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## Harvesting and Processing Field-Day

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**Sunday 22nd April 2007**



This field day is designed to get us thinking about how to go about the practical work of harvesting, cleaning, drying and processing walnuts. Pictures and a video of overseas equipment will be displayed.

**1.00 pm** Ian Sheerin's property "Camden Green" 387 Hampton's Road, West Melton.

Collecting walnuts from the orchard floor, washing and drying.

Ian is experienced in the management of his orchard and has an excellent washing machine.

**2.30 pm** Jenny & Malcolm Lawrence's property and factory Tricketts Road, West Melton

Tea, coffee and walnut product tasting provided.

Display of pictures of overseas walnut harvesting equipment.

Video of harvesting machines working in France, courtesy of Frank & Margaret Brenmuhl

Tour of "A Cracker of a Nut" processing factory

The section of the field day at the Lawrences factory will be indoors so this event is not weather dependant. Just come along, it is not necessary to register.

**AGM Advance Notice: The meeting will be held in June. Details soon.**

## The South of the South Expedition –

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### ***A Walnut Tour to Central Otago***

Depending on which venue, about 26 of us took part in the tour and a grand one it was. Not only about walnuts, it proved to be a good mixture of experiences in growing, processing, marketing and eating food.

At Geraldine we learned that frost can wipe out production even on established trees. An interesting point of discussion was about how various varieties respond

to, and perform in their respective environments.

Feint's orchard at Wanaka has a fantastic scenic aspect and there we found out about bigger scale harvesting, irrigation and once again how devastating frost can be. It was also very interesting to see the new cultivar trial block.



On Saturday, at his beautiful lakeside property, Bill Dunbar shared his experiences of his Guivina plantation, the large number of tree deaths and how he feels this may be related to tissue culture and nursery practice.

The visit to "Provisions" in Old Cromwell was a very professional example of what great branding and marketing can do. We were told of the success of their products (some products use walnuts from **A Cracker of a Nut**) and how market demand is pulling their business along.

At Adrian and Olivia Somerville's we found that Aucklanders can shift south to appreciate the good life of Central Otago, and their 100 year old walnut trees. The visit to "The Big Picture" was really informative and educational. I think we would all recommend it to anyone who wants to learn about the 200 aromas that can be found in wine. And yes it includes walnut. The wine tasting and audio-visual tour of vineyards was spectacular.

On Sunday evening excellent weather and the fantastic view from the Mt Difficulty

restaurant at Bannockburn proved to be an outstanding venue for fine dining with a menu that included walnuts in every course.

Monday brought us to Wayne and Mary Ashton's dried apricot processing plant and Tony and Judy Banks mature walnut trees and peony growing/exporting enterprise.



At midday Verdun Burgess and Sue Edwards' very entertaining wine tasting presentation preceded lunch at their Black Ridge winery. Verdun's tales about his efforts to reduce the rabbit population combined well with the story of their wine. In the afternoon more heritage walnuts and a visit to Monty Christo Berries, allowed many on the tour to partake of the very popular ice cream, even if the proprietor was almost run off his feet.

On Tuesday we were privileged to visit the Hursts well-established walnut orchard and more recently planted flood irrigated walnut area on Waitaki Valley Road. I'm amazed to think that Russel may have time to devote to walnuts, on a 1000ha dairy farm.

All in all a successful trip.

Nelson Hubber

# Moisture content of walnuts

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It is universally recognised that walnuts are best stored at 8% moisture content. This is the standard accepted in both USA and Europe. There is good scientific reason for this: at higher moisture content, yeasts and moulds can grow and spoil the nuts in a relatively short time (a few months or less). Whereas nuts with a lower moisture content don't store as well and have used more energy than is necessary in the drying process.

## ***What does 8% moisture content mean?***

Moisture content is a measure of how much water is present in the in-shell nut (i.e., including shell, partitions and kernel) relative to the total weight. So, 100 kg of nuts at 8% moisture will contain 8 kg of water and 92 kg of dry material (shell, partition, kernel, etc.)

## ***How can you measure moisture content?***

Qualitatively, the moisture content of the nut is too high if the partition doesn't 'snap' when bent with the fingers. If the partition does snap, then the moisture content is close (enough) to 8% or less. So if you are drying recently harvested walnuts, monitoring the partitions for 'snappiness' will tell you when you can stop drying.

Quantitatively it is not easy to measure moisture content, unfortunately. The standard method is to take a sample of the nuts, weigh them as-is, then weigh them again after thorough drying in an oven. The difference in weights is assumed to be the amount of water that was there at the start. The moisture content is the weight of water divided by the wet weight of the nuts.

Say you are monitoring the moisture content of nuts on your drying racks, and want to know whether they are sufficiently dry. You take, for example, a sample of 100g of nuts from the racks. You put them

in an oven and, after drying, find that the weight is now 91g, meaning that 9g of water has been removed in the drying process. The moisture content of the nuts on the racks is therefore 9g divided by 100g, or 9%.

The oven temperature for drying your sample must be over 100°C to drive off all the water but it should not be too hot (105°C is usually suggested). The time required in the oven is 'long enough to drive all the water off' (i.e., to get the nuts to 0% moisture content). This is likely to take at least 3 hours. However, to be sure, you should weigh your sample after 3 hours in the oven and then again after 4 hours. If there has been no weight change from 3 to 4 hours, you can be sure that all the water has been driven off. The main problem with the method is that other parts of the walnut (e.g., oils) can be vapourised and their loss 'adds' to what is believed to be moisture. This effect shouldn't be too bad at 105°C but if the oven is hotter, quite a lot of non-water will be driven off in the oven. So, it is not 'simple' to quantitatively measure the moisture content.

## ***What is the moisture content of a nut at harvest?***

The moisture content of walnuts at harvest varies between about 15% and 25%. The wettest nuts will be ones whose husks haven't split (and thus the nut is still in a completely saturated environment) and ones that have been lying on damp ground. The driest will be ones that have been hanging on the tree by a thread from a well split husk through a couple of nor'westers. There will be some moisture take-up during washing, but if the contact time with the wash-water is brief, only the outside part of the shell will be wet and this is easily dried again.

## ***How much weight (yield) will be lost in drying?***

If the nuts are at the wet end of the range when harvested (25% moisture content)

then 100 kg of freshly harvested nuts will comprise 25 kg of water and 75 kg of dry matter. After drying these nuts to 8% moisture content, the dry matter comprises 92% of the total weight. Therefore the total weight after drying is 81.5 kg (75 kg divided by 0.92). Thus you have lost 18.5 kg of weight (water) in the drying process (100 kg harvest weight minus 81.5 kg dried weight), or 18.5% of the original wet weight at harvest.

If the nuts are at the dry end of the range when harvested (15% moisture content) then 100 kg of freshly harvested nuts will weigh 92.4 kg after drying to 8% moisture content, so 7.6 kg (or 7.6%) of the weight will be lost.

In other words, you can expect to lose (in round figures) between about 5% and 20% of the harvest weight during the drying process.

Clive Marsh

## NUTNZ Export Marketing Strategy

### ***What is it? Why do we need it?***

Nut Industries of New Zealand (NUTNZ) was incorporated in 2004 and represents the New Zealand Chestnut Council, the Hazelnut Growers' Association of New Zealand and the New Zealand Walnut Industry Group. NUTNZ is looking to act as a recognised product group under the HEA (Horticultural Export Authority) Act 1987, and to formulate and implement an Export Market Strategy (EMS) under that Act.

The intent of the NUTNZ EMS is to produce a set of requirements that must be adhered to by all parties wishing to export temperate nuts grown in New Zealand.

It is NUTNZ's wish to create the EMS to protect the quality and reputation of our NZ temperate nuts. It is believed this will

be achieved by setting minimum quality standards and having a structured and coordinated industry with a clear mechanism for enforcement.

The EMS details NUTNZ's vision and objectives together with all participants' specific responsibilities to achieve these aims. Specific quality management programs and standards are currently being developed by each member group and will only apply to their specific member group. The EMS will be reviewed regularly and can be changed by majority agreement to better suit the industry requirements as they evolve.

The development of an EMS is a formal step in NUTNZ registering its requirements with the New Zealand Horticultural Export Authority (HEA). HEA was established by an act of parliament in 1987 and has a primary function to promote effective export marketing of horticulture products. HEA will administer all export licenses and will ensure exporters comply with the NUTNZ EMS requirements.

At present NUTNZ is in the preliminary stages of developing their EMS and wants to ensure it meets the requirements of the majority of all commercial nut growers, processors and exporters of temperate nuts in New Zealand.

Please bear in mind the specific quality standards which will appear as appendices in the EMS have yet to be drafted, these will be shared with you on their completion.

As there will be a number of responsibilities on all growers, packhouses, processors and exporters we urge you all to read the EMS and provide any feedback you may have, or changes you would like to see.

Feedback should be sent to Andrew Horsbrugh at [akh@donaghys.co.nz](mailto:akh@donaghys.co.nz).

Subject to the feedback received a further DRAFT may be circulated at a later date.

The draft EMS document is available on the NZWIG website: [www.walnuts.org.nz](http://www.walnuts.org.nz)

## Research Report

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### ***Blight***

#### **Spraying trials**

Trials have been completed and measurements made. We are still finalising the analysis.

It was generally a high blight season.

The most positive results were that we were able to get similar control with 3 sprays in-season, timed in response to climate as we got with 7 weekly sprays.

Nufilm (sticker) and amino fit (plant health booster) failed to improve control.

Copper methionine (which had performed well on capsicum) gave inferior control to mankocide, performing similarly to how kocide has performed in previous years.

Increasing the mancozeb levels in mankocide did not improve control. Lower rates of mankocide gave inferior control.

**So, in summary, a tough blight season and nothing performed as well a full-strength mankocide. The best option for 'sustainable' methods seems to be to reduce the number of sprays by responding to climate.**

#### **Spray technologies.**

We had a successful field-day demonstration with Dr David Manktelow.

This provided good information on spraying rates and concentrations. Also on what works and what doesn't as far as getting even coverage is concerned. Dr Manktelow showed us a good way to monitor coverage using the tags-on-poles

method. This is all being collated into a blight-spraying-guide which will be ready for next season.

### **Phages**

A field experiment has been conducted where nuts were inoculated with bacteria and phages. This was successful at introducing the disease but phages were unable to make a significant reduction of disease symptoms. We think we know why and have conducted a follow-up experiment.

### ***Benchmarking for blight***

Four teams visited three orchards each to assess blight in a range of blocks.

As expected, Meyric were worse than Rex. There was also quite a lot of difference between properties. We are still trying to understand the key factors here.

### ***New SFF application.***

We have submitted application for more funding. This is a two stage process. We will know by end of march if we pass to the second (final) round and final applications due mid May.

### ***Cultivar trial.***

Leaf samples have been taken from all trial orchards to check nutrient status.

The NZWIG Newsletter is edited by  
Graeme Nicholas,  
480 Rattletrack Road, RD 4, Christchurch.  
phone 03 974 3133  
[graeme@nicholas.net.nz](mailto:graeme@nicholas.net.nz)

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## 2007 NZWIG Members' Questionnaire

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Help us to help you

**Your committee needs your feedback. Responding to this questionnaire will help us to check whether we are providing the services you need. It will also provide vital information about the way your industry is growing.**

We are distributing this form by email and post. If you have already sent your response, thank you. If you haven't, why not complete it and send it back today? It should only take a few minutes.

### Tell us about you

1. Name (optional) \_\_\_\_\_

2. Location/region \_\_\_\_\_

3a. Years as a grower of walnuts \_\_\_\_\_ 3b. Years as propagator \_\_\_\_\_ 3c. Years as processor \_\_\_\_\_

4a. *Hectares* of walnuts already planted \_\_\_\_\_ 4b. *Number* of walnut trees planted \_\_\_\_\_

5a. *Hectares* of walnuts you *plan* to plant \_\_\_\_\_ 5b. *Number* of walnut trees you *plan* to plant \_\_\_\_\_

6. Varieties and age of trees already planted (Please put the numbers in the appropriate boxes)

<b>Cultivar</b>	<b>1-3 years</b>	<b>4-6 years</b>	<b>7-9 years</b>	<b>10-12 years</b>	<b>12-15years+</b>
Rex					
Meyric					
Stan					
Dublin's Glory					
150					
Other:					

7a. Is your orchard certified organic now? Yes/No  
OR

7b. Do you plan to make it certified organic in the future? Yes/No

8. Approximately how many kilograms of walnuts (total, in-shell, dry weight) did you harvest in 2006? \_\_\_\_\_

9. If you have begun cropping, do you:

sell your walnuts to a processor?  Tick if appropriate

sell your walnuts to a retail outlet?  Tick if appropriate

process them yourself?  Tick if appropriate

Other? \_\_\_\_\_

10. If you are a processor or retailer how many suppliers do you have? \_\_\_\_\_ (optional)

11. If you are a propagator, how many trees did you sell in 2006? \_\_\_\_\_ (optional)

### Tell us about the services NZWIG provides

Rate each of the following services with a circle around the number that best represents how well the service is meeting your needs now.

12. Reports on research                      Not useful    1    2    3    4    5    6    7    8    9    10    Essential

Never read them    Tick if appropriate

13. Walnut Growers Manual              Not useful    1    2    3    4    5    6    7    8    9    10    Essential

Never read it    Tick if appropriate

14. Walnut Manual *update*              Not useful    1    2    3    4    5    6    7    8    9    10    Essential

Never read it    Tick if appropriate

15. Newsletter                              Not useful    1    2    3    4    5    6    7    8    9    10    Essential

16. Health in a Shell                      Not useful    1    2    3    4    5    6    7    8    9    10    Essential

17. NZWIG website                      Not useful    1    2    3    4    5    6    7    8    9    10    Essential

18. Field days and trips                      Not useful    1    2    3    4    5    6    7    8    9    10    Essential

Many of our field days take place in Canterbury because of the large number of growers there. If you are from outside Canterbury and are willing to coordinate a local group in your area, please write your name and contact details here:

### **Any comments and suggestions for the committee**

19. What are the important issues/information needs for you currently?

20. Are these issues/needs being met by NZWIG publications/field days/research etc., and if not, how can we meet your needs better?

21. What do you think are the main issues our industry should consider for the future?

22. Any other comments?

Please post your reply to:

**Walnut Industry Group Questionnaire, P O Box 1142, CHRISTCHURCH**