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\$28 million program to improve farm productivity

A new research and development program launched by Hort Innovation aims to arm growers with the tools they need to produce more fruit and nuts per hectare.

The five-year \$28 million *National Tree Crop Intensification in Horticulture Program* will develop the needed systems to increase the intensity of orchards whilst improving production, quality and profitability outcomes for growers. Initially, the program's focus is on almonds, avocados, citrus, macadamias and mangos. These are important crops to Australian horticulture and have strong potential for improved productivity through crop intensification.

Hort Innovation Research and Development Manager Dr Adrian Hunt said, "The program will optimise the orchard system to help produce more fruit or nuts per hectare. The program will investigate scion rootstock combinations, orchard design, vigour and canopy management strategies for optimal light interception. Orchard automation is also a key industry goal and the program will provide insights from a tree physiology perspective to facilitate this transformation."

The program involves an international collaboration of leading research providers from Australia, New Zealand, USA and Spain — creating a transformational international research program.

Queensland Minister for Agricultural Industry Development and Fisheries Mark Furner said, "Queensland's macadamia, mango and avocado tree crop industries were worth a combined farm gate value of \$518 million in 2018/19.

"Through this program, the Queensland Government will co-invest \$15.3 million to increase tree crop productivity through intensification, improve profitability for producers, and support jobs in regional and rural Queensland."

The program is being led by the Queensland Department of Agriculture and Fisheries, New South Wales Department of Primary Industries and Plant & Food Research, in Australia and New Zealand. Collaborators include South Australian Research and Development Institute (SARDI), Queensland Alliance for Agriculture and Food Innovation, Western Australia Department of Primary Industries and Regional Development and Food Innovation, the University of Adelaide, the University of California Davis, and the Centro de Investigación y Tecnología Agroalimentaria de Aragón (CITA) and Institut de Recerca i Tecnologia Agroalimentàries (IRTA) from Spain.

NSW Minister for Agriculture, Adam Marshall said citrus was one of most important horticultural industries in NSW, worth \$242.6 million per year.

"NSW produces around 250,000 tonnes of citrus annually, representing 40 per cent of Australia's production and 36 per cent of citrus exports," Mr Marshall said.

"The NSW Department of Primary Industries has the largest citrus research and extension team in Australia and plays a leading role in supporting the NSW and Australian citrus industry with its substantial research, extension and information capacity."

These improved and intensive cropping systems will contribute to the strategic priorities of industries included in the program. The projects include on-farm demonstrations that will provide critical insight in the adoption and extension of intensive cropping. Each of the five crops also have crop advisory groups to provide ongoing insight and feedback from growers and researchers.

NSW Department of Primary Industries Director Horticulture Dr Shane Hetherington said, “Our research program will address citrus tree canopies modified using dwarfing viroids, dwarfing rootstocks, planting densities, pruning and cultural practices, and plant growth regulators to understand their effect on the relationships between fruit density, canopy volume and saleable fruit.

“Our work will also include surveys of a wide range of citrus varieties in an attempt to better understand the physical traits that promote fruit density and, in turn, suitability to production intensification.”

Plant & Food Research Australia Scientist Dr Grant Thorp said “Plant and Food Research has provided global leadership in increasing the yield per hectare of apple and other high-value crops through the intensification of tree crop production systems over the years. We’re glad to be collaborating with SARDI and researchers and growers in Australia, California and Spain to intensify the production systems of almond and macadamia. We’ll do so through increasing understanding of the underlying physiology and genetics of key orchard systems components and through the development of systems to better manage these components.”

The program is closely linked to the National Tree Genomics program also underway in the Hort Innovation Advanced Production Systems Fund. By working together, the programs are collectively gaining new knowledge in areas of shared interest and increasing the efficiency of delivery outcomes.

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