Narrow canopies lift yields

BY **QUINTON MCCALLUM**

South Australia

IMPROVED tree architecture, including narrower canopies, could be the key to growing almond orchard production and efficiency, according to Plant and Food Research Australia senior scientist, Grant Thorp.

In a research program funded by Hort Innovation, various methods to improve almond production were investigated including better light distribution to the lower canopy of almond trees by using reflective groundcovers.

While light interception was increased in lower parts of the canopy and there were increased yields in the lower parts of the canopy, Mr Thorp said total yields weren't increased by using that method.

"All we did was shift the yield from one part of the tree to another part of the tree," he said.

"If you want to improve light distribution in a tree's canopy, you're much better off having a narrower canopy.

"If we can bring canopies in narrower, we can have more rows per hectare and if you have more rows per hectare then you're getting more trees per hectare and you're getting more yield."

Mr Thorp said the almond industry should aim to have a narrower canopy producing the same quanity of fruit as a wider, unpruned canopy.

"When we do narrow pruning we want rows to be narrow but when you're standing side on you want trees to be growing their full width," he said.

"We believe we can work on 4.5 metres across the rows, trees 2m apart and trees 5m high.

STRATEGY: PFRA senior scientist, Grant Thorp says the almond industry should aim to have narrower canopies.

"You want the tree to grow tall, branches evenly spaced over greater distance, a good solid trunk, central leader uniform trunk all the way up, with no choke point.

"An upright growing tree is desirable, not spread over a great big area."

In trial work with 7.5m rows and 4.25m spacings, Mr Thorp said trees were planted in 2012 and first pruned in 2014, with a focus on removing branches that grew out into the row and could have an impact on machinery movements.

"What we learnt - and this is a system suitable for your standard tree coming out of the orchard - is to grow as per normal for the first one to two years then use heading cuts," he said.

"They're not cuts that remove that whole branch which is what we did the first time around. You cut the branch in half or cut one third off - that stimulates new growth and stimulates new fruiting wood.

"It fills out the lower part of the tree whereas in an unpruned tree you get quite a big void area. If you can fill that out with fruiting wood and have more of a hedge style system."

With those heading cuts, yields of 1.9 tonnes a hectare for Shasta, 1.5t/ha for Carina and 0.8t/ha for Nonpareil were achieved for third leaf trees.

"I believe with the narrow pruning system we can get rows down to 5 metres by 3 metres and you can end up with third leaf trees getting 3.4t/ha of kernel," he said.

"I think a lot of the solution lies with the nurseries. Instead of getting the trees pruned in the nurseries - getting the tops cut off the trees, and side limbs trimmed back to two buds - is to actually start the orchard with an unpruned tree.

"With an unpruned tree we can develop a central leader. They come out of the nursery as a central leader tree and we can maintain that. What that means is you're getting rid of that congestion of limbs coming from the same point, we're getting a much better tree structure and getting a lot of good fruiting wood down lower.

"What is important with getting the central leader growing from those unpruned trees is to still look after the extension of the central leader."

Fertiliser tech gives plants needed boost

ARMING crops with resistance to drought, frost, salinity and disease stress is very much a reality for one Victorian business.

Dual Chelate Fertilizer Pty Ltd is a speciality fertiliser manufacturing company, specialising in advanced plant nutrition.

At the core of the business is dual chelation technology (DCT).

This is a patented formulation technology developed to deliver plant nutrients and minerals efficiently into plant tissues where nutrient corrections are required.

The technology addresses two key areas: efficient nutrition intake and efficient transport within the plant.

The dual chelated products contain specially formulated minerals and plant nutrients together with organically derived amino-acids, and a biologically highly active patented molecules (BAOM) range.

This technology uses 17 different organic amino acids to chelate minerals and plant nutrients. Organically derived amino-acid chelated minerals have a lower level of phytotoxicity and a higher level of penetration into plant tissues.

The biologically active molecules used in this technology drive the nutrition to where it is required within the plant.

This combination results in an increase of quality characteristics of crops, including enhancement of natural flavours, colour, fruit firmness and shelf life.

Dual Chelate Fertilizer works with leading universities and scientists worldwide (including Australia, USA and Asia) to understand the most efficient technologies to transport nutrients into plants, and in translocation of different nutrients within plants where nutrient corrections are required.

CLEAN: The state-of-the-art fertiliser analytical laboratory at Dual Chelate Fertilizer's Robinvale facility.

Dual Chelate Fertilizer is strategically located in the Sunraysia region where Victoria, New South Wales and South Australia meet.

The company is committed to improving the prosperity of the farming community and the region in which it is based.

It is developing sustainable technologies and practices based on solid scientific principles and extensive field experience and observations. Its experienced and qualified researchers design and formulate new products and technologies based on rigorous laboratory procedures and replicated scientific field trials.

Some of the focus study areas are:

- efficacy
- crop yield and quality
- crop stress tolerance
- nutrition levels
- crop vigour
- early crop establishment
- long term effects
- sustainability.

The product itself is only part of the operation however.

Dual Chelate Fertilizer provides a series of services which are closely related to the specific needs of clients.

These services include:

- Plant tissue and soil analysis, interpretation and recommendations for fertiliser program
- Remote sensing and whole farm monitoring (WFM)
- NDVI (Normalised Difference Vegetation Index) aerial diagnostics
- Crop health monitoring
- Technical meetings and field days
- Research and development trials tailored to clients' specific needs
- On time delivery of plant nutrition products with its own transport fleet.

The company has been part of extensive research papers into almond and grape production.

- Copy by Dual Chelate Fertilizers.