

Narrow Orchard Systems (NOS) Apricots in the Riverland

Hort Frontiers | AS22002

National partnership testing NOS for various tree crops

The South Australian Research and Development Institute (SARDI) is establishing an experimental 2D planar canopy apricot orchard at the Loxton Research Centre (LRC) as part of Hort Innovation's national AS22002 research program:

'Narrow Orchard Systems (NOS) for Future Climate'

The high-density orchard (2000 trees/ha) tests two of SARDI's recently developed apricot cultivars grafted to four rootstocks of varying vigour and planted to narrow rows. Multiple production metrics will be assessed.

Potential benefits of NOS include:

- Rapid return on investment
- Fruit quality improvements
- Lower operating costs (improved efficiencies)
- Safer orchards that are more attractive to labour
- Accelerated adoption of AgTech
- Climate resilience

The 1 ha apricot experiment, established in 2024, is one of two SARDI contributions to the NOS program. The other being a demonstration of canopy training systems for cherries in the Adelaide Hills.

Learnings from other NOS orchards around Australia will be shared with Riverland growers through the Hort Frontiers Narrow Orchards program.

The multi-state NOS collaboration has partner agencies contributing aligned research to different crops. These include Victoria (cherry, nectarine, plum, apple and pear), Western Australia (apple), New South Wales (apple) and South Australia (apricot and cherry). Experimental orchards will incorporate novel Ag Technologies with some also hosting the University of Queensland and their development of digital orchard models for simulating light interception and spray efficiencies.

The Riverland apricot experiment is using two of SARDI's locally bred cultivars grafted to four rootstocks of varying vigour.

The experiment tests the response of eight apricot cultivar x rootstock combinations planted in narrow rows and trained to a narrow canopy system known as the Bi-cordon Upright Fruiting Offshoot (Bi-UFO).

The eight genotype combinations include:

TWO CULTIVARS

FlavorCot-2 and RiverCot-2

FOUR ROOTSTOCKS

H29C, Citation, WarootOne and Rootpac-R



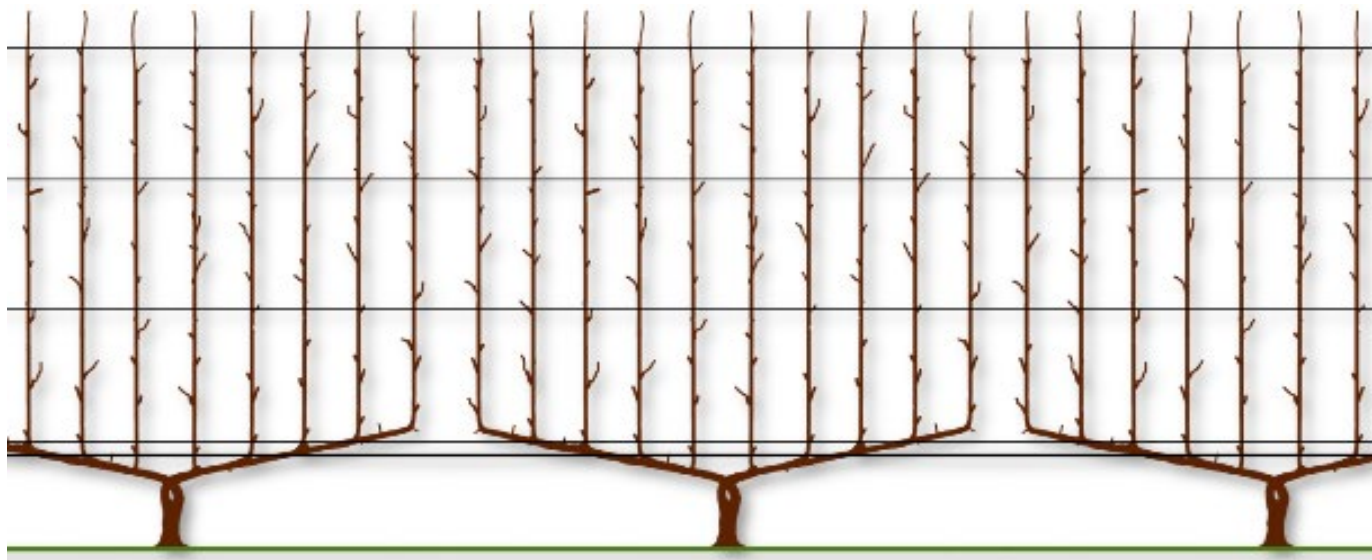
FlavorCot-2 – early cropping, consistent bearer, upright, strongly spurred growth habit. Large firm fruit (50 mm AVG) with pale pink blush. Free stone, high TSS (20° brix), slightly acidic skin. Suited to fresh and dried markets.



RiverCot-2 – early cropping, consistent bearer, moderately upright to spreading growth habit with finer fruiting laterals. Large firm fruit (52 mm AVG) with pink blush. Free stone, high TSS (17° brix), low/balanced acidity. Suited to fresh, canned and dried markets.

Bi-cordon Upright Fruiting Offshoot (Bi-UFO)

Trees are being trained to a planar trellis using the Bi-UFO system at row spacings of 2 m and tree spacings of 2.5 m (2000 trees/ha). Each tree will have 10 upright leaders spaced at 0.25 m. SARDI will test the response of different scion and rootstock combinations to determine if narrow-row planar canopies result in manageable production benefits for Riverland orchardists, from more even and increased light interception with improved labour efficiencies.



The Bi-UFO system is a narrow planar canopy:

- Vertical with good light penetration and air flow.
- Large productive canopy area with low fruit rub or wind damage.
- Suited to narrow row spacings and flat sites.
- Easy access for workers
- Efficient spray coverage with low power machinery.
- Once established, simple canopy management will require occasional maintenance to renew productive leaders.

The economics of orchard establishment and maintenance will be informed by labour tracking technologies. Production efficiencies will be complemented by measures of canopy development, yield and fruit quality metrics. The goal being to characterise genotype suitability for NOS applications and demonstrate the management considerations and production opportunities for Riverland orchardists.



Narrow canopy apricot at Clyde Research Orchard NZ.

The New Zealand Institute of Plant and Food Research Ltd have successfully demonstrated narrow-row planar apricot canopies in NZ and are collaborating with AS22002.

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