly improved with regular spraying. The pruning regime has involved an additional one or two large cuts in an attempt to reduce height and these trees are at the maximum of the tree-row volume of this spacing. In addition to the canopy management and disease management on the focus grove there has been the interest in the coppiced Leccino block and the grafting undertaken nearby.

From the Grove Owner

Our harvest was down on last year, but we did not harvest the coppiced trees, and the heavy pruning regime we are undergoing to bring the trees down in size means that many of the Frantoio trees did not bear enough fruit to warrant the harvest costs. We have not yet reached our target of an annual sustainable harvest.

The trees were healthy at the time of harvest, and currently look significantly better than previous years at the same time of year. There was very little sign of anthracnose, despite all the rain we had prior to harvest. Yield was also down reflecting the challenge in ripening the fruit in the 2017 harvest season. Several other growers in the area did not harvest at all due to the weather and it being an “off year”.

Frantoio	No. of Trees	Weight (kg)	Volume (L)	Yield
2016	380	9180	913	10%
2017	230	3023.5	430	7%

Field Day Report

The Northern Field Day was held at Olives on the Hill, Mangawhai on Monday 6th November. There were 22 attendees from Manogonui and Matuari Bay in the far north to Bombay, South Auckland and also Waiheke Island.



Pruning for thinning

The focus for the day was on flower health. There was a noted improvement in overall tree health and heavy flowering. Trees have responded well to the spraying program. Need to manage heavy flowering to avoid biennial bearing in 2019. Potential for 40+kg but 30kg will produce better quality and yield. Therefore secondary pruning and focus on managing canopy for maximum harvest potential. The aim this year is to remove old, dead and diseased branches. Looking at how to manage regrowth, regeneration and next steps from heavy pruning regime. Not necessary to take big cuts.

There were questions about tree height and the need to address this. However advice was that tree height will be addressed through crop load bringing the branches down, and this was illustrated. Also noted that the fruit will drop vertically when trunk is shaken.



Reviewing the flowering

There was discussion around the new recommendation of spraying weekly for the three weeks of flowering with the systemic fungicide Difference added to the normal Manzate spray. It was noted that the Spraying Fact Sheet needs to be updated accordingly.



The group also reviewed the coppiced tree regrowth and structural pruning of Leccino trees.

After the Field Day attendees had the opportunity to continue discussions over afternoon tea. Attendees were very pleased with the level of knowledge being imparted and being able to see the results that have accrued over the past two years.



Olives on The Hill - Frantoio block

Overall

The 2017 harvest data for the Focus Groves for Frantoio is shown on the table below – average kilos harvested per tree.

Participant	Region	2014	2015	2016	2017
Aquiferra	Hawke's Bay	22.8	21.7	21.1	13
Leafyridge	Wairarapa	15.2	Frosted	19.1	5.7
Kakariki	Nelson	11	16	12	14.38
Terrace Edge	Canterbury	1.9	1.9	16.1	2.7

As was expected all groves, except Nelson, showed the impact of crop reduction by the restructuring pruning but equally significantly exacerbated by very adverse weather conditions from February to July 2017.

The Nelson grove has been rigorously managed for disease control as well as tree restructuring. Despite best efforts, there have been large breaks in the disease control especially in winter caused by excessive rain in 2017. Although an '*annus horibilis*' for every region, it should be noted that the Nelson Focus Grove has maintained yields (although much lower than anticipated) so that only relatively small annual oscillations in yield are evident from year to year, and becoming less with every year perhaps.

Appendix One shows regional crop comparisons for 2014 – 2017 and with the Focus Groves shown separately. Hawke's Bay and Nelson Focus Groves continue to out-perform in their regions. However Canterbury and Wairarapa have under-performed in 2017. Note that the Focus Groves have been deliberately heavily pruned to improve canopy structure going forward. Also that some 40% of olive groves across the country reported No Harvest and are not included in the crop comparison chart.

At the last round of field days prior to and during flowering, discussion was had regarding the effect of anthracnose to flowering. This was followed up at the October Field Days. New recommendations have been made for spraying, given a suspicion that Anthracnose may be causing a reduction in fertilisation and incomplete development of fertilised fruit, leading to

reduced cropping. The advice was to add Difference to Mancozeb at the time of first flower opening and then follow with weekly spraying of Mancozeb over the next three weeks.

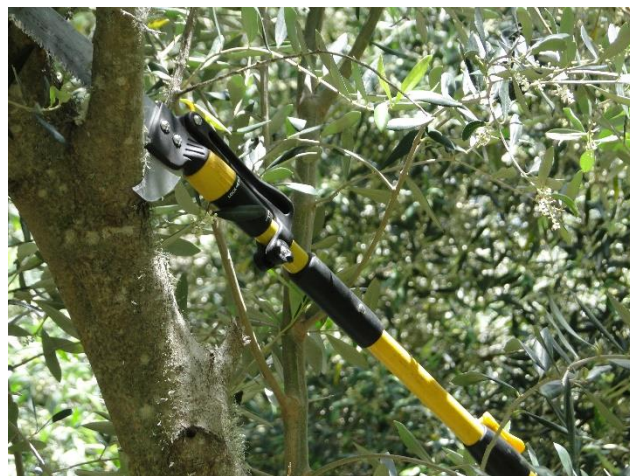
The recommended practice of pruning removal of several large limbs to open the canopy, reduce height and volume of the tree, increase sunlight access inside the tree, combined with improving wind access to encourage drying of the canopy post rain, remains critical. It also provides better access for spray penetration. The regrowth from previous cuts has been very good across the focus groves.

The biggest challenge now, following on from a poor 2017 harvest, is to convince olive growers of the need to prune to avoid excessive harvest loads for 2018 otherwise 2019 could express extreme biennial bearing with reduced crop loads.



The regrowth on previous cuts is looking excellent. Zero leaf disease!

Showing the 'crop thinning' pruning cut, removing old diseased secondary limb sections to reduce total flower numbers.



Appendix One – Regional Crop Comparisons

