Applied case study — AP16007 An Integrated Pest, Disease and Weed Management Program for the Australian Apple and Pear Industry

Grower	John Evans
Property	Geeveston Tasmania
Planted area	40 ha with 25 ha under production and the rest being new plantings. By 2023 the majority of the orchard be planted at 0.7m X 3.5m.

What was the research about

From 2017 to 2020, AP16007 *An Integrated Pest, Disease and Weed Management Program for the Australian Apple and Pear Industry* (delivered by Agriculture Victoria) assisted apple and pear growers in developing and maintaining pest-resilient farming systems using integrated pest and disease management (IPDM). It provided clear knowledge on the tools and systems required to implement IPDM, which involves the effective combination of chemical, cultural and biological methods to control pests, diseases and other undesirables in a 'whole of system' approach.

What was your involvement in AP16007?

John Evans' property near Geeveston, Tasmania was a case study orchard for Tasmania. John's property had an action plan developed highlighting potential changes to his pest management strategy and practices. John worked with the project staff to implement the IPDM action plan and document his progress.

What were the primary factors contributing to the decision to participate in AP16007?

Prior to participating in AP16007 as a case study orchard, John considered the pests and diseases in his orchard were under control, despite some edge issues with codling moth (CM), and he used a minimal spray program. So his goal was to capitalise on the existing low pest and disease population and attempt to further reduce pesticide use while maintaining effective control and confidence in the approach being taken.

What IPDM practices were implemented from participation in AP16007?

Some of the key changes that John made as part of the program were:

- Experimenting with line trapping for CM as a result of the workshop delivered through AP16007. John established CM traps along the border with neighbour and in a transect parallel to the border traps but through the middle of the orchard.
- Protecting populations of earwigs and Aphelinus mali by modifying the rate and timing of sprays that might impact these important predators.

What worked well?

The experiment with line trapping on the boundary was successful in disrupting the CM coming onto the orchard. "The involvement with project team allowed me to understand the dynamics of the pest, so I was able to manage my risk effectively. We had the choice of putting a lot of chemical, but that creates other problems. So we were able to combat the risk, avoid the excessive cost while also avoiding the yield/quality losses".

The project helped John to form a better understanding of IPDM and a more strategic approach for his pest and disease management. "We were working towards IPDM even though we didn't know we were going that way. So we were very much on the journey, but the research gave us an understanding of the things we had been doing without actually knowing it".

John recognized that IPDM is often seen as risky, so the technical support provided through the project is a great resource to give growers confidence. "The project really gave us the confidence to make the extra step without thinking that it's a huge gamble. So you are not actually having to change too much, it was just understanding it better and making some

finer adjustments. Many of IPDM pieces were already there, we just needed the help to bring them together in a way that worked well".

John also sees the broader benefit of improved industry and research capacity. "There's more than just the benefit of the IPM, you also get the explanatory benefit of the researchers, and the lifelong networking from having these people on your farm. There used to be 120 apple growers in my region and now there are two, so this helps me to maintain a network with researchers and growers which is of huge value beyond the direct research".

John can clearly see the value in implementing IPDM. "Yield may not rise, but packout will. We went from 60% packout and we were picking over, now we are able to do 84-89% first grade on strip pick, and we are up to 94-96% first grade in some instances. As an industry we need to put more money in the pocket of growers, and this project has definitely done that".

What were the challenges?

There were no issues, but John did recognise the difficulty that could be faced by growers as they make changes. "As we move forward people who haven't adapted to the new environment will be either forced to change or will leave the industry. It can be daunting if you're the one pushing the envelope, so you have to just wade in. It also takes a little while for your farm to adapt and have a bioinfrastructure that can cope. You cant just stop cold turkey. So that's why I have put my hand up for these sort of projects as it helps you to see more of what's coming and make that transition based on best advice".

The key challenge that John sees for any IPDM adopters is to not panic. "You'll have a panic threshold for yourself, then you'll have the actual pest threshold and you have to work towards that. IPM is just a change in risk. Previously I might go out there and see I had a certain pest, and panic and put on a chemical, but that just made another problem. When I talk to other growers who say they have a terrible mite problem and my response is not "use this chemical" but "what chemicals are you using" as some chemicals cause you to have these problems. For me, I haven't used a miticide in 25 years and the cost savings can be quite huge."

What were your key takeaways?

John recommends installing enough weather stations as it then provides localised data that can be fed into a prediction model for CM, light brown apple moth (LBAM) and scab. He also recognised that when you are using chemicals, the better gear you have the more measured you can be, "if you don't have chemical application equipment with computerised variable rate controllers, if you are trying to go on calibration, then you are just guessing".

Do you have plans for further system changes or trials going forward?

John still has plans to try to further reduce pesticides by improving timing, and looking at landscape management to help manage pest populations such as removing a Macrocarpa tree that is probably supporting Dimple bug over winter.

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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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