

**Future Orchards and Trial Update
April 2018**

Seeing is believing

Craig Hornblow and Sophie Folder

Sometimes we read good science, but it doesn't really ring true until we see it first-hand. Our demonstration field trials on our Focus Orchards are in part a way to do this. Sometimes the trials are attempting to solve a direct problem but more often they are putting a local context on good science ideas. The belief that each region is different and what works somewhere else won't necessarily work here is very common. Demonstration trials are a great learning curve to prove and or disprove this.

The benefits of hail netting is a classic example. The early work in Australia was completed with a team lead, Simon Middleton in the late 90's with work in Queensland, New South Wales and Victoria.

The research showed a range of impacts on fruit quality:

Fruit size	-	Variable effect
Colour	-	Variable effect
Sunburn, Windrub	-	Reduced
Russet	-	Reduced
Bird Damage	-	reduced or eliminated
Hail Damage	-	reduced or eliminated

Since then, research has been completed in other Australian regions and many other countries, confirming similar findings to Middleton et al.

Year to year and region to region, the priority as to why netting is used in Australia has varied. The 3 most important benefits remain consistent, reduced damage from birds, protection from hail, and improving packouts (colour, sunburn, russet).

Netting of apples is now wide spread in mainland Australia. Mostly it is used to protect against extreme weather events (heat and hail). Netting of apples is rare in Tasmania where the expectation of hail risk is low and heat is not usually an extreme occurrence.

Tasmania's cooler climate is good for colour development in ripening apples. These conditions make it tricky to grow green coloured varieties in Tasmania such as Granny Smith as the market specifications require them to be grass green in appearance with no yellow or red colouring. Granny Smith are prone to sunburn, bleaching and russet. Packout percentages of first grade fruit is often low typically around 60% class 1.

Trial: Investigating netting in Tasmania's climate

The Tasmanian Grower Community Group was interested to increase their understanding of the effects of netting for apple production in the Tasmanian climate. The Hansen orchards site was used as a case study to increase marketable fruit yields in Granny Smith apples by investing in over row netting at their Grove Orchard.

The demonstration trial was conducted in a 3 ha block of Granny Smith apples at Hansen Orchards in the Huon Valley, Southern Tasmania. The block was netted on the 2nd October 2017 and a section of 4 bays

long by 4 rows wide was left unnetted as an uncovered control. Twenty trees were selected within each treatment area and used as monitoring trees for the demonstration trial.

The expectation for the trial was to improve packouts significantly with less down grading for blush and less russet.

Results

The trial was harvested on 27 March 2018 and samples were collected from the top of the tree and bottom of the tree. Each sample was graded for packout (class 1, class 2 and process) and defects recorded (russet, sunburn, colour / blush, limb rub and damage). Table 1 summarises the packout results.

Table 1: Packout Summaries

	Tops		Bottoms	
	Class 1	Class 2	Class 1	Class 2
Un-Netted	62%	29%	80%	17%
Netted	71%	28%	90%	10%
Packout change	+9%		+10%	

Implications

The packouts of Class 1 fruit were increased by 10% under net. Comparing all levels of defects whether in or out of grade there was an 8% reduction in both the incidence of russet and sunburn/blush in the netted trees.

Within netted orchards there is significantly less wind run which is likely the reason for lower windrub. Even though the trial was under white net, there was a significant impact on reducing the blush and sunburn. Every season being different, sometimes the results are unexpected. There was a subtle improvement in grade out for sunburn and colour. In this trial the netting colour was white. In several studies, the recommendation for the most benefit for Granny Smith is for black net.

Middleton et al. found slightly higher packouts improvements with netting over Granny Smith due to lower sunburn and russet. Different climatic regions have slightly differing reasons for netting orchards but the results were similar with a 10-15% improvement in packout.

With an average production of 60 tonnes per hectare and then assuming all costs except packaging and freight have been incurred, the additional benefit of a 10% packout would be approximately \$9,000 per hectare. This level of benefit gives the ability to pay the investment in netting back in 3-5 years.

The demonstration trial results are promising for growers to increase apple packouts in Tasmania and it may be worth investigating in other varieties where russet is more prevalent or the risk of sunburn is high eg. Envy and Fuji.

A process of undertaking localised demonstration trials is important to assess the commercial impact of new ideas or technology within your orchard and within your region. Making it real for growers helps with confidence in better decision making for their business. The information gained on one orchard is shared for the benefit of the broader grower community and helps to increase adoption of new growing practices in the industry.

This is one example of many demonstration trials within the Future Orchards program. Full results can be found in the Future Orchards library located on the APAL website.

References

Simon Middleton and Alan McWaters (2002) "Hail Netting of Apple Orchards – Australian Experience"

Photos:



Unnetted trees, 10/10/17



Netted trees, 10/10/17



Unnetted trees, 21/11/17



Netted trees, 21/11/17