

Final Report

Regional Capacity Building to Grow Vegetable Businesses – VegNET NSW

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Regional Capacity Building to Grow Vegetable Businesses VG15042

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Summary

The project Regional Capacity Building to Grow Vegetable Businesses (VegNET NSW) Project VG15042 was delivered by Greater Sydney Local Land Services (GS LLS) between July 2016 – 2019.

The project focused on the extension of existing research and development (R&D) levy funded projects across vegetable growing regions in Greater Sydney, the North Coast, Central Tablelands and the Riverina.

An experienced Local Land Services (LLS) team delivered the project, led by staff from Greater Sydney LLS and assisted by regional extension staff from North Coast, Central Tablelands and Riverina LLS's. They include:

Bill Dixon (retired), Maddy Humphreys, Leigh James (retired), Alison Towerton, Renee Pearson, Paul Bennett, Sylvia Jelinek, Jonathan Eccles, Matthew Plunkett, Peter Conasch, Nikki McGrath, Sacha Perram, David Hogan and Linda Dedovic (Greater Sydney LLS).

In addition, LLS staff in the following regions as follows:

- Julie Dart (North Coast LLS)
- Karen O'Malley (Central Tablelands LLS)
- Justin Vardenega (Riverina LLS)

Translators and local community leaders and influencers were also engaged to work with the various Cultural and Linguistically Diverse Background (CALD) grower groups in NSW, particularly in Greater Sydney.

Priorities for extension of levy funded R&D topics were established early on in the project by consulting with key industry influencers and high profile growers across the State.

Over the life of the project, almost half of all vegetable growers in NSW have been engaged (four hundred and sixty six growers).

It has engaged growers and industry by:

- delivering one hundred and thirteen extension events
- producing three newsletters
- posting eighty two social media posts with an audience reach of eighteen thousand six hundred
- establishing a Protected Cropping Community of Practice for NSW
- producing a suite of extension resources including posters, manuals and videos
- extending R&D trials and demonstrations at the Greater Sydney Demonstration Farm
- translating fact sheets in multiple languages
- producing seventeen practice change case studies and videos (please see link below) <u>https://www.youtube.com/channel/UC-6ZzaPeq5UeWvMOifnvfuQ/videos</u>

Adaptive management and flexibility in delivery ensured extension events were tailored to meet the preferred engagement styles of the different grower groups across the State. A wide range of extension approaches were used ranging from field days, farm walks, individual farm visits with 'key informants' to the direct transfer of R&D at venues such as the Sydney Produce Markets.

In the last year of the project a knowledge and practice change survey was undertaken with growers and industry to measure the outcomes of the project. The survey focused on how R&D knowledge gained through the project has translated to on-ground practice change.

One hundred and thirty three growers and industry representatives were surveyed and it was found that:

- 99 per cent of growers had learnt something new
- 86 per cent of growers had made, or were intending to make changes on their farm as a result of their learnings
- 75 per cent of growers said application of their learnings had reduced their business input costs and resulted in noticeable improvements in productivity.

The project has documented many of the practice change examples as case studies in a series of fact sheets and short videos.

The project also engaged with over 80 per cent of the allied industry including consultants, agronomists and resellers who have assisted in transferring R&D to growers throughout the project.

GS LLS also assisted a number of Hort Innovation R&D providers and projects to engage effectively with growers and allied industry across NSW.

As a result of the project the NSW VegNET brand is now well established in the market place and has been highly effective in engaging growers and industry to enable practice change, and improve profitability and the sustainability of vegetable businesses.

Keywords

Extension, VegNET, Allied Industry, Local Land Services, Greater Sydney Local Land Services, Greater Sydney Demonstration Farm, Cultural and Linguistically Diverse Background Growers, Practice Change, Research and Development, Innovation, Community of Practice, Engagement, Industry Development Officers, Key Influencers.

Introduction

The NSW vegetable industry has undergone significant change over the last ten years, particularly in the peri-urban areas of Greater Sydney. Rising land prices, increasing input costs, lack of succession planning, depressed market prices for some vegetable commodities and environmental pressures have all been drivers encouraging growers to look for efficiencies across the whole supply chain. Indeed, some growers have exited the industry or have moved to growing other crops.

There has also been a reduction in smaller to medium vegetable enterprises and the move to larger corporate farms, particularly in the Riverina and the Central Tablelands regions. Mixed farms have emerged to diversify income streams and spread risk given the volatility in vegetable prices. For instance, vegetable crops such as pumpkins may only be growing opportunistically in the Riverina if prices are reasonable in any given year.

Despite some growers leaving the industry, there are many new growers that have entered the industry in the last five years. These growers are keen to network and learn from 'key influencers' in the industry. They are often the early adopters of research and development (R&D) levy funded innovations. There is also a new cohort of younger generation growers who see opportunity long term in the vegetable industry.

Up until 2014, the NSW Department of Primary Industries (NSW DPI) provided extension to vegetable growers through the National Vegetable Extension Centre in the Riverina and the National Centre for Greenhouse Vegetables in the Greater Sydney region. With the NSW DPI withdrawing funding support for extension in 2014, these centers closed. Subsequently, a loss of key extension staff resulted in a loss of momentum and trust among vegetable growers and industry organisations.

It is fair to say that extension of vegetable levy funded R&D projects was in some instances disjointed, ad hoc and not reaching a wide cross section of growers and industry.

Local Land Services (LLS) was formed in 2014 by the NSW Government to provide independent advice on agricultural extension, natural resource management and biosecurity best practice. From the period 2014-16, widespread consultation across the four vegetable growing regions was undertaken to determine the priorities for extension. This consultation and planning benefited the current VegNET project enormously. Priority topics for extension were developed and networks were rebuilt which allowed the project to gain momentum quickly.

This included extensive consultation with private consultants and resellers which focused on how LLS could work with the private sector to build confidence in public/private extension partnerships. A great example of this is the collaboration with industry at the Greater Sydney Demonstration Farm. Growers wanted an independent site where they could view applied R&D innovations and trials.

LLS was identified as the key broker of information and the coordinating body who could bring growers together for the mutual benefit of all in the industry. Connections were reformed with CALD grower groups in the Greater Sydney region, with strong interest from growers to engage at the Sydney Produce Markets.

NSW also has an emerging and growing protected cropping industry, particularly on the mid north coast of NSW. Many private companies are putting increasing resources and effort to service this growing region. There is a considerable shift away from traditional farming practices to more sustainable and innovative farming practices within the state.

This project has enabled strong partnerships to be forged and the rebuilding of Hort Innovations brand. Moreover, the NSW VegNET brand is well established in the market place with both growers and industry. Continuity of funding and the employment of experienced Industry Development Officers is critical to the ongoing success of the project to build on the outcomes achieved thus far.

Methodology

The NSW vegetable industry is widely fragmented industry with significant regional variation in scale, connectivity and demography. The following methodology is split into categories as described below.

Project team

An experienced LLS team was involved in the delivery of this large state wide project.

- Matthew Plunkett has worked full time as the NSW Vegetable Industry Development Officer, and led the project since 2018
- Sylvia Jelinek has assisted with the delivery of the project in 2018-19
- Paul Bennett and Renee Pearson have assisted with project and financial management and reporting
- Nikki McGrath has led the media and communications work with the assistance of Sacha Perram
- Peter Conasch has coordinated the Greater Sydney Demonstration Farm engagement
- Bill Dixon was project leader before retiring in 2018
- Leigh James was involved in the planning of the project before retiring in 2018
- Several regional LLS extension staff were also involved in delivery including Julie Dart (North Coast LLS), Karen O'Malley (Central Tablelands LLS) and Justin Vardenega (Riverina LLS).

Consultation and planning

From the period 2014-16, extensive consultation was undertaken with vegetable levy payers and industry regarding extension priorities within the Central Tablelands, Greater Sydney, North Coast and Riverina regions. This included detailed consultation with regional LLS staff on the status of the industry, and who were the 'key influencers' that could assist with industry engagement in each region.

A stakeholder engagement plan was developed that identified key messages, tools for engagement and frequency of communication within these groups (please see Appendix 1). This was monitored throughout the project to determine the effectiveness of each engagement strategy.

A detailed grower engagement plan was developed that required specific targeting of appropriate methods to individual regions, specific CALD groups and specialist industries. This required a highly adaptive approach recognising where traditional engagement methods fail and new approaches are needed to be trialed to obtain a satisfactory result (please see Appendix 2).

A formal launch of the project was held at the Greater Sydney Demonstration Farm in Richmond in August 2016. This assisted with industry engagement and started valuable conversations about planned R&D trials at the Greater Sydney Demonstration Farm.

Monitoring, evaluation, reporting and improvement plans (MERI) were developed for the full three years of the project including a National Vegetable Extension Network Action Plan (please see Appendix 3). Annual workplans were shared with the national coordination team, Project VG15049 to enable collaboration with other VegNET project leaders to reach a wider grower audience.

The Project VG14048 entitled "Review of Current Irrigation Technologies" was highly effective in connecting with vegetable growers before this project commenced. The extension of this project was led by GS LLS in partnership with NSW DPI and Irrigation Australia Limited. Some of the engagement feedback from the project was incorporated into the stakeholder and annual implementation work plans, particularly in the first year of the project.

Networknig

Regular contact with other VegNET Industry Development Officers located across Australia occurred through teleconferences and annual gatherings at Hort Connections. This also allowed for sharing of technical information, project ideas and fostered cross regional collaboration such as the Riverina Vegetable Innovation Expo held in July 2017 with RMCG (who manage the Victorian and Tasmanian components of the VegNET program) and the Tweed Fruit & Vegetable Growers bus tour to the Lockyer Valley in March 2018.

Review of R&D targeting priorifioe extension

The Vegetable R&D Review document compiled by Applied Horticultural Research (AHR) was highly effective in identifying what Hort Innovation R&D projects needed extension in the four different NSW vegetable growing regions. This information was cross checked with regional and market segmentation analysis to confirm the project was on the right track. This document was extended to over 80 per cent of the allied industry and private sector, raising awareness of Hort Innovation projects funded within the vegetable industry.

Crop and grower timelines were established for each vegetable growing region to enable the efficient and effective planning of thirty targeted contracted events for each year of the project. R&D projects were matched up with regionally specific timeframes and incorporated into the annual work plans accordingly.

Implementation, monitoring and evaluation

Various R&D service providers together with GS LLS staff were engaged to run and deliver a variety of field days, farm walks, bus tours, and targeted 'one on one' extension throughout each region.

Practical applied R&D demonstrations at the Greater Sydney Demonstration Farm were developed to encourage practice change and learnings extended in the workshops and field days. Webinar links on a variety of topics such as soil health and bio-fumigation were actively extended through the network.

Applied Horticultural Research (AHR) were contracted to deliver twenty four events across the four regions in addition to the events contracted to be delivered by GS LLS and partners. AHR also assisted with resource development where gaps were identified in each market segment.

A range of extension fact sheets on biosecurity, soil health and integrated weed management were translated in simplified Chinese, Khmer and Vietnamese and extended to their respective communities.

Every event was evaluated to determine knowledge learnt, how likely growers were to adopt a certain innovation and what areas growers would like further information. Feedback was also sought on how growers like to receive information. Allied industry was surveyed to determine how many growers they had extended R&D information to. This feedback has been stored in a multi-faceted database, allowing for effective interrogation of data, writing of milestone reports and providing input on how the delivery of extension could be improved.

Bi-lingual officers were employed in the Arabic, Cambodian, Vietnamese and Chinese growing communities. Gaps in knowledge or language barriers were overcome by translating fact sheets or providing direct 'one on one' extension to growers. Having experienced and trusted industry development officers was highly effective in engaging these groups.

A targeted Hort Innovation membership drive was undertaken in 2016-17 with over forty growers joining as members with the initial recruitment drive.

Communicationsocial mediand development of extensiooureses

A refined whole of industry database of NSW vegetable growers was used to inform each grower that the project had commenced. This included sending a link to a webpage on the GS LLS website encouraging growers to sign up to the project. Growers were also signed up to the project at many of the one hundred and thirteen events held as part of this project.

A separate database was developed for those interested in receiving newsletters, information on upcoming events and more information on specific R&D projects. Text messaging growers was a highly effective way of promoting events and extending R&D information. At the Sydney Produce Markets, over one hundred and fifty Chinese growers have received extension material through a targeted campaign during the project.

E-newsletters, text messaging, emails and social media posts (Facebook & Twitter) were sent to VegNET members to update them on a variety of events, R&D projects and resources available for downloading. Events were also actively promoted through resellers and the allied industry through targeted social media blasts.

A whole of state promotional flyer (please see Appendix 4) and a dedicated website page for the NSW VegNET project were developed together with event templates and flyers that could be used for promotion of activities and events.

Weekly internal team meetings were held to keep the project on track and enable the project to adapt to grower and industry feedback as required.

Informal discussions occurred regularly with 'key influencers' several times a year to ensure the project was on the right track. The development of extension resources such as fact sheets, videos, posters and manuals were

developed based on industry feedback and consultation with growers.

Surveyinggrowers foknowledge and practice change

A representative sample of growers and industry were surveyed 'one on one' and via telephone to determine what was learnt as a result of attending one of the one hundred and thirteen extension events. The focus of the survey was on what knowledge and practice change had resulted from attending these events together with asking survey participants what other R&D topic areas they were interested in and what format they would like to receive information in the future. The extensive document outlining the detailed results and analysis of the survey findings can be seen in Appendix 5.

A number of written case studies, videos and stories were developed based on this survey data to use in upcoming events and for media and promotional activities.

Outputs

A range of outputs have been developed and implemented as part of this project and split into the following categories.

- Extension events
- Resource Development
- Media and communications
- Monitoring and evaluation
- Industry engagement.

There are also a number of practice change case study stories that are still under development together with the Greenhouse Cucumber Production Manual. These outputs will be submitted as part of the reporting for the current VegNET project extension due for completion in March 2020.

The Infographic in Figure 1 below highlights the key outputs delivered within the NSW VegNET project.



Figure 1- NSW VegNET Project Outputs (2016-2019)

A detailed summary of the outputs of this project can be seen in Appendix 6. This includes a summary of the events linked to levy funded R&D projects and a breakdown of the resources developed together with the media and communications.

A short summary of each section is described below:

1. Extension events

The project was contracted to deliver thirty events per year or ninety in total from the period 2016-2019. The project has delivered a range of events from structured workshops, field days, farm walks, and 'one on one' targeted extension of R&D. The project has delivered one hundred and thirteen events across a variety of topic areas with over nineteen hundred and fifteen attendees at these events. Of this number, four hundred and sixty six NSW vegetable growers have attended one or more events, and forty eight levy funded R&D projects have been extended. Annual work plan and grower engagement plans have guided these events to ensure they were targeted and enhanced the adoption of R&D innovations.

2. Resource development

Throughout the project, gaps were identified in a number of areas, particularly the need for translating existing fact sheets into appropriate languages for extension. In total, forty three fact sheets, videos, posters and manuals were developed and updated on a variety of R&D topics. Of the total of forty three products developed, nineteen VegNET practice change case study videos and written fact sheets have been developed for extension and reporting. A full review and update of the Commercial Greenhouse Cucumber manual was also undertaken given the relevance of this publication to growers both within NSW and nationally.

3. Media and communications

The media and communications program has been a targeted mix of newsletters, print media and promotion of events and resources through social media platforms. In the print media, twenty five newsletters and online articles were developed. In the social media space, eighty two Facebook posts, live Facebook feeds and Tweets have reached an audience of eighteen thousand six hundred people.

4. Monitoring and evaluation

Monitoring and evaluation (M&E) plans were developed at the commencement of the project and annual implementation plans reported against Key Performance Indicators. A key component of the M&E has been the development and undertaking of one hundred and thirty three knowledge and practice change surveys.

In addition to contracted deliverables, fifteen random NSW vegetable grower surveys were also entered into the Applied Horticultural Research whole of project practice change survey. This survey was designed to assist Hort Innovation to communicate the benefits of continuing the project internally to the Strategic Investment Advisory Panels.

5. Industry engagement

At the commencement of the project, an informal reference committee was formed to guide the project. This includes representatives from the four vegetable growing regions, key industry personnel and consultants.

The following is a list of 'key influencers' who have guided and advised the project team and they include:

- Troy Millard & Trent Sosso (Riverina growers)
- Jeff McSpeddin, Michael Willott, Ed Fagan & Brendan Booth (Central Tablelands growers)
- Sid Sidhu, Paul & Karmjit Singh, Paul Shoker, John Cunningham & Doug Paddon (North Coast growers)
- Sunly Sao & Kim Ngov (Cambodian growers Sydney basin)
- Kong & Kristina Hwang (Vietnamese growers Sydney basin)
- Jason & David Chung, David Ha (Chinese growers Sydney basin)
- Mario Muscat, Carlo Perri, Peter Ward, Nicky Mann (Greater Sydney growers)
- Joe Boustani & Carlos Azzi (Arabic growers Sydney basin).

The following industry representatives have assisted greatly with the project and include:

- Daryl Cislowski, Nicolas Srour and David Walker (Ace Ohlsson)
- Alan Wray (Norco Rural)
- Josh Stephenson (Windsor Rural)
- Dave Farmer (Croplands)
- Marc Hindregar (AHR)

- Henry Prichard (Lindsay Rural)
- Len Tesoriero (NSW DPI)
- Phil Ritchie (Rijk Zwaan)
- Scott Matthews (Syngenta)
- Stephen Ng (Golden Harvest)
- Ho Dang (Vietnamese grower consultant)
- Lyndon Orpwood and Evan Brown (Simplot).

Given the large number of protected cropping growers in NSW, a Community of Practice group was formed based on growers who signed up to the VegNET mailing list. In the Sydney Basin and on the North Coast, one hundred and five growers and industry personnel received information on events, protected cropping videos and upcoming events. As part of the 2017 Protected Cropping Australia Conference, Julie Dart and Cheyne Clarke (North Coast), Kong Hwang (Greater Sydney) and Danny Monteleone (Riverina) were funded by the project to attend this event.



Photo caption 1 - Karmjit Singh discussing his protected cropping irrigation system (July 2018)

Outcomes

The NSW VegNET team undertook extensive planning and industry consultation at the commencement of the project to ensure the project exceeded its contractual milestones and delivered a suite of integrated outcomes primarily focused on improving the reach, and ultimately the adoption of levy funded R&D projects.

The key to the success of the project has been the adaptive management model utilised and the continual monitoring of the projects progress against contracted deliverables. This has been in line with the development and monitoring of the projects Monitoring and Evaluation Plan together with the Grower Engagement Plan.

Engagement methods were adapted to suit the variety of grower segments and accommodate different regional needs. Regular interaction with 'key influencers' ensured the project was meeting its outcomes.

The following outcomes and various examples of knowledge and practice change are outlined below.

1. Increased knowledge of the vegetable R&D program

The NSW VegNET project has engaged more than nineteen hundred and fifty vegetable growers and industry personnel, including over half of all vegetable growers in NSW since the project began in 2016. The majority of the four hundred and sixty six growers engaged have attended more than one event throughout the project. These growers are producing a variety of vegetables including brassicas, lettuce, cucurbits and a range of other levy funded crops such as eggplant, capsicums, sweet corn and parsley.

The project was contracted to engage with 25 per cent of the NSW vegetable growing industry or two hundred and sixty six growers of an estimated total of one thousand and fifty two. Over the life of the project, the number of levy paying growers engaged has been exceeded by over two hundred growers.

The project now has two hundred and sixty six growers and industry members on the NSW VegNET mailing list with a larger database of over nine hundred NSW vegetable growers updated regularly. This database is continually kept up to date as growers exit the industry and new growers emerge across the four vegetable growing regions in NSW.

Of the growers who were surveyed as part of the monitoring and evaluation component of the project, 99 per cent said they had learnt something new about the vegetable R&D program. The variety of engagement methods has been highly effective in increasing knowledge and awareness of the R&D program.

Throughout the project, growers were encouraged to join Hort Innovation and talk direct with Hort Innovation Relationship Managers. A concerted effort was made to increase Hort Innovation membership in the first year of the project.

Case Study partnerships with industry bodies breeds success

A major component of the project has been increasing awareness of levy funded vegetable R&D through the building of partnerships with Peak Industry Bodies such as AUSVEG, Protected Cropping Australia, Sydney Produce Markets and NSW specific groups such as the Australian Chinese Growers Association of NSW, the Australian Cambodian Growers Association of NSW, NSW Farmers and the Tweed Fruit & Vegetable Growers Association. Given the fragmented nature of the industry in NSW, the VegNET network has made a concerted effort to assist growers groups who do not have a voice and/or an association such as the Vietnamese growers in the Sydney Basin and growers on the mid north coast growing in protected environments.

The national VegNET mid-term review commissioned by Hort Innovation highlighted the efficient and effective nature of the LLS model in engaging with growers and industry. The project has taken the lead in demonstrating 'practical R&D in the paddock' and utilised the Greater Sydney Demonstration Farm and regional farm sites to drive interest in the project. This has been critical to the success of the project, and it is hoped that other projects in the National Vegetable Extension Network can implement a similar model in the future.

The project has seen a significant improvement in awareness of levy funded R&D and the role Hort Innovation play in making the vegetable industry more efficient, competitive and profitable.

2. <u>R&D knowledge applied in a way that changesiduetfirom current practice</u>

The project set an ambitious target of five per cent of the twenty five per cent of NSW vegetable growers engaged adopting some form of practice change as a result of attending one of the one hundred and thirteen events, and learning about levy funded R&D projects. The project has made substantial progress toward these targets, with

certain practice change targets grouped into short, medium and long term timeframes. For example, improving growers understanding and capability to export will be a long term target to improve the number of NSW vegetable businesses undertaking export programs. The opening of the Western Sydney Airport at Badgerys Creek will present a number of opportunities in this area within a five to seven year timeframe. The NSW VegNET team is engaging with the Western Sydney Airport Authority and the NSW DPI to make this outcome a reality for NSW vegetable businesses in the future.

The surveying of one hundred and thirty three growers and industry representatives identified over ninety six growers who have adopted, or planning to adopt practice change in one of the following areas:

- Soil health
- Postharvest
- Pest & disease management including Integrated Pest Management
- Spray application efficiency
- Precision technologies
- Water recycling and ultrafiltration
- Irrigation management
- Work health & Safety (WHS).

Of the one hundred and thirty three participants surveyed, seventy one growers have adopted practice change, with twenty five planning to in the future. Only nineteen growers had not adopted any form of practice change. Other survey respondents were industry representatives for which the practice change question was not applicable.

A significant focus of the project has been on pest and disease management together with improving growers understanding of spray application efficiency. The following case study highlights how a targeted extension event with a close knit group of growers, a key influencer and a variety of engagement methods can achieve short term practice change with over 80 per cent of the group.

Case Study Eweed Vegetable prowers adopt improved spray application practices

The Cudgen vegetable growing area on the Far North Coast of NSW produces a variety of crops for market including brassicas, sweet corn, peas, taro and sweet potato. After discussions with the Tweed Fruit & Vegetable Growers Association in March 2017, it was clear that spray application efficiency was an area of interest to the group. Spray drift combined with community concern about pollution of local waterways was a significant driver for growers to review their spraying practices.

After a detailed discussion with the President of the group Doug Paddon, the R&D summary document was sent to all the growers in the group for review. Information on the levy funded Projects VG13076 "Soil Wealth" and VG 16078, "Soil Wealth Phase 2" together with the Project VG "Integrated crop protection: Extension of integrated crop protection information" was identified as suitable R&D for targeted extension.

Subsequently, a leading crop protection specialist Dave Farmer from Croplands was engaged to visit several growers to benchmark current spray practices before and after a targeted spray workshop. These individual visits were undertaken early in 2018, with feedback provided to the VegNET team on planning an appropriate and targeted spray application workshop.

In August 2018, a spray application workshop was held which highlighted current inefficiencies with nozzle selection, appropriate water rates and pressures required to spray efficiently. Growers were actively sharing their spray programs, and what they could do individually to improve their spray programs at the workshop.

Following the workshop, Matthew Plunkett organized follow up 'one on one' farm visits with Croplands so growers could ask more detailed questions relevant to their own specific spray programs and the calibration of their spray gear. Growers were encouraged to make additional changes to their spray equipment. Of the growers who attended the workshop, six out of the ten growers ordered new nozzle packs the next day after the workshop.

Information fact sheets on correct spray application were disseminated at the workshop together with spray paper so growers could do spray tests on their own spray application equipment. Webinar recordings on spray application were also disseminated to each grower and an update given by the local agronomist on new 'softer' products available on the market to control a variety of pests.

Overall, eight of the ten growers who attended the workshop have undertaken practice change such as changing nozzles and lowering water rates. Doug Paddon, a key influencer has now reduced his spraying from 3 times a

week to once a week, reducing his input costs considerably.

The local agronomist Henry Prichard from Lindsay Rural was also fully engaged through the farm visits and workshop to enable further education of growers and support them in making further improvements over time.

Stu Kennedy, a leading 'key influencer' and grower in the region highlighted the benefit of the workshop by stating "Personally I think the workshop was the best one I have ever been to."

A video showcasing the knowledge learnt and practice change undertaken by Doug Paddon and Stu Kennedy as a result of this targeted extension program can be found in Appendix 6, Outputs section Table B.

3. Effective linkages established to increase the reach of R&D

One of the success stories of the project has been the engagement of the private sector in delivering levy funded R&D to a much larger audience than originally intended. Over 80 per cent of the allied industry, agronomists, seed companies, resellers and consultants together with R&D service providers have been engaged either at workshops, 'one on one' farm visits or through trials at the Greater Sydney Demonstration Farm.

A number of farm visits with private agronomists was undertaken on the North Coast, Riverina and the Central Tablelands to meet a larger cross section of growers. This engagement strategy was particularly effective on the North Coast of NSW where partnerships were developed with packing houses such as Oz Group and Pacific Blue. Extending levy funded R&D and resources at these locations is highly time effective, with over fifty growers dropping off cucumbers at packing houses in any given day at packing houses, particularly in the warmer months.

In the Riverina region of NSW, most of the larger corporate vegetable farms employ private agronomists. Given the small number of farms, the vegetable R&D summary document has been extended to these agronomists. A great example of the success of this engagement approach is an agronomist encouraging two Riverina vegetable growers to trial low cost protective covers on brassica crops. Other technical information was also extended on the Project VG13075 "An investigation of low cost protective cropping."

The use of social media has improved the reach of the project to a large audience of eighteen thousand six hundred people. A highlight of the media engagement has been the close relationship established with the Good Fruit & Vegetables magazine staff. A number of events have been recorded live on Facebook and posted on a variety of social media platforms.

On farm variety trials were undertaken at the Greater Sydney Demonstration Farm with a number of vegetable seed companies and a major private industry reseller Ace Ohlsson. The growing of new varieties of vegetables together with technology demonstrations are effective incentives to attract a wider cross section of growers to events. In June 2018, over one hundred growers attended a two day vegetable expo event, with many attendees not previously engaged in the project. At the same time, attendees were introduced to a variety of R&D project updates and innovations including:

- Project VG15059 "Evaluating and testing autonomous systems" (Robotics)
- Project VG16086 "Area wide management of vegetable diseases: viruses and bacteria"
- Project VG16062 "Field and landscape management to support beneficial arthropods for IPM on vegetable farms."

The NSW VegNET team have also worked closely with AUSVEG assisting with a variety of events targeting different crop and grower segments including the Project VG16060 "Vegetable agrichemical pest management needs and priorities" and Project VG16063 "The EnviroVeg Program 2017-2022." The Greater Sydney Demonstration Farm is currently participating in the EnviroVeg project to demonstrate leadership in environmental stewardship and encourage other growers to adopt this program.

Case Study Bort Innovation R&D Service Providers reap the benefits of/eginetworks

In addition to the above mentioned R&D projects, a number of Hort Innovation's R&D Service providers have approached the NSW VegNET team seeking assistance to engage growers in their R&D project.

In the summer of 2018/19, trials have been undertaken by Applied Horticultural Research at the Greater Sydney Demonstration Farm on determining the cause of pumpkin brown etch as part of the Project VG15064 "Improved management of pumpkin brown etch." As a result of this project, the viewing of trials has been extended to over fifty growers in NSW.

Trials were also undertaken on the tolerance of parsley varieties to soil borne disease and mosaic virus as part of the Project VG13101 "Effective management of parsley summer root rot." A fact sheet translated in simplified

Chinese was then extended to over one hundred Chinese growers at the Sydney Produce Markets.

Toni Chapman, the NSW Department of Primary Industries Project Leader for the Project VG16086 "Area wide management of vegetable diseases: viruses and bacteria" summarised the benefit of engaging with the NSW VegNET network as follows:

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able to get the introductions we need, you guys have come out on farm with

And further to this, Toni sums up the collaboration by saying:

Overall, forty eight levy funded vegetable R&D projects and extension resources have been extended to levy payers and industry throughout the duration of the project.

4. Regional vegetable grower groups assisted in realising their own goals and learning needs

Evaluation surveys were undertaken at each of the one hundred and thirteen events delivered throughout the project. Feedback from these evaluations on what further R&D growers were interested in and how they would like to receive information has been used in the planning of future events.

In the Central Tablelands and Riverina regions, there is no formal vegetable industry association or group representing this region of growers. The VegNET project, through the employment of key contacts such as Karen O'Malley (Central Tablelands) and Justin Vardenega (Riverina) has greatly assisted in improving awareness of the Hort Innovation vegetable R&D program. It has also been beneficial for these groups to become aware of programs and assistance that Hort Innovation, NSW Farmers and AUSVEG are delivering.

In the Central Tablelands region, a significant partnership has been developed with Simplot. Simplot is a private company with a network of twenty five growers who grow sweet corn and cabbage for processing in Bathurst. Successful events have been co-delivered with Simplot which has extended the reach to growers beyond Bathurst to the Central West region. Given the ongoing drought in NSW, improving irrigation management to improve sweet corn yields has been a key focus for the project. Adoption of soil moisture monitoring tools by several growers as part of the Project VG14048 "Review of current irrigation technologies" and the use of precision technologies as part of the Project VG16009 "Adoption of precision systems technology in vegetable production" has been very well received, and will continue to be a focus into the future. A practice change case study entitled "Adoption of moisture monitoring in sweet corn" can be viewed in Appendix 7.

The VegNET project has also educated the resellers and agronomists in these regions encouraging them to extend vegetable R&D, given that industry representatives visit a larger number of vegetable growers on a regular basis than VegNET team members. This model is a far more effective engagement strategy given the large geographical distances between farms, with LLS staff seeking regular feedback from the private industry on what growers are interested in.

Case Study Developing a regional interest group for green/reguestablegrowers on the North Coast

On the Mid North Coast of NSW, there is estimated to be over one hundred and thirty greenhouse vegetable businesses that grow primarily cucumbers in protected cropping. This expanding sector does not have a voice, with a large number of new growers entering the industry every year.

Based on this need, and feedback from 'key influencers' in the region, informal talks are underway to form a North Coast Hydroponic Growers Association to represent the needs and interests of this growing vegetable sector.

A number of issues have been identified as areas of focus including, but not limited to:

- Better access to funding opportunities such as the Clean Coastal Catchments project
- Further support to extend and adopt R&D levy funded projects and innovations
- Advocacy on industry issues such as the 'right to farm' with local consent authorities
- Mapping the size, scope and value of the greenhouse vegetable industry
- Supporting new growers with information, workshops and information
- Developing resources to support growers, particularly in the areas of water recycling, nutrition and spray

application

Costs of production to grow alternative crops to cucumbers.

A key output from the VegNET project is the updating of resources such as the Commercial Greenhouse Cucumber Manual and the development of a series of six protected cropping videos targeted at helping growers transition from low to medium technology protected cropping.

These protected cropping videos can be viewed by clicking on the links in Appendix 6, Table B.

5. <u>Collaboration between national vegetable R&D initiatives and regional groups such as NSW</u> Freegrower (Sydney), Chinese, Vietnamese and Cambodian Grovsersialtsions

A significant component of the project has been the engagement of Cultural & Linguistically Diverse (CALD) groups in the Sydney Basin.

The Australian Chinese Growers Association of NSW are the largest CALD group in the Sydney region, where there is estimated to be at least three hundred growers. Over 60 per cent of these growers are members of their association. Many events have been delivered in the early mornings at the Sydney Produce Markets, with translated fact sheets on spray application, pest and disease management and parsley summer root rot extended. Vegetable levy funded information has also been disseminated on WeChat, the Chinese communities equivalent of Facebook. This was particularly effective in raising awareness of exotic pest incursions and the Tomato Potato Psyllid Project MT16016 and AUSVEG's Project VG15020 and VG1103 "Strengthened biosecurity for the vegetable industry – Phase 1 and 2."

An effective partnership has been established with Golden Harvest, a private company that distributes chemicals, fertilisers and other inputs to growers at the Sydney Produce Markets. Stephen Ng, a highly respected and long standing business owner is well connected with most of the growers. Stephen assisted the VegNET team greatly with raising awareness of the VegNET project in 2017 and introducing Matthew Plunkett to at least one hundred growers at the Sydney Produce Markets. Attendance at social events and presenting at Annual General Meetings has fostered a close collaboration which has set the project up for long term success with this grower group.

Stephen Ng described the benefits of the VegNET project to him personally and the growers as follows:

dZv(ĵššj≀i) (that) jsospedjsospojie pojie pojie

been in the industry a long time and there is always new things coming up, but with VegNET I can learn more new things like some sort of new irrigation system, see some new kind of cover cropping species, a new variety, then they tell me (levy funded R&D that is appropriate) v/v

Regarding the adoption of R&D levy funded projects, Stephen also shared this insight:

tell me they never come across a new technology to improve the soil and how to (pick suitable varieties that are pest and disease resistant) for example the parsley trial last year (2018) and they can tell me which variety is better for them X



Photo Caption 2 t Chinese vegetable growers learning about summer cover crop options (February 2018)

A significant amount of work has also been undertaken with the Australian Cambodian Growers Association and the Australian Vietnamese Growers Association of NSW. Respectively, there are estimated to be sixty Khmer speaking (Cambodian) growers and twenty five Vietnamese speaking growers in the Sydney Basin.

Limited engagement has been undertaken with the Arabic speaking greenhouse growers given cultural barriers, limited interest in participating in the project and many leaving the industry or their land that is either owned or leased being sold and subdivided for housing.

Case Study Gambodian Compost storyractice change success

Australian Khmer vegetable growers grow a range of crops in soil and in greenhouses including snow peas, capsicums, tomatoes and cucumbers. This group has formed a cooperative established over 15 years ago to work together and share information.

Improving soil health has been a long term objective of the group. The following levy funded R&D projects were identified as suitable for extension and include: Project VG13076 "Soil Wealth – Soil condition management – Extension and capacity building" and Project VG12115 "Integrating sustainable soil health practices into a commercial vegetable farming operation" and Project VG15010 "Soil Wealth and Integrated Crop Protection - Phase 2" and Project VG16078 "A multi-faceted approach to soil-borne disease management."

Targeted workshops were planned and work undertaken by GS LLS on improved soil health was disseminated to growers as one of the first events undertaken in the NSW VegNET project. A range of events and farm walks identified different soil types across different farms and split them into groupings that would receive appropriate amounts of compost and soil amendments.

Sunly Sao, a respected elder and Kim Ngov, a young and innovative grower support the group as de-facto extension officers. They were subsequently engaged to visit each farm and assist with the soil testing and also assist with other projects as required.

Significantly, seventeen growers have adopted improved soil health practices within this group. Continual monitoring of this project and engagement with growers is ongoing, with plans to undertake further testing to determine long term soil health benefits and improvements in productivity over time.

The full Cambodian Compost Case Study story can be viewed in Appendix 7.

6. Coinnovation with stakeholdermfaoross the value chain

In addition to supporting current research such as Project VG16028 "On farm evaluation of vegetable seed viability using non-destructive techniques" and Project VG15070 "A strategic approach to weed management for the Australian Vegetable Industry," GS LLS has collaborated in promoting innovations that add value to farmers in the production phase of the supply chain.

Case Study & Coinnovation excites interest in precision technologies

Close links were established with the Australian Centre for Field Robotics at the Sydney University to extend demonstration of the Robot for Intelligent Perception and Precision Application (RIPPA), Project VG15059 in both the Riverina and the Sydney Basin regions.

GS LLS also ran very successful workshops to demonstrate the "Digital Farmhand", a low cost prototype robot being developed by the centre for small scale farming enterprises. GS LLS also drew on its extensive experience in the use of recycled organics in horticulture to deliver collaborative workshops within the Project VG13076 "Soil Wealth – Soil condition management – Extension and capacity building."

7. Non Contracted Outcomes

The establishment of the NSW VegNET network has been effectively utilised for non VegNET contracted outcomes such as organising consultation workshops facilitating industry feedback on the development of the Australian Vegetable Industry Strategic Plan. A number of visits with AUSVEG staff throughout the project has also helped reestablish their profile within the NSW vegetable industry.

A range of service providers such as the NSW Department of Primary Industries, the Western Sydney University and the Sydney University are increasingly using the VegNET network to promote their activities, trial new innovations at the Greater Sydney Demonstration Farm and disseminate information to the wider vegetable industry. This has increased interest in the VegNET project over time. The Greater Sydney Small Farms network have also been engaged in the project to help smaller growers to learn from larger more experienced commercial growers who are undertaking practice change in the areas of biosecurity and soil health.

Case Study Pacilitating AQF 3 Chemical Certificattioning

The right to farm and managing vegetable businesses in a sustainable way is becoming increasingly important for vegetable growers in heavily populated peri-urban areas. In 2017, a major issue for a large number of the Australian Chinese Growers in the Sydney Basin was the renewal of the AQF 3 Chemcert chemical training licences that had lapsed.

Regular engagement with 'key informants' at the Sydney Produce Markets and the organising of venues and a trainer greatly assisted over one hundred and twenty growers to obtain this qualification. This would not have happened without the support of trusted industry development officers. This allowed for further targeted training on pest & disease management, the need for translation of registered chemicals for pest and disease control and the need for further information on controlling diseases such as Clubroot.

The GS LLS team also provided several stories and leads to the AUSVEG Communications team for publication in the Vegetables Australia magazine, including practice change stories on irrigation system efficiency improvements together with promotion of upcoming VegNET events in the AUSVEG weekly e-newsletter.

Monitoring and evaluation

GS LLS undertake monitoring and evaluation of all projects delivered both externally and internally. GS LLS use integrated recording systems and databases to ensure outputs are captured and recorded that meet the objectives documented within the Monitoring and Evaluation plan.

The objective of the MERI Project was to test the hypothesis that vegetable growers working with trained consultants and industry development officers involved in the VegNET project will adopt practice change.

The project has used a wide variety of extension strategies and methods developed by the NSW VegNET team to link growers with R&D and facilitate practice change. Such strategies have included field days, workshops, demonstration farms, farm tours, farm walks and one on one farm visits.

Post-event evaluation surveys were carried out through face to face farm visits, telephone and via translators. In total there were one hundred and thirty three growers surveyed to achieve a credible and statistically sound sample representing NSW vegetable growers. Evaluations were also undertaken throughout the project period at field days, workshops and other events delivered as part of the project.

A comprehensive MERI Report for the Project (Documenting On-ground Practice Change and Extension Outcomes - VegNET Project Evaluation Survey for Vegetable Growers in NSW using the MERI Framework) has been produced documenting all of the project outcomes and the results of the extensive grower and industry practice change survey. This document is attached to this Final Report and a summary and sample of the outcomes is shown below as Appendix 5.

The planned outcomes of the project were:

- To engage with 25 per cent of all vegetable growers in New South Wales (NSW) (.25 x 1062) = 266 growers
- To facilitate 50 per cent of these growers to adopt one or more targeted innovations or improvements
- For growers implementing practice change to achieve a noticeable increase in productivity (minimum 5 per cent).

The project has exceeded all of these planned outcomes.

The project has delivered one hundred and thirteen events across a variety of topic areas with over nineteen hundred and fifty attendees at these events. Of this number, four hundred and sixty six NSW vegetable growers have attended one or more events, and forty eight levy funded R&D projects have been extended.

The project engaged with approximately 50 per cent of NSW vegetable growers.

A total of one hundred and thirty three growers and industry representatives were surveyed with 99 per cent reporting they had learnt something new and 86 per cent stating that they had made, or are intending to make changes on their farm.

In addition, 75 per cent of growers said application of their learnings had reduced their business input costs and resulted in noticeable improvements in productivity.

For example, Joe Boustani, a greenhouse grower in the Greater Sydney highlighted the success of adopting grafted cucumbers to control losses from soil borne disease. Joe highlighted this by stating "From 100% loss (of crop) to 100% success." This case study can be viewed in Appendix 7.

The topics of the main learnings were:

- Pest and disease identification and management (69.9 per cent)
- Soil Wealth (48 per cent)
- Agronomy (42.8 per cent)
- Basics of protected cropping (30.8 per cent)
- Biosecurity and showing new vegetable varieties and crop protection products were both (27.8 per cent).

Practice change examples have occurred in the areas of, but not limited to:

- Soil health
- Postharvest
- Pest and disease management including Integrated Pest Management
- Spray application efficiency

- Precision technologies
- Water recycling and ultrafiltration
- Irrigation management
- Work health and Safety.

Another significant outcome of the project has been the engagement of over 80 per cent of the allied industry including consultants, agronomists and resellers who have assisted in transferring R&D to growers throughout the project. The reach of the project is conservatively estimated at three hundred and fifty six growers.

An independent consultant Coutts J&R Pty Ltd was engaged by Hort Innovation to undertake the mid-term review of the National Vegetable Extension (VegNET) program. This review, presented to Hort Innovation and the VegNET network in April 2018, highlighted the NSW VegNET project nationally as a leader in effective engagement and working with industry to enhance the reach of R&D levy funded innovations.

The project review confirmed this through the following statement:

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delivering to the industry. The project was felt to be progressing well and ahead of schedule with one regional project officer particularly noting the flexibility of it 1950

Further insights were given in the report about the success of the project in improving grower knowledge of the vegetable R&D program as follows:

Ezo CAPP (APA)

verage score 8/10) in undertaking activities which increase

EVÁPVPPuvš KAŠ

The feedback from this report was incorporated into workplans and gave the NSW VegNET team confidence that the project was on the right track, good value for money and ultimately working towards making levy paying vegetable businesses more profitable and sustainable.

Another significant Hort Innovation commissioned review entitled "VG17006 – Strategic Review of the Australian Vegetable Industry's Extension and Training Programs" also highlighted the success of the NSW VegNET project.

In the areas of engagement, the Greater Sydney Demonstration Farm was highlighted as an effective engagement tool and the author shared this insight:

"The NSW Local Land Service was perceived to have been successful example of the VegNET project. It has the advantage of having a demonstration farm where the levy funded R&D findings can be trialed and then be used to bring farmers to show the results."

The Demonstration Farm concept, led by the GS LLS team is gaining widespread interest throughout the other vegetable growing regions and with groups such as the Cambodian and Chinese growers in the Sydney Basin.

In 2018, Matthew Plunkett was nominated as a finalist in the Research and Engagement category for the work undertaken in engaging a wide range of growers and industry. This award was part of the AUSVEG annual Hort Connections conference held at the Brisbane Convention Centre in June 2018. This nomination would not have been possible without the support of a dedicated team, a network of 'key influencers' and industry personnel supporting the project to achieve the success documented in this report.

Recommendations

In NSW, the VegNET program has built a reputation as a trusted and recognised brand in the market place and uniquely positioned to build on the current project outcomes. Over half of all vegetable growers in NSW have been engaged in the current project, with a significant number of vegetable growers adopting, or planning to adopt levy funded R&D innovations.

Local Land Services, led by the Greater Sydney team have a focused, adaptable and outcomes driven team who are highly regarded in the NSW vegetable industry. Extension is not a means to an end, but a process of learning to enable practice change. Networks take time to develop and partnerships with industry groups and the private sector need to be maintained. The challenge will be to encourage and support growers who haven't already adopted R&D innovations to undertake change and continual improvement over time. New growers are also hungry for new R&D information, particularly the 18-35 year grower demographic group. This will be a greater focus in the future.

Based on detailed monitoring and evaluation data collected as part of the project, the following R&D priorities will continue to be a focus in the future.

These priorities include, but are not limited to:

- Soil health
- Protected cropping (helping soil based growers transition to low tech systems)
- Integrated pest management
- Spray application efficiency
- Precision Agriculture Systems
- EnviroVeg
- Export readiness linking growers to existing export programs.

Delivering a large statewide project with many segmented vegetable growing groups is difficult to resource, particularly when there are language barriers. The success of this project is largely due to the employment of capable and trusted extension staff and contractors together with having clear objectives and embracing different engagement methods to suit the different target audiences.

In general, engagement methods such as webinars, structured sit down workshops, the extension of detailed R&D reports and dissemination of R&D in print media such as magazines were not as effective as applied demonstrations, farm walk and talks combined with integrating social networking events with targeted talks on topics of interest to a particular grower group.

Translation of fact sheets and resource material for CALD communities is an ongoing demand that needs further resourcing in the Chinese, Khmer and Vietnamese grower communities within the Sydney Basin. Extending R&D innovations to the Chinese vegetable growers at the Sydney Produce Markets is a highly effective engagement strategy.

Most growers use a Smart Phone to seek information with apps such as The Yield and the VegPest ID being widely used and promoted. Texting growers is highly effective in attracting large numbers of growers to VegNET events. It was also important to have a variety of incentives such as a new technology or piece of machinery to entice growers to attend when marketing events.

Technical fact sheets were readily distributed. However they must be short, factual and have an economic benefit for the grower to adopt R&D innovations in the short term.

A designated VegNET website was seen as a good idea. This will encourage the sharing of projects, ideas and resources both within NSW and Australia wide and further build on cross state collaboration.

More specific project recommendations are as follows:

Recommendation 1

Adapt engagement methods to suit the target audience as no 'one size' fits all and continue to support investment in Demonstration Farms.

It is clear that a majority of NSW levy paying vegetable growers prefer to interact informally at farm walks and enjoy learning about applied R&D trials at independent sites such as the LLS Demonstration Farm. LLS have invested significant resources to develop the Demonstration Farm concept. This has been recognized in Hort Innovation commissioned reviews as being a highly effective tool for engaging a wide cross section of growers.

Recommendation 2

Continue to employ trusted and experienced extension staff over a 5 year period consistent with the priorities in a targeted national vegetable extension strategy. Support baseline funding to employ trusted and experienced industry development officers is critical to building and maintaining ongoing confidence in the program and the success of future investments.

Recommendation 3

Support and empower vegetable levy paying businesses who have adopted R&D innovations to share their experiences and encourage other growers to do so.

The project has seen a large number of targeted events delivered across the four vegetable growing regions. In the future, it is important to provide further support to vegetable levy paying businesses that have adopted R&D innovations. These 'key influencers' will be utilized in extension programs and encouraged to share the benefits of adopting R&D innovations. Remunerating these influencers for their contributions to extending or demonstrating R&D in their grower communities has proven to be an effective enabler. It has resulted in higher quality outcomes than when expecting influencers to volunteer their time and has placed a real value on their expertise.

Recommendation 4

Continue to engage trusted bi-lingual officers as part of the next project.

The NSW vegetable industry is extremely fragmented and has a high proportion of CALD growers. A more targeted campaign is needed with these grower segments in the Sydney Basin and on the North Coast of NSW to build on the success to date.

Recommendation 5

Continue to explore how the VegNET project nationally can assist with the growth in the vegetable protected cropping sector through a Community of Practice.

Most of the growth in the NSW vegetable industry is within the protected cropping industry on the North Coast of NSW. Building on the formation of the Community of Practice as part of this project will continue to be a successful engagement tool to satisfy this growth in demand.

Recommendation 6

Continue to support the allied industry in promoting levy funded R&D projects and innovations.

There is a move toward larger corporate mixed vegetable farms in the Central Tablelands and Riverina regions. Working with the allied industry in the four regions will continue to be important to transfer R&D innovations through their networks.

Recommendation 7

Encourage a greater number of Hort Innovation Service providers to connect with VegNET Industry Development Officers, particularly early in a project.

Several Hort Innovation R&D service providers are encouraged to use Demonstration Farms (where available) to engage with a wider network of industry and growers. The NSW VegNET project has facilitated several events with R&D providers including a number of trials at the Greater Sydney Demonstration Farm.

Recommendation 8

Develop, in partnership with 'key influencers' and Hort Innovation Relationship Managers R&D proposals on an ongoing basis for submission into the R&D funnel on the Hort Innovation website.

It is also important that R&D Service providers are encouraged to think about adoption of their research, and at the very least summarise research findings into a fact sheet or short video that growers can understand.

Some target groups such as the hydroponic lettuce industry in the Sydney Basin have not been effectively engaged in the project. Engagement of this group together with the development of resources to support learning at events will be an ongoing focus.

Recommendation 9

This project has demonstrated that in NSW, there is a need for many different communication approaches recognising the diversity of NSW vegetable businesses, different cultural backgrounds and the geographical location of the vegetable growing regions.

A strategy for future projects involving extension to vegetable growers in NSW needs to be developed for each of the target groups which will look at the effectiveness of communication tools such as text messaging, e-newsletters, hard copy newsletters and social media.

This should also form part of a national communication and extension strategy.

Refereed scientific publications

No refereed scientific publications have been produced in this project.

References

Coutts, J &R. (2018). Mid-Term Review National Vegetable Extension Network report.

Abraham, P. (2018). VG17006 – Strategic Review of the Australian Vegetable Industry's Extension and Training Programs report.

Intellectual property, commercialisation and confidentiality

The project did not produce commercial intellectual property. All project deliverables have been made publicly available. All project outputs include branding and acknowledgement as per the Horticulture Innovation Publications Guide.

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- Julie Dart (North Coast LLS)
- Karen O'Malley (Central Tablelands LLS)
- Justin Vardenega (Riverina LLS)

The following growers have been 'key influencers' in the project and include:

- Troy Millard & Trent Sosso (Riverina growers)
- Jeff McSpeddin, Michael Willott, Ed Fagan & Brendan Booth (Central Tablelands growers)
- Sid Sidhu, Paul & Kaka Singh, Paul Shoker, John Cunningham & Doug Paddon (North Coast growers)
- Sunly Sao & Kim Ngov (Cambodian growers Sydney basin)
- Kong & Kristina Hwang (Vietnamese growers Sydney basin)
- Jason & David Chung & David Ha (Chinese growers Sydney basin)
- Mario Muscat, Rod Sherriff, Carlo Perri, Peter Ward & Nicky Mann (Greater Sydney growers)
- Joe Boustani & Carlos Azzi (Arabic growers Sydney basin)

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- Josh Stephenson (Windsor Rural)
- Dave Farmer (Croplands)
- Marc Hindregar (AHR)
- Henry Prichard (Lindsay Rural)
- Len Tesoriero (NSW DPI)
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Appendices

- 1. National Vegetable Extension Network Stakeholder Engagement Plan. 2016
- 2. Grower Engagement Plan (NSW VegNET). 2016
- 3. National Vegetable Extension Network Action Plan. 2016
- 4. National Vegetable Extension Network NSW Flyer. 2016
- 5. Documenting on Ground Practice Change and Extension Outcomes VegNET Project Evaluation Survey for Vegetable Growers in NSW using the MERI Framework
- 6. VegNET Outputs Project Tables
- 7. VegNET Case Study

-Cambodian Compost Story

-Adoption of Moisture Monitoring in Sweet Corn

-Adoption of Grafted Rootstocks in Greenhouse Cucumbers

8. Sample of social media posts

Appendix 1 National Vegetable Extension Network (NSW) Stakeholder Engagement Plan

VegNet NSW IDOs will strive to engage all relevant stakeholders with an interest in vegetable production to create effective networks; capture skills and knowledge that can contribute to outcomes; ensure that levy payers are aware of the opportunities created by the VegNet project; establish effective communication channels appropriate to the different stakeholder groups; deliver the most relevant R&D to targeted grower groups; and communicate outcomes from the National Vegetable Extension Network to the vegetable horticulture industry and to the broader community.

Stakeholder	Key Messages	Tools	Frequency
Growers – vegetable levy paying	Workshop and field day	Growers on databases from previous	On-going (more detail is in the
growers & their staff	notifications.	extension projects engaged to assess	specific Grower Engagement Plan)
	Accessing information on grower	currency.	
	priorities for extension.	Dedicated webpage for VegNet on	
	Opportunities for involvement in the	GS LLS site.	
	Network to access R&D.	Wufoo form on website for growers	
	Regional opportunities such as SIP	to join the NSW network.	
	consultation and input to new R&D.	Social media-Facebook and Twitter.	
	The value of HIA membership.	Major events in key locations to	
	What the project is achieving.	launch project.	
		Media releases for major events and	
		articles in industry and local media.	
		Collaboration with established	
		programs such as Soil Wealth to	
		produce synergies in engagement.	
		Articles in "Good Fruit and	
		Vegetables".	
		Text, email and phone contact.	
		Direct engagement with growers,	
		especially identified CALD groups, at	
		the Sydney Produce Market.	

		Attendance at grower association meetings such as the Chinese	
		Growers Association.	
		Using trusted members of specific	
		communities (such as Cambodian,	
		Chinese and Vietnamese) to	
		promote engagement in the project.	
		Providing information through	
		resellers such as Ace Ohlsson, Elders	
		and Norco.	
		Annual report distributed to growers	
		in hard or e- copy.	
Industry groups such as the	Invitation to collaborate on specific	Direct contact with key industry	Workshops scheduled with
Australian Sweet Potatoes Growers,	R&D extension.	group stakeholders by email and	collaborators and targeted growers
Protected Cropping Australia	Opportunities to establish	phone.	for mutual availability. Specific
	Communities of Practice.	Collaboration with DPI and PCA to	contact to plan relevant events.
		generate greater engagement.	
		Field days on priority extension.	
		Key stakeholders invited to PCA	
		conference.	
Local Land Services in regional NSW,	Opportunities to be involved in	Face-to-face meetings,	Monthly catch–up, more frequent
NSW DPI	implementation of VegNet extension	teleconferences, email and phone	contact around planned events
	and major events.	communication.	
	Assistance with identifying local	Attendance, participation and	
	priorities for extension.	assistance with delivery of extension	
	Assistance with engagement of local	events.	
	growers and other stakeholders.		
Researchers, industry groups and	Invitation to attend events for	Invitation to attend workshops and	On-going, invitations to events,
experts such as university	professional development.	events.	planning meetings around workshop
researchers, AHR and consultants	Opportunities to collaborate on	Contracts for specific extension to	delivery
	specific R&D extension.	access best available skills and	
		knowledge.	
IDOs in VegNet projects across	Two-way information exchange.	Annual VegNet two-day meeting.	Annually and quarterly for

Australia.	Opportunities to share resources.	Quarterly video conferences	programmed meetings.
	Opportunities for joint program	Direct communication face-to-face,	Utilising AHR project update emails.
	development and delivery.	phone and email.	As required for informal contact and
		Participation in events	for discussing opportunities for
			collaboration.
Resellers	Invitation to attend events for	Direct engagement face-to-face,	On-going, invitations to events,
	professional development.	phone and email. Open invitation to	additional meetings as required to
	Assistance with communications to,	attend workshops and events.	access their newsletters for VegNet
	and engagement of local growers		communications.
	and other stakeholders.		
Local media, industry focussed	Workshop and field day	Invitation to attend workshops and	On-going, invitations to events,
media.	notifications.	events.	focussed engagement in support of
	Stories on events.	Media releases.	key events.
	What the project is achieving.	Pre-prepared stories associated with	
		VegNet.	
		Advertising with editorial content.	



Appendix 2

GROWER ENGAGEMENT PLAN

Vegetable horticulture is a widely dispersed industry in NSW with significant regional variation in scale, connectivity and demography.

The Sydney region has a significant number of growers but is segmented by culture and language. Most enterprises are small in area and a significant area of vegetable farming occurs on leased land. Engagement is made more challenging by factionalism and secretiveness in some sectors.

In regional NSW, the dispersed nature of the industry makes engagement difficult though there are some areas where growers are efficiently networked.

Consequently, grower engagement requires quite specific targeting of appropriate tools to individual regions, ethnic groups and specialist industries. It also requires a highly adaptive approach recognising where traditional engagement tools fail, new approaches need to be trialled until satisfactory collaboration results.

The last major program with growers in the Sydney region was funded through the National Water Initiative with programs on water and nutrient efficiency. This was delivered between 2010 and 2013. Significantly, it took twelve months to achieve satisfactory levels of buy-in to the program. It is expected that a similar time may be needed to generate the same level of engagement in the VegNet program.





Targeted Engagement Strategies

1. Growers collectively (Sydney Basin)

- a. A legacy of the National Water Initiative funded programs was a comprehensive database of growers across the region. All growers on the database were contacted by mail and advised about opportunities under the National Vegetable Extension Network. They were asked if they were happy to remain on the database to be informed of specific extension events. Allowing for returned mail and advice that some growers are no longer active, the resulting database has 625 contacts.
- A webpage on the Greater Sydney LLS website has been allocated to the National Vegetable Extension Network. As well as information on the program, there is a Woofu form where individuals can sign up to the network and receive information on events. The Network list is updated with participants after each event.
- c. Extension activities are organised in partnership with other key stakeholders and organisations. This includes AUSVEG, Applied Horticulture Research, Soil Wealth and NSW DPI. This provides synergies in networks and adds value by including recognised programs while building awareness of VegNet.
- d. The VegNet program has been received positively by industry suppliers (Ace Ohlsson and Elders) and they have offered support in promotion of events through their newsletters to clients.

2. Khmer growers (Sydney Basin)

Khmer growers are well networked as they operate as a cooperative. This has allowed the VegNet project to effectively engage with this sector and deliver workshops at their cooperative packing shed. VegNet can also access translation services for workshops and provision of written resources in Khmer through this community network.

3. Vietnamese growers (Sydney Basin)

Vietnamese growers have declined in number in the Sydney basin. The project has engaged a community representative to determine the number of growers. Targeted extension will be undertaken, and translated resources from other states such as Western Australia disseminated as appropriate.

4. Chinese growers (Sydney Basin)

Chinese growers represent a significant proportion of growers in the Sydney region. They also present the greatest challenge to engagement. The community is highly factionalised and very protective of what individual growers perceive as market advantage. Consequently, there is a tendency to work in isolation and avoid scrutiny by their peers or perceived authority.




Strategies for engagement are:

- a. Working with Chinese growers engaged through other programs. This number is currently small, but each individual brings a small network of connected growers.
- b. Working through the Chinese Growers Association. This has highlighted the known problems of politics and division but has identified individuals willing to support and promote VegNet.

A table has been booked for project staff to attend the Chinese Growers Association Annual Dinner in March to personally engage with individual growers who are unaware of the opportunities presented by VegNet

- c. Direct contact with growers through the Sydney Growers Market at Flemington. Though not all Chinese growers use this supply chain, it does provide access to a significant proportion of the sector. The VegNet team meets individually with growers on the floor to promote the program and events.
- d. Golden Harvest (a subsidiary of Ace Ohlsson) has strong business links with Chinese growers and has offered support in communication and promotion of events.
- e. Due to low turnout at previous events, the conference room at the Sydney Markets will be used to deliver workshops after the growers pack up, and assessed for effectiveness.

5. NSW Free Growers (Sydney region)

The NSW Free Growers represent growers who are not members of NSW Farmers Association. While there is no longer a formal governance structure for the Free Growers, there are many growers who identify with this group. The VegNet team engages with respected members of this group to feed information to what is now an informal network.

6. NSW Farmers (Horticulture)

While small by comparison with unaligned growers, NSW Farmers has useful representation in some locations. Regional Manager for NSW Farmers, David Banham, has sat on a reference committee for Greater Sydney LLS since its inception and is a key contact for this sector. Greater Sydney LLS is hosting the NSW Farmers Horticulture Committee AGM at the Sydney Vegetable Demonstration Farm to build relationship with this group.

Greater Sydney LLS is hosting a Community Support Officer (CSO) on behalf of NSW Farmers (Central Coast) at our Wyong Office. This CSO will work with Central Coast growers and will directly engage them for VegNet events.





7. Growers (Central Tablelands)

Central Tablelands LLS has a dedicated horticulture extension officer who has established networks with vegetable growers. VegNet IDOs in Greater Sydney LLS have also had previous engagement with Central Tablelands growers through previous projects and extension activities will centre on Bathurst and Cowra.

8. Growers (North Coast)

North Coast LLS does not prioritise engagement with vegetable growers as it is ranked 7th in agricultural economic importance in the region. Their staff have offered logistical support in delivering extension. VegNet IDOs have met with community based networks supporting growers and held discussions with Norco and Ace Ohlsson, both of whom have offered their support in communication and engagement activities.

9. Growers (Riverina)

VegNet IDOs have previously delivered extension to growers in the Riverina through irrigation workshops funded by Hort Innovation. This experience and detailed discussion with Riverina LLS staff has identified difficulties in direct engagement with growers due to the spatial distribution of farms, resulting in no obvious location for workshops, and a lack of collegiality among growers who tend to be reluctant to share knowledge and practices.

A major Innovations Expo has been planned to coincide with the Riverina Field Days in May to launch VegNet in this region. This will feature demonstrations in robotics, energy efficiency, drone technology, irrigation apps and emerging products such as spray polymer mulch.

While this is expected to be attractive to growers, the longer term strategy is to extend the appropriate R&D to consultants working with the growers so that this knowledge is available through a third party.

10. Industry Specific Extension

Some sectors have been identified where highly targeted extension will occur

a. Growers using protected cropping

VegNet IDOs have previously worked with DPI in delivery of extension to these growers in the Sydney region. This has included highly relevant topics such as water disinfection and reuse, hygiene and choosing appropriate growing media. DPI has worked extensively with greenhouse growers on the North Coast. Workshops are planned in both Sydney and North Coast in collaboration with Protected Cropping Australia. The VegNet team is also represented on the industry reference committee for the research greenhouse on the campus of Western Sydney University (a project jointly funded by Hort Innovation Australia). This has potential for additional engagement of the industry.





Key stakeholders in the industry will be funded to attend the PCA conference in Adelaide in July.

The objective is to establish a Community of Practice for protected cropping as an output from the project.

b. Sweet Potato Growers at Cudgen, NSW

Eighteen growers specialise in sweet potato in northern NSW. This group is well networked. Australian Sweetpotato Growers Inc has commissioned a survey with these growers to identify their R&D priorities to plan future extension. VegNet IDOs have been in communication with Australian Sweetpotato Growers Inc to offer support through the project to deliver this extension.





Appendix 3 National Vegetable Extension Network (NSW) Action Plan

Торіс	Activity	Who	What	Where/when	How	КРІ
Identification of target groups for extension.	Analyse segmentation of growers by region, language and cultural groups, market and other factors.	NSW VegNet IDOs.	Spatial and demographic database of grower groups.	Sydney region, Central Tablelands, North Coast and Riverina. Foundational activity at start of project.	Direct discussion with growers, Associations, resellers, agronomists, editing and updating existing databases, accessing local knowledge of LLS and DPI regional extension staff.	700 growers on database, with additional growers added through engagement with project.
Priorities for extension.	Determine priority extension for specific grower groups.	NSW VegNet IDOs.	Generate list of extension topics for identified grower segments.	Sydney region, Central Tablelands, North Coast and Riverina. Foundational activity at start of project.	Direct discussion with growers, Associations, resellers, agronomists, accessing local knowledge of LLS and DPI regional extension staff.	List of priority extension for each sub-region and specific grower groups.
Stakeholder engagement.	Identify stakeholders with an interest in the vegetable industry and how they can be engaged.	NSW VegNet IDOs.	Stakeholder engagement plan.	Sydney region, Central Tablelands, North Coast and Riverina. Foundational activity at start of project.	Direct discussion with growers, Associations, resellers, agronomists, editing and updating existing databases, accessing local knowledge of LLS regional extension staff.	Stakeholder engagement plan produced. Specific grower engagement plan developed identifying target growers by region and demography.
Extension: managing soil health and productivity.	Engaging vegetable growers on R&D to improve soil management.	NSW VegNet IDOs, Soil Wealth, identified consultants.	Cover crops, biofumigation, compost, minimal till (link this to soil borne disease).	Sydney region, Central Tablelands, North Coast.	Farm walks, demonstrations on private farms, workshop extension based on R&D produced through the Vegetable Levy.	Workshops delivered to grower groups where soil management was identified as a priority.

Extension: Environmental best practice.	Connect growers to EnviroVEG program.	NSW VegNet IDOs, EnviroVEG.	Extension on benefits of improved environmental practice and benefits of improved food safety in marketability of produce.	Sydney region, Central Tablelands, North Coast.	Workshops at selected locations (in association with other topics).	10 growers take up Basic or Gold EnviroVEG membership.
Extension: Improved irrigation practice.	Improved irrigation efficiency to reduce costs and improve water productivity.	NSW VegNet IDOs, NSW DPI.	Extend the review of current irrigation technologies project.	Sydney, Central Tablelands, North Coast.	Farm demonstrations showcasing new technology; use of "apps" to guide irrigation scheduling.	Key irrigators able to access workshops within their region appropriate to their identified priorities.
Extension: Improved uptake of precision irrigation technologies.	Applying emerging technologies to ensure that water is accurately applied to crops to maximise productivity.	NSW VegNet IDOs, NSW DPI.	Extension on variable rate irrigation and the use of drones to monitor plant performance under irrigation.	Sydney, Central Tablelands, North Coast, Riverina.	Farm walks and demonstrations where appropriate and/or workshops.	Key irrigators able to access workshops within their region appropriate to their identified priorities.
Biosecurity extension: exotic pests and emerging threats.	Building awareness of existing and emerging pest species and risk of disease transfer.	NSW VegNet IDOs, AUSVEG, industry experts.	Extension on Biosecurity Preparedness Plan, whole farm biosecurity planning, emerging issues. Targeted extension based on regional pest issues and priority crops within different grower groups.	Sydney, Central Tablelands, North Coast, Riverina.	Targeted workshops, dissemination of translated materials, Biosecurity "road Show".	Growers aware of emerging threats and better able to plan at a farm scale.
Biosecurity extension: soil borne disease.	Provide practical solutions to specific soil borne diseases that impact on productivity.	NSW VegNet IDOs, Soil Wealth, AHR and industry experts.	Extension on learnings gained at specific demonstration sites, extension on R&D, use of biofumigation.	Sydney, Central Tablelands, North Coast, Riverina.	Farm walks, technical extension in workshop format, podcasts of workshops.	Increased uptake of biofumigation and other tools to manage soil borne disease.
Biosecurity: pests and disease.	Targeted extension to identified grower groups to build their capacity to manage pests and diseases relevant to their crops.	NSW IDOs, NSW DPI, industry experts.	Workshops (including in translation to community languages), technical manuals and appropriate posters.	Sydney (extended to other regions in future years).	Workshops, practical demonstration of diagnostics such as sticky traps. Black light workshops to demonstrate efficient spray application of chemicals.	Adoption of Veg Pest ID developed by AHR. Understanding of pesticides available under minor use permit program. Greater awareness of integrated crop protection.

Protected cropping extension: low cost protected cropping; improved management in greenhouses; IPM; development of a Community of Practice for protected cropping.	Farm walks and field demonstrations; targeted extension to greenhouse operators in Sydney and North Coast, attendance by industry leaders at PCA Conference Adelaide.	NSW VegNet IDOs, NSW DPI, AHR, PCA and industry experts.	Demonstrations of floating row covers, netting and fleece materials; management of fusarium resistance in greenhouses; targeted approaches to IPM; engaging industry stakeholders through PCA.	Sydney Basin, North Coast	Farm walks and demonstrations; translated extension material (Arabic); industry targeted workshops (greenhouse cucumbers); funding attendance at PCA conference.	Greater awareness of management and technologies to improve productivity through protected cropping and reduce risks from pests and disease. Community of Practice developed through industry consultation.
Extension on emerging technologies under current R&D.	Innovations Field Day.	SU Centre for Robotics, CSIRO, OEH, Irrigation Research and Extension Committee; Deakin University.	Demonstration of "Rippa" weeding robot; drone technologies; spray polymer mulches; irrigation innovations; energy efficiency through solar pumping.	Griffith (local farm set up for research and workshop delivery).	Field day, demonstrations, workshops.	Provide a project launch in the Riverina to engage local growers.

Appendix 4





The project

The National Vegetable Extension Network (VegNET) consists of ten projects across Australia giving vegetable growers access to the latest research to help them to be more sustainable and profitable. The network will also gather information on future needs for research to assist the industry.

VegNET in NSW is managed by Greater Sydney Local Land Services.

Who can be involved?

All growers who pay the national vegetable levy can benefit from VegNET. Workshops, demonstrations and training events will be available in the Sydney Basin, Central Coast, Central Tablelands, Riverina and North Coast. Growers that can't attend workshops will have access to information through factsheets, webinars and video resources.

Agronomists and organisations supporting vegetable growers will also be provided with advice on the latest research information and products. This will further extend the reach of the project.

Extension will be provided in appropriate community languages in recognition of the diverse cultural backgrounds of vegetable growers.

Promoting best practice in crop scheduling, irrigation efficiency, energy efficiency, soil management, pest and disease control, weed management, food safety and other key aspects of farm management.

al Land











Intended Outcomes

By the completion of the VegNET programme, a significant proportion of NSW vegetable growers will have access to new learning to make their businesses more sustainable and profitable.

Improved practice will be evident in crop scheduling, irrigation efficiency, energy efficiency, soil management, pest and disease control, weed management, food safety and other key aspects of farm management.

VegNET Partners

VegNET NSW is delivered by Greater Sydney Local Land Services.

The ten project teams from across Australia regularly share information and this process is coordinated by Applied Horticultural Research.

AUSVEG provides updates on VegNET in their magazine "Vegetables Australia".

VegNET is funded by Hort Innovation using the vegetable research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

Join VegNET (NSW)

To receive regular updates on workshops and events register online at <u>www.lls.nsw.gov.au/greatersydney</u>

or contact Sylvia Jelinek P: (02) 4724 2113 | E: <u>veg.network@lls.nsw.gov.au</u>











Appendix 5

Documenting On-ground Practice Change and Extension Outcomes

VegNET Project Evaluation Survey for Vegetable Growers in NSW using the MERI Framework

Aim

This survey report is part of an evaluation of the project: Regional Capacity Building to Grow Vegetable Businesses – NSW, known as "VegNET – National Vegetable Extension Network" (HIA project number VG15042).

The objective of the survey was to test the hypothesis that vegetable growers working with trained consultants and IDO extension staff involved in the VegNET project will adopt practice changes. The aim of VegNET nationally is to effectively communicate information to vegetable growers through 10 regionally-based extension projects, with coordination and support provided by Applied Horticultural Research.

Researchers through Hort Innovations funded projects and the vegetable R&D levy have previously made great progress in developing and testing new methods for pest and disease control, post-harvest handling, soil health, biosecurity, crop agronomy, nutrition, irrigation, health and nutrition, and more. The role of VegNET is to communicate and extend this vitally important research-based information to Australian vegetable growers and the allied sector.

Horticultural consultants have been working in Greater Sydney, Bathurst/Cowra region, Riverina, Central Coast and North Coast with vegetable growers on adopting practice change through extension strategies and methods developed by the VegNET team. Such strategies implemented have included field days, workshops, demonstration farms, farm tours, farm walks and one on one farm visits.

Extension events and field day evaluations have been undertaken throughout the project period.

The key deliverables and outcomes were to seek to engage with 25% of all vegetable growers in New South Wales (NSW) (.25 x 1062) = 266 growers. Of these growers, 50% (133 growers) adopt one or more targeted innovations or improvements. Of the 133, an increase in productivity of 5% must be demonstrated through documented evaluation. The VegNET project also pursued to engage with 80% of all consultants and agronomists working within the NSW vegetable industry.

Methodology

The sampled Local Land Services (LLS) regions that participated were Greater Sydney, North Coast, Central Tablelands, Central West, Hunter and Riverina. Within these regions are sub-

groups; Greater Sydney includes Rossmore greenhouse, seedling producers, Vietnamese, Bargo greenhouse, Camden field, Central Coast hydroponics, Chinese, Hawkesbury field, Hawkesbury greenhouse and Khmer. North Coast includes greenhouse and field growers, Central Tablelands include Bathurst and Cowra, Dubbo represents the Central West. Allied industry is also a group made up of agronomists, consultants, horticulturists, resellers, government employees and any other affiliated allied industry member.

Evaluation surveys were carried out through face to face farm visits, telephone and via translators. In total there were 133 growers surveyed to achieve a credible and statistically sound sample representing NSW growers.

The following pie-chart depicts the groups sampled and in what proportions each group were sampled in NSW.



Figure 1. Groups of respondents surveyed

Survey themes and topics

There are several themes and topics mentioned throughout the evaluation, these include;

- Pest and disease identification and management (including Integrated Pest Management and spray application efficiency), referred to as in the figures as '*Pest and Disease*'
- Agronomy, including nutrition, irrigation and weed management, referred to as in the figures as 'Agronomy'
- Soil Wealth, including bio-fumigation and cover crops, referred to as in the figures as 'Soil Wealth'
- Export, food safety and postharvest best practice, referred to as in the figures simply as 'Export'
- Basics of Protected Cropping, referred to as in the figures as 'Protected Cropping'

- Precision farming including the application of robotics and drones in vegetable production, referred to as in the figures as 'Precision Farming'
- Showing new vegetable varieties and crop protection products, referred to as in the figures as 'New Veg'
- Bizcheck costs of production and the economics of growing different crops, referred to as in the figures simply as 'BizCheck'
- EnviroVeg how to develop an independent plan (includes Freshcare accreditation) and referred to as in the figures simply as 'EnviroVeg'
- Biosecurity

The survey form and contents are included in the appendix.

Learnings as a result of VegNet events

Survey question - From the workshops/field days/events you attended overall, did you learn anything?

Of the 133 respondents **99.25% answered yes to learning something from the workshops,** *field days and events* that they attended.

As shown in Figure 2 the main learnings from VegNET events were around Pest and disease identification and management at 69.9%, Soil Wealth at 48%, Agronomy 42.8%, and Basics of protected cropping 30.8%. Biosecurity and Showing new vegetable varieties and crop protection products were both 27.8%.



Figure 2. Themes of main learnings

Practice change adopted as a result of VegNet

Survey question - As a result of the information you received through the VegNET project or project activities you participated in, have you made any changes in how you farm or have you been implementing change?

As a direct result of information received through the VegNET project **61.7% of survey** *respondents made changes to their farming practices.* Another **21.7%** have committed to *changing practices in the near future* (See Figure 3).



Figure 3. Practice change as a direct result of VegNET

Figure 4 shows NSW Local Land Services regions that participated in VegNET extension events in relation to the uptake of practice change.

- The Central Tablelands incurred the highest percentage of practice change with 12 of the 14 respondents indicating they had implemented practice change
- This was followed by the Central West where five of the six respondents were implementing practice change
- In the North Coast 20 of the 29 respondents implemented practice change
- Greater Sydney had a total of 66 respondents and 39 of these had implemented practice change on their farm.

Each of these regions had location specific practice change events tailored to their needs, which gave great results. The Central Tablelands and Central West both had great success in learning and implementing soil moisture monitoring tools; the North Coast had positive practice change stories around spray application efficiency improvement, compost and cover cropping; Greater Sydney had various practice change adoption across many groups.





Practice change implementation by grower group

Figure 5 shows practice change by defined grower group.

- North Coast field and Bargo greenhouse scored the highest implementation of practice change - with North Coast field growers all eight respondents made a significant practice change and Bargo greenhouse there was only one recorded respondent that also made a practice change
- This was followed by Bathurst with 10 out of the 11 respondents implementing practice change
- Nine of the 11 surveyed Vietnamese growers in Greater Sydney implemented practice change
- In Dubbo four of the five growers surveyed implemented practice change.

When regarding the intention to change farming practices it shows success in many groups, as farming is planned out ahead of time and some practice changes come at a greater cost than others, such as acquiring new machinery or changing irrigation that incur a high capital input, This kind of commitment and expense may take some time for farmers to secure.



Figure 5. VegNET practice change NSW groups

Increases in farm productivity and financial benefits

Survey question – If you have made changes to your farming practices has it saved you money and/or increased productivity?

For the respondents that answered yes to implementing change on their farms, 75% in total said they saved money or increased productivity. Figure 6 shows of those respondents that made changes and which topics/subjects they increased productivity and/or saved money in.

The greatest cost saving/productivity increase was in Pest and disease identification and management at 86%, Agronomy, including nutrition, irrigation and weed management at 83%, Soil Wealth at 77.4%, and showing new vegetable varieties and crop protection products and Biosecurity at 60%.



Figure 6. Theme of increased productivity and/or money saved

Other results from Survey

Survey question - Is the GS LLS Demonstration farm a valuable learning venue?

The Greater Sydney Local Land Services Demonstration farm located in Richmond Lowlands is an essential site for learning and extension, with being viewed as 'neutral territory' for vegetable growers to come together and see a vegetable trial in-situ, participate in workshops and training events, attend meetings and see innovative farm demonstrations.

80% of respondents (within the Greater Sydney region and other regions) said the **Demonstration farm is a valuable learning venue** whether it be value to themselves or the vegetable growers as a whole, 20% of respondents replied no/not applicable as the site was out of geographical reach for it to be of any value to them.

Survey question - Do you want to see VegNET events continue?

100% of respondents answered yes to VegNET events continuing. The strong response to this question is a reflection of what vegetable growers want from their vegetable levy funds and being able to seek assistance from qualified extension services and having R & D communicated.

Future focus of VegNet

Survey question - What would you want to see as a future focus?

Figure 7 shows a comparison of topics learned in red, versus topics of future focus in blue. There is a strong indication for further events in the themes of Pest and disease identification and management, Soil Wealth, Precision farming including the application of robotics and drones in vegetable production and Agronomy, including nutrition, irrigation and weed management. There is also a peaked interest in Bizcheck, EnviroVeg (how to develop an independent plan including Freshcare accreditation), export, food safety and postharvest best practice.



Figure 7. Comparison of topics learned versus topics of future focus

Figure 8 shows the percentage breakdown of future focus according to NSW LLS regions. The respondents could select multiple topics that were of interest to them.

The Greater Sydney region has an equal first for a future focus of Pest and disease identification and management and Agronomy, including nutrition, irrigation and weed management with Showing new vegetable varieties and crop protection products and Soil Wealth not far behind.

The Central Tablelands top picks were Agronomy, including nutrition, irrigation and weed management and Soil Wealth, followed very closely by Showing new vegetable varieties and crop protection products, EnviroVeg (how to develop an independent plan including Freshcare accreditation) and Biosecurity.

The Central West region of NSW equally prefers Pest and disease identification and management, Soil Wealth and Basics of Protected Cropping.

The Hunter region equally prefers Pest and disease identification and management, Agronomy, including nutrition, irrigation and weed management; and Showing new vegetable varieties and crop protection products.

The North Coast regions top selections are Pest and disease identification and management, Agronomy, including nutrition, irrigation and weed management and followed equally by Soil Wealth, Showing new vegetable varieties and crop protection products and Biosecurity.

The Riverina favourites Pest and disease identification and management, Agronomy, including nutrition, irrigation and weed management and Precision farming including the application of robotics and drones in vegetable production.



Figure 8. Areas of interest for future focus according to region

Survey question - How do you best like to receive information?

The respondents could have multiple selections that were of value to them regarding the best method of communication for VegNET. The highest responses were through face to face communication in the form of workshops or extension events with 63 votes, field days at 55, informal farm walks at 44, followed by newsletters at 42 votes; email and one on one farm visits also rated highly (see Figure 9).



Figure 9. Best method of communication

Allied Industry Outcomes

Survey question - For Allied industry: How many other producers have you spoken to?

This question was focussed only at allied industry respondents; Figure 10 represents the greater reach of VegNET to vegetable growers via allied industry surveyed, so essentially casting a wider net for VegNET extension staff. The minimum reach was 356 producers.



Figure 10. Allied industry reach to producers

Other Observations and Lessons from the MERI

Practice change stories

The greatest practice change implementation was recorded in the Central Tablelands, in the Bathurst and Cowra areas (see Figure 5) in the use of cover cropping learnt through the Soil Wealth/Integrated Crop Protection projects as well as compost use to improve soil health and minimise root diseases, as well as adoption of soil moisture monitoring tools and improved Biosecurity measures.

High achievers were recognised after following a local champion Brendan Booth, sweet corn farmer under large centre pivot irrigation from Geurie in the Central West of NSW in using soil moisture monitoring tools to get more out of your water. He was introduced to new innovative technology in irrigation and crop/soil moisture monitoring. As he became familiar with this piece of technology he urged other growers to learn how to 'push out water further' with a focus on margin per megalitre. In this instance VegNET engaged with growers in this region, the 'Farm technology field day' was run in Bathurst and Geurie in September 2018. The learnings from these events were with soil moisture monitoring probes, farmers can set clear irrigation targets based on moisture and monitor if they are being met.

Greater Sydney growers excelled in practice change adoption across a few groups in various themes. The greatest practice changes were seen Vietnamese growers that improved farm hygiene and biosecurity measures as this was also an inexpensive exercise in practice change adoption. These growers were engaged via a Vietnamese translator with many years of experience in agriculture, this helped in making contact with the Vietnamese grower community, running workshops on integrated pest management (IPM) and irrigation efficiency. Khmer growers also have an established grower group that VegNET extension staff could easily influence through their elders and champions. They improved their soil health by attending compost workshops, soil testing and compost addition, as well as learning more about correct spray practices and farm biosecurity.

The North Coast were championed by sweet potato and sweet corn growers attending a 'Black light spray application demonstration,' after seeing how outdated their own spray equipment nozzles were they unanimously upgraded and changed their nozzles within the week, which reduced chemical use, slashed water rates and decreased drift greatly. Simple and inexpensive.

The value of Demonstration Farms

The Greater Sydney Local Land Services Demonstration farm located in Richmond Lowlands is an essential site for learning and extension, with being viewed as 'neutral territory' for vegetable growers to come together and see a vegetable trial in-situ, participate in workshops and training events, attend meetings and see innovative farm demonstrations. An important assumption was made regarding the Demonstration farm at the development phase of the practice change survey, as the focus and importance of this site only related to vegetable growers living close to or in Greater Sydney. Nearly 80% of respondents (within the Greater Sydney region and other regions) said that the Demonstration farm is a valuable learning venue whether it be value to themselves or the vegetable growers as a whole, 20% of respondents replied no/not applicable as the site was out of geographical reach for it to be of any value to them. Only 1 single greenhouse respondent from the Sydney Basin answered no, as the site didn't represent the needs for low to medium technology greenhouse vegetable growers. As mentioned in the Mid-term review by J&R Coutts it is stated "the demonstration farm was noted to be a large contributor to the project's success by showing growers new practices and outcomes without them taking the risk." Other comments disseminated during the project evaluation survey from more regional areas recognised the importance and value of a demonstration farm and "it was suggested that more demonstration farms be established during the next round of VegNET" (Mid term review, J&R Coutts) to assist in regional areas seeing R&D demonstrated in the field.

Continuation and future focus of VegNet

The results were undisputed that all respondents want to see VegNET continued to further see their investment extended out to the levy payers. There is a strong indication for there to be future focused events, therefore reinforcing for VegNET to continue

Future focus has a strong and defined response as seen in Figure 7. With the comparisons of the discovered learnings and what respondents want as a future focus shows a solid engagement in the VegNET project and that the themes are aligned to their wants and needs. This analysis draws out the important focus for each region (Figure 8) how to tailor extension events and who to target is captured in the deeper data collection. The lesser selected themes doesn't make them less import but rather makes them important to a niche group of growers that can be individually targeted for extension of BizCheck, Export, Biosecurity and EnviroVeg.

Growers and allied industry's preferred method of communication was measured and the highest responses from those surveyed were; face to face communication in the form of workshops or extension events, field days and informal farm walks; followed by newsletters Email and one on one farm visits also rated highly. The other forms of communication are not redundant and still effectively reach an important segment of vegetable growers (see Figure 9).

Accessing allied industry was a pivotal communication source for the VegNET project. Their positive communications out to further vegetable growers and industry members in Greater Sydney and other regional areas raised awareness of the project and created a further reach and linkage to growers that were unable to attend extension events. These allied industry members were able to be influential to vegetable growers in practice change adoption. Through this (as demonstrated in Figure 10) the minimum reach to producers was greater than 356.

Appendix

Follow up Practice Change Survey [Example]

uld app	preciate y	ou filling out th	is form to help u	is improve our serv	ices	
Hi Greate	I am er Sydney	calling to gain y Local Land Ser	our feedback on vices over the la	the VegNET Project st couple of years -	t activities you atten	that have been run by ded "
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Prope	rty addr	ess:				
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			 Private Advisor 	consultant or		Other (Please describe)
lf ap fa	a produ proxima rm?	cer, please giv ite idea of the	e an size of your	Crops:		
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Date:	_/_	_/2018				
Time:						
1.	From the Yes If yes,	ne workshops, what did you	field days/eve No □ learn? (Tick all	nts you attended that apply)	overall, d	id you learn anything?
	Pest and sp Age	and disease in ray applicatio	dentification an n efficiency) ng nutrition ir	nd management (including d manage	Integrated Pest Manageme ment
		Wealth, includ ort, food safet	ling bio-fumiga y and postharv	ition and cover cr est best practice	ops	
	Prec Shov	ision farming	including the a table varieties	pplication of rob and crop protect	otics and otics and otics and otics and otics of a second statements	drones in vegetable product acts

	D Er	wiroVeg - how	to develop an indep	endent plan (includes Freshcare accreditation)			
	Bi	osecurity					
		of the above					
2.	As a you p	result of the in participated in,	formation you recei have you made any ze?	ved through the VegNET project or project activities changes in how you farm or have you been			
Yes No Planning to D							
	Furt	her comment:	What changes did yo	ou make/are you making?			
	15						
3.	Voc.	s, has it saved y	/ou money and/or in	creased productivity?			
	Tes		NOL				
4.	ls the	e GS LLS Demor	nstration farm valua	ble learning venue?			
	Yes		No 🗆				
5.	Do y	ou want to see	VegNET events cont	inue?			
	Yes		No 🗆				
5.	Wha	it would you w	ant to see as a futur	e focus? (tick all that apply)			
	Doct	nd dicasca ida	atification and man-	an and finduding Integrated Pact Management and			
C	nrav a	ind disease fue	(ency)	igement (including integrated rest management and			
2	Agron	omy, including	nutrition, irrigation	and weed management			
	Soil W	ealth, includin	g bio-fumigation an	d cover crops			
E	Expor	t, food safety a	ind postharvest best	practice			
	Basics	of Protected (Cropping				
	Precis Show	ion farming ind ng new vegeta	luding the applicati ble varieties and cro	on of robotics and drones in vegetable production op protection products			
	Bizch	eck - costs of p	roduction and the er	conomics of growing different crops			
	Enviro	Veg - how to d	levelop an independ	ent plan (includes Freshcare accreditation)			
	Biose	curity					
E	All of	the above					
0	How	do you best lik	e to receive informa	tion?			
C 7.		fhe [] New	sletter			
۵ 7.			114/01				
ت 7.		The [Jweb	site (linked Soil Wealth, AUSVEG, VegPRO etc)			
ت 7.		fhe [] Field	site (linked Soil Wealth, AUSVEG, VegPRO etc) days			
ت 7.		The [Workshops] Field	site (linked Soil Wealth, AUSVEG, VegPRO etc) days			
7.		The [Workshops] Web] Field] Farm	site (linked Soil Wealth, AUSVEG, VegPRO etc) days walks			
7.		The [Workshops One on one far] Web] Field] Farm	site (linked Soil Wealth, AUSVEG, VegPRO etc) days walks			
7.		The [Workshops One on one far Service Provide] Web] Field] Farm m visits rs [site (linked Soil Wealth, AUSVEG, VegPRO etc) days walks] network			
7.		The [Workshops One on one far Service Provide Other:	j web] Field] Farm m visits rs [] Plan	site (linked Soil Wealth, AUSVEG, VegPRO etc) days walks] network ning Groups			
7. For <i>4</i>		The [Workshops One on one far Service Provide Other: ndustry:] Web] Field] Farm m visits rs [] Plani	site (linked Soil Wealth, AUSVEG, VegPRO etc) days walks] network ning Groups			
E For #		The [Workshops One on one far Service Provide Other: ndustry:	j web] Field] Farm m visits rrs [] Plani	site (linked Soil Wealth, AUSVEG, VegPRO etc) days walks] network ning Groups			

Appendix 6 - Output Summary							
Output type	Number	Evidence detail					
Extension events	113	See table A					
Resource	1	Commercial Greenhouse Cucumber Production Manual 2019					
development		Edition (See table B)					
	4	Posters (See table B)					
	13	Translated factsheets (See table B)					
	6	Greenhouse video's (See table B)					
	7	VegNET case study video's (See table B)					
	10	VegNET case studies (See table B)					
Media and	1	VegNET Flyer					
Communications	3	VegNET Newsletter (See table C)					
	22	Online and printed articles					
	24	Facebook posts (See table C)					
	6	Facebook live (See table C)					
	52	Tweets (See table C)					
	22	Online and printed articles (See table C)					
MERI Survey	133	See Appendix 5					
Community of practice	105	Protected cropping					

TABLE A.

Extension events						
Date	Title	Hort Innov	ation Projec	t numbers		
21- Sep-16	Ausveg Grower Biosecurity Workshop	VG15065	VG15020	& VG1103		
7-Oct-16	Workshop with Khmer Community (Compost)	VG13076	VG1211 5	VG16078		
11-Oct- 16	Workshop with Chinese Community on plant disease plus market preferences	VG12102	VG1310 1	VG17013		
21-Oct-	Biosecurity workshop with Khmer	VG15065	VG15020	& VG1103		
16	Community					
25-Nov-	Farm Walk and Update on compost	VG16078	VG13076	VG13039	VG13020	VG15068
12-Dec-	Soil management and	VG13076	VG12115	VG16078	VG15010	
12-Dec-	biofumigation in intensive	VG15070	VOIZIIJ	VG10078	VG15010	
	vegetable production					
28-Mar-	Seed Viability research with	VG16028				
17 28 Mar	University of Queensland	VC15012	NC07144		1015020	
28-iviar-	extension event - Vietnamese	VG15013	VG0/144	VG15033-V	/G15036	
29-Mar-	Viability of vegetable seed research	VG16028				
17	event - Bathurst					
1-May- 17	Chinese Pest & Disease Workshop Flemington Markets	VG13101	VG12102			
1-May-	Brassica and Parsley diseases	VG13101	VG12102	VG09137	VG07070	
2-May-	extension event - Sydney Markets	VG13076	VG12115	VG16078		
17	& Cover Crops Workshop	VG15070	VOIZIIJ	VG10078		
3-May-	Central Tablelands Bathurst	VG13076	VG12115	VG16078		
17	Compost & Cover Crops Workshop					
4-May-	Mangrove Mountain Compost &	VG13076	VG12115	VG16078	VG15010	
8 to 10-	Robotics and the use in	VG13113	VG16009			
May-17	Horticulture extension event -					
	Griffith					
12-May- 17	Using Irrigation to Manage Soil Borne Disease Workshop	VG08029	VG07070	VG15010		
12-May-	Whats New in Irrigation Sprinkler	VG14048	VG08029	VG15054		
17	Performance & The Yield Irrigation					
	Decision Support Tool					
31-May-	Protected Cropping Workshop	VG13052	VG15033-	VG15036		
8-Jun-17	Soil Wealth and Integrated Crop	VG13076	VG12115	VG16078		
	Protection extension event -	.010070	. 012115	1010070		
	Maitland					
14-Jun-	Integrated Pest Management and	VG15013	VG15033-	VG15036		
17	Biosecurity in Cucumbers extension					
21-Jun-	VegNET Biosecurity Roadshow	VG15065	VG15020	& VG1103		

17	Protected Cropping Flemington Markets				
21-Jun- 17	Biosecurity and TPP extension event - Sydney Markets	MT16016	VG15020 &	vG1103	
22-Jun- 17	VegNET Biosecurity Roadshow Bathurst - ICP Pest & Disease Workshop	MT16016	VG15065	VG15020 &	vG1103
23-Jun- 17	VegNET Biosecurity Workshop - Demo Farm	MT16016	VG15065	VG15020 &	vG1103
23-Jun- 17	Sydney University Digital Farm Hand Robotics Demonstration	VG13113			
28-Jun- 17	Cucumber Mosaic virus extension event - Coffs Harbour	VG15013			
28-Jun- 17	VegNET Biosecurity Protected Cropping Workshop Woolgoolga	MT16016	VG15065	VG15020 &	vG1103
29-Jun- 17	VegNET Biosecurity Protected Cropping Workshop Coffs Harbour	MT16016	VG15065	VG15020 &	vG1103
19-Jul-17	VegNET - Riverina Innovation Expo Field Day	VG13113	VG08029	VG15054	VG16009
21-Jul-17	VegNET Cover Crop & Bio- fumigation Workshop AHR	VG13076	VG12115	VG16078	
21-Jul-17	Low Cost Protected Cropping Workshop AHR at Demo Farm	VG16078	VG13076	VG13075	
3-Aug-17	Research and Development priority extension event - Sydney Markets	VG16078			
30-Aug- 17	Black Light Workshop @ Demo Farm	ST16006			
31-Aug- 17	Black Light Workshop Rossmore	ST16006			
29-Sep- 17	Soil Health for Sustainable Vegetable Production - Cambodian workshop	VG13076	VG12115	VG16078	
26-Sep- 17	Low Cost protected cropping Farm Walk - Griffith	VG16078	VG13076	VG13075	
1-Oct-17	Chinese Growers Association AGM	VG16078			
18-Oct- 17	Soil Wealth extension event - Murwullimbah	VG13076	VG16078		
19-Oct- 17	Integrated Crop Protection extension event - North Coast	VG16078	VG13076		
25-Oct- 17	Integrated Pest Management basics workshop for Vietnamese Growers - Austral	VG07144	VG15033-V	/G15036	
27-Oct- 17	Integrated weed management consultation	VG13079	VG10048	VG09137	
30-Oct- 17	Exotic Pest & Disease Information booth)Tomato Potato Pysilid update - Flemington	MT16016			
30-Oct- 17	TPP extension advice event - Sydney Markets	MT16016			
20-Nov-	Parsley R&D Extension with	VG13101			

17	Chinese growers - Flemington						
23-Nov-	TPP extension advice event -	MT16016	MT16016				
17	Maitland						
1-Dec-17	Robotics Field Day	VG13113	VG16009				
8-Feb-18	AusVeg Integrated Crop Protection extension event - Sydney Markets	VG16078	VG13076				
9-Feb-18	AusVeg Integrated Crop Protection - Rossmore	VG16078	VG13076				
12-Feb- 18	Cowra Sweet Corn extension visits - Bathurst	VG08029	VG15054	VG16009			
13-Feb- 18	Cowra Sweet Corn extension visits - Geurie	VG08029	VG15054	VG16009			
16-Feb- 18	Soil Borne Disease Management Richmond	VG13076	VG16078	VG15010			
16-Feb- 18	Soil Health for Sustainable Vegetable Production Richmond	VG13076	VG12115	VG16078	VG15010		
20-Feb- 18	Parsley R&D Demonstration - Chinese	VG13101	VG12102				
21-Feb- 18	Pest & Disease Identification for Vietnamese growers - Austral	VG15013	VG07144				
27-Feb- 18	Soil Borne Disease Management 2 Cowra	VG13076	VG16078	VG15010			
28-Feb- 18	Soil Borne Disease Management 1 Bathurst	VG13076	VG16078	VG15010			
28-Feb- 18	Soil Health for Sustainable Vegetable Production 1 Bathurst	VG13076	VG12115	VG16078			
28-Mar- 18	Soil Health for Sustainable Vegetable Production 2 Bathurst	VG13076	VG12115	VG16078			
8 to 9- Mar-18	PCA Protected Cropping Tour - Sydney	MT13041	VG16070	VG13052	PH16000	VG17003	
12 to 14-	Pest & Disease Extension visits -	VG15033-V	G15036				
	Coil Dorno Disease Management	VC1C070	VC15010		VC0000	VC12004	
13-iviar- 18	Soli Borne Disease Management	VG10078	VG15010	VG09052	VG09009	VG13004	
14-Mar- 18	Soil Health for Sustainable Vegetable Production	VG13076	VG12115	VG16078	VG15010	VG13004	
19-Mar- 18	Soil Health for Sustainable Vegetable Production Flemington Markets	VG13076	VG12115	VG16078			
22 to 23- Mar-18	Sweet Potato Bus Tour - North Coast	VG16078	VG09052	VG09009	VG13004		
21-Mar- 18	Vietnamese Keep it Clean workshop 1	VG07144	VG13109	VG15033-V	/G15036		
9-Apr-18	Soil Borne Disease Management Flemington Markets	VG13076	VG16078	VG15010			
17 to 18- Apr-18	Talk at Blueberry Spray Workshop - Woolgoolga extension visit	VG16078					
28-Apr- 18	Integrated Crop Protection Cambodian	VG16078					

27-Apr- 18	Integrated Crop Protection Cambodian	VG16078				
7-May- 18	Promote EnviroVeg, Organise Cucumber Spray Workshop and	VG12008	VG16063			
7-May- 18	Greenhouse Cucumber manual extension advice - Coffs Harbour	VG13052	VG07144	VG16004	VG13055	
10-May- 18	Vietnamese Keep it Clean workshop 2	VG07144	VG13109	VG15033-\	/G15036	
11-May- 18	Brassica tables extension event - Sydney Markets	VG16078				
21-May- 18	Greenhouse construction code extension event - Woolgoolga	VG16004	VG13055			
23-May- 18	Using grafting to control Fusarium in Cucumbers extension event - Woolgoolga	VG08026				
30-May- 18	Integrated Crop Protection Coffs Harbour	VG16078	VG13076			
30-May- 18	Protected Cropping Dorrigo	VG13076	VG13052			
5-Jun-18	Brassica tables extension event - Bathurst	VG16078				
6-Jun-18	Protected Cropping 1 Bathurst	VG16078				
14 to 15- Jun-18	Industry seed day extension event - Richmond	VG16028				
3-Jul-18	Ultra Filtration Workshop 1 - Woolgoolga	VG13052				
5-Jul-18	Ultra Filtration workshop 1 - Rossmore	VG13052				
25-Jul-18	PCA Bus Tour - North Coast	VG13052				
26-Jul-18	Promoting EnviroVEG with Industry grower groups extension event - Woolgoolga	VG12008	VG16063			
8-Aug-18	Farm visits with Croplands on Spray efficiency extension event	ST16006				
9-Aug-18	Blacklight spray workshop - Tweed Heads	ST16006				
15-Aug- 18	Integrated Crop Protection industry extension event - Woolgoolga	VG16078	VG13076			
16-Aug- 18	Integrated Crop Protection Cudgen	VG16078	VG13076	VG09009		
16-Aug- 18	Protected Cropping Cudgen	VG16078	VG13076	VG09009		
16-Aug- 18	Ultrafiltration Workshop 2 - North Coast	VG13052				
16-Aug- 18	Effective Greenhouse Management - Woolgoolga	VG09070	VG07144			
28-Aug-	Pest and Disease in Leafy Brassicas	VG07070	VG15033-	VG09137		
18	extension event		VG15036			
30-Aug-	Biosecurity and pest and disease	MT16016	VG15065	VG10104	VG16086	VG15020 &

18	extension event - Cowra					VG1103
31-Aug- 18	Protected Cropping 2 Bathurst	VG16078				
31-Aug- 18	Integrated Crop Protection 2 Bathurst	VG16078	VG13076			
3-Sep-18	Biosecurity and Pest and Disease Extension Event - Hawkesbury	MT16016 VG15065	VG16086 VG14063	VG15033- VG15036	VG15020	& VG1103
4-Sep-18	Farm Technology Field Day - Bathurst	VG08029	VG15054	VG16009		
4-Sep-18	Biosecurity and Pest and Diseases Extension Event - Camden/Rossmore	VG15065	VG14063	VG16086	VG15033 - VG15036	VG15020 & VG1103
5-Sep-18	Farm Technology Field Day - Geurie	VG08029	VG15054	VG16009		
5-Sep-18	Cambodian Growers Biosecurity and Pest and Disease Extension Event	VG15065	VG15033- VG15036	VG15020 &	vG1103	
7-Sep-18	Cambodian Growers Compost Extension Event	VG13076	VG16078			
20-Sep- 18	AHR Soils Masterclass - Riverina	VG16078	VG13076	VG15010		
4-Oct-18	Biosecurity and Pest and Disease Extension Event - Badgerys Creek	VG16086 VG15065	MT16016	VG15033-VG15036 VG15020 & VG1103		
9-Oct-18	Pest and Disease and Low Cost Protected Cropping - Richmond	VG16078	VG13076	VG13075	VG15033-	VG15036
24-Oct- 18	Protected Cropping Bus Tour - Sydney Basin	VG13052	VG16070	MT13041	PH16000	VG17003
14-Nov- 18	Vietnamese Growers Bus Tour	VG13052	VG16009	VG07144		
21-Nov- 18	Vietnamese Growers Irrigation Workshop 1	VG13052	VG07144			
5-Dec-18	Vietnamese Growers Irrigation Workshop 2	VG13052	VG07144			
7-Dec-18	Compost in Soil workshop - Cambodian	VG13076	VG12115	VG16078		
7-Dec-18	Cambodian Growers Spray application workshop - Cecil Park	ST16006				
27-Feb- 19	Cucumber Growers Pest Walk and Talk - Biological Services - Coffs Harbour	VG15033-V	G15036			
8-Mar-19	IPM - AHR - Riverfarm	VG16060	VG15033-V	G15036		
8-Mar-19	Soil Borne Disease Management - AHR- Riverfarm	VG13076	VG16078	VG15010	VG15064	

TABLE B. Resource developm	ent					
Manual	Commercial Greenhouse Cucumbe	er Production Manual 2019 Edition				
Posters	Managing Clubroot Disease					
	Leafy Asian Brassicas – Pests and I	Diseases				
	Lettuce – Pests and Diseases					
	Cucumber – Pests and Diseases					
Translated	Farmgate biosecurity Factsheet	Chinese, Khmer				
factsheets	Pest, disease, weed surveillance	Chinese, Khmer				
	factsheet					
	Vehicle cleaning factsheet	Chinese, Khmer				
	Weed management in vegetables factsheet	Chinese, Khmer, Vietnamese				
	Farm biosecurity sign	Chinese				
	Summer and winter cover crops factsheet	Chinese, Khmer, Vietnamese				
Greenhouse	Layout and planning	https://youtu.be/_jjyk3L2Ao8				
video's	Setting up a greenhouse	https://youtu.be/Y3Ol8kqP4B4				
	Irrigation management	https://www.youtube.com/watch?v=toxiZWwCexs				
	Nutrient management	https://youtu.be/tlmVAVhFHX4				
	Sanitation and cleaning the greenhouse	https://youtu.be/Rb92t3w_Se0				
	Pest and disease management	https://youtu.be/TWKIAcIXaHs				
VegNET case	Cambodian Compost Success Stor	y (See Appendix 7)				
studies	Adoption of Grafted Rootstocks on Greenhouse Cucumbers (See Appendix 7)					
	Adoption of Moisture Monitoring in Sweet Corn (See Appendix 7)					
	NextGen Compost					
	Water Recycling Adoption					
	Low Cost Covers - Frost Cloths					
	Adoption of VegWHS Workplace H	lealth and Safety on Vegetable Farms				
	Paul and Kaka Singh					
	Cudgen Spray Application Success	Story				
	Strip Tillage					
VegNET case	VegNET Practice Change in Cover	Crops				
study video's	VegNET Practice Change in Compo	ost Use				
	VegNET Practice Change in Spray A	Application				
	VegNET Community Practice Chan	ge - Khmer Growers				
	VegNET Practice Change Irrigation	Management				
	VegNET Community Practice Chan	ge - Chinese Growers				
	VegNET Practice Change in Graftin	g Adoption				

TABLE C.				
Media and Communications				
Flyer	VegNET flyer (See Appendix 4)			
e-Newsletter	VegNET e-newsletter edition 1 September 7, 2017	https://us8.campaign- archive.com/?u=ab10f363ede220c4458731869&id=4 b2ff0d5e0		
	VegNET e-newsletter edition 2 May 31, 2018	<u>https://us8.campaign-</u> archive.com/?u=ab10f363ede220c4458731869&id=8 e0f4934cc		
	VegNET e-newsletter edition 3 November 16, 2018	<u>https://us8.campaign-</u> <u>archive.com/?u=ab10f363ede220c4458731869&id=9</u> <u>4868c7ef5</u>		
General	Webpage	http://greatersydney.lls.nsw.gov.au/agriculture/horti culture/national-vegetable-extension-network-nsw		
	On-line access to growers to join the National Vegetable Extension Network (NSW):	https://gslls.wufoo.com/forms/s1pns2tr0g7d3y3/		
Online and	Vegetable Australia Novembe	r/December issue 2016		
printed	Good Fruit and Vegetables September 22, 2016;			
articles	Good Fruit and Vegetables December 15, 2016: Land Services dishes up dirt on soil health	http://www.goodfruitandvegetables.com.au/story/ 4359455/land-services-dishes-up-dirt-on-soil- health- photos/?time=1481778288326&preview_token=32 aTpB32srSgUB3ViEtJwE8vHUA77f#slide=1		
	Hawkesbury Gazette May 16, 2017: GSLLS workshop helps vegie farmers with irrigation technology	http://www.hawkesburygazette.com.au/story/4667 208/hot-water-tips-for-our-vegie- farmers/?cs=1453)		
	Protected Cropping Australia May 31, 2017: Crowds gather for protected cropping workshop in Sydney	http://www.protectedcroppingaustralia.com/?p=57 89		
	AgInnovators June 6, 2017: Farm trials show next-gen compost benefits for vegie growers	<u>https://www.aginnovators.org.au/initiatives/sustainability/case-studies/farm-trials-show-next-gen-composts-can-benefit-vegie-growing</u>		
	AgInnovators June 6, 2017: Bathurst farmer grows sweet corn using 'next gen' compost	https://www.aginnovators.org.au/initiatives/sustai nability/case-studies/bathurst-farmer-grows-sweet- corn-compost-0		
	South West Voice June 13, 2017: Digital farmhand: robot could be game changer on the land	http://www.southwestvoice.com.au/digital- farmhand-robot-prototype-set-revolutionise-small- farm/		
	Good Fruit and Vegetables June 28, 2017: Growers get first glimpse of new 'vegie robot' at Richmond	https://www.goodfruitandvegetables.com.au/story /4758930/growers-get-first-glimpse-of-new-vegie- robot-at-richmond/		

	Hort Innovation July 7, 2017: VegNET - Matthew Plunkett (NSW)	https://vimeo.com/224596183
	Good Fruit and Vegetables July 24, 2017: Greater Sydney Local Land Services - Farm Walk	https://www.goodfruitandvegetables.com.au/story /4809491/greater-sydney-local-land-services-farm- walk-photos/
	Good Fruit and Vegetables September 1, 2017: Photos from Sydney Basin spray application efficiency workshops	http://www.goodfruitandvegetables.com.au/story/ 4894988/photos-from-sydney-basin-spray- application-efficiency-workshops/?cs=4928#slide=8
	AgInnovators October 3, 2017: VegNET: giving growers a heads-up on the latest R&D	https://www.aginnovators.org.au/news/vegnet- giving-growers-heads-latest-rd
	Hawkesbury Gazette November 21, 2017: Greater Sydney Local Land Services field robot trial at Richmond	https://www.hawkesburygazette.com.au/story/507 0175/field-robot-trial-here/
	Good Fruit and Vegetables December 4, 2017: Growers gather to see robot technology in action	https://www.goodfruitandvegetables.com.au/story /5097150/growers-gather-to-see-robot-tech-in- action-photos/
	Good Fruit and Vegetables March 16, 2018: New demo farm set for Hawkesbury, NSW	https://www.goodfruitandvegetables.com.au/story /5284099/new-demo-farm-set-for-hawkesbury/
	The Land, Sydney 22 March, 2018, page 33: LLS delivers Sydney demonstraion farm Providing a 'Greater' service	https://www.theland.com.au/story/5297382/provi ding-a-greater-service/
	The Land, Sydney 22 March, 2018, page 33	New demonstration farm will double its role
	Good Fruit and Vegetables August 31, 2018: Leigh James retires from NSW LLS	https://www.goodfruitandvegetables.com.au/story /5612620/leigh-james-retires-from-nsw-lls/
	Hort Daily September 12, 2018: Australia: Greenhouse growers tour Woolgoolga	https://www.hortidaily.com/article/6045737/austr alia-greenhouse-growers-tour-woolgoolga/
	Good Fruit and Vegetables February 22, 2019: Sydney Demonstration Farm opens gate	https://www.goodfruitandvegetables.com.au/story /5920085/demo-farm-takes-root/
	Vegetable Australia May/June issue 2019, page 16-17:	Looking forward, looking back at on-farm practice changes
Facebook posts	See sample in Appendix 8	
Facebook live	https://www.facebook.com/G	oodFruitandVegetables/videos/vb.288921704476599

	/1115045381864223/?type=2&theater
	https://www.facebook.com/GoodFruitandVegetables/videos/vb.288921704476599
	/1115076608527767/?type=2&theater
	https://www.facebook.com/GoodFruitandVegetables/videos/vb.288921704476599
	/1115080118527416/?type=2&theater
	https://www.facebook.com/GoodFruitandVegetables/videos/vb.288921704476599
	/1115099/18525456/ rtype=2&theat
	/1460856803949744/?tvp==2&theater
	https://www.facebook.com/GoodFruitandVegetables/videos/1394772530558172/
Tweets	https://twitter.com/lls_svdnev/status/1058158665201414145
	https://twitter.com/lls_svdnev/status/1044409679491678208
	https://twitter.com/lls_sydney/status/1026285954644889600
	https://twitter.com/lls_svdnev/status/1016124160668389376
	https://twitter.com/lls_svdpey/status/1009653509556355072
	https://twitter.com/GrowingVegBizs/status/1008859399991930880
	https://twitter.com/lls_svdpey/status/1003850359960293379
	https://twitter.com/lls_sydney/status/996603037450780672
	https://twitter.com/lls_sydney/status/980983824438902785
	https://twitter.com/lls_sydney/status/977026249422815232
	https://twitter.com/lls_sydney/status/966099230342328320
	https://twitter.com/avulnerableman/status/961809838807248896
	https://twitter.com/lls_svdpey/status/955992384940027904
	https://twitter.com/lls_sydney/status/93790/1920/67972096
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VegNET Case Study

Appendix 7.1

GREATER SYDNEY LOCAL LAND SERVICES

Cambodian Compost Success Story



Improving soil health using compost

Australian-Khmer vegetable growers in the Sydney Basin often grow in the field and greenhouse on the same farm site. In the greenhouse, nutrition is easily monitored and adjusted to suit, but in the field the soil doesn't get the same attention.

Early in the VegNET project it was identified that the growers faced challenges with managing soil health with little knowledge about the potential benefits of compost to soil.

Engagement with the community was facilitated through a respected Khmer grower who helped VegNET build relationships with the group. The grower also assisted with translating presentations at workshops and other VegNET events.

The growers worked with the VegNET team to develop a soil improvement strategy informed by the learnings of a number of Hort Innovation funded projects

 Soil Wealth – Soil condition management
 – Extension and capacity building (VG13076)

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- Integrating sustainable soil health practices into a commercial vegetable farming operation (VG12115)
- Soil Wealth and Integrated Crop Protection - Phase 2 (VG16078) and
- A multi-faceted approach to soil-borne disease management (VG15010).



Growers at the first soil health and compost workshop

Workshops and soil tests

An introductory workshop was held in 2016 to improve awareness and gauge interest in soil improvement through compost use. This was followed by a 'Managing soils for better health' farm walk in 2017 which covered topics such as

- How to take soil tests
- How to interpret soil test results
- Use of recycled organics to build productivity and healthy crops
- The importance of soil biology in healthy soils.

In 2018 soil samples were taken from 16 plots across several farms for analysis and to inform



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recommendations for soil improvement treatments.

Three of the samples came back with no amendments required. The other 13 plots were broken up into three groups.

- Soils with low organic matter <2.5% and low permeability needed 40 m/ha of composted green waste added
- Soils with reasonable organic matter <3.7% and low permeability needed 30 m/ha of composted green waste added to their plot.
- Soils with good to very good organic matter <4.5% and good permeability needed 20m/ha of composted green waste added.

Compost incorporation was recommended to a depth of 150 mm. Amendments were also prescribed on a case by case basis for various issues such as adding lime to raise soil pH and increased irrigation for leaching sodium from the soil.

Compost was delivered to the participating farms on behalf of the VegNET project in late 2018. Another workshop on composts was held in late 2018 and focused on compost application rates.



The compost ready for application

Benefits

Incorporating compost in the soil will increase organic matter which can improve soil structure by increasing aeration and water holding capacity. This can result in water savings.

Soil fertility can be improved through the slow release of nutrients from the compost, resulting in decreased fertiliser input. Compost can assist with the suppression of pathogens and provide beneficial microbes that make nutrients available, leading to healthier plants, greater yield, root vigour improvement and generally more productive crops.

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Acknowledgments

Sunly Sao, Kim Ngov, Applied Horticulture Research, Rob Nicol (ANL)

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VegNET Case Study

Appendix 7.2

GREATER SYDNEY LOCAL LAND SERVICES

Adoption of Moisture Monitoring in Sweet Corn



Background

Brendan Booth is a sweet corn farmer using centre pivot irrigation from Geurie in the Central West of NSW. He was introduced to new innovative technology in irrigation and crop/soil moisture monitoring. As he became familiar with this piece of technology he urged other growers to learn how to 'push out water further' with a focus on margin per megalitre (ML).



In this instance VegNET engaged with growers in this region to find needs and gaps in which then the 'Farm technology field day' was run in Bathurst and Geurie

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in September 2018. Information gained for this undertaking came from Hort Innovation funded projects; Review of current irrigation technologies (VG14048), Design and demonstration of precision agriculture applied to different vegetable crops (VG08029) and Data analytics and app technology to guide on-farm irrigation (VG15054).



Outcomes

The learnings from these events were with soil moisture monitoring probes, farmers can set clear irrigation targets based on moisture and monitor if they are being met. Alerts can be set for low line pressure, adjust irrigation schedules and check run times. This technology can observe the irrigator's performance, prevent needless irrigation on saturated soils as well as understanding how the soil type variation affects crops at different times and ensure sufficient deep water prior to harvest. The benefits of soil moisture monitoring are far and wide;



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and begin with seeing how much water actually makes it to the root zone, saves pumping and fertilizer costs while ensuring optimum crop production and prevention of unnecessary overirrigation.



As we are a few years into a drought period over eastern Australia water shortages are imminent and water use efficiency becomes more important as does margin per ML being a big drive for large scale sweet corn cropping. Brendan Booth states that after using the Wildeye probes *"I use more water, but I grow more crop so the margin per hectare is greater"*. Scott Stevenson from Ponto near Dubbo is a sweet corn, adzuki bean and wheat farmer and is already using 3 moisture probes and is trialling the Wildeye probe. Scott found to be watering more because of the moisture probes and over the summer period, but watering more accurately. Mark Carter a sweet corn grower implemented more soil moisture probes on all crops now. He said *"Testing them out, gives you confidence with water use and a good back up tool"*.

The key messages are that to monitor soil moisture improves water productivity per ML and allows for critical periods to be monitored. Stressing plants at critical times reduces yields and hence productivity.

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Acknowledgments:

Brendan Booth, Scott Stevenson, Mark Carter, Wildeye, Lyndon Orpwood (Simplot).

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VegNET Case Study

Appendix 7.3

GREATER SYDNEY LOCAL LAND SERVICES

Adoption of Grafted Rootstocks in Greenhouse Cucumbers



Background

Greenhouse cucumbers can succumb to fungal root rot, stem and wilt disease complex. A lack of available and efficacious fungicides registered or permitted for greenhouse application on cucumbers in combination with a grower culture of trying to get the most out of media bags by some low tech cucumber greenhouse producers reusing for up to 3 crops to get their monies worth out of their growing media. Grafting can be a way to insure a crop against root disease and possibly have a more robust and lengthier crop with a higher marketable yield. Root rots are caused by various species of Fusarium, Rhizoctonia and Pythium. These plant diseases can cause 5 – 95% plant losses, thus reducing crop profitability. Standard cucumber varieties come to be the scion that is grafted onto a pathogen tolerant cucurbit rootstock, these plants carry an extra up front cost, but the benefits quickly outweigh the cost, especially under high Fusarium pressure where in extreme cases the yield can be doubled or greater (L. Tesoriero). Actual monetary gain can be difficult to measure in the short term due to fluctuating market prices, but is more accurately measured over several crops to years.



Healthy grafted cucumber seedling

Supporting information for the adoption of grafted plants used to overcome crop loss to plant diseases are; Cucumber Strategic Agrichemical Review Process 2011-2014 HAL Projects - MT10029 & VG12081, Increasing productivity and extending seasonality in soil grown vegetables using capsicum as a candidate VG12103 and the Soil Wealth and Integrated Crop Protection – Phase 2 VG16078.



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Results

Joe Boustani of Rossmore is a long time cucumber greenhouse grower in Greater Sydney; has called for help on several occasions to agronomists, chemical resellers, plant pathologists and technical horticultural extension staff over the years to overcome major crop losses due to fusarium and other fungal root rots. It wasn't until recently that Joe took matters into his own hands and decided to trial some grafted plants on his farm. The rootstock use was Cobalt RZ with his choice of cucumber scion. His self-trial included growing grafted plants in new media, grafted plants in infected media, non-grafted plants in new media and non-grafted plants in infected media. The demonstration exercise was very obvious that the grafted cucumber plants grew better, were healthier, yielded more and suffered less plant loss.

"From 100% loss to 100% success" - Joe Boustani



Healthy grafted plant (top) and fusarium affected non-grafted plant (bottom)

The only difficulty with this the seedling price is greater and when market prices are down, recouping costs and having profit gains can be a shortfall, thus pushing the smaller growers out of being able to afford purchasing grafted seedlings. "Cheyne Clarke, a cucumber greenhouse producer also says "there are benefits of using grafted plants on the North Coast of NSW in Coffs Harbour".



Successful grafted cucumber

Recommendations

The need for further grafting demonstrations and possibly provide and/or facilitate training local cucurbit growers to learn grafting, the need for more locally grown grafted plants in NSW, approach local seedling producers if mass production of grafting rootstock and/or grafted plants.

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Acknowledgments

Dr Len Tesoriero, NSW DPI

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Appendix 8



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Greater Sydney Local Land Services is at Greater Sydney L July 24, 2017 at 2:46 PM · Hawkesbury · 🕥

Our latest #vegNET workshops attracted a crowd of 40 growers and industry reps, all keen to hear the latest on low cost protected cropping, Bio-fumigation and the benefits of cover crops for soil health. Great to have Applied Horticultural Research presenting ... See More

🕐 🗃 Sharon Elliott, Sacha Perram and 11 others



Greater Sydney Local Land Services May 2, 2017 at 4:13 PM - Q

Our ag experts pounding the pavement at the Flemington Sydney Market talking best practice parsley and brassica pest and disease information to Chinese Vegetable growers as part of the VegNet extension program funded by Horticulture Innovation... See More



🕐 Sharon Elliott, Angela Maier and 21 others



Greater Sydney Local Land Services April 4, 2017 at 10:54 AM - 🕢

Our new vegetable variety crops are in the ground! The new additions to our Demonstration Farm will play a key role in helping us showcase new veggie varieties to growers and industry in our upcoming VegNet workshops made possible through our... See More

🖒 Sharon Elliott, Angela Maier and 5 others



Greater Sydney Local Land Services November 2, 2018 at 11:31 AM - 🕥

Wonderful to team up with Protected Cropping Australia Ltd to host a hugely successful tour of greenhouse farms throughout Western Sydney recently. Almost 70 people turned out to the event which culminated in a tour of the Western Sydney University high tech... See More



1 Shar

2 Shares





Greater Sydney Local Land Services March 23, 2018 at 2:42 PM · Sydney · Q

A great day for a farm visit in the beautiful North Coast to showcase the last R&D to sweet potato growers on soil wealth, value adding and precision ag. A huge thank you Queensland Agriculture, Kalfresh Vegetables & Lockyer Valley Growers Inc. for helping make this ... See More

🚯 Sharon Elliott, Matt Plunkett and 5 others



1 Comme





Greater Sydney Local Land Services May 12, 2017 at 8:41 AM · 🕢

Our ag advisory team have been racking up some kilometers of late! Great to be working with Riverina Local Land Services, NSW DPI and Protected Cropping Australia Ltd to provide advice and extension support to innovative leafy vegie growers like Fresh... See More

🙆 Sharon Elliott, Matt Plunkett and 13 others



Greater Sydney Local Land Services July 7, 2018 at 10:40 AM · 🥥

Great to partner with North Coast Local Land Services and Protected Cropping Australia Ltd to outline the economic benefits of recycling water and nutrients in protected cropping. Another fantastic #vegNET NSW event made possible thanks to Hort Innovation

🕐 Matt Plunkett and 6 others

Greater Sydney Local Land Services is in Cudgen, New So ... October 24, 2017 at 1:13 PM - 🥥

There really is no rest of the wicked! Our Ag team hit the road just days after our #Sydneyagdinner to share some of the latest best practice research & development tips to sweet potato growers in the beautiful North Coast as part of #vegNET NSW with Hort Innovation See More

🕜 Sharon Elliott, Matt Plunkett and 1 other



Greater Sydney Local Land Services July 12, 2017 at 1:46 PM · 🕥

Our very own Matt Plunkett talks about the challenges and opportunities that come with engaging vegetable growers in the Greater Sydney region as... See More



+3

Hort Innovation's Post

Calling all NSW vegetable growers! VegNET has been set up. C Sharon Elliott and 6 others

Greater Sydney Local Land Services is at Greater Sydney L.. July 25, 2017 at 9:29 AM - Hawkesbury - 🕢

More great pictures from our #VegNET NSW workshops last week courtesy of Good Fruit and Vegetables!... See More

Greater Sydney Local Land Services - Farm Walk | Photos

www.goodfruitandvegetables.com.au

🕐 Sharon Elliott, Matt Plunkett and 6 others



1 Comme



Greater Sydney Local Land Services is with Matt Plunkett a... August 3, 2018 at 9:51 AM - Q

Great to work with Protected Cropping Australia Ltd and North Coast Local Land Services to extend best practice information and the latest research to greenhouse growers in the region. Another excellent example of partnerships at work as part of our vegNET... See More



1 Comment 7 Shares

C Linda Hanlon, Matt Plunkett and 18 others



Greater Sydney Local Land Services e 23, 2017 at 1:12 PM - 🥥

Excited to hear more about the small scale veggie robot aimed at supporting our growers!

Good Fruit and Vegetables's Post Greater Sydney Local Land Services have pulled a great crowd.

Matt Plunkett and 4 others



Greater Sydney Local Land Services ptember 25, 2018 at 12:06 PM - 🥥

Our VegNET NSW team traveled to Tasmania last week for a week of networking and hearing about all the great projects across the country supporting the horticultural industry. A great initiative made possible thanks to Hort Innovation as well as AUSVEG and RMCG.

🕜 Matt Plunkett and 3 others



Greater Sydney Local Land Services May 9, 2017 at 12:57 PM · 🕗

A great turn out at our latest VegNet workshop where we showcased info on soil health management and the latest results of our NextGen compost trial. Some great feedback from growers and industry on the day! This great event was made possible via... See More

🖒 Sharon Elliott, Matt Plunkett and 5 others





A great group of keen vegetable growers from the Vietnamese community took part in our workshop to help them learn to identify different pests and diseases that may impact their crops. The event is part of our vegNET NSW partnership with Hort Innovation. A big... See More

🕐 Sharon Elliott, Sacha Perram and 4 others

More

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