

Grower case study — AV18002 Implementing precision agriculture solutions in Australian avocado production systems

Grower	Matthew Fealy, Farm Manager
Location	Mareeba, far north Queensland
Orchard	310 hectares of Hass avocados ranging from 1-6 years old

What was the research about

Delivered by the University of New England's Applied Agricultural Remote Sensing Centre, AV18002 continued the work of previous levy investment ST15016 to improve spatial mapping technology of the Australian avocado industry, capturing all plantings above 1 ha, and also to refine and validate two remote sensing-based yield forecasting methodologies (CropCount and Time Series), which were trialled with commercial growers in key growing regions. A minimum viable product (MVP) mobile application was developed to provide grower access to CropCount, with a commercialisation plan developed (and taken into the follow on project AV21006).

In this case study Matthew Fealy talks about his experiences with the research and the benefits for the industry.

What is your background in the avocado industry?

"I've had 12 years growing, including running the family orchards, managing our pack shed and creating and growing our family brand, and more recently I've been managing for larger corporate farms. In 2017 I was awarded a Nuffield Scholarship where I looked at robotics, automation and emerging technologies, and through that process I'm also involved in developing a farm management app for tree crop horticulture including avocados."

What was your involvement with AV18002?

"I was involved in the farm trials of the CropCount app for crop forecasting for a season. But more broadly I've had a lot to do with Andrew Robson (AV18002 Project Leader) over the years discussing his research around the use of the satellite data".

Why do you think the AV18002 research are important for avocado growers or the industry more broadly?

"Accurate forecasting is incredibly difficult, yet equally important as its really a case of 'if you cant measure it, you cant manage it'. On farm, inaccurate forecasts lead to over or under allocation of water use, fertiliser requirements, labour, packing resources, but that also has ripple effects right through the industry in terms of managing resources and market preparedness to try and avoid oversupply. And we recognise that a lot of people downstream of the supply chain get frustrated with farmers for not being able to provide a timely or accurate yield forecast, so while on the one hand we are working with mother nature where there are a lot more unknowns, we are aware that any improvement in yield forecasting has some pretty significant implications for the whole of industry."

What are the practical benefits you think could be generated from the research and its outputs?

"The crop count app made record keeping and documentation easier, and more retrievable. Any way that we can simplify the process of on-farm data collection and use to make it more practical in the field, rather than having to duplicate the process by transcribing from a notebook to an excel spreadsheet, is a step in the right direction. So its about collecting management data on farm, where its happening, when its happening, and in the simplest way possible.

I especially liked the ability to take a photo of the tree with full crop load and attach that to the crop forecast. And I think that record keeping aspect is where the value of the process and the data will compound over the years where you can visually compare across the seasons. Then you can easily look back and see, that's what a 12 tonne per hectare tree looks like compared to a 7 tonne per hectare tree.

At the end of the day, for the average family farmer who has been managing the same block for 30 years, they can

probably forecast their yield pretty accurately or at least pretty close to what they need. But at the same time, if they can implement some simple tools to make it a bit easier, and the record keeping becomes a little bit more robust once it's a digital notebook, then that can still be cost-effective. Whereas we all know there is an increased trend towards corporate farming, and they have additional resourcing and reporting pressures to get their forecasts incredibly tight, so there is perhaps a higher value proposition there for them in that regard. And generally the staff turnover in corporate farming is going to be higher than family farming as well, so you're going to get people farming land that they are less familiar with so they're going to be a bit less accurate for a few seasons until they get the hang of it. But if you can step onto a new farm and have this digit record that you can draw on then it certainly makes the process easier."

Any final thoughts or comments on the AV18002 line of research?

"At the end of the day there will always be a high level of variability in paddocks because we are working with mother nature so that is just the reality of farming, so its just about having a systematic approach to that so we minimise that to a reasonable level.

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Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture. For more information visit www.horticulture.com.au.

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