

the Nutshell



MPC'S NEWSLETTER FOR MACADAMIA GROWERS

APRIL 2011

Dear Growers,

2010 strong results

The 2010 macadamia season was another good season for MPC. In addition to having paid to notional price by the beginning of December, we then paid an extra \$0.15/kg. That brought our final price, at the industry standard 33% premium kernel recovery, 2% commercial kernel recovery and 1% reject kernel recovery, to \$2.79/kg.

This result reflects ongoing cost-saving programs and changes in our marketing strategy that have been undertaken over the past few years. We expect to continue this strong performance into 2011.

2011 outlook

The good news continues with our recent announcement that the 2011 season NIS price will be \$3.232/kg – a significant increase on last year with the prospect a further price rise at the end of the year.

In addition, MPC has adjusted its payment system to help you as a grower reduce costs on farm and increase returns. We have instigated a bonus for low reject levels – a reject penalty-free allowance of up to 5% reject KR, with commercial grade paid as premium to 5%, and a strong premium price.

Through our own research we have found that removing obviously-damaged NIS, such as rat damage and black nuts, significantly improves NIS quality. However attempts to remove less visible defects are often not cost effective, and can result in increased defect levels and shortened shelf life due to less than ideal storage conditions.

All NIS delivered to MPC up to and including 13th May 2011, will receive a \$1.50/kg upfront payment at the end of the month following the month of delivery. NIS delivered to MPC after 13th May will receive a \$1.00/kg upfront payment at the end of the month, following the month of delivery (less the AMS levy). The more NIS we receive, the

higher our final price will be, so please talk to any macadamia growers you know and let them know we offer great prices and great payment terms. We are always working for the grower.

It is difficult to gauge the size of the 2011 macadamia crop at this point, but most people are predicting an overall industry crop similar to last year. The northern NSW crop is poor, with most experts agreeing that rain during flowering prevented proper pollination. However the Gympie, Glasshouse and Bundaberg regions in Queensland seem to be performing well this year.

Overall production in northern NSW has been affected by the recent wet weather. We experienced the wettest December on record. A total of 404mm of rain was recorded at the Alstonville Bureau of Meteorology (BOM) site, compared to an average of 153mm for December. That was more than two and a half times the average rainfall for the month. Unfortunately this pattern continued into early January. The resulting overall lack of sunlight could have an effect on nut maturity levels in the 2011 season.

We're all hoping that the rain stays away as we move toward harvest time.

Bundaberg Factory

The new factory in Bundaberg continues to take shape with the recent erection of the tilt slab walls and the addition of the roofing steel.

The photograph of the building on the right was taken near the end of March. The roof is expected to be on by mid-April and the floors poured shortly after that. The Factory will be operational for the 2012 season.



The new factory in Bundaberg takes shape.

New marketing company



The new marketing company, Macadamia Marketing International Pty Ltd, jointly owned by Consolidated Nuts (Aust) and MPC commences business on 1st April 2011. The new company logo and tagline (shown above) have been developed to show the international nature of the business and to express the commitment to our customers to provide a reliable supply of quality macadamias. Major users of macadamias have told us that sourcing macadamias gives them headaches and in some years it is almost impossible to find enough macadamias to keep their products on the shelf. The supply of inferior quality macadamias also causes them problems in the market place. These issues are costing the whole industry a lot of money. MMI aims to change all that by becoming a large kernel supplier, concentrating on ensuring the quality and quantity provided meets the needs of the customer and more importantly the consumer.

We will continue to tell you more about the new factory and MMI as the year progresses.

Larry McHugh
General Manager

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Marketing Report

International crop down

As already mentioned, Australia is expected to have a below-average sized macadamia crop this year.

That means there will be an ongoing shortage of kernel in the global market. Demand for macadamia products remains strong – both locally and internationally but macadamia users are experiencing great difficulty obtaining the kernel they require for their products. As a result, many are keen to lock down their supply for 2011 early in the year.

Prices increased across the 2010 season, and we expect them to continue to firm into 2011.

Macadamia price rises

The strong Australian dollar will impact on sales in some overseas markets. Both the Euro and the US dollar have devalued against the Australian dollar in the past year.

That means without even changing our Australian dollar prices, our customers are seeing significant price rises for macadamia products in their own currency. For example, customers in the US will be paying up to \$A2.50/kg more this year compared to the start of last year, simply due to the change in the exchange rate.

While the kernel shortage is good for prices, it continues to put pressure on the viability of some products that use macadamias – with some at risk of being priced out of the market.

MPC are working closely with macadamia users to keep as many products as possible on the shelf. In addition, we are preparing the market to extend their ranges and introduce new products when the next big crop arrives. In this way we hope to stabilize the market price and demand.

Australian export market

The value of macadamia exports in 2010 was up seven per cent on the previous year, to just over \$80 million, according to the September export figures on a crop year-to-date basis, as reported in the AMS November 2010 Bulletin.

That increase came despite a 15 per cent decline in the volume of Australian macadamia kernel exports in the 12 months to September, compared to the previous year. That was as a result of modest crop sizes last year and a rise in the Australian dollar.

While total macadamia exports fell, there was a significant increase in exports to Europe – up 37 per cent in the March to September period, 2010 (crop season to date). This was probably due to a slight fall in the Australian dollar in this market, and as customers sought to secure supply for existing products in a short supply market. This was also despite a 25 per cent drop in launches of new product using macadamias during 2009-2010.

Australian macadamias regained their position as the third largest Australian horticultural crop exported, after table grapes fell to fourth position earlier this year.

The Asia Pacific region remains the biggest market for Australian kernel – accounting for 34 per cent of the total crop, and the Asia Pacific region including Australia accounting for 64 per cent of total kernel. New product development in the Asia Pacific region almost doubled in the year to June 30, 2010.

New research

New research shows households with one to two members are more likely to purchase macadamias than families with children. Also, shoppers aged 45 years and older, and who spend more than the average shopper, are also more likely to buy macadamia nuts.

The Australian Macadamia Society's own research, as reported in its November 2010 bulletin, found the Australian macadamia brand had built significant value globally. The Australian brand was regarded as being the best quality macadamia nut in the world; having the highest production standards globally; being the most reliable supplier of macadamias; and being the cleanest and greenest producer.

The research also found some marketing advantages were that Australia was the biggest producer of macadamias, with a third of world production; macadamias were an Australian native and this was the best place to grow them; and Australia itself was regarded as a special and magical place.

The Australian Macadamia Society said this equated to a five per cent price premium on Australian macadamia nuts, or between \$3 million and \$5 million annually on a wholesale basis.

However Australia's share of the global macadamia market was under pressure from rising global production.

To protect the Australian brand, the Australian Macadamia Society has developed a new logo to help position Australian Macadamias as the original and the best macadamia in the world.

The gold, black and white symbol combines a circular brush stroke which represents both the shape of the nut and the shape of the globe. Inside the circular shape sits a cluster of stars representing both the Southern Cross and five-star quality.

The Society plans to launch the logo and new Australian brand at a series of events this year, including the endorsement of an ambassador, trade and consumer events and blogging events.

Factory Operations with Steven Lee

The factory has been busy roasting and dicing customer orders and preparing for another processing year which we expect to commence at the end of March.

With the recent worldwide shortage of kernel, demand for all grades has increased. Our efforts over recent years, developing paste and alternate markets for lower grade kernel, are now paying dividends. Subsequently we've reviewed how this is impacting our payment system – meaning as we get more money for all components recovered from the Nut-In-Shell delivered, we can return more money to you in grower payments. That's the MPC difference - we don't withdraw profits for private business owners.

Independent lab tests

MPC has been leading the push for an industry standard for premium, commercial and reject kernel to be used in the assessment of grower NIS.

I am pleased to report an agreement has almost been reached between processors on standard definitions for kernel categories. The standard will be tested during 2011 and implemented in 2012 by all processors who wish to be an AMS accredited lab. We believe this new system will improve grower confidence in the results and payments they receive.

Around the Farm

Husk Spot

This season the weather conditions have been extremely favourable for husk spot infection, with nearly all varieties recording some level of damage. There have been large variations in the level of infection and drop across orchards in each growing region. Observations from growers, crop consultants and data from the QLD DPI research trials have all shown that there are three main issues creating the differences in the levels observed (apart from variety). These factors cannot be considered in isolation, as it is the combination of all that have lead to the outcomes seen:

Maturity monitoring is a key aspect of husk spot management. By monitoring maturity, you can reduce your husk spot losses by as much as 30-40%.

1. Level of pressure – the greater the amount of stick tight husk left in trees from the previous season, the greater the level of spore production and as a result the greater the potential for infection. The stick tight levels are a function of the variety and the seasonal conditions. The high pressure observed this season made the next two issues critical, with different management strategies needed for each variety.
2. The timing of applications – growers who sprayed (if the weather allowed) and applied the first application at match head and a follow up spray 2-4 weeks later. In highly susceptible varieties, more than two fungicide applications were often used, and;
3. Coverage/Volume – growers who have used higher volumes and achieved better coverage have experienced lower levels of drop.

Difference due to Chemical Choices?

Interestingly, there has been little difference in the results observed using a program of Carbendizum (eg Spin-flo®) and Copper compared to using Cabrio®, or a combination of both chemical options. This is similar to the results found in the research trials into husk spot management, with the level of pressure, timing of applications and coverage/volume of application being critical to get the best results.

Dealing with the Husk Spot drop

Don't mulch your husk spot affected nuts until you have had a maturity test carried out to verify their value. On farms where growers have been carrying out maturity testing they have found that there is a considerable quantity of NIS that has dropped early with husk spot lesions that is saleable. In the past these growers would have mulched this crop, but by monitoring maturity they have found that it has value and can be harvested and sent in. By adopting this strategy, they have been able to reduce their losses from husk spot by 30-40%. This increases their profit margin considerably. Why not use the services offered by the MPC NIS laboratory to assist you in the decision making process.

To ensure an accurate test, you want to collect a representative sample of nuts. The best way to do this is to collect nuts off the ground from a number of trees on your farm, and mix these up. If you would like assistance with this process, please contact Jim Patch or Kevin Quinlan.

Looking at it simply, if you test it and comes back as saleable, great. If testing shows it is worthless, then you mulch it - but you know that it was the right decision. Simply by testing the sample you can maximise your returns.

Workshops

Supply Chain Managers update

Dehusking services

A new dehusking service is being offered to growers by Greg Woods at Dunoon, This service is on his farm Braefield, and any grower is welcome to inspect the dehusking plant and discuss with Greg their requirements.

Greg has provided the following information:

Braefield Farm Services

PO Box 8102 Dunoon
Ph: 66895110 m: 0418779942 fax: 66895994

For the 2011 season we are providing contract dehusking, sorting, drying and silo storage for growers with small to medium farms in Tullera, The Channon, Dunoon, Dorroughby, Whian Whian and surrounding areas. Our independent services are provided at our farm at Dunoon by experienced people under a grower owner's supervision at very competitive rates.

Pricing for 2011 season:

- dehusk and sort - 0.27 cents/kg NIS weight received at factory. This covers receipt, dehusk, sort and transfer to silo for drying or load out into bins or truck
- resort - 0.18 cents/kg NIS weight received at factory
- silo fan operation - \$2 per hour per silo for drying down
- all charges exclusive of GST
- Growers have free use of a braking trailer that can hold 4 field bins. Trailer available free of charge to growers for delivery of bins to us and for delivery of NIS to processor.
- For further information, please contact greg Woods on 02 6689 5110

Summerland House with No Steps



Summerland's new colour sorter

The Summerland House with No Steps (SHWNS) at Alstonville has been providing dehusking and sorting to growers for a number of years and this season they have installed a new nut in shell colour sorter. This type of machine has been used in Bundaberg by Macadamia Farm Management for the past two seasons with promising results.

Brett Lacey, General Manager for SHWNS said that they had invested in this machine as the aim of mechanizing sorting was to provide a more objective sorting method and improve consistency.

The SHWNS is charging \$0.27/kg of NIS based on the finished weight after sorting. For further information, please contact Dave Ferguson, Dehusking Operations Manager at SHWNS on 02 6628 0610.

How do you compare to other growers?

Do you wonder how your farm compares to other macadamia farms in the industry? In your local area?

Well the QLD DPI is running a project that is providing you with the opportunity to benchmark your farm against others, and see where you fit.

Please note that all information you provide will be kept confidential, so you can not be identified.

Attached to the nutshell is a letter outlining what the project is about, a sample of the types of comparisons you will get back, a privacy consent form and a data collection form.

MPC believes this project will provide our macadamia growers with some great information. To assist you to participate, MPC can provide a summary of your production and quality results to the benchmarking project team on your behalf. To do this, you just need to tick this option on the data collection form and we will fill in the rest. You will still need to provide the consent form and orchard statistics to the benchmarking project team, using the email address or fax so they can crunch the numbers.

If anyone has any questions or would like to utilise this service, please contact Kevin Quinlan 02 6624 3900 or kquinlan@mpcmacs.com.au.

Harvester Field Day

Rural Buying Machinery Centre, Lismore in association with Town & Country Tractors & Machinery are running a series of demonstrations of a new macadamia harvester.

The new harvester that will be demonstrated will be the Facma Model C380S. This is a self propelled harvester fitted with hydrostatic drive. It has a 3.80mtr harvesting width which is made up of two counter rotating sweepers that feed a suction receiver opening which in turn separates the product from orchard floor debris. This is undertaken by using air pressure and with the aid of a sorting screen, the product is then transported into a collection trailer. The harvester exerts low impact on the orchard floor due to its high floatation tyres.



The new Facma harvester.

The demonstration days are as follows:

- 1: Monday 18th April – 11am onwards – Bruce Hawthorn’s Macadamia farm, 269 Alphadale Road, Alphadale. (Follow signs)
- 2: Tuesday 19th April – 11am onwards – Dorey’s Macadamia farm, Martins Lane (East) Knockrow. (Follow signs)
- 3: Wednesday 20th April – 11am onwards – Gray’ Plantations, The Stockade Eureka Road, Eureka (Follow signs)

Please RSVP to Robert Bianco at Rural Buying Machinery Centre on 02 6621 8837.

Good Practical Ideas Workshop Report

The workshop held late last year once again showcased some of the creativity that shareholders have used in their pursuit of the most simple and effective ways to conduct their orchard operations.

The topics discussed by the presenters at the 16th December event were:-

- Under tree mower modifications;
- Sorting table modifications;
- Sorting table with moveable trash chutes; and
- Spraying trees with cannons. **Disclaimer**

The events or services listed in this newsletter are done so to provide macadamia growers with information about events that are occurring within the industry. The listing of a company, individual or group is not an endorsement of that entity or its product.

Under tree mower modifications – Joof Alberts.

Joof has smother grass in his orchard and he doesn’t want to have a wide herbicide strip. That meant he needed a mower that would reach right under the tree and mow the grass close to the trunk. To save money, Joof decided to build his own offset mower.



Smother grass covers the orchard floor

Joof described how he created the purpose-built mower. The original mower was a basic 2.15-metre duel rotor, 3 pt.-linkage finishing mower on skids that ran behind the tractor. The mower was modified by placing it on four wheels to stop the skids from digging in and creating grooves in the ground.

The front wheels are independently height adjustable by changing spacers on their vertical mounting shafts. The rear wheels are located on a cross member which allows both rear wheels to be adjusted simultaneously by the use of a mechanical top link. The mower tracks over the orchard floor well without scalping the grass or creating skid marks. All grass clippings are left behind the mower.



The modified under tree mower

To mow under the trees required the addition of a second mower. Joof selected a lightweight 1.8-meter wide, side discharge deck, which was designed to mount onto the 3 pt. linkage of the tractor. The mower deck was designed to be powered from the PTO, but Joof modified this by mounting a hydraulic motor onto the input shaft of the mower gearbox. To reduce vibrational damage, Joof mounted the motor on rubber blocks.

As the mower was to be side mounted to the tractor, the front left side wheel of the mower was repositioned closer to the centre of the mower to allow clearance from the tractor's front wheel when turning. Pivot points were mounted on the left edge of the mower to allow it to be raised for transport, and for turning at the end of rows.



The inter row can be mown with two passes

Joof's orchard has nine-metre tree rows. With the mower design that Joof now has, the inter row can be mown in two passes. The mower leaves the orchard floor with short grass that is very easy to harvest nuts from. Joof is now able to maintain a very narrow herbicide strip. He said that the modifications were carried out with 'bits and pieces' he had in his shed. This meant the whole modification cost Joof a lot less than buying a pre-made machine.

Sorting Table Modifications - Joe Kavur.

Joe operates a small orchard at Alstonvale, in northern NSW, and is very particular about sorting his crop. Over the years Joe has modified most of the dehusking machinery in one way or another to improve its efficiency. Last year Joe built a modified sorting table system to improve the ability to see all sides of the nut. He says he is still working on improving the design for the 2011 season.



The under tree mower can be raised for turning and transporting

A frame was manufactured that attaches to the middle of the right side on the tractor chassis. From the tractor cab Joof can see the outside edge of the mower, which allows him to operate close to the tree trunks. The tractor-mounted frame has a hydraulic ram that is used to raise and lower the mower. The mower design allows it to float. The tractor's remote hydraulics have been extended, with outlets on the side of the tractor to power the mower.

The rear and side mowers have a 300mm overlap to prevent any unmown strips. The side mounted mower can be easily removed from the tractor by the removal of three pins and uncoupling two hydraulic hoses.



Joe's modified sorting table with wire cable

Joe said he likes to be able to see all sides of a nut as it passes down the sorting table, to ensure that there is no visible defect that he has missed. He found the conventional sorting table setup very cumbersome to sort on, because the large steel wipers made it hard to remove nuts easily. Nor did they allow the nuts to spin sufficiently in full view.

Joe removed all the old conventional wipers from his table and installed thin, horizontally-positioned stainless steel wipers that sit about 2mm above the sorting table belt. Each wiper has been curved to form a slight concave shape to provide strength and stability. The concave side is positioned on the top side of the wiper, to ensure that the metal belt joiner does not snag on the wiper.

The new wipers do not now intrude into the area where the sorters hands are working as the original wipers did, so there is no hesitation to move freely about the table. The nuts rotate vigorously as they move along the side of the wiper, which provides greater visual access to any defects. The wipers are mounted so they can be easily repositioned to extend or reduce the time that the nut is on the sorting table.

To extend the time the nuts rotate, the wipers are positioned at almost a right angle to the side of the table. To reduce the time, the wipers' angle is decreased, to allow the nuts to pass by more quickly. The final wiper on the table extends from one side of the table to the other. All the nuts rotate against this wiper for a short time to give the sorter one final look before they 'jump' over this wiper and off to the silo.



Joe's sorting table

The new wipers have worked well, but Joe wants to increase the spin of the nuts and the opportunity to look at them.

To that end, Joe has been testing a thin, spring-loaded steel cable positioned at right angles across the table and 2mm above the belt. He has found that as with his new wipers, the nuts rotate vigorously against the cable. As more nuts build up behind the cable, the pressure increases against the nuts that are in contact with the wire cable. Increasing pressure causes them to jump over the cable and move on down the table.

Joe said he intended to experiment with using the cable only, to see if he could achieve an even better result than using the new wipers he has installed.

Another novel tool that Joe has set up, is a floor-mounted on/off switch that he uses to control his table. The conveyor belt on the table stops when he takes his foot off the switch. These brief stops allow him to ensure that very few defective nuts leave the table.



A foot-operated conveyor table switch

Moveable Trash Chutes – Stewart Edmonds

Stewart Edmonds runs Balmoral - a 20,000-tree orchard located at Caniaba, near Lismore. Stewart has developed a number of good ideas for use around the farm.

Stewart described how he had instigated the use of moveable trash chutes in his dehusking and sorting shed. The chutes are used to funnel selected nuts from the sorting table into a bin or bucket on the floor. Stewart's chutes are constructed from 90mm PVC pipe, with the top section being an oblong downpipe adapter. The chutes have a small steel strap that allows them to attach to the side of the table. The chutes can be positioned anywhere along the side of the table, to suit the number of sorters or for special sampling that may be required. These chutes allow different reject types to be kept separate from each other.

The dehusking system is managed from the sorting table position, where the operator can see a series of six lights that flash if there is a jam in various parts of the system. For example, when there is a jam in the recievals bin, the light designated to this area comes on and flashes.

Stewart said this warning system allows the operator to turn off that elevator and free the jam before it burns a motor out. This system ensures the smooth operation of the dehusking shed and he said it had saved him many hours of down time.



The moveable trash chute

Spraying with Cannons - Nick de Wit

Nick manages Kerry Byrnes' orchards, with one orchard having sensitive areas on two sides, so he wanted to minimise the spray drift, while still getting good coverage in older trees.

Nick explained he was not confident that the trees were obtaining sufficient coverage at the top, where the crop's growth was most vigorous. The largest trees are up to 8.0 metres tall.



Single sided, double-turbine sprayer

The sprayer is a single-sided, double-turbine Tornado, fitted with an upward-facing conveyor to provide extra spray height. A speed trial was carried out to determine the tractor speed in the gears used for spraying. As most of the spraying that Nick does is on large trees, he realised that the air that the sprayer was putting out needed to be better directed to the tree canopy.

He manufactured and fitted a shroud to block the lower area of the fan duct, which then provided slightly higher air pressure in the area of the duct that was carrying spray to the tree.

Nick then concentrated on improving coverage. To achieve the height he needed, he fitted two cannon nozzles to the top of the extended conveyor. These cannons have the flexibility to provide a solid stream, or a more dispersed course/fine stream of spray droplets. Cannon nozzles look like the end nozzle on a garden hose, with the turning in and out changing the spray pattern. Cannons cost about \$70 each.

Nick knew that the coarse droplets would reduce the chance of drift, as the larger droplets usually do not break up easily in the air, but fall downwards towards the ground. Smaller droplets can be carried on the breeze or evaporated, causing drift problems. The solid streams travel high up into the tree before breaking up to large droplets near the target at the top of the tree.



Modified duct to reduce air loss



The cannons fitted in the conveyor

Following the setup of the cannons, the remaining nozzles on the sprayer were evaluated for their output, droplet size and coverage. Nozzle types were changed if there was insufficient coverage, while others were turned off as they were not hitting the tree at all.

The changes were tested each time using fluorescent dye. Large racemes of nuts attached to a PVC pipe at one metre intervals were hung in the tree, and after spraying were taken down to see if the dye had covered the nuts. The nozzles were then redirected as required to ensure adequate coverage of the trees.

The outcome is a sprayer that provides accurate placement and quantity of sprayed chemicals in the trees, while minimising the potential for spray drift.

If any MPC shareholder would like to check the coverage of their sprayer and calibration, please contact Jim or Kevin on 6624 3900 and they will assist you.

Tim Reilly's Macadamia Farming Success Story

Tim Reilly owns and operates two macadamia orchards in the Alstonville Plateau of Northern NSW.

One of them, Russellton, west of the Alstonville town buffer zone, with 24 ha planted, is remarkable because of its higher-than-average production.

The other orchard, Dungullin, is younger and presently has 10 ha planted. This orchard, his home orchard, is situated on the southern edge of the plateau at Victoria Park, beside the Victoria Park 'Big Scrub Remnant Nature Reserve'. This picturesque orchard has a panoramic view of the beautiful Meerschaumvale Valley through to the sea at Patches Beach, south of Ballina.

The farms are about 10 minutes travel from each other by road.

Tim is a successful macadamia grower due, in part, he says to his 'excellent staff'. His orchards display some very interesting modifications.

Keep it simple and highly mechanised

Before becoming a macadamia grower, Tim worked as an Agricultural Economist for what was then the NSW Department of Agriculture based at Wollongbar, NSW (it is now called Industry and Investment NSW).

With this background, Tim understood the need to develop and operate his orchards in a business-like manner if he wanted to become financially successful as a macadamia grower.

His intention was to be successful at a scale of farming without too many headaches or too many staff.

Tim said he carried out good research to try and ensure his decisions were accurate. His orchard philosophy is 'keep it simple and highly mechanised'.

His simplicity message is demonstrated in the purposeful manner in which he has developed the orchards and how he has purchased only the machines he believes are most suitable for the task at hand.

The Russellton orchard was planted out by Okari Plantations Ltd (a tree management company) between 1988 and 1990, at 4 x 4m, with mostly varieties 344 and 741.

Tim purchased the farm in 1991. Since then, he has reduced the planting density to 8 x 4m, removing every second row and allowing the orchard to be more workable. Following the removal of windbreak trees some years later, the area left vacant was planted with Daddow and 849 to act as pollinators.

Tim believes the orchard site has a unique micro climate with warm-winter/cool-summer temperatures and good rainfall. The soil is deep and fertile, being a well-drained kraznozom.

To protect his investment and to be a good custodian of the environment, Tim carried out soil erosion control with the assistance of the NSW Department of Land and Water Conservation. Diversion drains run through the orchard. They have sufficient capacity to carry the extensive runoff water from the deluges experienced in the past two harvest periods of 2009/10.



a) The base and front side of one of the diversion drains



b) The back side of the diversion drain shown in (a)

The tree rows are 'veed' (made in the shape of a shallow V) to allow water to drain away from the trunks and surface root system. Early on the 'veeing' was completed using a grader, but is now

undertaken using a soil profiling machine. These drains do not impede harvesting, as the nuts roll away from the immediate trunk area.

"Don't worry about putting soil against the tree trunk, this method really works," Tim said, in commenting on the drain design.

The v-shaped drains take the surface water to the main diversion drains, where most water is carried to the bottom of the orchard, without causing damage. The diversion drains were made using a 20t excavator and a road grader. The design of the diversion drains can be seen in the photos a) and b).

Tim is a great believer in the benefits of the use of smother grass, and has planted it throughout the orchard. The Russellton orchard suffered little, if any, damage or crop loss from the 300mm deluge that fell in May 2010.



c) 'Veeing' the rows and covering the tree roots



d) The inter row sown with smother grass after 'veeing'

Production has been very sound at Russellton for the past five years - ranging between four and six tonnes, with an average of between five and six tonnes per hectare.

Tree removal improves cropping potential

In the older tree blocks Tim has seen a decline in production due to a lack of light, especially from the lower portion of the trees. In 2007 a program of tree removal was commenced to combat this situation.

The aim of the tree removal was to allow the remaining trees to gain improved cropping potential by having greater irradiance on all sides and to provide the orchard floor with sufficient light to enable grass to grow. Tim said, "I did not want to have dead sticks falling from the trees, which happens when the light problem is allowed to proceed".

Tim also found other benefits including:

- reduced tree height;
- improved spray penetration to control pests and disease;
- the ability to harvest sooner after a rain event;
- ease of harvesting without sticks;
- improved surface root environment and;
- control of soil erosion control due to the grassed orchard floor.

The tree removal program involves the removal of every second tree in every second row – resulting in a 25% reduction in tree numbers.

Tree removal has been conducted over a number of years and will continue block-by-block until the plan Tim devised is completed. "I don't consider tree removal has reduced the orchard production significantly, because not too many trees have been removed at any one time" Tim said.

Three years on from the initial tree removal work and you can see the trees have regained a lot of vegetation low down. Light now falls on exposed limbs/branches within the tree causing growth from dormant buds. The lower sections of the trees flowered heavily in 2010 (see photo 'h' over).

Air blast sprayer does the job

Insect attack can be a problem for macadamia growers and the 'Russellton' orchard is no exception.

To improve the spray coverage of nuts high in the trees, Tim bought a modified air-blast sprayer using SARDI fans on a tower that can be raised or lowered and laid flat on top of the spray tank if working on a side slope. A small TV camera is fitted to the spray tower to allow the operator to watch the hedged sides of the tree canopy and avoid snagging of the tower in tree branches. Tim has found that this sprayer is giving excellent results.



g) 2010 – 3 years after tree removal .



e) 2007 following initial tree removal .



f) 2008- one year after tree removal



h) The first crop of flowers on the new wood that now occupies the space between the trees.



i) *Folded tower fans on top of the air blast sprayer .*



l) *Air sorter for light nut in shell removal*



j) *Rear view of the modified air blast sprayer*



m) *Shallow bed drying/curing system*

Dehusking and NIS drying/curing system at 'Dungullin'

'Dungullin', Tim's home orchard is different in many ways from the 'Russellton' orchard. It receives less rainfall, has a different soil type and is more exposed to southerly winds.

Planting of the orchard started in 2006 and is currently at 3500 trees with planting ongoing.

Varieties selected for this orchard are 849, 842, 816 and 15% of the total are A16. Tim is not happy with the stick tight problem of the A16's and is presently considering other management options. Whilst initially happy with the performance of the 816's, more recently Tim has found the 849's perform the best.

The 'Russellton' orchard has earlier nut drop than 'Dungullin' which allows for the timely conduct of harvest rounds on both orchards.



k) *Removal of extraneous material prior to dehusking*



n) *Tim outside his dehusking/curing system at 'Dungullin'*

'Dungullin' is equipped with a 'Bungay' style drying/curing system. It was installed when the orchard started bearing and gives Tim the flexibility to store crop in safe conditions.

The air held in the shed's ceiling cavity is warmed during daylight hours by the sun and there is a computer controlled program maintaining specific drying conditions in the bins both day and night.

Electricity is used to maintain the right temperature/relative humidity conditions during the night. Tim has found that this system maintains the quality and therefore the value of his crop at a reduced cost compared to conventional grain silos.

No rest for the successful!

Orchard operations don't ever stop at Dungullin and Russellton. Tim continually carries out orchard works to upgrade his orchards between seasons. His focus for the post harvest period of 2010 is to replace the top soil and mulch under trees that have been displaced by heavy rainfall events in the past two seasons.

An 'A' frame plough and a heavy duty orchard sweeper are used to carry out this operation (see photo 'o' below). The 'A' frame plough is towed by a tractor and moves the soil and mulch away from the outside edge of the inter row and deposits it in a wind row under the edge of the tree canopy. A sweeper fitted to a Bobcat then moves the soil and mulch back to the tree row (see photo 'p' below). Much of the smothergrass that has been established in the inter row survives this operation and will grow back to re-cover the exposed soil in a matter of months.

The same 'A' frame plough may be used to create a 'vee' in the centre of the row using a short top link.



o) The 'A' frame plough used at 'Russellton'



p) The tree row sweeper

Following the replacement of topsoil and mulch a soil aerator is used to perforate the orchard floor to improve soil aeration, water penetration, and plant root respiration.

Tim discussed one of his latest acquisitions in the form of a turbo powered Toro diesel mower. He explained that it looks like the other Toro models but it was far more powerful than the others, which allows the mowing work to be completed in less time.



q) Tim's turbo diesel Toro mower used at 'Dungullin'

This purchase may sum up Tim's pursuit of 'simplicity and mechanisation'. "It all may look very similar on the outside to the others, but in reality it simply does the job better than the rest. Why? Because from a financial perspective it has the potential to return greater value to the grower! My message is, "Keep it simple and highly mechanised!" said Tim.

FOR SALE



Antonio Carraro tractor

Four cylinder, 2001 8008 model, 51kw, 4wd drive, reversible seat, just 1,300hrs, asking 1/2 new price (say \$27,000 or near offer).

DGM harvesting head

3.4m, complete with auger and trailing tipper bin in good order, asking \$15,000 or ONO.



Two Silos

Two Silos (15 tonne) by Alstonville Steel, including fans and elevator (150mm belt and rollers), asking \$15,000 or ONO for the two.

Phone Geoff Bottomley 6628 3774 (W) or 0428 428 591

FOR SALE

Silvan Airblast Sprayer

400l fitted with side conveyor and hand gun
Suit low H.P. tractor purchase price \$5,818.00
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'as new'. Asking price \$2,500.00 for both.

**Contact Peter Squire 02 66281563 or
ingalba@bigpond.com**



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