Horticulture Innovation Australia

Final Report

Grower study tour of New Zealand: Precision vegetable production

Vegetable (R&D Levy)

Project Number: VG15704

VG15704

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Summary

The project VG15704 '*Grower Study Tour of New Zealand: precision vegetable production*' aimed to provide vegetable producers the opportunity to travel and learn from each other while visiting precision horticultural farms and research sites across New Zealand's north island.

Through shared learning and interaction with producers and researchers, this project sought to initiate a 'community of practice' (CoP) approach in precision vegetable production. Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact both during and following the event.

The main objectives of VG15704 were to:

- Introduce participants to new knowledge and ideas which can then be implemented on their own farms or to provide support for those wishing to undertake similar precision approaches.
- Reinforce precision concepts and approaches applicable to vegetable systems.
- Introduce a group of Australian vegetable producer's to progressive producers, practices and researchers in the New Zealand vegetable industry.
- Inspire and challenge Australian vegetable producer's to adopt or progress the adoption of precision practices.
- Help overcome adoption barriers by encouraging producers to self-organise so they can assist each other outside of organised projects and programs.

Recruitment of producers occurred via an Expressions of Interest (EOI) that was advertised through industry communication channels (AusVeg and Horticulture Innovation Australia). Selection criteria developed by the Department of Agriculture and Fisheries (DAF) formed the basis of a participant questionnaire, which was provided to growers and others who expressed an interest in participating in the trip. This process was to ensure that tour participants were actively investing in precision agriculture practices.

Precision practices were defined as:

- Soil mapping and strategic sampling programs
- Yield monitoring
- Prescription mapping & variable rate inputs (soil ameliorants, nutrients and irrigation)
- Biomass mapping/crop sensing
- Minimum or strategic tillage.

Fourteen (14) vegetable businesses from across Queensland, Victoria and Tasmania participated in the ten (10) day study tour (23rd May 2016 – 31st May 2016). Two (2) private agronomists also participated using their own funding and DAF provided two (2) tour facilitators who are also involved in precision farming research, development and extension (RD&E). The tour also included attendance at the one of New Zealand's premier agricultural conferences LandWISE (www.landwise.org.nz). Two participating growers along with the DAF facilitators presented at this conference.

The main reported outcomes of the tour were:

- the ability to network with like-minded growers and to assess the progress of New Zealand horticulture in their adoption of precision technologies
- the development of an informal 'community of practice' that has connected a broad mix of vegetable producers who are adopting and optimising a range of precision technologies and practices
- a clearer picture of the areas requiring further investment (e.g. data analytics, hyperspectral imaging, increasing opportunities for producer interaction)
- Study tours are an important vehicle to improve both producer and researcher knowledge and industry cohesion around particular issues.
- Issue (or practice) based study tours (e.g precision in vegetables) allows itinerary's to be developed that expressly seek to improve knowledge in that area and attracts likeminded growers who are committed to improving their knowledge of that subject.
- Producers have visited each other's farms following the tour.

Keywords

Vegetables; precision agriculture; study tour; New Zealand

Introduction

Precision agriculture (PA) is a farming management concept based on observing, measuring and responding to inter and intra-field variability in crops. The goal of precision agriculture is to arrive at a whole-of-farm management system that optimises returns on inputs while preserving natural resources. Precision agriculture aims to optimise field-level management by:

- Matching farming practices more closely to crop needs
- Reducing environmental risks and farming footprint
- Boosting profitability through more efficient practices and improvements in yield and/or product quality.

The scale and intensity of modern vegetable production creates substantial challenges for producers wishing to progress beyond machine guidance into other precision applications such as soil nutrition and irrigation, crop sensing, variable rate inputs and yield monitoring. Despite a significant increase in the installation of machine guidance systems in Australian horticulture over the last decade, evidence indicates that very few producers employ this technology and precision agriculture methodologies beyond basic guidance (auto-steer) activities.

Interest and investment in PA and technology in farming systems is perhaps at an all-time high. Emerging areas such as Big Data, Internet of Things (IoT), unmanned aerial systems (UAS), robotics and automation are also likely to play an ever increasing role in food production and land management more generally. Deriving benefits at the individual farm gate level while possible will not happen quickly or easily across intensive horticultural operations. Therefore, connecting the relatively small community of Australian producers who are actively optimising and adopting precision technologies is crucial to accelerating the development of spatial management technologies and producer capacity to fully exploit the opportunities presented by precision agriculture.

Communities of Practice (CoPs) are informally constituted and reside within a specific area of practice. These self-organising systems share the capacity to create and use organizational knowledge through informal learning and mutual engagement (Wegner, 1998). A CoP can evolve naturally because of the members' common interest in a particular domain or area, or it can be created deliberately with the goal of gaining knowledge related to a specific field. It is through the process of sharing information and experiences with the group that members learn from each other, and have an opportunity to develop personally and professionally (Lave and Wegner, 1991).

Since 2014, DAF have been working with a range of Queensland based producers in optimising precision systems for vegetable production. The main focus areas have been:

- Soil mapping and strategic sampling programs
- Yield monitoring (carrots, sweet potato and potato)
- Prescription mapping & variable rate inputs (soil ameliorants, nutrients and irrigation)
- Biomass mapping/crop sensing (NDVI and multi-spectral using UAV, remote and proximal crop sensing)

This work is centered on advanced precision farming technologies which represent the next tier up from controlled traffic / guidance systems. As such, the knowledge base of growers, researchers and commercial precision providers is low in terms of how to optimise for vegetable production. Importantly, this mix of spatial management technologies allows producers to leverage additional benefits off their existing guidance systems. Though, despite advances and availability of technology to quantify and manage variability, very few producers are using advanced spatial management tools.

The North Island of New Zealand offers the opportunity to visit a broad mix of fresh and processed vegetable production. New Zealand agriculture is noted for its progressiveness and has a large export focus on the Northern Hemisphere. This export focus means there is minimal competition with Australian markets and therefore sharing information doesn't present too many barriers. Proximity to Australia combined with short internal distances means New Zealand represents good value for money as significant time can be spent on the ground. New Zealand also shares many similarities with Tasmanian production where vegetable production is part of a mixed farming operation and includes cereals and livestock in rotation.

Methodology

Itinerary development

Creating an interesting and diverse itinerary was necessary to both initially attract Australian producers and to provide them with appropriate learning and networking opportunities while on tour. DAF used a mix of New Zealand contacts to help identify key producers to host the group. These local contacts were critical to gain access to farms and pack houses (see Appendix for final itinerary).

Producer selection

Selecting appropriate producers to participate was considered crucial to the success of the tour. The aim was to attract a mix of vegetable producers (e.g. size of operation and age of producers) from across the country who had made initial investments in precision technologies, were preparing to invest further in spatial management technologies and were prepared to share their experiences with the group both during and after the study tour.

Expression of Interest (EOI) were sought via industry media channels (AusVeg Connections, HIA Hortlink, Qld Fruit and Vege News) and closed on the 10th March 2016. (see Appendix for EOI)

Upon receiving an EOI, producers were asked to submit responses to selection criteria. The criteria aimed to establish a range of elements considered essential to the success of the tour. The selection process allowed DAF and Horticulture Innovation Australia to deliver a transparent process and importantly ensured that attendees were committed to the development of precision farming systems.

The criteria focused on the producer's current level of adoption and knowledge of precision farming, their strategic goals in progressing their precision farming approach, prior involvement in similar projects and their desire to share and communicate knowledge to the wider industry (see Appendix for Selection Criteria).

Participant evaluation

An application evaluation panel was established to assess the EOIs. Panel members included a representative from Horticulture Innovation Australia, DAF and an independent grower appointed by Horticulture Innovation Australia. All grower applications were reviewed and a final selection of the tour participants developed.

Post –tour survey and feedback

A mix of approaches were used to assess participant response to the tour. Discussions were held whilst travelling between destinations and additional feedback was sought at the end of tour debriefing session. Following the tour a survey was conducted.

Outputs

Following the selection process sixteen (15) producers representing fourteen (14) enterprises, two (2) private research/ agronomists and two (2) DAF facilitators were approved to participate in the study tour (Table 1).

No applications were received from New South Wales, South Australia, Western Australia or Northern Territory.

Table 1: Approved participants

State	No. attending	Total hectares of production	Crops represented
Queensland	8 (7 enterprises) + 2 x DAF facilitators	5980	Pumpkin, potatoes, carrot, green bean, sweet corn, broccoli, lettuce, parsnip, chilli, herbs, capsicum, onion.
Victoria	1	200	Lettuce, broccoli, fennel.
Tasmania	6 + 2 research agronomists	3065	Potatoes, onions, peas, green beans, seed potato, carrot seed, swede, beetroot, pumpkin, leek.

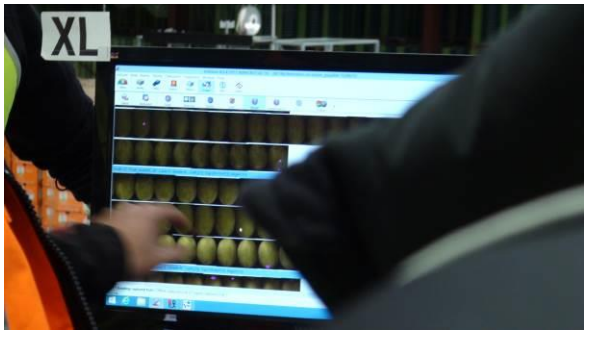
Trip activities and farm visits

Table 2: Summary of daily activities

Sunday 22nd May 2016	Study tour briefing	An initial briefing was held on the first evening. This included introductions from each study tour participant as well as a brief outline of their business and their precision agriculture activities. Participants were given an information pack and a high visibility vest that was required to enter all packhouses on the tour. This briefing also included updating participants on the required project deliverables and expected etiquette on the study tour.
Monday 23rd May 2016	A.S.Wilcox & Sons	Business overview: Fully integrated chain including growing, packing, marketing, and exporting. Producing carrots, onions and potatoes. 15-20% carrots exported, 70% onions exported and very little potatoes less than 5%. Packing shed packs 28 000t of onions p.a. Focus is on branded products. PA practices: CTF, EM38 soil mapping, Greentronics yield monitor on a potato harvester, zonal applications based on crop performance, currently looking at the use of UAVs and assessing the value of the information they can provide. Comment: given the fresh market focus and scale of the Wilcox operation, this visit was highly anticipated by tour participants. Even though the inclement weather didn't fully allow the group to explore the field and CTF sites, the information provided and the tour of the packing operation was well received. Post tour survey results indicate that all of participants rated the information/ experience and connections gained as excellent.  **Figure 1: Example of branded product at Wilcox Farms**

		 **Figure 2: Tour group inspect the machinery sheds at Wilcox Farms.**
	Vida Farms	Baby leaf salad producer. Group informed of the risk of not meeting consumer expectations and quality control. Previously producing 35 t baby leaf per week, down to 6.5 t per week following a significant drop in quality. New US owners increased throughput to 110 bags per minute which caused significant bruising of the baby leaf produce. Within 2 weeks, consumers had stopped buying and now no there is no market for their brand. PA practices: formerly rigorous adherence to controlled traffic with significant time and diesel savings. Now back to full cultivation Comment: good visit to hear about how corporate influence and in particular how increasing production can damage product and consumer expectations. Clearly the impact of losing market share has significantly reduced profits with a direct impact on farm practices. Post –tour survey results indicate that 71.43% (n=10) rated this visit as satisfactory.  **Figure 3: Growers inspect machinery at Vida Farms.** 

		Figure 4: Baby leaf production at Vida Farms.
Tuesday 24th May 2016	Haywood Limited (John Cook) – Kiwi fruit grower and Director of Horticulture NZ	Discussion and farm walk. Participants heard about how the industry responded to a bacterial incursion (PSA). Land values range from $600 000/ha for established G3 type (Gold) orchard to $450 000/ha for Haywood green fruit variety. Average orchard size is 3.5ha. Marketing strategies discussed. PA Practices: using unmanned aerial vehicles (UAVs) to develop 3D images of orchard. Comment: for most participants this was the first time they had been to a kiwifruit operation. The visit also provided an opportunity for participants to speak about broader horticulture issues and management with a Hort NZ director.  **Figure 5: (left) Kiwifruit grower and Hort NZ Director John Cook (2nd from right) discusses orchard practices with tour group.**  **Figure 6: Matt Flowerday (GPS-IT) discusses the use of UAV and 3D imaging in orchard management.**
	EastPack – Kiwifruit Packing operation	EastPack is a grower co-operative kiwi fruit packhouse. They operate 3 sites, with the Te Puke site the second largest. The grading line is 89 m long. The company has installed a Near-Infra-Red (NIR) vision system which grades the fruit on size, brix levels and dry matter. The grading chain is designed so that the purpose of the system is to get each fruit into the tray. Each piece has up to 3 chances to get to tray and if it is knocked out each round then it is waste. The machine is calibrated by numbering fruit and putting each piece of fruit through each camera (this makes sure that they are all assessing the same) then doing destructive lab analysis and comparing the lab results with

		the grading system results (100 fruit). The company is committed to LEAN manufacturing. Comment: many growers on the tour were impressed by this packhouse, with 86% (n=12) growers rating the visit as excellent.  **Figure 7: Packing line at EastPack in Te Puke**  **Figure 8: Growers getting an overview of the NIR grading system**  **Figure 9: Grading system software showing NIR images/scans of individual pieces of fruit passing through the grader.**

Wednesday 25th – Friday 27th May 2016	LandWISE Conference & Trans-Tasman grower discussion	LandWISE is a 2 day agricultural and technology conference. The theme of the 2016 event was: '*The Value of Smart Farming*'. Both Precision Agriculture Study Tour facilitators, Ian Layden and Julie O'Halloran spoke at this event. Two of the grower participants, Ben Moore from Kalbar, Queensland and Rob Tole from Cressy, Tasmania also presented on their experiences implementing precision agriculture tools into their businesses. Field demonstrations of Yamaha unmanned helicopter with multiple applications, including spray application; unmanned aerial vehicle (UAV) for onions; bio-stimulants; NDVI tractor mounted sensor; and ground based sensors for orchard activities were also demonstrated. <u>Trans-Tasman Grower/researcher discussion:</u> This session involved the Australia study tour growers, NZ growers and researchers. It focused on identifying issues around precision agriculture and opportunities to address them. The key areas discussed included: • Data – its interpretation and use of it, groundtruthing, calibration (in field and between fields – benchmarking) • Sensors – are we using the correct spectra or index? NDVI (blunt, need targeted bands/sensors, yield monitors (vegetables), yield profile and prediction via images in crop. Lack of yield data in vegetables, peas, potatoes, onions. • Interoperability – software offered versus that needed • Benchmarking <u>Comment:</u> 64% (n= 9) participants rated this event as excellent with the remainder (n= 5) rating the event as satisfactory.

Figure 10: Kalbar grower Ben Moore addresses conference delegates

Figure 11: DAF Senior Horticulturist Julie O'Halloran provides delegates with information on the Queensland precision work

Figure 12: UAV with 20l spray tank

		 **Figure 13: Growers and researchers discuss common issues with PA during the Trans-Tasman session.**
Friday 27th May 2016	Scott Lawson (True Earth Organics)	Organic grower of organic potatoes, onions, carrots and blueberries. Potato packaging has not changed since they started growing. Scott has had it reviewed to identify any opportunities for improvement but none have been required. Carrots are hand harvested, ripped either side and lifted and then topped by hand in the field. No loss from mechanical damage. Produces 40 tonnes of blueberries for the Australian market and the UK. Seconds which were previously waste are bulk packaged into 1kg containers and sold for freezing. Comment: Organic operations can be markedly different to conventional production systems. Nonetheless, soil health is an important area for most growers.  **Figure 14: Scott Lawson speaks to participants about his organic operation**

		 **Figure 15: Example of packaged organic potato**  **Figure 16: Assessing soil quality during field walk at True Earth organics.**
Friday 27th May	Apatu Farms (*in place of the McCain packhouse visit which was cancelled due to earlier than expected cessation of processing*)	Packhouse tour. Apatu Farms produce 1,000 ha of onions and peas and have a lambing operation. They are responsible for harvesting sweet corn for McCains. They pack 28,000t of brown onions, 95% for export markets to Indonesia, Malaysia, Japan, Norway, Holland, UK and Germany. Only 5% is marketed domestically for processing. 3,000t red onions are shipped to the UK and Norway. Once packed, onions are loaded directly into shipping containers and transported to the port half an hour away.  **Figure 17: Packhouse manager at Apatu Farms discusses the**

		farming operation.  **Figure 18: Growers inspect the Dobmac onion harvester**  **Figure 19: Onions being graded into sizes**  **Figure 20: One (1) tonne bags being filled for direct export.**
Friday	Grower slide night	Prior to the trip participants on the study tour were asked to prepare a series of photos/videos depicting their farming system and precision agriculture technologies. The group decided to have a Friday night 'movie & pizza' night where participants presented what they had put together. LandWISE NZ donated their meeting room and AV equipment. Presentations were given by Josh Wing, Alex Emerick,

		David DePaoli, Adam Posthlewaite, Ben Poggioli, Greg Simpson, Danny Shoenmaker and John McPhee. Other growers including Marco Mason, Ed Windley and Michael Nicholls had presented on the bus during a long travel leg. The intent was to further develop the CoP and sharing of personal stories and journeys is an important component. This is covered further in the evaluation section. Participants rated this event as highly beneficial.
Saturday 28th May	Hugh Ritchie (Drumpeel Farms)	Hugh produces corn, peas, carrots, lambs, ryegrass and wheat. He has VRI capable pivots and lateral move irrigators. Hugh had significant waterlogging and drainage issues so everything was levelled using the opti surface levelling. EM38 mapping of all these blocks has been done. Hugh is a Director of Irrigation NZ and is arguably the first adopter of VR irrigation and strip tillage in NZ. Hugh practices strip tillage and has very good soil structure and biology. He does deep rip the headlands only. His soils are very forgiving and do not seem to suffer from compaction. He has some sandy soils that do tend to crust but Hugh manages that by keeping them moist so that the crust never dries out too much. Comment: the group was excited to finally get to Drumpeel Farms. It shares a lot of similarities with Tasmanian mixed production systems. Hugh Ritchie is a well-known proponent of strip tillage and variable rate irrigation and has a lot of experience in these areas. 71% (n=10) of participants rated this visit as excellent.  **Figure 21: Hugh shows soil structure to the group**

		 **Figure 22: Explaining the Orthmann strip till rig**  **Figure 23: Group inspects the air seeder**
Monday 30th May	Massey University Variable Rate Irrigation (VRI)	This is the sister project to USQ VRI at Ed Windley's in SEQ. It is a small centre pivot, only 1.5 spans. They have collected a range of mapping layers, these include: EM38, gamma radiation mapping (indicates parent material), and LiDAR. These mapping layers are then used to determine sampling points and sampling points are based on zones. Trial plots are situated in the same pivot arc to accurately compare treatments. Two different irrigation rates, schedules are being tested, which allows plants to take advantage of different infiltration in different soil types. They do EM38 mapping when soil is dry. Having EM38 mapping uniformity in soil moisture more important than field capacity. Sensors are attached to the pivot which provides real-time data to inform the irrigation. Comment: as there were a number of participants who either had VRI or were considering VRI this site was informative and rated highly in feedback.

		 **Figure 24: Participants inspect the VRI pivot**  **Figure 25: Massey University lead researcher David Horne explains the VRI project.**
Monday 30th May	John Clarke (Woodhaven Gardens)	Two production areas: 600 acres Woodhaven and 500 acres Kapiti. Produces 17-18 different crops, with management systems for each, including zucchini, lettuce, cabbage, broccoli, spring onions, spinach, fennel, beetroot, radish, parsley, kale, melon and pumpkin. Aims for 1.7 crops per acre per year. Tries to grow all crops year round for continuity of supply except for melon and pumpkin. Biggest cropping lines, are lettuce, cabbage, broccoli, spring onions and spinach. Domestic NZ fresh market supply only. Maintains growth of about 15% per year. 150 permanent staff, with staff allocated to production, sales, harvest and administration. Team of three agronomists plus head agronomist. Packing shed has just had cool rooms replaced and the shed reconfigured. Produce is packed into 35L and 47L crates. No contract growers, software links production through to dispatch, can give trends in sales. Committed to CTF which has made labour management easier.

		Comments: as a fresh market operator growing multiple lines this visit resonated with the Qld and Vic participants.  **Figure 26: Inspecting product**  **Figure 27: Example of packaged product**  **Figure 28: Participants inspecting the innovative side dressing setup on a fertiliser spreader.**

		 **Figure 29: Inspecting the fennel crop**

Outcomes

Study tours can generate a wide range of social and productivity benefits for both individual growers and the wider industry. Whilst, the destinations are important, the time spent together in a group environment around a common theme (e.g. vegetable production and precision) was the critical factor in achieving any extension /practice adoption or industry development success. Using small group study tours allows for the facilitated exposure of producers to new practices, thinking and relationships; this typically leads to broader networks and the generation of new knowledge and innovation generally.

While precision vegetable production underpinned the overall theme of the tour, VG15704 sought to through shared learning and interaction with producers and researchers initiate a 'community of practice' in precision vegetable production. Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact.

The key objectives of the project were to:

- Introduce participants to new knowledge and ideas which can then be implemented on their own farms or to provide support for those wishing to undertake similar precision approaches.
- To reinforce precision concepts and approaches applicable to vegetable systems.
- Introduce a group of Australian vegetable producer's to progressive producers, practices and researchers in the New Zealand vegetable industry.
- Inspire and challenge Australian vegetable producer's to adopt or progress the adoption of precision practices.
- Help overcome adoption barriers by encouraging producers to self-organise so they can assist each other outside of organised projects and programs.
- Develop an improved understanding of the role of precision technologies in vegetable production.
- Benchmark producer/industry progress against international counterparts.

Table 3 provides an overview the results and impact from the project.

Table 3: Outcomes from VG15704

Objective	Evidence of results or impacts
Facilitated development of valuable networks	• Feedback from post trip survey • Networks also appear to have value not only for PA but other production areas as well (evident by how well the grower's movie night was received) • Follow up visits and conversations by producers that have occurred after the project • New Zealand producers have followed up with Australian group to explore strip tillage • Tour group participants discussed what a new precision vegetable project might seek to achieve and that working together would add benefit • New PA grower group developed in Tasmania (15 members) being organised by consultant agronomist who participated in the tour • LandWISE presentations by tour participants
Introduced participants to new knowledge and ideas	• Feedback from post trip survey • Use of UAV in onion production • Hyperspectral imagery • Branding and packaging • Kiwifruit operations/ industry development and packhouse technology • LandWISE Conference
Help overcome adoption barriers by encouraging producers to self-organise so they can assist each other outside of organised projects and programs.	• Tasmanian grower contingent have visited Queensland farms (August 2016) • New Zealand grower visit to South-east

	Queensland participant farms (October 2016)  **Figure 30 Simon Wilcox (A.S Wilcox and Sons, NZ) visiting Brendon Windolf (Windolf Farms, Gatton)** • Victorian grower made contact with Queensland growers and DAF during Lockyer Valley field day (July 2016) • Feedback from post trip survey on preferred method of communication, ideas for activities • Increase in participants using social media – encouraged by members of the study tour a number of growers have signed on and are now using social media (Twitter, Facebook) • Strip tillage – discussion of how to implement strip tillage in vegetable systems. North Queensland producer visiting SE Queensland and Tasmania to speak with producers
Inspire and challenge Australian vegetable producer's to adopt or progress the adoption of precision practices.	• DAF have been engaged to work with Windolf Farms to acquire and groundtruth biomass imagery for applications, crop establishment/strike rate • Side shift guidance: implement steer trials have commenced in Queensland • Strip tillage: following group discussion on the trip a number of producers are pursuing strip tillage. New project developed to validate strip tillage in veg systems

	• UAV purchases: two producers have purchased UAVs following the study tour after being exposed to their application in vegetables in NZ • Producers and Serve Ag have formed the Ag Technology Focus Group (ATFG) to develop new projects and field application of PA in Tasmania
Introduce a group of Australian vegetable producer's to progressive producers, practices and researchers in the New Zealand vegetable industry. Benchmark producer/industry progress against international counterparts.	• Feedback from post trip survey • Growers reporting that New Zealand vegetable industry weren't as advanced in the adoption of precision approaches as they initially thought prior to the trip • Introduction to LEAN manufacturing in packhouses

Evaluation and Discussion

The role of study tours in innovation

Producer study tours are not new, indeed there is long history of Australian producers travelling domestically and internationally to learn and to seek new relationships. This project offered vegetable industry participants the opportunity to develop new interstate relationships whilst viewing and listening to a broad range of horticulturists and operations in New Zealand. Perhaps one point of difference was this tour sought to focus its efforts on a specific aspect of vegetable production, that of precision technologies.

The Expression of Interest (EOI) process was able to target those producers who had the requisite knowledge of precision technologies and were making an ongoing investment in the development of precision vegetable production. This process of ensuring that participants shared the same endeavors was critical to the success of the project and the ultimate development of the 'Community of Practice' whether that be a formal or an informal group. It's also worth noting that participants reported during the end of tour debrief session that having facilitators that both understood the role of precision technology in vegetable systems and direct contacts/relationships with producers/advisors in New Zealand was important.

Feedback on project activities was sought at several stages of the project. Midway through the tour and at the end of tour debriefing, participants were asked to reflect on the project activities and provide comment to the group. This identified the key points/ideas/learnings that each participant had discerned from the project activities at different stages of the tour. A post trip survey was developed and distributed upon return to Australia (see Appendices). This survey had an excellent response rate with 14 of the 16 (93%) participants (enterprises) completing the survey. This provided participants with the

opportunity to offer feedback anonymously compared with opportunities on the tour and afforded time for reflection on what they had seen and heard as part of the project activities. Tour facilitators have also maintained contact with participants to capture post trip activities and changes made by tour participants in the progression of precision technologies.

The tour activities encompassed a range of vegetable production operations and associated precision technology systems. The tour was very well received by participants and feedback has been overwhelmingly positive with 71% of participants rating the tour as exceeding their expectations. While precision technologies was the common theme of the tour, site visits incorporated a range of different precision technologies and practices including controlled traffic farming, strip tillage, yield monitoring, unmanned aerial systems, vision systems for grading produce and LEAN systems for both packing and production operations. Participants generally appreciated the mix of operations including corporate structured and domestic and export operations which was reflected in the feedback captured on tour. The LandWISE conference also provided an opportunity for participants to consider those technologies that are still very much a research tool. The potential application of these technologies in vegetable systems generated much discussion and interest, in particular hyperspectral imagery.

The project has proven effective in achieving the key objectives as evidenced in the outcomes reported in Table 3. Several participants have commenced or continued to progress the adoption of a range of precision technologies since the study tour. This was implied in the post trip survey responses with 93% of participants indicating that they were 'very likely' to apply information or practices observed or discussed on the tour. Based on post trip follow up by the tour facilitators, the activities participants have undertaken post trip include, trialing side shift guidance, strip tillage and the application and groundtruthing of crop biomass imagery. The networks developed through the tour have been pivotal in facilitating this progress, with participants sourcing technical assistance and advice from within the group. The feedback captured at the end of tour briefing highlighted that participants had been mentally benchmarking their operations against those visited on the tour. Gratifyingly, it was apparent that the Australian contingent was more advanced than they had considered themselves to be in the application of precision technologies. This process also highlighted to participants that both the Australian delegation and the NZ producers were facing the same challenges and issues in progressing the implementation of precision technologies and there were opportunities and a willingness to share experiences. This shared challenges and experiences is a key characteristic of Communities of Practice (Wenger-Trayner and Wenger-Trayner, 2015).

The development of networks and a Community of Practice were key objectives of this study tour to assist producers in overcoming barriers to adoption of precision technologies and to facilitate communication amongst participants into the future. The value of these to participants was highlighted through feedback collected on the tour and also through the post trip survey where 93% of participants rated the networks developed through the tour as extremely valuable. Qualitative feedback through the survey also highlighted that the development of networks was the most valuable learning from the tour, reinforcing the preference for farmer to farmer learning and the role of study tours.

Additional survey content sought to identify preferences for communication amongst the group into the future and the following rated high in participant responses: social media 64%; organised funded tours to farms, regions, packing sheds 85%; and organised but self-funded tours to farms, regions and packing sheds 64%.

The Community of Practice has already been evident in post trip activities and communication. Social

media, and Twitter in particular, is proving to be an easy and popular method for participants to promote both their activities and maintain awareness of what other participants are undertaking in the precision technology space. The networks facilitated through the tour have also generated a range of activities, both self organised by participants and requiring some assistance from the tour facilitators. It is anticipated that this will continue with more activities into the future and opportunities for expansion of the Community of Practice through additional investment in precision technologies in vegetables.

Key developments from the project can be summarized as the following: the tour successfully facilitated a network of likeminded growers which was identified as the most valued consequence of the tour for participants; participants are currently leveraging these networks well beyond the study tour; participants gained an understanding of the current status of NZ PA research and adoption in vegetable systems as well as where vegetable PA systems are positioned in comparison; and participants are making changes to progress the application of precision technologies in their farming systems. This progression towards precision vegetable systems is a critical next step to optimize the potential for robotics and automation and the vision for technological platforms and big data applications in both the vegetable industry and agriculture in general.

Recommendations

If used correctly, producer study tours can be an excellent way to promote grower-to-grower learning and the development of formal and informal grower networks. They also allow RD&E providers with detailed information and producer feedback on what works and doesn't work and where new projects areas might emerge.

The post tour survey results (in particular questions 13 and 14) have a wealth of information on how growers perceive the value of study tours and suggestions of how tours might be developed in the future. The list of recommendations below attempts to encapsulate the feedback from growers and the facilitators.

- Target producers through transparent EOI processes that ensure participants are the ones most likely to implement change
- Ensure adequate group networking opportunities are incorporated in the tour and that this may need to be facilitated in order to stimulate discussion
- Consider setting of 'homework' where participants are required to bring something along to share with the group (the grower 'slide night' worked particularly well
- Where possible use facilitators who have sufficient content knowledge and local contacts
- Ongoing post-tour maintenance for the network/community of practice is critical and perhaps needs further consideration/support by industry. We suggest:
    - strongly encouraging growers to engage with social media (e.g. Twitter) as an efficient way to stay in touch with each other while promoting their businesses
    - annual or biennial interstate 'get-togethers' that could be a mix of industry supported and grower contribution to strengthen and add to the network.

Scientific Refereed Publications

None to report

Intellectual Property/Commercialisation

No commercial IP generated

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Acknowledgements

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Dan Bloomer	LandWISE New Zealand
Adam Postlethwaite	Addison Farm Produce (Moriarty, Tas)
Ben & Nicole Poggioli	Poggioli Farms (Tolga, Qld)
Ben Moore	DJM Farming (Kalbar, Qld)
Brendon Windolf	Windolf Farms (Lockyer Valley, Qld)
David DePaoli	Austchilli (Bundaberg, Qld)
Ed Windley	Kengoon Farming (Kalbar, Qld)
Greg Gibson	Gibson Ag (Hagley, Tas)
Josh Wing	Harvest Moon (Forth, Tas)
Marco Mason	Mason Bros (Werribee, Vic)
Michael Nichols	Sisters Creek, Tas
Robbie Tole	Greenvale Pastoral (Cressy, Tas)
Robert Hinrichsen	Kalfresh (Kalbar, Qld)
Alex Emerick	Mulgowie Farming Co (Bowen, Qld)
Vaughan Trebilco	UTAS – commercial research & production (Forth, Tas)
Danny Schoenmaker	Serve-Ag (Tas)
John McPhee	Tasmanian Institute of Ag (Tas)

Appendices

Appendix 1: Itinerary

Date	Depart	Arrive	Accommodation	Notes/comments
Sunday 22nd May 2016	Various Australian locations	Auckland	Jet Park Hotel & Conference Centre 63 Westney Road, Mangere. www.jetpark.co.nz/ P. +64 800 538 466	Introductions, tour briefing, group dinner & overnight (*arrival by mid to late afternoon if possible*)
Monday 23rd May (am)	Auckland	Pukekohe Simon Wilcox (A.S Wilcox & Sons) www.wilcoxgoodness.co.nz Chris Butler (Vida Farms)	nil	Potato, onions, carrots - VR inputs, controlled traffic, min tillage, imagery Fresh cut salad growers (*Lunch on bus*)
Monday 23rd May (pm)	Pukekohe	Tauranga (Bay of Plenty)	Pavilion Boutique 4 Marine Parade - Mount Maunganui. www.pavilion.net.nz P. +64 7 572 0001	Overnight (*group dinner*)
Tuesday 24th May (am)	Tauranga (Bay of Plenty)	Frank Bollen (Zespri – Kiwifruit) Matt Flowerday (GPS-IT)	Nil	Imagery, unmanned aerial systems, robotic harvesting R&D. *Stop for lunch/afternoon tea*

Tuesday 24th May (pm)	Tauranga	Havelock North	Village Motel 16 Te Aute Rd, Havelock North P. + 64 6 8775401 www.villagemotel.co.nz/	Overnight (*group dinner*)
Wednesday 25th May 2016	LandWISE Conference (Havelock North) www.landwise.org.nz/		Village Motel	Overnight Hastings – conference evening dinner event
Thursday 26th May	LandWISE Conference (Havelock North)		Village Motel	Overnight Hastings (*informal dinner with NZ growers TBA*)
Friday 27th May **(am)**	Trans-Tasman Precision R&D – grower discussion (Havelock North or Hastings)		Village Motel	Grower led workshop on issues facing vegetable growers and the role of technology
Friday 27th May **(pm)**	Havelock North	Tour of McCain's processing plant Hastings Scott Lawson (True Earth Organics) www.trueearth.co.nz/	Village Motel	Potato, carrot & pumpkin innovative packaging and brand development (*group dinner*)
Saturday 28th May (am)	Havelock North	Hugh Ritchie (Drumpeel Farms)	Village Motel	VRI, min/strip tillage - carrots, sweetcorn ,peas, green beans
Saturday (pm) & Sunday 29th May	*Free time in Hawkes Bay area*		Village Motel	Choice of leisure activities (TBA) *No planned meals*

Monday 30th May (am) **Depart 0630**	Havelock North	North Palmerston (Massey University) Levin (Woodhaven Gardens or Kapiti Green) www.woodhavengardens.co.nz	nil	Variable Rate Irrigation R&D Fresh vegetable growers (broccoli, lettuce, cabbage, celery) *Stops for morning tea and lunch*
Monday 30th May (pm)	Levin	Wellington	Brentwood Hotel 16 Kemp Street, Kilbirnie, Wellington P. + 64 508 273689 www.brentwoodhotel.co.nz/	Overnight (*group dinner included*) Tour wrap-up and discussion
Tuesday 31st May	Wellington	Depart for various Australian locations		

Appendix 2: EOI Advertisement

Expressions of interest sought

VG15704: Grower study tour of New Zealand

Precision vegetable production: New Zealand's North Island

May 22nd – May 30th 2016

*Limited places available

Are you a vegetable levy payer?

Are you practicing precision agriculture such as:

- **controlled traffic systems**
- **crop sensing or imagery**
- **soil mapping**
- **variable rate input programs**
- **yield monitoring?**

Are you also prepared to share ideas with others in the vegetable industry?

Along with attending the **2016 LandWISE** conference, the tour will visit leading vegetable producers such as Vida Farms, A.S Wilcox & Sons, Drumpeel Farms and a range of research sites.

For further details and to register your interest contact Ian Layden, Department of Agriculture and Fisheries.
ian.layden@daf.qld.gov.au or 0409 495 737

EOI closes 10th March 2016

Horticulture Innovation Australia

Queensland Government

This project has been funded by Horticulture Innovation Australia Limited using the vegetable levy with co-investment from the Department of Agriculture and Fisheries, QLD and from funds from the Australian Government.

Appendix 3: Selection criteria

Grower study tour of New Zealand, 22nd May 2016 to 31st May 2016
Precision vegetable production (VG15704)

Overview

Horticulture Innovation Australia (Hort Innovation) following grower advice has commissioned the Department of Agriculture and Fisheries (DAF) to conduct a study tour of New Zealand's vegetable industry in May 2016. The tour will focus on precision agricultural technologies that are currently being employed in a range of vegetable cropping situations in the New Zealand vegetable industry. Spread over eight days the tour will visit a broad mix of vegetable farms, research facilities and attend a precision themed conference (LandWISE). This project had been funded by Hort Innovation using the vegetable levy and funds from the Australian Government, in addition to in-kind contributions by DAF.

To assist in identifying suitable producers, DAF have been requested by industry and Hort Innovation to develop participant selection criteria. The aim of the criteria is to maximise the industry investment by ensuring that producers who participate are both actively pursuing precision systems and willing to share knowledge and learnings with the broader vegetable industry.

Contact Details

Name: _____

Address: _____

Mobile Phone: _____ Email address: _____

Crops farmed: _____

Hectares farmed: _____

Participant selection criteria

Are you an Australian vegetable levy payer?
Yes ☐ *No* ☐

Please provide demonstrated knowledge, experience and/or previous investment in precision agriculture (PA) in vegetable production (for example controlled traffic systems, minimum tillage, crop sensing/imagery, soil mapping, variable rate input programs, yield monitoring).
Please select one or more of the following:

☐ controlled traffic systems ☐ minimum tillage ☐ crop sensing/imagery

☐ soil mapping ☐ variable rate input programs ☐ yield monitoring

Provide details on the PA you are currently undertaking:

Appendix 3 continued

If requested, be prepared to participate in discussions and/or presentations while in New Zealand?
Yes *No*

Are you willing to participate in a video style 'travel blog' that will allow key learnings and new ideas to be captured and communicated to industry?
Yes *No*

Are you willing to participate in daily 'debrief' sessions as requested?
Yes *No*

Following the study tour, be prepared to assist DAF to develop and trial an informal precision vegetable 'community of practice' network?
Yes *No*

How will you assist to extend information from the tour to other vegetable growers?

How will your participation in the tour assist your operation and the vegetable industry?

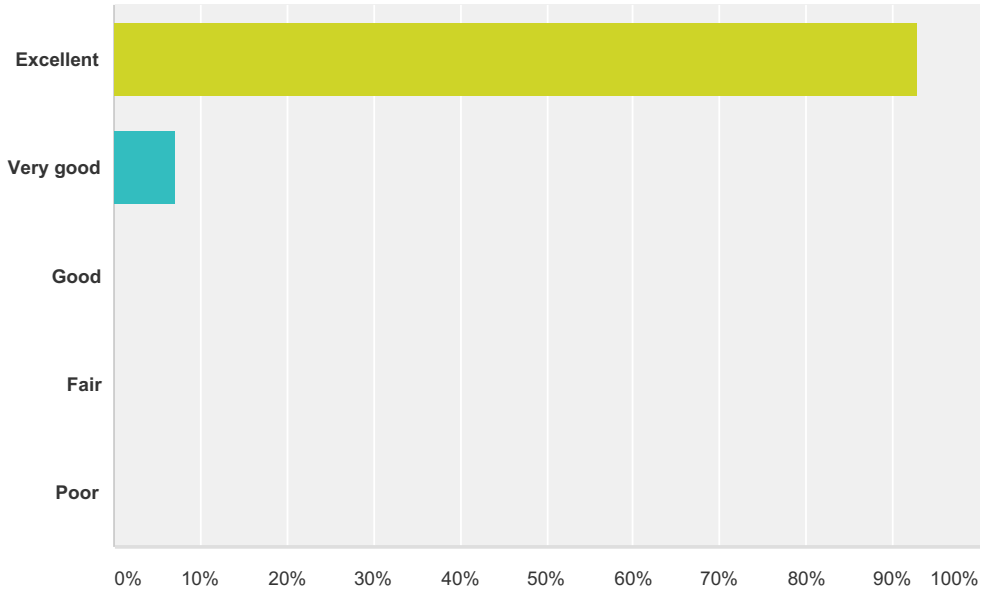
CLOSING DATE FOR TOUR APPLICATIONS: **5pm**, **Thursday 10th March 2016**
For further assistance please contact Ian Layden 0409 495 737

Appendix 4: Post-tour survey

Included as separate attachment

Q1 Overall, how would you rate the NZ study tour?

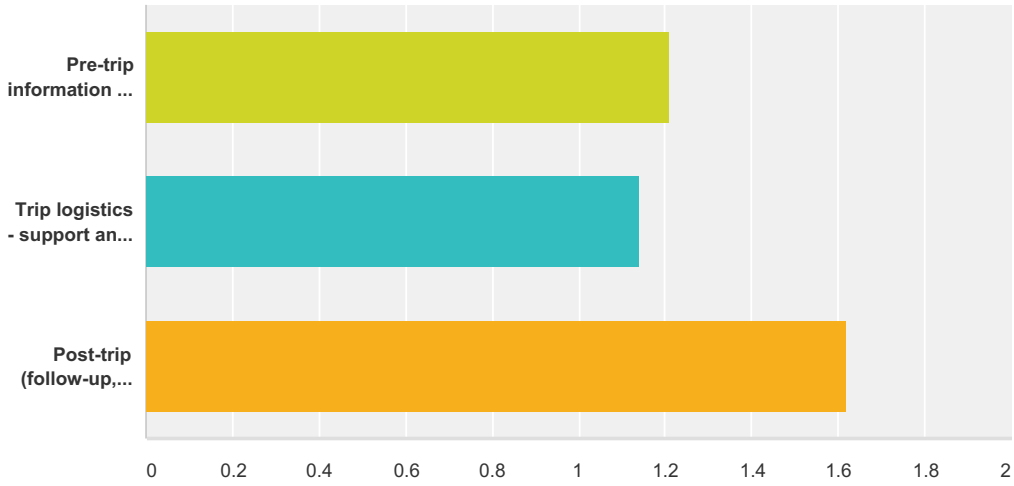
Answered: 14 Skipped: 0



Answer Choices	Responses	
Excellent	**92.86%**	13
Very good	**7.14%**	1
Good	**0.00%**	0
Fair	**0.00%**	0
Poor	**0.00%**	0
Total		**14**

Q2 How would you rate the organisation and communication of the tour?

Answered: 14 Skipped: 0



	Excellent	Very Good	Good	Fair	Poor	Total	Weighted Average
Pre-trip information and communication	**78.57%** 11	**21.43%** 3	**0.00%** 0	**0.00%** 0	**0.00%** 0	14	1.21
Trip logistics - support and communication	**85.71%** 12	**14.29%** 2	**0.00%** 0	**0.00%** 0	**0.00%** 0	14	1.14
Post-trip (follow-up, invoicing etc)	**53.85%** 7	**30.77%** 4	**15.38%** 2	**0.00%** 0	**0.00%** 0	13	1.62

Q3 What was the single most valuable thing you learned from the tour?

Answered: 14 Skipped: 0

#	Responses	Date
1	Queensland, New Zealand and Tasmania groups to network and work with on future PA projects. Kiwi fruit production system.	6/28/2016 8:28 PM
2	that's hard to many but one thing is drones and how far they have come along in the last couple of years	6/28/2016 10:04 AM
3	Hard to pick a single thing out, perhaps being able to see and talk with other VRI users about their experiences managing the technology was most helpful for me. Being able to get some exposure to where the NZ vegetable industry is at was also very valuable in terms of understanding our global competitiveness	6/27/2016 10:18 AM
4	The power of networking with like minded motivated people from the same industry.	6/24/2016 11:58 AM
5	PA is the way forward for my farming business! I was also pleased to meet so many farmers with the same passion for farming.	6/23/2016 9:39 PM
6	The problems we encounter in our operation are similar to others in Australia and NZ	6/23/2016 2:44 PM
7	understanding Precision Ag and all the different techniques	6/23/2016 1:19 PM
8	Insights & networks from the Australian participants. Good tech opportunities coming through vi NZ conference and farm visits.	6/23/2016 12:07 PM
9	Everybody in the farming industry face the same issues. We are not alone and can learn from others	6/22/2016 7:34 AM
10	That most people are in the same boat when tyring to sort out what is useful and what isn't in PA.	6/22/2016 1:27 AM
11	I think the most valuable thing that I learned on this trip was that we are all suffering from the same issues. Data collection is easy but - WHAT DO WE DO WITH IT AND HOW DO WE USE IT TO MAKE MORE INFORMED DECISIONS.	6/21/2016 11:49 PM
12	the variable rate irrig info from the tasy boys and massey uni	6/21/2016 9:57 PM
13	Networking with like minded people	6/21/2016 7:35 PM
14	that NZ and Aus growers are at a similar level regarding PA. Hyperspectral data is exciting	6/21/2016 5:21 PM

Q4 What was the least valuable aspect of the tour?

Answered: 13 Skipped: 1

#	Responses	Date
1	??? I'm struggling	6/28/2016 8:28 PM
2	none i think that even the things that didn't interest me i still got something out of it .	6/28/2016 10:04 AM
3	At was all good	6/27/2016 10:18 AM
4	I found all aspects of tour valuable and exciting	6/23/2016 9:39 PM
5	John Clarks for me personal I didn't get much from this.	6/23/2016 2:44 PM
6	there was none. the tour was ongoing learning and revision	6/23/2016 1:19 PM
7	All good really, no negatives.	6/23/2016 12:07 PM
8	It was all good	6/22/2016 7:34 AM
9	Kiwi fruit packing was interesting but not that applicabl to veg - but still good to see and for a break from constant veg information.	6/22/2016 1:27 AM
10	Simon's driving skills and attempted jokes!	6/21/2016 11:49 PM
11	Yamaha uav. pretty tame	6/21/2016 9:57 PM
12	None	6/21/2016 7:35 PM
13	probably the onion packing plant	6/21/2016 5:21 PM

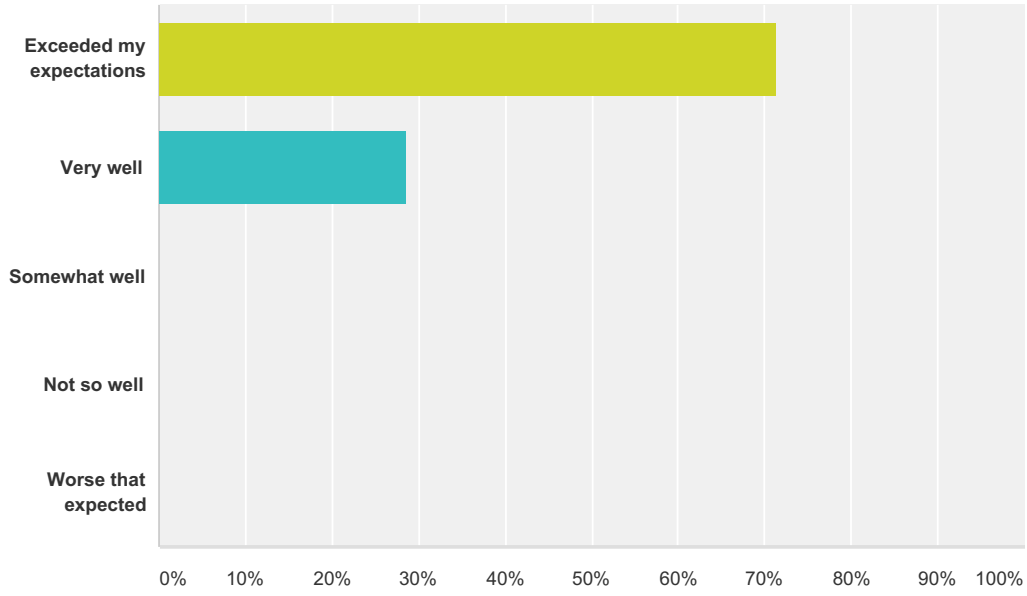
Q5 What was your main reason for participating in the tour?

Answered: 14 Skipped: 0

#	Responses	Date
1	To learn more about precision agriculture	6/28/2016 8:28 PM
2	lean more bout control traffic ndvi drones minimum tillage strip tillage variable rate irrigation and to network.	6/28/2016 10:04 AM
3	Precision Ag is a new and evolving area, there is so much to learn in order to make sense of it all and not find yourself down too many dead ends. It was a very good opportunity to assess where we are at and how to move forwards with it.	6/27/2016 10:18 AM
4	To better our farming operations	6/24/2016 11:58 AM
5	-Looking to better my farming practices	6/23/2016 9:39 PM
6	To gain a better understanding of PA. To see what else is out there and also to net work.	6/23/2016 2:44 PM
7	to better understand precision ag and see what the challenges are with different growers in NZ and from Aust	6/23/2016 1:19 PM
8	Networking & learning opportunities.	6/23/2016 12:07 PM
9	To see New Zealand To learn more about PA and other farming practices	6/22/2016 7:34 AM
10	To share common knowledge and experiences with growers in our project.	6/22/2016 1:27 AM
11	I wanted to build on my knowledge of P.A. and find ways to utilize all my gathered data to make more informed decisions.	6/21/2016 11:49 PM
12	benchmarking against nz growers	6/21/2016 9:57 PM
13	To learn more about different PA techniques and to hear practical applications	6/21/2016 7:35 PM
14	to gain and share knowledge and form collaborative networks	6/21/2016 5:21 PM

Q6 How well did the tour meet your expectations?

Answered: 14 Skipped: 0

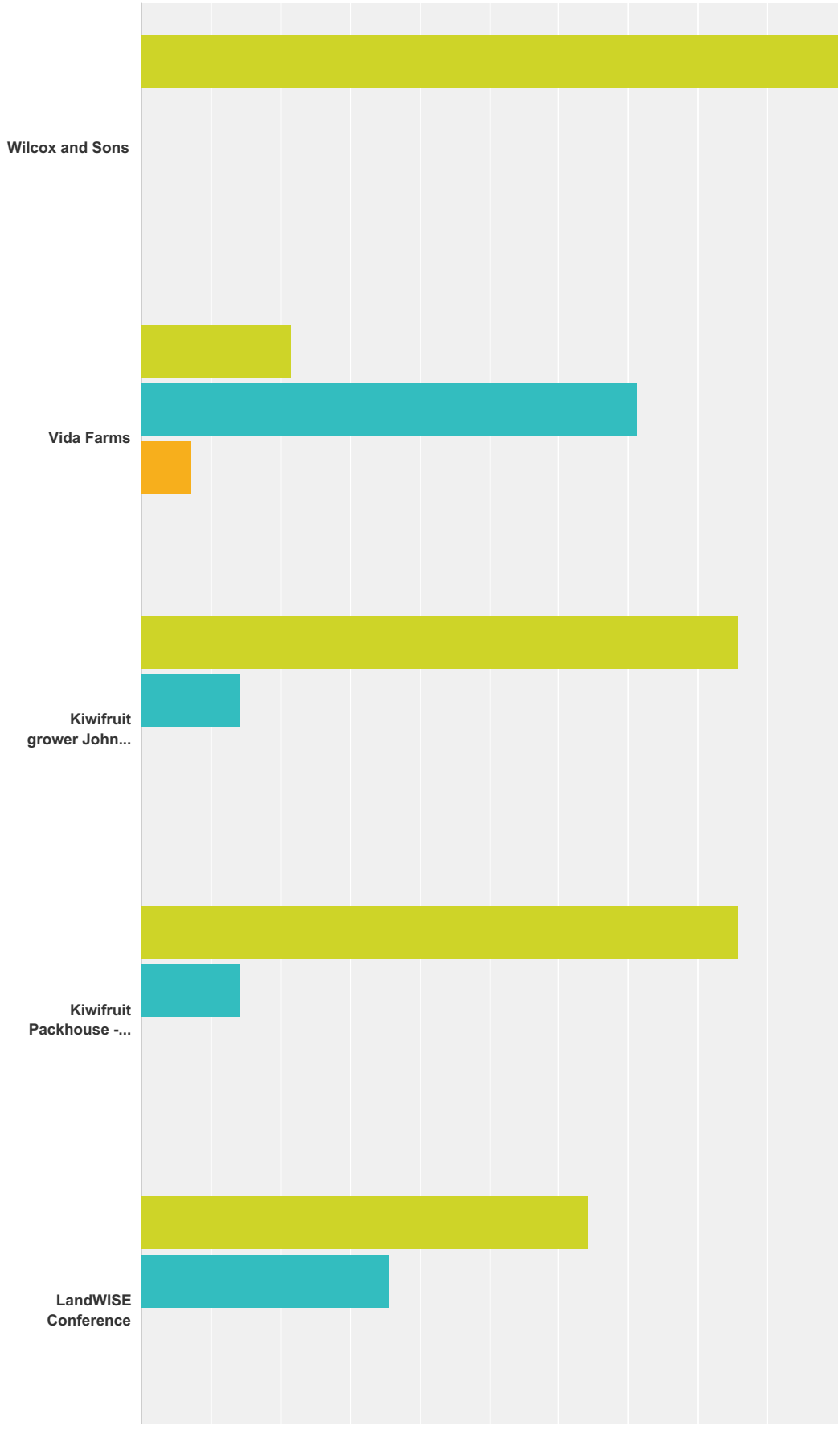


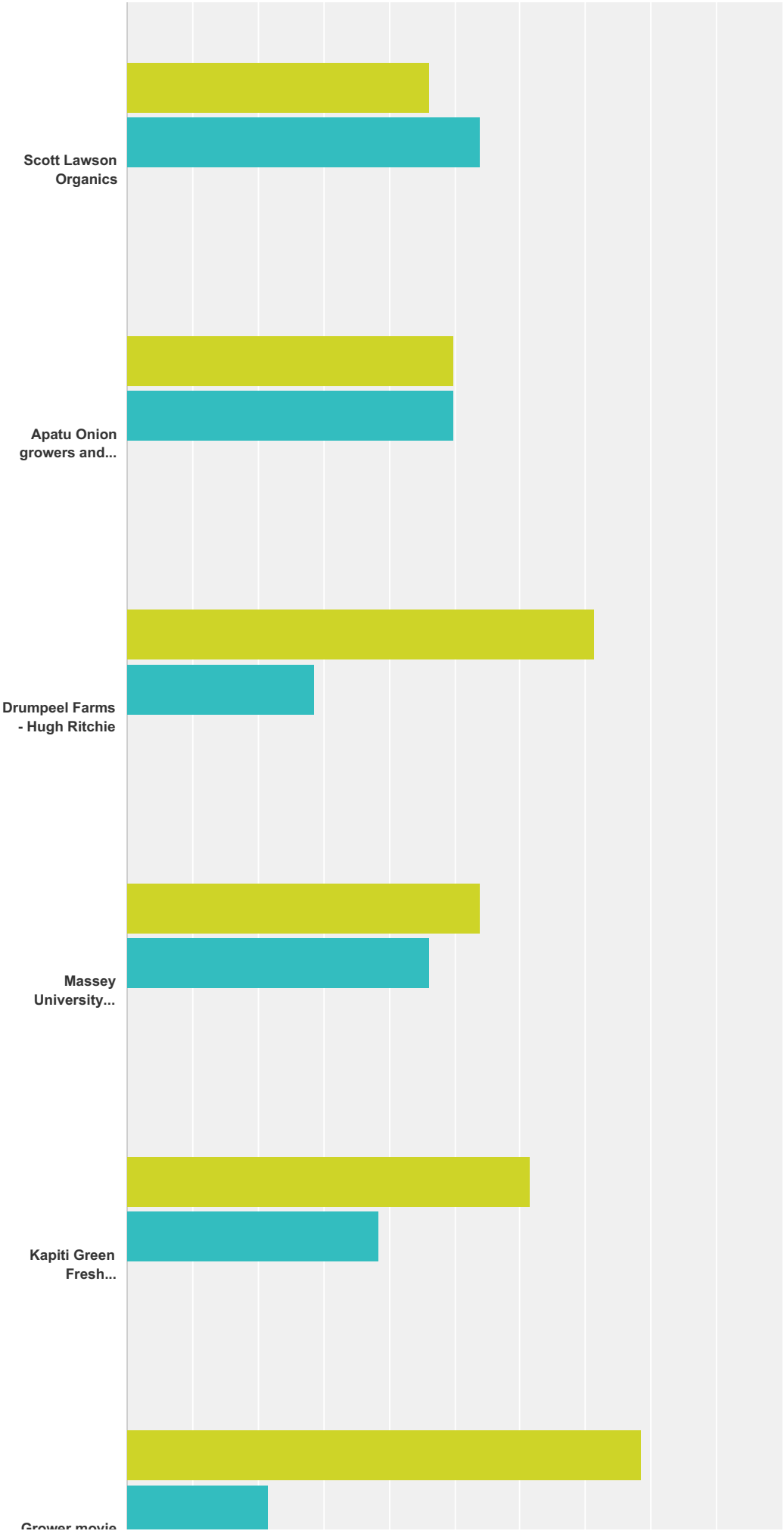
Answer Choices	Responses	
Exceeded my expectations	**71.43%**	10
Very well	**28.57%**	4
Somewhat well	**0.00%**	0
Not so well	**0.00%**	0
Worse that expected	**0.00%**	0
Total		**14**

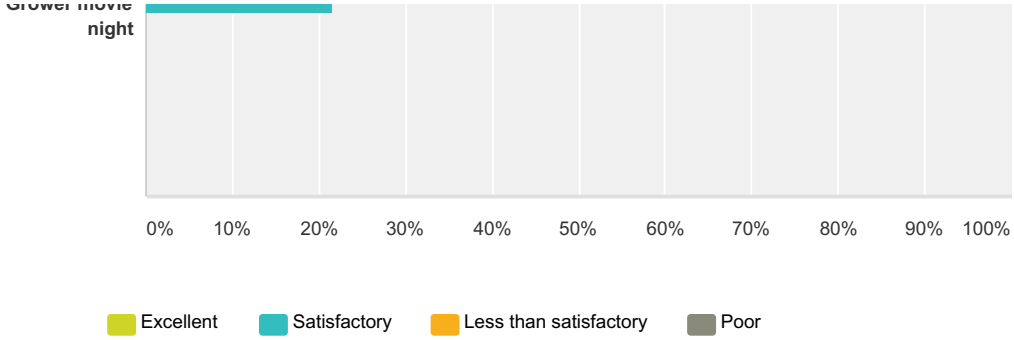
#	If the tour failed to meet your expectations, what could we have done to improve?	Date
1	Accomodation should be single room, no sharing	6/28/2016 8:28 PM

Q7 How would you rate the information/experience/connectionsgained from each of the activities?

Answered: 14 Skipped: 0



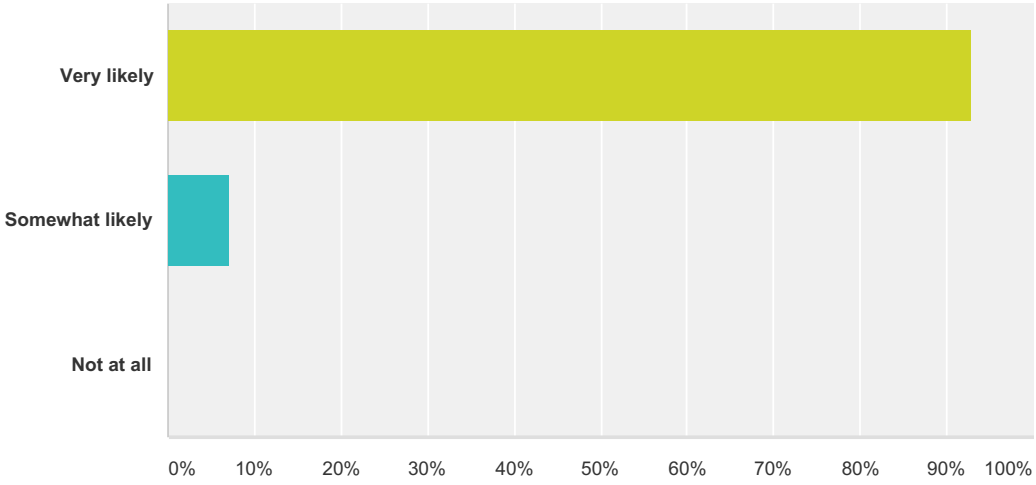

Scott Lawson Organics
Apatu Onion growers and...
Drumpeel Farms - Hugh Ritchie
Massey University...
Kapiti Green Fresh...
Grower movie



	Excellent	Satisfactory	Less than satisfactory	Poor	Total
Wilcox and Sons	**100.00%** 14	**0.00%** 0	**0.00%** 0	**0.00%** 0	14
Vida Farms	**21.43%** 3	**71.43%** 10	**7.14%** 1	**0.00%** 0	14
Kiwifruit grower John Cook & GPS-IT operator Matt Flowerday	**85.71%** 12	**14.29%** 2	**0.00%** 0	**0.00%** 0	14
Kiwifruit Packhouse - EastPack	**85.71%** 12	**14.29%** 2	**0.00%** 0	**0.00%** 0	14
LandWISE Conference	**64.29%** 9	**35.71%** 5	**0.00%** 0	**0.00%** 0	14
Scott Lawson Organics	**46.15%** 6	**53.85%** 7	**0.00%** 0	**0.00%** 0	13
Apatu Onion growers and packers	**50.00%** 7	**50.00%** 7	**0.00%** 0	**0.00%** 0	14
Drumpeel Farms - Hugh Ritchie	**71.43%** 10	**28.57%** 4	**0.00%** 0	**0.00%** 0	14
Massey University (VRI)	**53.85%** 7	**46.15%** 6	**0.00%** 0	**0.00%** 0	13
Kapiti Green Fresh Vegetables - John Clark	**61.54%** 8	**38.46%** 5	**0.00%** 0	**0.00%** 0	13
Grower movie night	**78.57%** 11	**21.43%** 3	**0.00%** 0	**0.00%** 0	14

Q8 How likely are you to apply any of the information or practices observed or discussed on the trip?

Answered: 14 Skipped: 0



Answer Choices	Responses	
Very likely	**92.86%**	13
Somewhat likely	**7.14%**	1
Not at all	**0.00%**	0
Total		**14**

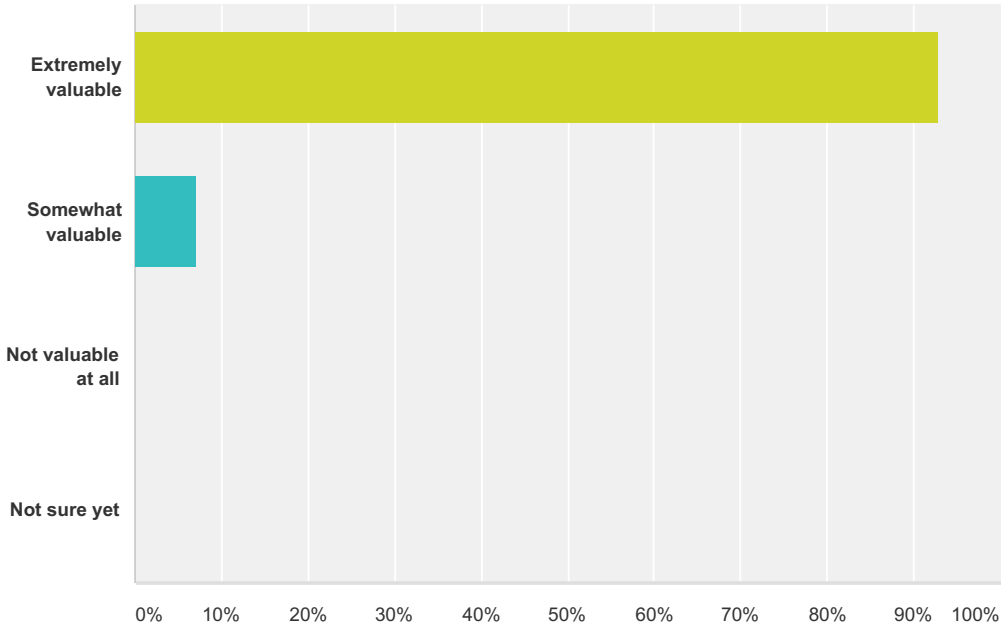
Q9 Were there other aspects of PA you would have liked to have seen included?

Answered: 13 Skipped: 1

#	Responses	Date
1	I enjoy pack house tours, never enough of them	6/28/2016 8:28 PM
2	more control traffic .minimum tillage	6/28/2016 10:04 AM
3	I think it was pretty well covered	6/27/2016 10:18 AM
4	I know we tried to see some ctf at Wilcox but I'm very interested in seeing more	6/24/2016 11:58 AM
5	More information on yield monitoring	6/23/2016 9:39 PM
6	As it was HIA funded it covered what I expected it to.	6/23/2016 2:44 PM
7	no	6/23/2016 1:19 PM
8	This is a how long is a piece of string question - no comment.	6/23/2016 12:07 PM
9	Gps levelling	6/22/2016 7:34 AM
10	There is always more, but I think what was covered hit the target.	6/22/2016 1:27 AM
11	After attending the LandWISE conference and saw what the guys in the forestry industry was up to and how advanced they are, I would have loved to spend some time with them to glean some more information to see if there was anything from them we could bring across to ag.	6/21/2016 11:49 PM
12	A bit more about tools of storing data eg Farm works, Connected farm, PAM	6/21/2016 7:35 PM
13	no	6/21/2016 5:21 PM

Q10 How valuable are the networks you developed through the tour?

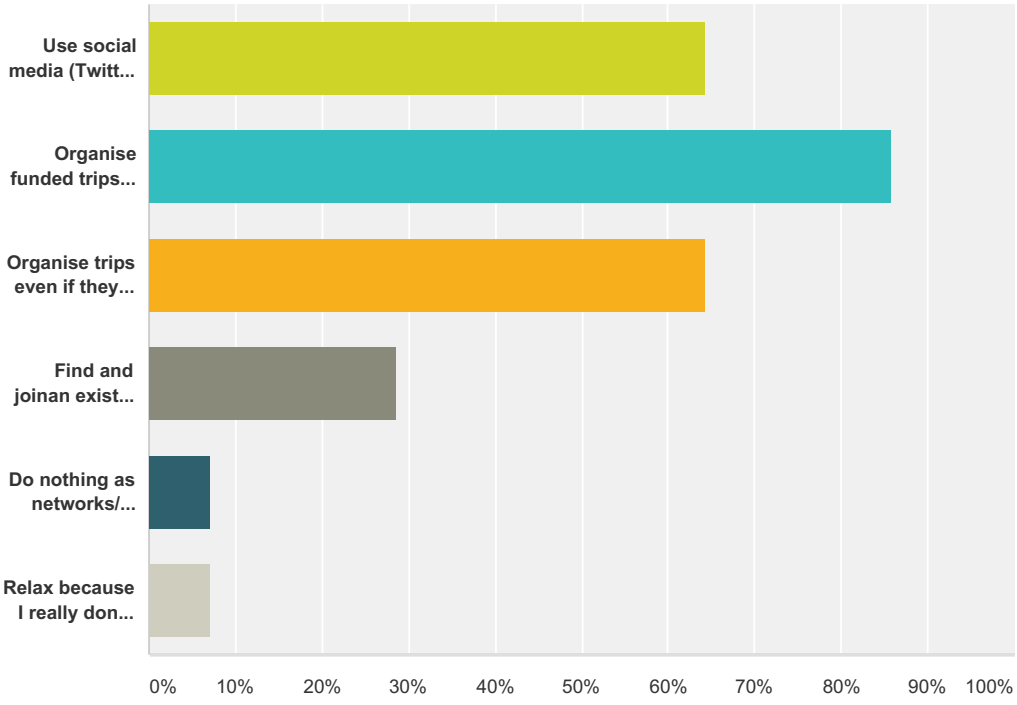
Answered: 14 Skipped: 0



Answer Choices	Responses	
Extremely valuable	**92.86%**	13
Somewhat valuable	**7.14%**	1
Not valuable at all	**0.00%**	0
Not sure yet	**0.00%**	0
Total		**14**

Q11 We are interested in your opinion of how DAF/HIA could support grower networks(e.g. like this study group). Should we.....

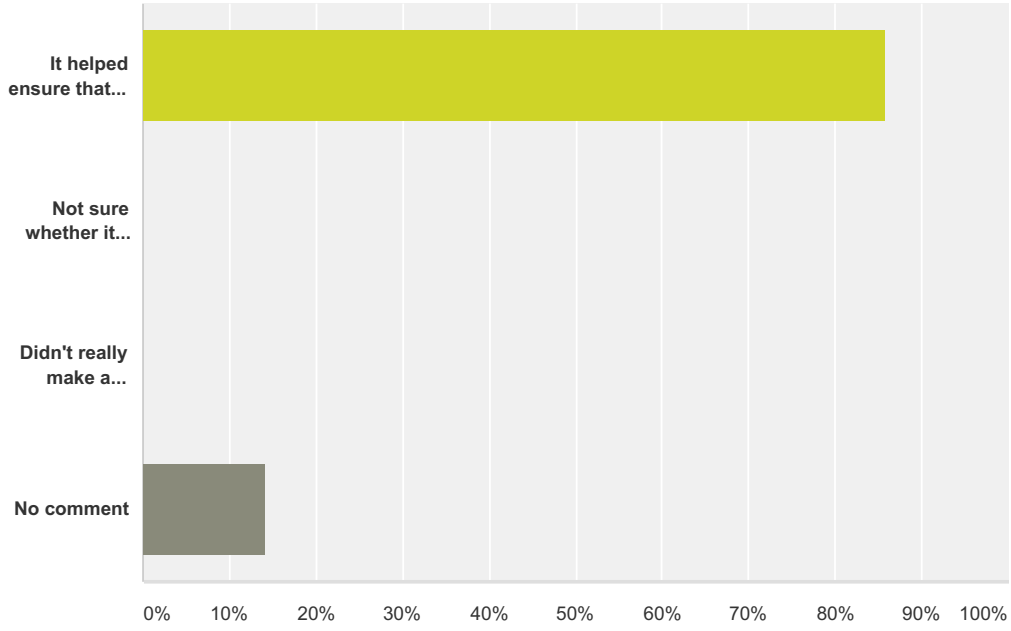
Answered: 14 Skipped: 0



Answer Choices	Responses	
Use social media (Twitter, Facebook etc) to keep communication going within the group?	64.29%	9
Organise funded trips to places, regional areas, packing sheds, other farms etc ?	85.71%	12
Organise trips even if they are unfunded (e.g. you pay)?	64.29%	9
Find and joinan existing grower group?	28.57%	4
Do nothing as networks/ relationships tend totake care of themselves?	7.14%	1
Relax because I really don't have an answer.	7.14%	1
Total Respondents: 14		

Q12 What's your thoughts on the EOI process& selection criteria used to select participants?

Answered: 14 Skipped: 0



Answer Choices	Responses	
It helped ensure that participantshad some level of knowledge /experience with PA	**85.71%**	12
Not sure whether it helped or not with selecting growers	**0.00%**	0
Didn't really make a difference to the group	**0.00%**	0
No comment	**14.29%**	2
Total		**14**

Q13 Do you have any specific feedback to HIA on the role of study tours in the vegetable industry?

Answered: 14 Skipped: 0

#	Responses	Date
1	Study tours play a crucial role in personal development and return a direct financial benefit to the industry through improved knowledge and growing practices	6/28/2016 8:28 PM
2	-	6/28/2016 10:04 AM
3	See below	6/27/2016 10:18 AM
4	Study tours are a great tool when used correctly. Ian and his team ran this tour exceptionally well and all growers came back motivated to improve there systems	6/24/2016 11:58 AM
5	Very valuable learning experience	6/23/2016 9:39 PM
6	I believe that this tour has been well worth while and I would highly recommend that something similar to this be ran every year or at least every 2nd yr	6/23/2016 2:44 PM
7	no	6/23/2016 1:19 PM
8	Extremely valuable!!!	6/23/2016 12:07 PM
9	Very worthwhile for keeping up to date with the latest technologies in farming	6/22/2016 7:34 AM
10	They are valuable if the right people are networking, the right people/places are visited, and the cost is kept appropriate for the purpose - i.e. they are not a junket to be spent in expensive motels catering for people who are unlikely to implement change.	6/22/2016 1:27 AM
11	This tour was excellent, well run with an amazing group.	6/21/2016 11:49 PM
12	every hia tour i have ever been on is an excellent from of education and collaboration.	6/21/2016 9:57 PM
13	Ian did a fantastic job of the whole trip very well run	6/21/2016 7:35 PM
14	maybe an annual meeting to discuss developements	6/21/2016 5:21 PM

Q14 Is there anything else you would like to share about the study tour?

Answered: 12 Skipped: 2

#	Responses	Date
1	hello the only thing i have to share is that i had got more out of it then expected and the rest of the group was very accommodation .	6/28/2016 10:04 AM
2	It was a well focused, professionally led tour which allowed the growers to spend time with other innovative producers (and relevant industry members) to work through the issues and develop approaches to the technology that will help them in their businesses for many years to come. These types of tours are an immensely valuable tool to introduce fresh thinking into the Australian vegetable industry	6/27/2016 10:18 AM
3	-very well organised - great selection of participants (hosts and visitors) - most valuable study tour I have been involved in -excellent for motivation I would like to thank DAFF/HIA for the opportunity to go on this tour. I hope to be able to share my new knowledge on PA with others in the industry. Thanks also to Ian and Julie!!	6/23/2016 9:39 PM
4	Ian thank you very much for the work you put in. I sent Ashley and Byron some feed back so catch up with them for my summary of the trip	6/23/2016 2:44 PM
5	I had fun! great networking. well organized. informative conference. pizzas were crap on the movie night :)	6/23/2016 1:19 PM
6	Good people, good experiences. Great balance between focused events and relaxation/networking. 2 thumbs up.	6/23/2016 12:07 PM
7	I'd like to thank Ian Layden for doing a great job in coordinating the study tour a long with Julie O'halloran	6/22/2016 7:34 AM
8	Well done Ian and Julie	6/22/2016 1:27 AM
9	The group selected for this study tour was excellent. I was quite humbled to be with the caliber of people selected for this trip. They made the tour very worthwhile. The knowledge I gained on this trip surprised me. I have traveled a lot in the last two years looking at pa and talking with people that use it and develop it and I was amazed at how much I did actually learn. This was a very well researched trip with great visits and meetings which included the LandWISE conference. A very big thank you to Ian and Julie for their hard work in organizing such a great worthwhile tour of the north island. Top work guys!!!!!!!!!!!!! I would also like to thank Dan Bloomer for his knowledge and insight into all the things that make NZ agriculture work. Sometimes visiting a place, it's hard to gain an understanding of how all the pieces fit together. I felt Dan was such a great help to bridge that gap.	6/21/2016 11:49 PM
10	well done Ian and Julie. I think this tour will bring change on a lot of levels. very worthwhile	6/21/2016 9:57 PM
11	A trip to QLD would be great to see what everyone else is doing	6/21/2016 7:35 PM
12	no	6/21/2016 5:21 PM