

Permanent Netting Enclosure Effects

Citrus and apple industries in the Riverland

Fruit and vegetable growers understand the benefits that permanent and temporary netting enclosures bring to high value crops due to the protection offered.

What is less understood is the effect that netting has on water use efficiency.

Natural Resources South Australian Murray-Darling Basin (Natural Resources SAMDB) and Primary Industries and Regions SA (PIRSA) have teamed up to fund a three-year University of Adelaide study to look at benefits and challenges this investment brings.

Citrus producer Pyap Produce, and apple growers Rivercorp near Loxton, sought investment through the South Australia River Murray Sustainability Program and invested significant amounts of their own funds in permanent netting enclosures – and are now hosting the study. More than 100 hectares of highly productive fruit trees have been netted in recent years and it's starting to show substantial benefits.

Pyap Produce Manager Tim Arnold said: "We heard about the benefits of nets over orange trees from interstate so we went to Sunraysia to see for ourselves. Looking at the trees on the grower's property we visited, you could quickly see a vast improvement in fruit production and quality.



Pyap Produce's Mandarin trees under nets

"It helped back the decision we made in seeking investment from SARMS in this infrastructure."



Blemished apple as a result of sun damage. Provided by the Apple and Pear Growers Association of SA

Rivercorp owner Fergus McLachlin said "The hot Riverland summers limited production on our apple trees. The branches and fruit were getting scorched from the heat, reducing yield and fruit quality. Since this patch of trees has been netted, the increase in tree health is significant."

What is being measured?

Natural Resources SAMDB have installed two weather stations on both properties under the netting enclosures, close to existing weather stations near the netted sites. Since September 2015, these new weather stations have been recording climate data every 15 minutes from within the netting enclosures. This allows weather and climatic conditions within the netted enclosures to be compared to conditions outside. Future analysis will identify the benefits or challenges netting brings to fruit quality, production and water use.

Study partners

The South Australian Murray–Darling Basin Natural Resources Management Board has funded this study to understand where improved water use savings can be made, and efficiencies will be promoted to the region's farming businesses.

The *South Australian River Murray Sustainability Irrigation Industry Improvement Program (SARMS 3IP)* is funded by the Australian Government and delivered by the Government of South Australia through PIRSA. The program was designed to support and invest in innovative ways of increasing irrigation efficiencies and crop production to assist regional growth. Orchard netting on this scale had been largely untried within the Riverland region. It's hoped the work being done now will show other producers the potential opportunities, costs and savings that can come from new practices such as netting.

Renmark horticultural, irrigation and consultancy company, AgriExchange is providing technical support to the study. AgriExchange have installed two soil moisture probes at the study sites that can be monitored remotely.

Soil moisture probe manufacturer Sentek Technologies have supplied two automatic soil probe systems that allows comparison of water use between netted and un-netted trees. A water use audit will be conducted by AgriExchange to benchmark water use throughout the study.



Weather Station, measuring climate data from under apple orchard nets

What results will I see?

The study is looking at;

- cost-benefit analysis of the investment in netting
- benefits that netting enclosures bring to production systems and comparison of return on investment

- influences that permanent netting enclosures have on fruit quality, yield and fruit characteristics
- crop water requirements and water use efficiencies compared between netted and un-netted trees
- effects of change in climate under netting on fruit production and quality.

Natural Resources SAMDB Sustainable Farming Project Officer Mark May said: "Although the project is in its early stages, the data collected so far is showing some surprising results."

"The estimate of water usage for the trees per day is quite a bit lower under the nets compared to the trees outside, commonly referred to as evapotranspiration. This study so far has shown netting of apple and citrus trees has the potential to increase water use efficiency whilst improving crop quality and saleability."

"It's been great to see the level of support for this project. Citrus Australia South Australia (CASA), the Apple and Pear Growers Association and local growers have been keen to see the project underway."

"It's exciting to see the results so far and the data is currently being analysed through the University of Adelaide."

Where can I find more information?

For more information contact Natural Resources SAMDB Sustainable Farming Project Officer Mark May on phone 08 8580 1800 or email mark.may@sa.gov.au

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