

Facilitators

Project VG16009 was led by Julie O'Halloran from The Queensland Department of Agriculture and Fisheries.

Major findings

From 2016 to 2020, Project VG16009 was undertaken with the goal of assisting the Australian vegetable industry to adopt precision agriculture technologies. This project involved research into high resolution satellite imagery of vegetable crops, as well as the establishment of case-study farms in each state where research and extension could take place. A comprehensive literature review of the ways that precision agriculture (PA) technologies can assist vegetable growers was also produced.

Lead researcher Julie O'Halloran explained that the case study farms were established with co-operating growers around the country to show how a range of commercially available PA technologies can be used in vegetable growing.

"For an industry with few examples of applying PA technologies, these demonstration sites and case studies were critical for increasing awareness and having industry-relevant examples of PA implementation," O'Halloran said.

The technologies implemented across the demonstration sites included a range of soil mapping technologies (EM38 mapping, soil grid mapping for pH and nutrients, SIS soil mapping, Veris soil pH mapping), yield monitoring, drone technologies and satellite imagery.

"We tried to establish sites that would utilise a range of different technologies and also different applications of the same technologies," O'Halloran said.

"At each site, the technologies used were based on the issues identified by the grower, or technologies that they might have heard of and were interested in seeing how they could be applied to their farming system."

Throughout the project, a range of communication outputs were generated, including case studies, factsheets, videos and webinars, which served to provide industry-specific information on how these technologies can be utilised by vegetable growers. These outputs addressed some of the preconceptions and doubts that existed among those in the vegetable industry.

Recommendations

O'Halloran explained that there were several key findings and recommendations to come out of the project.

Firstly, it was found that precision agriculture approaches can be utilised by the vegetable industry in identifying, quantifying and managing spatial variability across fields and farms. The project confirmed that sufficient variability does exist in vegetable systems to warrant these approaches.

Secondly, yield prediction from crop sensing imagery was found to be a real opportunity – particularly for those crops that don't have access to yield mapping technology and to assist with marketing. Results from the research showed that yield could be predicted with 74-99 per cent accuracy across sites.

"These results highlighted the potential to use high resolution satellite imagery, or any crop sensing imagery, to predict yield prior to harvest," O'Halloran said.

"This is important for an industry that currently doesn't have a lot of yield mapping options, as many of the crops are hand harvested, and yield mapping technology is not readily available for mechanically harvested crops; and where yield information in advance of harvest can be beneficial for marketing and supplying contracts."

Discussing further recommendations, O'Halloran noted that there are some low-cost technologies that can be implemented relatively easily, which can assist growers to get started in PA.

She advised that PA adoption in vegetables should be implemented to target a specific issue rather than focused solely on the technology, as well as explaining that regional support networks are critical for PA adoption, including a network of PA service providers and extension support.

Background

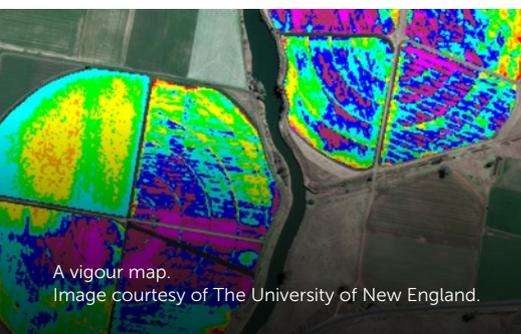
Prior to this project, R&D investment into PA in vegetables had been limited to some state- and regional-based projects and desktop studies. O'Halloran noted that PA adoption has been relatively low across the vegetable industry, in part due to perceptions in the industry that PA approaches are only applicable to more extensive broadacre industries, such as cotton and grains, rather than intensive vegetable growing.

Many in the industry also believed that PA technologies are prohibitively expensive to implement. O'Halloran found a general lack of awareness of what technologies were available, how they could be applied to vegetable systems, and where to start. Project VG16009 represented the first national industry investment into PA technologies in vegetables.

O'Halloran said there is a real opportunity now to build on the foundation and momentum initiated by this project.

"As the outcomes and value of PA can require longer time frames to assess – such as yield and profitability benefits from variable rate soil amendments – then some sort of ongoing investment would allow for greater capture and quantification of these benefits over the longer term," she explained.

"There is also an opportunity to facilitate ongoing communication through the community of practice initiated by VG16009. Continued extension and industry communication in this area will be required to support further adoption."



A vigour map.
Image courtesy of The University of New England.

Acknowledgements

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Further information

Please contact Julie O'Halloran at julie.ohalloran@daf.qld.gov.au.

Project factsheets and case studies can be found at business.qld.gov.au/industries/farms-fishing-forestry/agriculture/agribusiness/agtech-vegetables.

Facilitators

Project VG19001 was facilitated by Food and Fibre Gippsland and East Gippsland Vegetable Innovation Days in collaboration with AUSVEG.

Major findings

Up to 1,000 people were expected to attend the 2020 East Gippsland Vegetable Innovation Days (EGVID) from May 4-8 before the COVID-19 pandemic saw strict restrictions placed on travel movements and crowd numbers. Rather than cancel the event entirely, organisers capped attendance at 60 people per half-day, and rapidly implemented a virtual experience for those unable to participate on the ground.

"We turned our focus to ensuring that the effort that had already been invested into growing seed trials and demonstration sites wouldn't be wasted," EGVID event coordinator Bonnie Dawson explained.

Project VG19001 supported the production of 25 videos of trial sites and presentations that were part of the original program. All but one of the participating seed and crop improvement companies took up the offer to capture content, and the series of clips was filmed during the Innovation Days while the site was in its prime. The videos have been uploaded to the AUSVEG website in an online catalogue format, enabling users to compare different crops, seed companies and products.

"We believe that this is a unique way to be able to research these products," Ms Dawson said.

Digital technology also gave growers instant access to individual sites, with the EGVID event team and Soil Wealth and Integrated Crop Protection (ICP) project

team scheduling and streaming regular live crosses over Facebook.

"These were popular among our followers, and provided the opportunity for industry members 'playing along at home' to get in touch and encourage their industry colleagues from afar," Ms Dawson said.

"A lot of the people who physically attended EGVID also viewed some of the videos that were streamed in order to get a recap of the site or to gain a different perspective, while the companies involved have also shared the interviews and site walk-throughs with their own followers."

A strategic levy investment under the Hort Innovation Vegetable Fund, *Digitisation of East Gippsland Vegetable Innovation Days* (VG19001) also enabled the Soil Wealth and ICP project team to deliver an EGVID webinar, with viewers across the country logging on to learn the results of a cover crop trial.

Recommendations

While those who attended EGVID in person benefited from having time and space for discussions with seed company representatives, the digitisation of the innovation days created a highly effective platform for disseminating information to stakeholders.

"Although nothing fully replaces face-to-face interactions, being forced to take content online has given a wider audience access to the innovations that were on display," Ms Dawson said.

"It's a valuable resource for growers and will be available for years to come."

The innovative direction may have been implemented in the face of adversity, but it has seen EGVID evolve into a new format that will not only be integrated into future events – it will set a new benchmark for this type of industry event.

"Participant feedback has indicated that we should include live streaming, the use of social media and video production in future events," Ms Dawson said.

The 2020 experience has also highlighted the value in pre-registering smaller groups for designated sessions.

"Many of the growers and company representatives who were present commented that they valued having more time for key customers without large numbers competing for their attention, and therefore, it's likely that part of any future EGVID would also follow this structure," Ms Dawson said.

Background

In early 2018, a small delegation of Australian growers, agronomists and researchers travelled to Spain to attend the International Spinach Conference and tour local growing operations and seed trial sites. On the back of this tour, EGVID successfully lobbied to host the 10th International Spinach Conference in East Gippsland in May 2020.

Due to COVID-19, the International Spinach Conference was postponed, and crowd numbers at EGVID were significantly reduced to meet strict social distancing rules. As a result, the decision was made to stage EGVID predominantly online.

The production of 25 videos of the trial sites and presentations that were developed for the 2020 program gave growers virtual access to information and innovation available at the event, with the videos now available via the levy-funded industry communications program delivered by AUSVEG.



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Further information

Please contact EGVID Event Coordinator and Food & Fibre Gippsland Regional Development Officer, Bonnie Dawson, on 0407 683 938 or email bonnie.dawson@foodandfibregippsland.com.au.