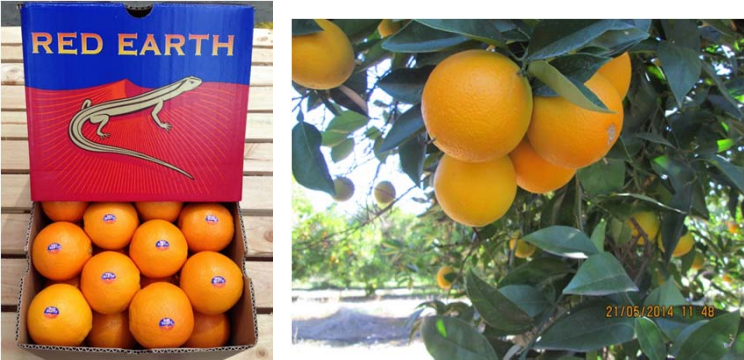


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R&D Citrus Roadshow - Pruning to improve Pack-outs & Profitability

Bill Robinson



NSW DPI Citrus roadshow, October 2017

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MFC - Overview

- MFC – run and pack approx. 200,000 bins (80,000T) fruit per year and growing (still have extra capacity) – **2017 will be a record year with 220,000 bins (88,000T)**
- Pack 4million cartons & trays plus 2.5million prepacks this season
- 85% of Fruit Exported 15% Domestic
- Receive fruit from 120 growers of all sizes;
 - smaller growers – 50-100 bins supply
 - Larger growers – 15,000+ bins supply
- Many influences on fruit quality & size including; tree age, pruning, windbreaks, crop-load, tree health, weather etc.

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Pruning - Benefits


- Regenerate the tree & optimise tree health
- Encourages stronger flowers and larger fruit
- Allows light inside the canopy
- Growing fruit throughout the canopy
- Reduce wind blemish
- Improve spray penetration
- Improve pest and disease control
- Increase yield
- **Improve – Pack outs & returns**

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Pruning

15 year old trees never pruned


Hand pruning, a number of smaller cuts




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Pruning


- Allows light inside the tree
- Removes dead wood
- Promotes growth of new wood
- Improves fruit set throughout the tree
- Increase yield
- Results in larger, better quality fruit
- Any pruning is better than no pruning






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Pruning



- Big trees
- Hard to pick
- Shaded tree centres
- Quick & effective way to remove deadwood

- 1-2 large cuts per tree
- Less time spent on pruning
- Reduce pruning cost per tree
- Who do you get to prune?
 - Contractor or train staff
- Prune straight after picking/before flowering



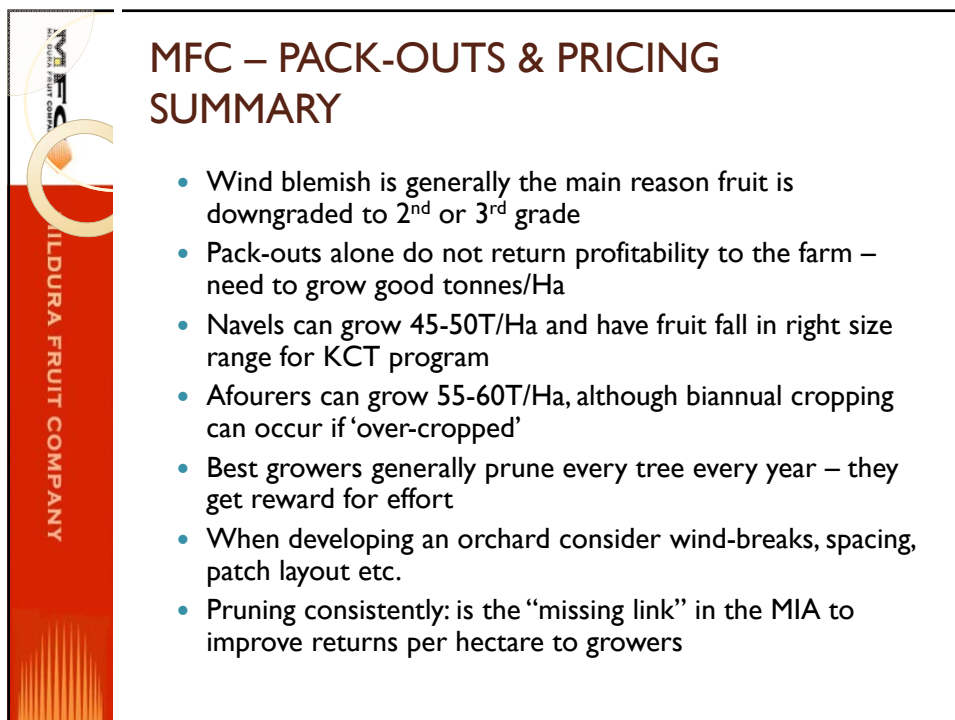
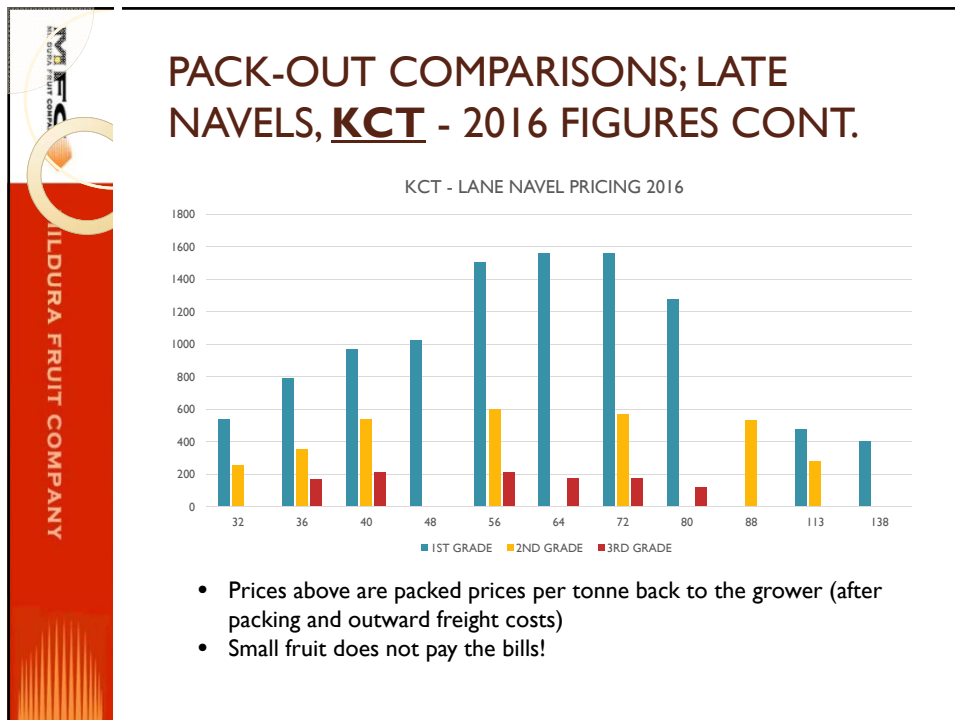
PACK-OUT COMPARISONS

- KCT (Korea, China & Thailand) has changed the dynamic of premium pricing for the size of fruit – preference for medium sizes; Counts 56's to 80's (72-87mm), C3I Equiv. (16Kg)
- Non KCT pricing premiums generally for 48's to 72's (74-90mm), C3I Equiv. (16Kg)

PACK-OUT COMPARISONS; LATE NAVELS, **KCT** – 2016 FIGURES

	HIGHER	LOWER
GROSS RETURN/TONNE	\$984	\$461
GROSS RETURN/BIN	\$412	\$172
1 ST GRADE PACK-OUT	16.8 CTNS/BIN	6.2 CTNS/BIN
1 ST GRADE – KCT COMPONENT	14.4 CTNS/BIN	1.6 CTNS/BIN

- N.B. converted to C3I equiv. cartons (16Kg)
- Gross returns back to grower (excl. inward freight & levies)
- Higher pricing orchards all had high pack-outs due to wind-breaks and regular pruning
- Note grower with lower pack-out/pricing had excessive scale/blemish etc.





Pruning - Guide

- Never remove more than 25% of total canopy in one year
- Ideally prune every year
- Better to make 2-3 large cuts rather than many small cuts
- “Some pruning is better than no pruning”



More growers beginning to prune annually



“If any grower wanted to produce high-quality fruit, then pruning after harvest should be on their to do list”. Rick Pearce – Riverland SA

Darren Minter pruning video on DPI citrus website

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13

Pruning factsheet in DPI Plant Protection Guide

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Citrus plant protection and management guide 2017



Steven Fallvene and Andrew Creek

www.dpi.nsw.gov.au

Hand pruning citrus

Steven Fallvene

Purpose

Optimally sized and unshaded fruit sells for the highest price and consistent yields are essential for long-term profitability. Citrus hand pruning is an essential practice to maintain this quality in fresh market fruit production. Pruning improves fruit quality by:

- **Constant yield:** Pruning helps to provide higher and consistent yields (a less alternate bearing). Increased fruit size (larger fruit) is seen on young vigorous shoots and branches. NSW DPI pruning trials demonstrated an increase in fruit size from the second year after pruning (Fallvene & Connolly 2016). Pruning removes a section of the canopy to make room for new shoot growth. Pruning also induces vigorous regrowth to further promote new shoot growth. New growth has a greater tendency to produce flowers with many leaves (early inflorescence), which produce larger fruit (Benquet et al., 2005).
- **More even fruit colour development:** Pruning allows more light into the tree, improving colour development in internal bearing fruit.
- **Albedo breakdown:** NSW DPI pruning trials were able to demonstrate reduced albedo breakdown (Creek 2013).
- **Reduced rind blanch:** Removing excess branches and deadwood reduces the incidence of fruit rubbing against dead branches.
- **Reduced disease:** Eliminating deadwood significantly reduces the disease spore load within the tree. Opening up trees also creates airflow, allowing the canopy to dry faster after rainfall or overhead irrigation.
- **Improved pest control and rind integrity:** Opening up windows in the canopy provides greater penetration and spray coverage. This improves the efficacy of pesticides, and plant growth regulators such as gibberellic acid, that require application on the shade-side of fruit.

Core principles

- Hand pruning is a simple exercise; its main challenge is finding pruning time to minimize costs whilst maintaining benefit.
- **Prune 20% of the canopy each year:** Research has demonstrated that the positive effect of pruning lasts for about five years (Benquet et al., 2005). Maintaining a canopy younger than five years will require about 20% of the canopy to be removed each year. This quantity is only a guide and will differ significantly between trees and seasons.
- **Make larger cuts for efficiency:** Making smaller cuts that target unproductive branches will provide a better result, but can become expensive due to the

Pruning session

extra time. Most growers try to spend no more than 1-2 minutes per tree per pruning. This is enough time to make 2-4 reasonably-sized branch cuts (at least 40cm on large, mature trees) (Figure 112 and 113). Find a technique that suits your situation.



Figure 112. Windows are opened into the canopy to 2-4 cuts around the tree. The shaded area represents gaps made in the tree from removing a large to medium branch that will allow more light into the tree and encourage new shoot growth.



Figure 113. Pruning expert Andrew Kojawa demonstrates the gap made by removing a large branch from the tree.

- **Prune lower limbs:** It is very easy to remove lower limbs because they require less effort. However, the lower parts of the canopy can produce the best quality fruit. Some poorly pruned orchards result in trees shaped like palm trees, with many downward-growing branches. These branches are less productive than upward-growing branches.
- **Do not prune young trees hard:** A faster-growing canopy will be more productive in the early years. Pruning young trees too hard will support the tree's growth. Only make straight structural shaping cuts and cut out dead wood. The lower limbs will eventually be removed as the tree matures, but until then they can produce fruit (Figure 114).

Crop management: hand pruning citrus

CITRUS PLANT PROTECTION AND MANAGEMENT GUIDE 2017 14