Delivery partner resource

Horticulture Impact Assessment Program

AV16007 – Improving avocado orchard productivity through disease management – Case study

June 2025

Hort Innovation

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AV16007 – Improving avocado orchard productivity through disease management

Clayton Lynch

Table 1 AV16007

Stakeholder	Clayton Lynch
Business	Australian Produce Partners
Location	Northern Queensland

What was the project about?

AV16007 – Improving orchard productivity through disease management, aimed to enhance avocado orchard productivity and fruit quality by addressing key diseases affecting the industry. The project, conducted by the University of Queensland, identified the major diseases adversely impacting avocado orchard productivity.

Once identified, the research project focused on potential strategies and disease management practices that could be implemented by growers to mitigate the effects of key diseases such as Phytophthora root rot, anthracnose and stem end root rot. These included field trials of new chemicals, soil amendments, and post-harvest treatments.

A key output of AV16007 was engagement with, and education of, growers through workshops and extension materials. This ensured that key findings were relayed to industry and implemented on farms.

AV16007 was aligned to outcomes and strategies with the Avocado Industry Strategic Investment Plan 2017-2021 and 2022-2026:

— By 2021, productivity (marketable yield per hectare) has improved by 15% on average, without increased production costs per kilogram. The strategic intent here is to accelerate the application of proven good practices in production as a means of improving on-farm profitability, business resilience and ability to compete in domestic and international markets.[1]

— The Australian avocado industry will increase marketable yield per hectare through globally competitive production systems, such as orchard management, varieties, innovative R&D and sustainable best management practices (BMPs).[2]

— Develop improved orchard management practices to increase productivity, yield consistency and fruit quality based on improved knowledge of tree physiology.[3]

[1] Horticulture Innovation Australia. 2016. Avocado Strategic Investment Plan 2017-2021.

[2] Horticulture Innovation Australia. 2021. Avocado Strategic Investment Plan 2022-2026.

[3] Ibid.

Clayton's background

Clayton is a national technical officer for Australian Produce Partners, a fresh fruit supply company based in North Queensland. His work involves supporting growers and suppliers with crop nutrition, crop protection and overall orchard management. Clayton's role *"focuses on technical support, problem shooting and the provision second opinions for growers."* Further, he provides help and advice to chemical companies that undertake small scale trials with growers. He has vision from paddock to plate.

Clayton also sits in on the Research and Development (R&D) Strategic Industry Advisory Panel (SIAP) in Hort Innovation for avocados. He has also been involved in Project Reference Groups (PRGs) for various projects within the avocado industry.

Clayton's involvement/engagement with this research?

"I had a little bit of involvement having known the lead project delivery partner for a while. I helped set up a masterclass in North Queensland for her to present the latest findings, some from that project itself."

The masterclass was an invite-only event for experienced growers and agronomists, limiting attendance to 25 people. Clayton noted this intimate setting was *"good compared to a regional forum where there are often more than 100 people in the room"*, as smaller groups prevent dominant voices from shutting down others' questions. Additionally, Clayton facilitated connections between the growers and researchers, arranging for the service delivery partner and the project's PhD students to visit a local farm to collect sample material.

Attendees gave highly positive feedback, with some commenting it was the best forum they had attended in years. Clayton attributed this success to the targeted audience, which enabled discussion of advanced information rather than the simplified content typically presented at regional forums.

Clayton noted the importance of including agronomists alongside growers, recognising them as valuable information conduits who often share knowledge more widely during farm visits.

Why do you think the research is important to growers and the industry more broadly?

Phytophthora is the leading cause of avocado crop decline globally, making AV16007 vital for addressing this issue. Many Australian growers are experiencing significant crop losses from panicle dieback caused by phytophthora.

AV16007 identified 2 new chemistries for managing both panicle dieback and anthracnose – particularly important since current anthracnose strains have developed resistance to azoxystrobin, the industry's main treatment option. This breakthrough provides growers with effective alternatives to outdated, ineffective treatments.

Beyond these 2 products, chemistry companies are likely developing additional treatments. Having multiple chemical options enables growers to rotate treatments when managing diseased crops, which prevents the development of resistant disease strains.

Clayton emphasised the research's importance in developing new chemical solutions. One product from the research is currently under regulatory review, with strong industry interest in its continued use. However, approval requires additional data on chemical residue levels in treated fruit, which is critical for export compliance.

What benefits have you observed as a result of the project, especially on yield and fruit quality improvements, and disease reduction/management?

The research findings on chemical timing and application may improve fruit quality and reduce early fruit drop.

While yield increases are uncertain due to climate and tree energy variables, Clayton believes the 2 new chemistries have likely enhanced fruit quality by improving orchard hygiene, which carries through to post-harvest quality. The research has particularly benefited the industry through improved anthracnose management and optimised Nitrogen and Calcium ratios, both of which extend fruit shelf life and quality.

The results of residue testing provided valuable insights for growers and highlighted the importance of understanding crop protection practices and their influence on residue presence at harvest – information that is critical for supporting market access. Further, advice to spray some existing chemistries more often, but with a lower volume than previously thought, has also been beneficial in keeping diseases under control.

What were the challenges with adopting the recommendations coming from this research?

High cost remains the primary barrier to adopting one of the 2 new chemistries with prices at least doubling since COVID-19. Those who do purchase the expensive new chemistry use it strategically as a single, targeted final spray per harvest – an approach recommended by the service delivery partner that may reduce costs by eliminating wastage from ineffective treatments.

Beyond cost, growers face 2 additional challenges in adopting the research findings. Time constraints are significant, as increasing regulatory and management requirements compete for attention while resources remain limited for trialling new approaches. In North Queensland specifically, weather conditions often prevent timely chemical application, making it difficult to implement the recommended treatments effectively.

Is there a part of the project that could have been improved?

Clayton noted that research needs to provide a clear value proposition, showing growers the per-hectare cost of chemicals alongside quantifiable yield or profit increases. While tangible dollar-and-cents impacts would boost adoption rates, he cautioned that excessive supply could drive returns below production costs, requiring careful balance.

The research has impressed growers by introducing new chemistry with its targeted effectiveness. Clayton emphasised that information delivery methods are crucial, and researchers should acknowledge that many growers are already using appropriate practices, rather than simply dictating what needs to be done.

Do you have any final recommendations for growers who may be considering adopting the innovation?

“Growers should read the research themselves and see whether it is for them. Buyers can recommend it, but they never get 100% uptake.”

Clayton noted that during oversupply periods, growers with higher-quality fruit may continue shipping while those with poor quality are asked to halt production – a pattern seen in other industries. This highlights the importance to growers of maintaining orchard health and fruit quality to ensure supply continuity. In his opinion, effective use of the chemistry produced through this research leads to better orchard and tree health, thereby increasing both yield and quality outcomes. However, he noted that many growers neglect proper tree health management due to time constraints.

Clayton recommended broader industry testing for anthracnose resistance, suggesting a more representative sample across all growing regions. He cited the citrus industry’s successful approach of distributing laboratory media plates pre-mixed with relevant chemicals to growers, who expose them in their orchards or packing sheds for 24 hours before returning them for analysis. Adapting this method for avocados would efficiently collect industry-wide data to assess the severity of resistance issues and monitor sensitivity to the 2 new chemicals, enabling more proactive industry responses.