

# citrus

## case study

Horticulture  
Innovation  
Australia

Citrus  
Australia



### Grower

Justin Davidson

### Location

Stanbridge, NSW

### Project number

CT13042

### Project

Rootstock trials

### Key points

Superior rootstock trials

Results encourage growers

Open hydroponic system boosts plants

## Setting a benchmark for Valencias

**T**RIALS of superior rootstock are being conducted in combination of a range of Valencia clones in the Riverina at the property of fifth-generation Leeton grower, Justin Davidson who is excited about the future.

“For us in the fresh juice game, we want to grow the benchmark so we’re not just supplying juice, but producing the best quality possible,” Justin said.

It’s fair to say Justin’s passion for research and new technology has been inherited from his father, John, who has previously imported new plant varieties, and was one of the farmers who established Quelch.

Riverina farmers wanted a superior Valencia for fresh fruit juice and Justin manages the trial plot on their property.

### Chinese rootstocks

The trial is testing the effect of Chinese rootstocks from NSW DPI on yield, quality and tree growth on seven different Valencia clones.

**This trial was established in 2010 and the first commercial harvest was conducted in December, 2015. The second harvest was conducted in December, 2016.**

Overall results from the first harvest has indicated that a Valencia clone developed on the Davidson’s property grafted to Zao Yang rootstock (Chinese *Poncirus trifoliata*) is outperforming other variety-rootstock combinations.

From the December 2015 harvest, this combination yielded 46kg/tree, a Brix value of 12.3 and a juice percentage of 47.

These Case Studies have been funded by Horticulture Innovation Australia Limited using the national citrus levy and funds from the Australian Government.

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The trunk circumference (recorded in December, 2014) was 17.4.

The trials are being conducted by Dr Tahir Khurshid, NSW DPI, Dareton, who said the Zao Yang rootstock would be available to growers through AusCitrus in early 2017 after the launch of recommended rootstocks.

"The Zao Young rootstock is suitable for heavy soils (clay soils), which are found in the Riverina," Dr Khurshid said.

Justin said the results – particularly the increase in litres and Brix value – were encouraging for growers paid premiums on litres produced and sugar content.

Trees in the trial plot are managed the same as other sections of the farm. Justin said the results would prove beneficial to all juice growers.

"Our research money is definitely going to good use in a trial like this," he said.

"The results are proven. With these results, we know what we're getting. Long-term, it can help pay off the farm quicker, or give us some spending money to invest."

Justin Davidson has grown new Valencia varieties as part of a trial on his family's Leeton farm.



Fruit from the trial has been harvested in December, 2015 and December, 2016.

### Commitment to juice

The Davidsons have 90ha high density planting of 90,000 trees, comprising 12 juicing varieties, on 120ha across two farms. They are fully committed to the juice sector, having removed their packing shed some years ago.

A new farm of 80ha was established in 2005, complementing the 36ha home farm. The new farm grows mid-season varieties and is set up for mechanical harvesting.

**"We have currently gone back to the conventional way of hand picking our fruit as it is cheaper to hand pick with plenty of seasonal workers around," Justin said.**

"However, we keep the farm maintained for mechanical harvesting as we see a future for it long-term. We can swap over tomorrow if we had too."

### Open hydroponic watering

The new farm also utilises an open hydroponic system, providing a constant, non-limiting, specially measured stream of water and nutrients to plants.

Under these systems, trees grow faster, closer together and produce fruit at a younger age. The constant source of water and nutrition can also reduce the affect of pests and disease.

Under the system, the Davidsons can maintain optimum levels of the major and micro elements in both soil and leaf, tailoring it to each site and block.

They use consultant Japie Kruger who constructs and modifies the fertiliser program each year according to each block's soil and leaf analysis.

"Some products that we have found to complement our program are Twin N (nitrogen fixing microbes) and Carbotech a carbon based product.

"We are definitely getting trees maturing a lot earlier than under the conventional method. It's a far better system than furrow irrigation and applying fertilisers once or twice a year," Justin said.

Fertiliser is fed to trees from August until March.

"On the old farm, we used to have to start the pump to pressurise taps for flood irrigation, now we can turn irrigation on and off with a mobile."

Justin clearly sees a long-term future for juice varieties in Australia. He can see the introduction of a sugar tax and believes this would benefit the industry.

"I feel fresh juice would be the winner. It's too easy to buy soft drink at the servo, and at junior sports carnivals. Fresh juice, as opposed to fruit drink, would benefit." 🍃

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