

## **Final Report**

# **VegNET 2.0 – WA**

**Project leader:**

Manus Stockdale

**Delivery partner:**

West Australian Vegetable Growers Association Inc.

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VG19016

**Project:**

VegNET 2.0 – WA (VG19016)

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Telephone: (02) 8295 2300

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## Summary

The primary objective of VegNET 2.0 WA is the development and delivery of user defined activities focused on targeted and measurable practice changes to support the profitable and sustainable growth of Australian vegetable businesses. The project's direct beneficiaries are WA vegetable levy paying growers whilst experience from this project is indirectly beneficial to the national vegetable industry as a whole. This Hort Innovation funded VegNET WA (VG19016) project commenced on 1<sup>st</sup> April 2020 and ended on 30 September 2021.

The main project outcomes included:

- (i) Improved capability of levy payers to adopt best management practices and innovations, and
- (ii) Improved levy payer awareness and attribution of the vegetable levy investments

### Key activities

The four key activities of this project followed a logical sequence including Regional Development Officers' (RDO) professional development, project strategy and extension plan preparation, extension activity implementation which ran alongside project monitoring and evaluation, and project reporting.

Within the available knowledge and information resources and relatively short lifetime of this extension project, the extension activities were streamlined to promote growers' adoption of best practices in 3 key focuses which were approved by the Regional Extension Advisory Group (REAG). They included: (i) Water and fertilizer use; (ii) Farm biosecurity practices; and (iii) Chem Cert Training - quality management.

The first two milestones were to prepare and plan activities to be done and how to execute them to achieve the project outcomes. This phase of the project lasted for 8 months in which implemented activities included:

- (i) Project team members engagement and RDOs participating in professional development
- (ii) Regional Extension Advisory Group (REAG) establishment
- (iii) 5-year extension strategy and project plan development
- (iv) REAG consultation and approval of 5-year regional extension plan and project plans
- (v) 5-year project logic development
- (vi) 5-year monitoring and evaluation (M&E) plan, stakeholder engagement plan, operational plan, and REAG approval of work plan.

These strategies and plans were then executed over the remaining 10 months of the project which were reported on in the last 2 milestone periods from December 2020 to September 2021 when the final M&E and project report was completed.

### Key outputs

Statistically, 12 virtual meeting and training participation during RDOs' professional development made significant impacts to enhance RDOs skills and knowledge as well as getting directions and material ready for extension activities implementation that target wider grower audiences. Information and innovation transfer were conducted via 175 farm visits, over 400 phone calls, social media posts, 7 workshops and meetings, 2 open discussion forums, and 3 chemical training classes, 4 AUSVEG and articles enabled RDOs to reach out and made impacts on 18 grower members of the two focus groups and hundreds other growers who participated in events and interact via social media.

14 meetings and 6 field visits with subject specialist collaborators (virtually and face-to-face when appropriate) to develop action plan and how to execute them toward achieving the set outcomes.

Information re VegNET WA project including its focus and workplan have been published via 12 articles in VegetablesWA and 5 in AUSVEG magazines (please see the appendix...list of published articles in VegetablesWA and AUSVEG quarterly magazines).

VegNET 2.0 WA project has made a significant impact in relation to Improving capability of levy payers to adopt best management practices and innovations and Improved levy payer awareness and attribution of the vegetable levy investments. 34.9% (69/175) of growers involved in the project showed practice changes at different levels toward adopting introduced innovations. All 18 members of water and fertilizer use efficiency focus grower group and farm biosecurity focus group, who engaged in almost every project event and activity, committed to practice changes to enhance business efficiency. An additional 24 growers who were not part of the farm biosecurity focus group also took the initial step of adopting farm biosecurity practices by displaying farm biosecurity signs on their farm gates. Twenty-seven growers developed improved attitudes toward more responsible chemical handling and use by taking the accredited chemical training classes.

The two field demonstrations on improving water and fertilizer use efficiency showed up to 60% water saving when decreasing irrigation time from 90 minutes to 30 minutes each shift. Fertilisers and power use were also reduced accordingly.

The personal development and improvement of RDOs' extension skills and capability as a result of the professional development program is also a key achievement of this project. This training upskilled the RDOs to

successfully develop the five-year project strategy, plans for project activities as well as monitoring and evaluation of the project impacts.

The concept of integrating farm biosecurity and the management of specific pests and disease practices when being introduced for the first time by RDOs in this extension project has received great interest from grower participants. The rate of adoption of farm biosecurity practices has been improved as growers understand the amplified effects when the prevention and the control strategies are combined.

A grower-lead open discussion forum which, was employed as an extension method for the first time in this project, was highly rated by grower participants. Having the opportunity to lead the discussion where their knowledge and experience was observed, growers were more deeply involved in the discussion and worked collaboratively with subject specialists that attended to produce “key messages take home messages” and ready to adopt ideas for practice change.

The successful establishment of the collaborators network and Regional Extension Advisory Group (REAG) are the other key achievements of this project. The collaborators network built a foundation that enabled the RDO to gain support from subject experts and the provision of in-kind contribution for successful execution of project activities. Similarly, the REAG, comprising of local growers, industry experts, project stakeholders, the regional extension coordinator, and extension officers, contributed a significantly by reviewing and giving their feedback on the project strategy, the selection of key focus areas as well as the project plan.

The rich human resources built into the delivery of this project is a strong foundation to enable the success of VegNET 3.0 which is the continuation of this project.

## Keywords

Regional Development Officer; Research & Development; Stakeholder Engagement; REAG; WA Project Briefs; Innovation approach; Improving water and fertiliser use efficiency; chem cert; Biosecurity; Extension services, innovation systems approach

## Introduction

The Australian leviable vegetable industry is one of Australia's largest and most important horticulture industries. The vegetable industry has an R&D levy that is used for vegetable research, development and extension activities across a range of disciplines targeting both on-farm and supply chain sectors in accordance with industry priorities.

The purpose of the VegNET program has been to build upon VegNET Phases 1 and 2 to increase the reach of the Vegetable R&D programs including enhancing the adoption of R&D outcomes. Phase 1 of the program had the vegNET Industry Development Officers working with a general remit around the delivery of awareness and extension activities in a geographical region.

Phase 2 was developed by Hort Innovation after taking into consideration the findings of VG18003 Extension Strategy for the Australian Vegetable Industry, the vegNET mid-term review report, vegNET team and Project Reference Group feedback, Vegetable Strategic Investment Advisory Panel members advice and the Vegetable Strategic Investment Plan 2017-22. Feedback from these sources was provided in the Vegetable Industry Extension Strategy review

"The overarching impression is that stakeholders like the idea of having a regional project but don't necessarily engage fully or broadly with what they have."<sup>1</sup>

The objective of Phase 2 of the vegNET program was to develop and deliver user defined activities focused on targeted and measurable practice change to support the profitable and sustainable growth of Australian vegetable businesses.

Phase 2 saw a shift in the Regional Development Officer role to being more focused on the development of regional and national strategies based on a process of stakeholder engagement. Hort Innovation provided the Regional Development Officers with training on their concept of an innovation systems approach to become conduits of technical insight and to be enablers or brokers of knowledge from various sources. The aim of this approach was that extension would become a key link to a broad coalition to deploy skills and capacity as required in a strategic and focused way.

Regional strategies designed to influence specific problem domains and practice change were to be implemented collaboratively with regional stakeholders to attract co-investment and implementation support to deliver the plans.

Providing a strategy that will take vegetable extension forward over the coming decades will:

- support growth of regional capacity to engage and build strategy
- increase growers' awareness in vegetable R&D levy investment
- increase stakeholders accessing levy funded research findings and outcomes
- Increase stakeholders' engagement in extension events
- Increase grower knowledge, attitudes, skills aspirations in identified best management practices and innovations relevant to their regions
- Increase in growers positively changing their practices

Through increased adoption of improved production practices and technologies vegetable growers have the potential to see production cost savings and or increased revenue. The significance of this for industry is ensuring the horticulture industry will not only remain one of Australia's largest industries but that growth both domestically and internationally will ensure it is sustainable.

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<sup>1</sup> Vegetable Industry Extension Strategy – Sean Kenny (Rural Consulting Group), Jeff Coutts (Coutts J&R) & Neels Botha (Neels Botha Ltd) October 2019

## Methodology

### Workshops:

A number of Workshops were held across the three main vegetables production areas including Carnarvon, Geraldton and North Perth. Events were advertised through word-of-mouth, email, text message to phones, phone calls, flyers display at local supplier shops and Facebook. The format for workshop were subject specialist speakers with a 15–20-minute speaking time assisted by PowerPoint presentation plus question time. The events were followed by a light food and drinks that enable post-event chat and grower feedback collection. Events were intended to be social to create and maintain strong connectivity amongst growers and industry. Monitoring and evaluation of these events was conducted using post event phone call and farm visits to each audience participant using pre-defined evaluation questions. Qualitative data analysis were then employed to capture the insights re the level of impact towards achieving the event objectives.

Photo of growers in Carnarvon attending Chem Cert Workshop



### Case Studies

Case studies were chosen based on the 3 pre-defined regional focuses. Interviews and photographs were gathered to form the case studies.

Social Media Facebook events had a reach of approximately 90 - 120 people depending on the topic.

VegetablesWA Website. website was regularly updated to include events and resources for growers.

Special subject – A series of extension-based activities were lead by RDOs in collaboration with subject specialist collaborators (Please see the Collaboration plan and list in Appendix 2) to bring up growers' awareness, knowledge and information take up and practice changes in special topics relative to the defined projects focuses. The special subjects included digital soil moisture monitoring technology, fall armyworms and American

Serpentine leaf miners and food safety and traceability. These included regular meetings with subject specialist collaborators for obtaining information and planning collaborative extension services. Special RD&E workshops, communication, farm visits, webinar, social media interactions, survey were carried out with grower, resellers, nurseries, and chemical representatives. The growers' feedback re their awareness, knowledge and information take up and practice changes in special topics was collated for M&E.

Photo: Dr Singh, NSW Department of Primary Industries delivering a presentation to grower, Fresh produce Safety and traceability





The regional forums: This used a focus group approach to discussing current key issues and priority areas for bring up growers' awareness, knowledge and information take up and practice changes in special topics relative to the defined projects focuses. The forums were organised by VegNET WA RDOs. There were 2 regional forums created in this project: (i) Carnarvon farm biosecurity Forum involved 7 vegetable growers whereas North Perth Water Forum involved 11 growers.

Focus group interviews and discussions:

A technique that collects data through group interaction on a topic determined by the RDOs. They were employed to explore project involved growers' perspectives and feedback against given project extension activities. The data were used for project M&E as well as suggestion for improvements.

Growers lead open discussion forum:

The forum is created and facilitated by RDOs to discuss a special subject in which growers open the discussion by presenting their knowledge, practices, and experience against integrating farm biosecurity practices and bacteria disease management in vegetable growing to enhance each other effectiveness. The roles of involved subject specialists are to reflect growers' story through scientific prism and add in value with their scientific knowledge and recommendations. The RDOs then translate the enhanced growers' stories into short and clear messages to bring home with suggestions for growers' practice changes.

Subject specialist Collaborator consultation:

This was conducted in forms of meeting, phone discussion and field visits which enable a knowledge and information share as well as collaborative event planning among RDOs and Subject specialist Collaborator.

Grower visit: RDOs visit growers at their farm environment.

The face-to-face interaction enable effective communication in topics relative to practical and specific farm context observation. This also strengthen RDO-grower relationship.

## Outputs

Table 1: Achievement against the REAG approved VegNET WA project plan

Project Plan	Team members	Output s	Extension content	Project links or collaboration
Improving Water and fertiliser use efficiency	VegetablesWA : Truyen Vo – RDO, Project delivery, Sam Grubisa – RDO, Project delivery, Karen Raybould – Project Manager	64/60 planned growers visits with participating growers providing post meeting notes, recommendations and action items for further workshops, case studies or webinars 1/2 workshops – Wanneroo, Carabooda. 2/2 field days: Demonstrations on Dye test and soilmoisture monitoring devices. 5/4 Articles: Quarterly, AUSVEG Magazine 2/4 Grower Case studies on irrigation decision making based on different soil moisture monitoring techniques (Wild Eye, Tensiometers, Soil profile observation). Produce factsheets, webinars, videos and field trials reports. - Video field days posted on VegetablesWA website.	- 3-years report on benchmarking of WA vegetables production business efficiency - <a href="https://www.agric.wa.gov.au/soil-productivity/vegetable-crop-nutrition-sandy-soils-swan-coastal-plain?page=0%2C1">https://www.agric.wa.gov.au/soil-productivity/vegetable-crop-nutrition-sandy-soils-swan-coastal-plain?page=0%2C1</a> - Reports on water and fertiliser use by vegetable grower in North Perth. (Neil Lantzke and Truyen Vo, 2016, funded by Natural Resources management). - Adopting soil moisture monitoring innovation – Case study on Su Tran family Farm (VegNET project 2016-2019) - Reports on irrigation efficiency assessment on vegetable farms in North Perth 2019 (DPIRD, Irrigation Australia, VegetablesWA)	1. David Rowe – Research Scientist, DPIRD* 2. Graham McAlpine - Project collaborator (advisor), Regional Agriculture Landcare Facilitator, Sustainable Agriculture Program, Perth NRM 3. Rohan Prince (Advisor), DPIRD 4. Tracy Martin – (Technological support facilitator) Irrigation Australia 5. Comms VegesWA 6. Neil Lantzke – Horticulturist DPIRD 7. Kieran Coupe - Wildeye
Improving WA growers capacity in planning and implementing farm management for reducing biosecurity and pest risks	VegetablesWA : - Truyen Vo – RDO, Project delivery, - Sam Grubisa – RDO, Project delivery, - Karen Raybould – Project Manager.	111/60 planned grower visits with participating growers 2/2 workshops – Wanneroo, Carabooda. 4 field days: Demonstrations on implementing farm biosecurity plan and pests and diseases identification in association with the Area wide virus and bacteria diseases management project. Articles: WA Grower Magazine, 2 Case study on growers' experiences in developing and implementing farm biosecurity plans. Produce factsheets, webinars and Video field days posted on VegetablesWA website.	- <a href="https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/vg16086/">https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/vg16086/</a> - <a href="https://AUSVEG.com.au/app/data/technical-insights/docs/TL179.pdf">https://AUSVEG.com.au/app/data/technical-insights/docs/TL179.pdf</a> ; - <a href="https://AUSVEG.com.au/app/data/technical-insights/docs/TL180.pdf">https://AUSVEG.com.au/app/data/technical-insights/docs/TL180.pdf</a> ; - <a href="https://AUSVEG.com.au/app/data/technical-insights/docs/TL48.pdf">https://AUSVEG.com.au/app/data/technical-insights/docs/TL48.pdf</a> - Farm biosecurity plan template for CGMMV and WA cucurbit farms (Template originally created by NT Farmers, 2016) - Come Clean Go Clean, Factsheet, NSW DPI, 2016 - Biosecurity Guidelines For Contractors, Factsheet, Plant Health Australia, 2016 - Decision Tree for Management of Cucumber Green Mottle Mosaic Virus (CGMMV) Version 1.0, Developed by the CGMMV National Management	1. Callum Fletcher – AUSVEG biosecurity coordinator 2. Area wide management of disease project team from DPIRD (Craig Webster and Dominie Wright and Monica) 3. Fall army worm researcher (Helen Pafford). 4. Graham McAlpine – NRM 5. Maddy - AUSVEG biosecurity

			Group, Parent document: CGMMV National Management Plan, 2016	
Chemical Certification to align with Industry and QA accreditation Standards	<p>Karen Raybould – Project Manager,vegetablesWA.</p> <p>Truyen Vo – Project delivery,vegetablesWA.</p> <p>Sam Grubisa – Project delivery,vegetablesWA.</p> <p>Joel Dinsdale – Quality Assurance Coordinator, vegetablesWA (Freshcare Trainer &amp; Global GAP Farm Assurer Manager) Maree Gooch – Executive Officer, SafeFarms WA &amp; AusChem WA Affiliated WA Industry Associations Associated Registered Trainers and Training Organisations (RTO'S) &amp; Agricultural Training Facilities Certification Bodies (CB's)</p> <p>Food Safety and Quality Assurance management system providers Local Government Councils / Shires</p>	<p>3/4 Proposed quarterly Chemical Accreditation Courses with certification requirements <b>AHCCHM307 Prepare and apply chemicals to control pest, weeds and diseases</b> <b>AHCCHM304 Transport and store chemicals completed.</b></p> <p>(Certification requirements subject to change to reflect industry standards).</p> <p>Another course has been fixed for November 2021.</p> <p>Cross-Industry communication and engagement by phone, email or zoom recorded meetings re – OH&amp;S/WH&amp;S standards are met (as required)</p> <p>Liaise with RTO's, CB's, QA providers and Local government to ensure current QA standards and requirements align with industry safety and capability (as required)</p> <p>Assist with course organisation and facilitation (language assistance) to mitigate seasonal scheduling conflicts and capture the desired stakeholders (as required)</p> <p>2 Case Studies of participants from course and impacts that have been introduced onto farms Article WA Grower Magazine</p> <p>Attend and participate Course advisory committee North TAFE</p>	<p>There are multiple sources of extension material regarding safe chemical handling and usage. Whether produced by training organisations, QA providers, local government or scientific industry specialists, the choice of extension material relates directly to the experience and competency of the intended audience</p> <ul style="list-style-type: none"> <li>- <a href="https://apvma.gov.au/">https://apvma.gov.au/</a></li> <li>- <a href="https://www.safeworkaustralia.gov.au/chemicals">https://www.safeworkaustralia.gov.au/chemicals</a></li> <li>- <a href="https://www.safeworkaustralia.gov.au/doc/model-code-practice-labelling-workplace-hazardous-chemicals">https://www.safeworkaustralia.gov.au/doc/model-code-practice-labelling-workplace-hazardous-chemicals</a></li> <li>- <a href="https://www.safeworkaustralia.gov.au/doc/model-code-practice-preparation-safety-data-sheets-hazardous-chemicals">https://www.safeworkaustralia.gov.au/doc/model-code-practice-preparation-safety-data-sheets-hazardous-chemicals</a></li> <li>- <a href="https://www.safeworkaustralia.gov.au/doc/classifying-hazardous-chemicals-national-guide">https://www.safeworkaustralia.gov.au/doc/classifying-hazardous-chemicals-national-guide</a></li> <li>- <a href="https://www.comcare.gov.au/safe-healthy-work/prevent-harm/chemical-hazards">https://www.comcare.gov.au/safe-healthy-work/prevent-harm/chemical-hazards</a></li> <li>- <a href="https://www.agsafe.org.au/knowledgebase/public-resources/free-poster-chemcert-storage-guide-for-hazardous-chemicals">https://www.agsafe.org.au/knowledgebase/public-resources/free-poster-chemcert-storage-guide-for-hazardous-chemicals</a></li> <li>- Extension resources produced/updated by research, development, extension and industry specialists</li> </ul>	<ol style="list-style-type: none"> <li>1. Joel Dinsdale – Quality Assurance Coordinator, vegetablesWA (Freshcare Trainer &amp; Global GAP Farm Assurer Manager) Maree Gooch – Executive Officer, SafeFarms WA &amp; AusChem WA</li> <li>2. Maree Gooch – Executive Officer, SafeFarms WA &amp; Director, AusChem WA (WA Director Representative for AusChem Training Ltd)</li> <li>3. Associated Registered Trainers and Training Organisations &amp; Agricultural Training Facilities eg – North Metropolitan TAFE, South Regional TAFE, Muresk Institute</li> <li>4. Certification Bodies eg – Aus-Qual Pty Ltd, SAI Global Certification</li> <li>5. Food Safety and Quality Assurance management system providers eg – Freshcare, HARPS, Global GAP</li> <li>6. Local Government Councils / Shires eg – City of Wanneroo, Shire of Gingin</li> <li>7. Industry approved initiatives eg – DrumMuster and ChemClear</li> <li>8. Affiliated WA and national Industry Associations</li> </ol>

Monitoring data collected to provide evidence of outputs and outcomes are presented in appendix

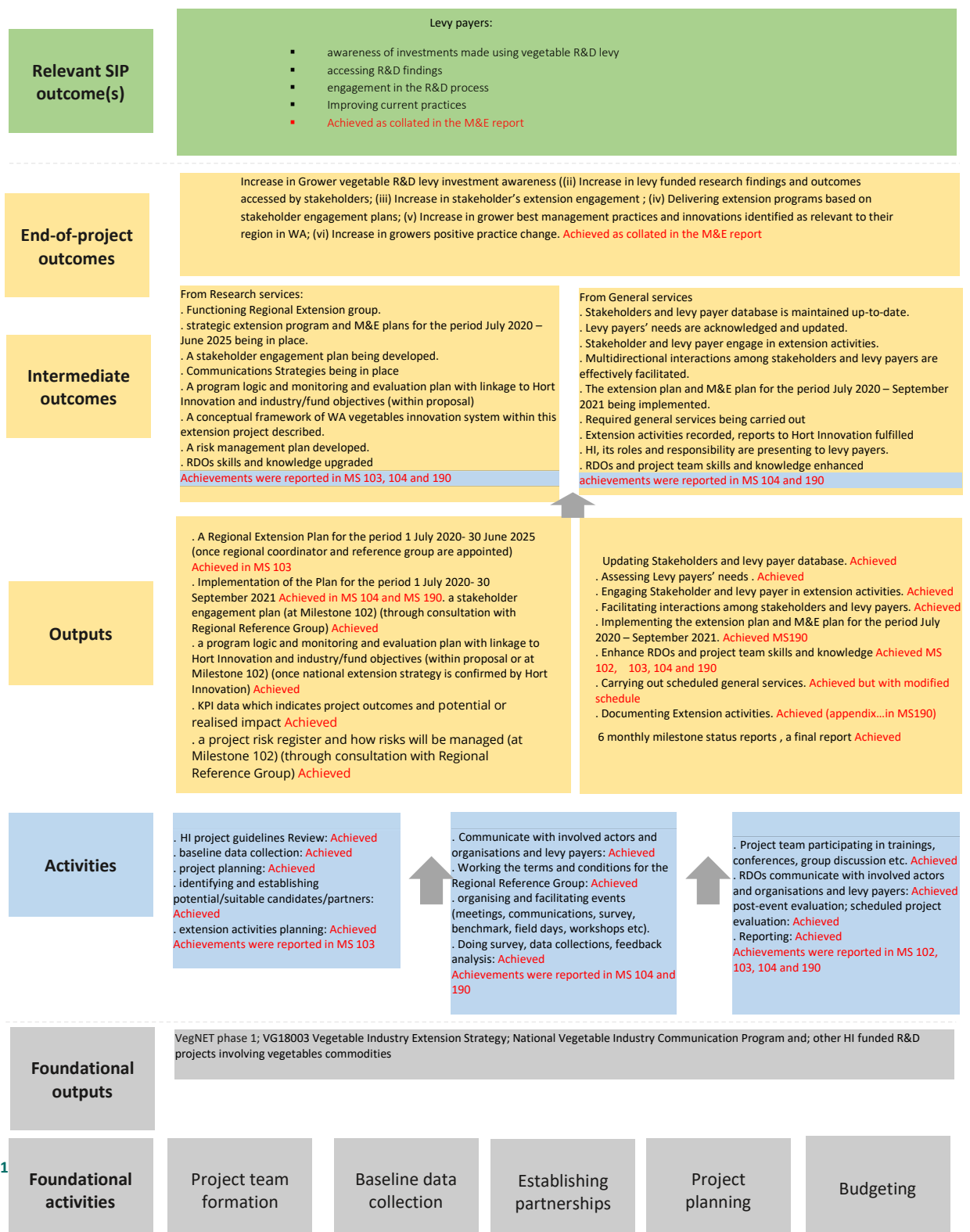
## Outcomes

Two overall goals of the VegNET program have been seen as driver for VegNET WA RDOs’ activities during VegNET 2.0 project, they included: (i) Improved capability of levy payers to adopt best management practices and innovations, and (ii) Improved levy payer awareness and attribution of the vegetable levy investments.

Over 18 months of VegNET 2.0 from April 2020 to September 2021 VegNET WA’s RDOs have successfully developed and executed activities that have been carefully defined in the project strategic plan and the project work plan to achieve desired outcomes.

The final project outcomes are summarised in table 1 of this section. Details intermediate outcomes of individual project output are in the appendix 1 – VegNET 2.0 WA RDOs’ activities, outputs, and outcomes.

Table 2: The overall project outcomes against project logic



RDOs' skills and knowledge has been significantly enhanced during the professional development phase of this project. As a result, the innovation system approach has been successfully employed by WA RDOs during the research phase of this project to achieve designed outcomes. These included the development of:

- A functioning Regional Extension group.
- A strategic extension program and M&E plans for the period July 2020 – June 2025.
- A functioning stakeholder network that is working effectively throughout the project life.
- The communications Strategies which has effectively driven communication throughout the project
- A program logic and monitoring and evaluation plan that worked driving project activities effectively toward achieving desired outcomes
- A conceptual framework of WA vegetables innovation system within this extension project.
- A risk management plan that has been applied effectively to overcome the COVID crisis and other natural disaster incidents during implementing the project activities

Evidence of these achievements have been reported in milestone reports 103 and 104

Aiming to demonstrate how to Improve the capability of levy payers to adopt best management practices and innovations, the VegNET WA project has been designed to help grower participants going through a 5-stage innovation adoption process that includes:

- Knowledge (expose growers to introduced innovation concepts and assist them in understanding the benefits).
- Persuasion (the forming of a favourable attitude to it).
- Decision (commitment to adoption).
- Implementation (putting it to use).
- Confirmation (reinforcement based on positive outcomes from it)

Activities, outputs, and outcomes of the improving water and fertilizer use efficiency focus are shown on Table 1 of appendix 1.

The introduction of knowledge and information relative to soil types, water demand pattern of crops and soil water movement and the root zone concept resulted in 100% of grower attendees in the program having a greater understanding of water and nutrient management. The establishment of a grower group comprising 11 growers who expressed great interest in this focus and committed to engage in the project was a result of these knowledge and information transfer activities.

WA RDOs strategy was to concentrate the extension services to this group to gain an “early adopters” force for later speed up of the adoption rate in VegNET 3.0. The list of growers in this group is in appendix 2 (This list is not to share to public).

At the end of the project 5/ 11 growers showed significant save of water, fertilizer, and energy resources. The highest save was 66% of water, electricity and fertilizer while the rate of marketable product got 20% increase due to increase of fruit size. This was a result of a reduction of two third of irrigation time each irrigation shift.

On the other hand 6/11 growers committed practice changes such as splitting irrigation and shorten the total watering time by coming cropping season starting in October 2021.

900 plus WA vegetable growers received information about this project and its demonstration results via 4 articles in VegetablesWA magazine of which 2 were republished on AUSVEG magazine.

Lessons learnt from this project along with the established collaborators network, the functioning grower group, the enhanced growers' competency in water and fertilizer use practices of the “early adopters” are good stock to be carried over to VegNET 3.0.

Extension services in farm biosecurity focus have produced encouraging outcomes. Activities, outputs, and outcomes of the improving water and fertilizer use efficiency focus are on the table 2 of appendix 1.

A grower group of 7 growers has been formed and facilitated practice change throughout the project implementation course. This group has been worked with like the “early adopters” which is expected to be driving force for wider adoption of farm biosecurity in the region. The list of growers in this group is in appendix 2 (This list is not to share to public).

Basically, as the results of the extension services in this focus grower group members demonstrated understanding and certain level of competency in developing and implementing farm biosecurity plan for their own farm. These plans are updating over time.

The benchmarking of practice changes in farm biosecurity before and after the project showed 100% (7/7 grower members of the focus group) have improved their farm biosecurity practices which is indicated by the increase of the number of farm biosecurity checklist boxes ticked (the Benchmark results are in the table 4 of Appendix 3). However, the level of practice change varies among growers in the group. One grower got highest number of farm biosecurity checklist boxes ticked is 31/38 (81% of complete farm biosecurity checklist) whilst 6 other growers got 18/38 to 26/38 boxes ticked (47%-68% of the checklist) as compared to initial average of 11/38 boxes ticked (27%).

It is also recorded that 21 grower attendees of 2 opened-discussion forums on integrating farm biosecurity practices and specific pests and diseases management in September 2021 expressed interest in trying this approach in coming cropping season.

Working with VegetablesWA's Quality Assurance Coordinator, the WA Extension team were able to identify skills and training gaps in businesses. Segmenting the participants into regions, accreditation requirements and available workforce have allowed issues to be addressed with the individual objectives of the business in mind. By engaging state-based government training providers and associated stakeholders, Industry certification bodies, scanning research and embracing established professional relationships the VegNET WA RDOs have achieved accurate, regionally representative insights (which allow integration of Quality Assurance guidelines and Food Safety standards) into Grower/business requirements.

Strong stakeholder and grower engagement throughout the project life was developed resulted in 3/4 accredited chemical classes been implemented and one has been scheduled by November 2021.

26 attendees, including 9 Vietnamese speaking growers, completed the chemical class and being waiting for their assessment results whilst a number of growers have expressed interest to attend the coming class in November.

26 attendees in the program proved having a greater understanding and skill in chemical handle, transport, storage, use and disposal. Activities, outputs, and outcomes of the improving water and fertilizer use efficiency focus are on the table 3 of appendix 1.

This enhanced skill enabled grower attendees to upgrade their product quality standard by moving further to Freshcare training and achieving Freshcare standard certification.

Whilst it's difficult to place a monetary value on a Quality Assurance System and chemical accreditation, based on the crop(s) grown, scale of production, however, this could be offset against the areas of the business which have been improved as a result:

- Maintained market acceptance while buyers' perspective to produce standard set higher
- Maintained consumer confidence
- Increased acceptance of "Best Practice" culture
- Increased industry sustainability
- The industry's reputation in term of food safety and environment care are more secured.

During the project life VegNET WA RDOs have also carried out services that the outcomes were not directly relative to the three main focuses. this help strengthening relationship among RDOs and growers and other service providers which is essential for extension services delivery. The activities, outputs, and outcomes of these services are on the table 4 of appendix 1.

## Monitoring and evaluation

Based on the recorded activities, outputs and outcomes for the 3 project briefs (Appendix 1) the M&E report provides the answer the key evaluation questions in Table 3.

Table 3: Key Evaluation questions

Key evaluation questions	Relevant?	Project-specific questions
<b>Effectiveness</b>		
1. To what extent has the project achieved its expected outcomes?	Yes	The project has very well achieved its expected outcomes in terms of: (i) Increase in levy funded research findings and outcomes accessed by stakeholders; (ii) Increase in stakeholder’s extension engagement; (iii) Delivering extension programs based on stakeholder engagement plans; (iv) Increase in grower best management practices and innovations identified as relevant to their region in WA; (v) Increase in growers positive practice change. Regarding to Increase in Grower vegetable R&D levy investment awareness, the indication of this achievement is not easily quantified. The project funding statement, project logo, and VegNET banner were displayed in every event throughout the project. This along with the availability of VegNET WA RDOs as a point of extension service contact for levy payers have done its best toward achievement of this specific outcomes.
<b>Relevance</b>		
2. How relevant was the project to the needs of intended beneficiaries?		By engaging state-based government services providers such as DPIRD, NRM, Department of water and environment regulation and associated stakeholders, Industry certification bodies, scanning research and embracing established professional relationships the VegNET WA RDOs have achieved accurate, regionally representative insights (which allowed the integration of the three main focuses into Grower/business requirements. Working with growers and the collaborators network since the VegNET program started five years ago the WA Extension team were able to identify skills and training gaps in vegetable businesses. Segmenting the participants into regions, knowledge and skill requirements and available workforce have allowed issues to be addressed with the individual objectives of the business in mind.
<b>Process appropriateness</b>		
3. How well have intended beneficiaries been engaged in the project?		The target engagement levels of vegetable industry levy payers were well achieved. The information transfer service has engaged 900 plus growers every quarter via project article in both VegetablesWA magazine and also AusVEG magazine. Several thousands of grower interactions were recorded via social media (Facebook pages) in the project related posts. However, within a relatively short implementation time (12 months of the 5-years strategic plan) VegNET WA RDOs have developed strategy and work plan to engage a limit number of growers to build up an “early adopter” platoon who will trigger larger adoption wave later. Two subject focused groups comprising 18 growers in total have been deeply engage in almost every project activities. 26 other growers have participated in accredited chemical training courses. These growers proved having a greater understanding and skill and committed practice changes toward adopting introduced innovation in 3 main focuses.
4. To what extent were engagement processes appropriate to the target audience/s of the project?		Working with growers and the collaborators network since the VegNET program started five years ago the WA Extension team were able to identify the needs of intended beneficiaries (skills and training gaps in vegetable businesses). Segmenting the participants into regions, knowledge and skill requirements and available workforce have allowed RDOs develop effective grower engagement strategy and issues to be addressed with the individual objectives of the business in mind. By engaging state-based government services providers such as DPIRD, NRM, Department of water and environment regulation and associated stakeholders, Industry certification bodies, scanning research and embracing established professional relationships the VegNET WA RDOs have achieved accurate, regionally representative insights (which allowed the integration of the three main focuses into Grower/business requirements. The built-up understanding on growers’ attitudes and practices through this process allowed RDOs designed effective grower engagement strategy. Events have been organised in such conditions as much familiar environment with grower as possible. Grower-led open discussion forum method was employed to allow grower take lead and be the centre of the information and technology transfer process.
<b>Efficiency</b>		
5. What efforts did the project make to improve efficiency?		VegNET WA RDOs have identified and developed strong and valuable partnerships with a range of stakeholders associated with the vegetable industry network (or knowledge system), that have led to collaborative opportunities that supported information and knowledge sharing and the amplification in the delivery of the latest RD&E and best management practices to growers. As the results, VegNET WA was able to expand its’ outreach and capacity to service growers in specific segments through the development of long-term partnerships with a range of government and private sector organisations, researchers, consultants and farm advisers. VegNET WA activities and impacts were amplified through developing strong and enduring partnerships, and importantly greater impact at the grower level. VegNET WA was also able to define its’ “value proposition” statement that captures the project’s core philosophy and outcomes, providing a clear statement of opportunity and benefit to both existing and potential partners.
<b>Other</b>		
To what extent was the project enhancing the employer’s staff (RDOs) capability?		RDOs’ skills and knowledge has been significantly enhanced during the professional development phase of this project. As a result, the innovation system approach has been successfully employed by WA RDOs during the research phase of this project to achieve designed outcomes. These have been proven by the successful development of: <ul style="list-style-type: none"> <li>. A functioning Regional Extension group.</li> <li>. A strategic extension program and M&amp;E plans for the period July 2020 – June 2025.</li> <li>. A functioning stakeholder network that is working effectively throughout the project life.</li> <li>. The communications Strategies which have effectively driven communication throughout the project</li> <li>. A program logic and monitoring and evaluation plan that worked driving project activities effectively toward achieving desired outcomes</li> <li>. A conceptual framework of WA vegetables innovation system within this extension project.</li> <li>. A risk management plan that has been applied effectively to overcome the COVID crisis and other natural disaster incidents during implementing the project activities</li> </ul>



## Recommendations

The VegNET 2.0 project had a number of differences from the previous vegetable industry extension projects and provided some insights into the impact of the different approaches and opportunities for further improving impact.

### 1. Continue RDOs professional development and mentoring

RDOs' skills and knowledge has been significantly enhanced during the professional development phase of this project and there would be continued benefits to project staff and outcomes if this training was continued in future extension projects. As a result of the training in the current project, the innovation system approach has been successfully employed by WA RDOs during the research phase of this project to achieve designed outcomes. The training has enabled the RDOs to develop important structures and plans in this project which have contributed to its success. These have included:

- A functioning regional extension advisory group.
- A strategic extension program and M&E plans for the period July 2020 – June 2025.
- A functioning stakeholder network that is working effectively throughout the project life.
- The communications strategies which have effectively driven communication throughout the project
- A program logic and monitoring and evaluation plan that worked driving project activities effectively toward achieving desired outcomes
- A conceptual framework of WA vegetables innovation system within this extension project.
- A risk management plan that has been applied effectively to overcome the COVID crisis and other natural disaster incidents during implementing the project activities

### 2. Further implementation and adaption of the innovation system extension approach

The innovation system approach has proved to be a suitable and impactful extension methodology in this project however further development and adaption of the methodology will increase engagement and adoption with growers. The innovation systems approach has allowed RDOs to imbed themselves in multi-faced extension environments which involved diverse actors and organisations driven by multidirectional forces toward achieving each other desired outcomes. RDOs need to continue to implement the system and adapt it to the desired project outcomes and target audience needs.

### 3. Increase focus on grower led learn rather than researcher driven workshops

Grower-led opened discussion forums have proved to be effective extension technique in this project. Traditionally extension activities have been usually driven by research projects and experts delivering presentations and workshops that are based on assumptions about what growers need to know and this often leads to poor adoption rates of research findings and practices. Using techniques that allow growers to take the lead and be the center of the information and technology transfer process has proved to be more impactful and engaging.

### 4. Improved training in qualitative data collection and analysis

Effective and practical training on qualitative data collection, analysis, and expression of its insights is needed to enable RDOs to better meet the M&E requirements of extension projects. This will enable better measurement of the impact of extension activities and lead to longer term increases in grower awareness and adoption of vegetable levy R&D investment.

### 5. Improved extension services and resources for language other than English levy payers

A project could be developed to better understand the needs of non-English speaking levy payers. This project would enable extension activities and materials to be developed for this significant segment of the industry and lead to greater awareness and adoption of levy funded R&D. Understanding the language and cultural differences of the major groups of language other than English growers across Australia would be beneficial and lead to more efficient expenditure of levy funds.

### 6. Greater flexibility to selectively service complementary non-levy growers

A flexible target audience policy would allow RDOs expand extension services to non-levy paying vegetable lines (such as tomatoes) which are grown on levy payers' farms should be considered. This would allow RDOs to better engage and building stronger relationships growers and in some cases lead to beneficial outcomes for the wider industry. This is particularly true in projects that are focused on topics such as biosecurity and pest control where approaches need to cover a range of crops in a given region.



## References

<sup>1</sup>Vegetable Industry Extension Strategy – Sean Kenny (Rural Consulting Group), Jeff Coutts (Coutts J&R) & Neels Botha (Neels Botha Ltd) October 2019

Hort Innovation Vegetable Strategic Investment Plan 2017-22

## **Intellectual property, commercialisation and confidentiality**

Grower information contained within the report remains the property of vegetablesWA

## Acknowledgements

Sam Grubisa and Karen Raybould for their work and contribution to the delivery and outcome of the project

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The Regional Extension Advisory Group, vegetablesWA Committee of Management, APC Vegetable Producers Committee for their continued support in delivering this project to extend the delivery of R&D to WA vegetable Growers

## Appendices

Appendix 1 Activities Outputs and Outcomes

Appendix 2 List of Grower Groups

Appendix 3 M & E report

Appendix 4 M&E Plan Output Water and Fertiliser

Appendix 5 Farm Bio-Security

Appendix 6 Chem Cert – QA

Appendix 7 Report against activities to emergency response and other outputs

Appendix 1. VegNET 2.0 WA RDOs' activities, Outputs and outcomes

Table 1. Activities, Outputs and outcomes of the Water and fertilizer use improvement project

No	Dates	Activities	Outputs	Outcomes	Remarks
1	04/12/2020	Language assistance and grower engagement	Translate and spread out the invitation to growers re meeting with local governments, Depart. of Water to seek for alteration of 10% water cutting plan.	Growers got updates information on how the proposal of 10% cutting of water allocation was made and works done by various stakeholders to assist growers to scope with it. 12 growers later participated in the water field day in Carabooda co-organised by DPIRD and Irrigation Australia. 11 of these grower have then joined to irrigation system efficiency assessment program funded by DPIRD and collaborated with RDO. These growers were then join to form a water focus grower group that engaged with the water and fertilizer project with thin VegNET WA project. 2 of these growers got a demonstrations set up in their farm: use of digital soil moisture monitor technique and adopted new irrigation ways that saved them up to 60% of water and fertiliser	Today the final decision on 10% water cutting has not been made yet.
2	08/12/2020	Developing collaborators network	Email to targeted stakeholders to present the RDOs focuses and workplan and suggest an establishment of a collaboration network	Obtain agreements via reply emails from all targeted stakeholders listed in the stakeholders engagement plan (except Alan Nankivell National TPP Coordinator, AUSVEG) (Please see stakeholders engagement plan in MS 103)	This is a significant achievement that place a foundation toward getting essential support for successful execution of project activities throughout the project course
3	09/12/2020	webinar	Participated in webinar re "Using Soil Moisture technology to inform decision on irrigation managing" organized by Hugh - Victoria RDO	Copied the information presentation techniques to apply to grower meeting in the water and fertilizer use improvement project. Improvement will be made when conduct the grower meeting later by combining soil moisture technology with the root zone concept and with the illustration by an advanced grower who has adopted this innovation for 4 years	Collaboration among VegNET RDOs to utilize each other resources and expertise RDO's knowledge enriched.
4	10/12	Zoom meeting	Participated in zoom meeting with Geraldton growers, Depart of water (DWE), DPIRD, Mid-West Development Commission to discuss possibility to alter water use contracts between growers and DWE toward better flexibility terms to adapt to seasonal variation of water demand by growers	Growers get explanations from the water supply company and understand that the fix rate of daily use was involved in the contract based on specific design of infrastructure of the water supply company.	The outcomes did not make growers happy.
5	14, 15, 16/12	Email and phone communication with DPIRD Collaborators – Neil Lantzke and David Rowe	Planned for a meeting to develop workplan together for this project and to confirm the tasks, roles and contribution from each party	A collaboration principle established: DPIRD: provide equipment (lending from Irrigation Australia member – Wildeye), and technical support for the field demonstration. RDOs: engaging with growers to establish the focus grower group and select suitable farm properties for field demonstrations set up and facilitate the knowledge transfer from technical collaborators	A strong RDOs - DPIRD- Private Supplier – growers is start to take shape.

				to growers A Wildeye technician: Assist installing the soil moisture monitoring devices and set up data logging accounts for RDOs and for grower participants	
6	18/12/2020 to 28/1/2021	Engagement with growers  Communicate with collaborators	18 visits and 41 phone discussions were made to 11 growers of focus groups for water project and 7 growers of focus groups of farm biosecurity project Email contact and meetings was made with collaborators at DPIRD and Irrigation Australia re possible reduction of the number of field trials and case studies	The project workplans were introduced to growers 6 growers agreed to set field trials on their properties to compare their conventional irrigation practices with the suggested irrigation innovation using soil moisture monitoring to assist irrigation management. Inspections of those 6 growers were made to select 4 suitable one for trial purpose. These will be use as case studies in the project Unfortunately, only 2 are suitable for trial.  Collaborators get aware of obstacles in setting field trials. Agreed to reduce the number of case studies to 2.	13/18 growers committed trying new technology  Promptly inform collaborators obstacles and changes during the course of collaboration helped to maintain collaboration spirit and effective collaborative works. 7 personel (3 persons of Wildeye and 4 of DPIRD participated in 3 meetings with RDO)
7	10/2/2021	Maintain contact to project collaborators	Communicated with project collaborators re changes of project activities and schedule due to Covid lock down and restriction	Maintaining the leadership role among project collaborators. Keep collaborators updated with changes so that they can be prepared for. Collaborator network maintained to continue working together.	
8	10-11/3/2021	Grower visits	14 grower visits North Perth to maintain RDOs commitment to deliver water project activities after Covid lock down and maintaining grower engagement.	Grower engagement maintained. 11 growers are keen to learn and stay committed with up taking innovation information. Acknowledge the loss of seasonal window to establish field trials as planned. Acknowledge the loss of seasonal window due to Covid lock down and restriction that make the establish field trials impossible. This requires changes of project activities, outputs and outcomes.	11 growers of the focus group visited of which 2 demonstrations were set up at 2 growers' farm properties that fit to given available equipment resource
9	12/3/2021	Grower visits with DPIRD	Visited 2 growers' properties to prepare for demonstration on Soil moisture monitoring technology	Sites and crops were selected to set up demonstrations	2 growers involved in demonstrations.
10	07/4	Preparing for Cover Crop coaching clinic in Gingin	Finalised the field day plan with growers and with service provider - AHR	Date and venue for the event fixed Contribution from each party agreed The event will be on 28/4	The event was postponed due to Covid lockdown during 24-27/4 and further restrictions.
11	12/4	Meeting with Wildeye	Meeting with Wildeye – a soil moisture monitoring innovators to discuss possible collaboration to disseminate this innovation to growers	Getting to understand each other interests and services. A collaboration was initiated Additional technical support to this project beside other collaborators	Conflict interests need to be well maintained with a private company to protect growers' interest. 3 collaborators involved.
12	19/4	Field works	Installing the soil moisture monitoring devices	Got the soil moisture monitoring demonstration set up at 2 farm properties	3 growers (of 2 farm businesses) and 2 collaborators from Wildeye and DPIRD involved
13	21/4	Communication with collaborators	Communicated with Wildeye and DPIRD technicians to set up accounts for data logging	In progress	2 collaborators from Wildeye and DPIRD involved

14	24/4	Response to Covid lock down	Discussed with AHR re postponing the Cover crop coaching clinic event to to Covid lock down	The event was postponed due to Covid lockdown during 24-27/4 and further restrictions and will be resumed when appropriate	Promptly communicate with collaborators to make changes of the planned activities is crucial.
15	19/4	workshop	Educate growers to: - download Wildeye app - assess and understand the output data - integrate the data into decision making to make changes in irrigation practices - Assessment the preliminary gains/lost - Planning for further actions	2 demonstration involved grower obtained: - Wildeye app downloaded to smartphones - Daily assess and understand the output data - integrated the data into decision making to make changes in irrigation practices by reducing irrigation time by 70%. - Saved 70% water, electricity, fertilisers - Better fruit size and increased marketable produce by 40% - Committed to continue the trial to finetune the changed practices and reinforce the gains. Collaborators: Committed to continue engaging next season	6/11 members of focus grower group, 1 collaborator from DPIRD involved. See more details in M&E report 2 growers committed adopting innovation by installing affordable digital irrigation controllers. 5 growers of the group express difficulties to adopt innovation due to resource shortage, specific crop types and inherited irrigation system characteristic designs.
16	20/4 to 2/6	Meetings and Communication with growers and collaborators	Consult with Collaborators re: -Trial progress -Trial results and further collaboration opportunities	RDOs: identified the constraints and solutions for further improvements (affordable automatic irrigation controllers to overcome additional labor requirement due to practice changes )	3 person in DPIRD and 2 from Wildeye involved. An article resulted from the demonstration was published in VegetablesWA mag and republished in Irrigation Australia Mag.
17	20/7	Soil Restoration meeting and Carnarvon Research Station Field day	Assisting growers engaging in soil restoration program and test the topsoil salinity	16 (20% of total) growers got the agreement form completed to get topsoil filled. Soil salinity was tested to show suitable salt level for vegetable growing.	This activity is not directly related to the project plan, however it influences soil fertility, thus growers 'practices re water and fertiliser application. 16/80 growers benefit from this service. Others were able to complete the form themselves.
18	25/8	Attend event	Waterwise Irrigation Expo	RDO engaged with irrigation service providers to explore info re automatic irrigation controllers. A few affordable automatic irrigation controller brands were selected to introduce to growers RDO's knowledge increased	Discussed with a new collaborator to invite him to involve in VegNET 3.0 to transfer affordable digital irrigation controller to growers.
19	27/9	Workshop	Got plan for the soil moisture monitoring demonstration wrapped up by a focus group meeting by 27/9/2021	The event was postponed (4/6 growers of the focus group absent due to unforeseen matters; one of the 2 key growers involved in demonstration closed farming business due to illness). It was agreed that the event will be resumed in Summer 2021.	This project will be carried over to VegNET 3.0 to amplify the achievements.

Table 2 Activities, Outputs and outcomes of the Farm biosecurity project

No	Dates2020	Activities	Outputs	Outcomes	Remarks
1	08/12/2020	Developing collaborators network	Email to targeted stakeholders to present the RDOs focuses and workplan and suggest an establishment of a collaboration network	Obtain agreements via reply emails from all targeted stakeholders listed in the stakeholders engagement plan (except Alan Nankivell National TPP Coordinator, AUSVEG) (Please see stakeholders engagement plan in MS 103)	This is a significant achievement that place a foundation toward getting essential support for successful execution of project activities throughout the project course Confirmation emails from collaborators attached
2	6/1/2021 to today	Assistance to Qfly outbreak in WA	Engaged with the Biosecurity team in DPIRD to obtain updated information and to provide assistance including language assistance for Qfly inspection activities. The list of Vietnamese growers in Qfly affected are who need language assistance was established and provided to DPIRD team. Provided language assistance to translate flyers, updates, quarantine requirements. Relay updates info to all growers through various channels: SMS text message, phone call, facebook posts	Grower got up to date info and alert on the Qfly outbreak incident to act accordingly to comply to the Qfly response and quarantine regulations. The RDOs-grower linkage is maintained and strengthened over time. Growers' practices (produce marketing and cooperation with inspection) observed complying to biosecurity regulation as a result gain by these activities	5 Collaborators from DPIRD and 5 Affected growers involved in inspection. No breach of biosecurity regulation recorded at the market during this time period. The biosecurity team detects no Qfly for over 60 days since Feb 2021. The Qfly-free area declared in June 2021.
3	13/1	Meeting with Collaborator	Meeting with Graham McAlpine – Perth NRM to exchange info re effort to enhance growers' awareness and practices on farm biosecurity	Achieved commitment to support each other in farm biosecurity services. Better understand each other interests and practices for effective collaboration	
4	14/1	Communication with AusVEG's biosecurity coordinator – Callum Fletcher	Phone chat	Strong commitment from AusVEG's biosecurity coordinator to support VegNET WA activities in farm biosecurity. A zoom meeting was set on 19/1 then move to 22/1 to discuss possibility to organize biosecurity workshops in WA together.	
5	22/1	Communication with biosecurity collaborators	A Zoom chat setting	A zoom meeting happened among VegNET WA RDOs, AusVEG's biosecurity coordinator, Area wide management of disease project team from DPIRD (Craig Webster and Dominie Wright and Monica) and Fall army worm researcher (Helen Pafford). A Plan for a road show to conduct a series of workshop in Carnarvon, Perth and Southwest with the present of all collaborators achieved. Contribution from each involved parties agreed	
6	18/12/2020 to	Engagement with growers	18 visits and 41 phone discussions were made to 11 growers of focus groups for	The project workplans were introduced to growers 6 growers agreed to sit in the focus group and participate	11 participating growers develop positive attitude toward learning



	28/1/2021		water project and farm biosecurity project	in case studies on growers' awareness, capability of develop and implement the farm biosecurity plan.	and trying farm biosecurity practices
7	22/2 to 26/2/2021	Travel to Carnarvon to assist with flood recovery effort and Carnarvon field day and to inform growers about possible farm biosecurity issues cause by water flood	(i) Consult with biosecurity and plant pathologist to get advice on biosecurity threat caused by flooding incident and relay their advice to growers in flood affected area. (ii) Assisted the grower survey on farm biosecurity conducted by NRM	Growers got updated info and alert to be better prepared for possible issues at post-flooding stage. Collaboration among RDOs, local growers and NRM was strengthened. The result of grower survey on farm biosecurity conducted by NRM will be shared to RDOs	
8	4/3/2021	Zoom meeting	Participated in zoom meeting with the Qfly response team at DPIRD to obtain updates and advice on Qfly quarantine measure to relay to growers Posting obtained updates and advice on Qfly quarantine measure to growers	Grower got up to date info and alert on the Qfly outbreak incident to act accordingly to comply to the Qfly response and quarantine regulations. The RDOs-grower linkage is maintained and strengthened over time.	
9	5/3/2021	Zoom meeting with Farm biosecurity project collaborators	Review the post-Covid lock down and travel restriction situation to organize workshops in Perth and Carnarvon	Acknowledged the travel restriction will stop collaborators coming from Victoria, thus the planned workshop contents will be changed but contributions from collaborators within WA remain the same. 2 workshops on pests and diseases management and farm biosecurity were fixed for Perth (24/3) and Carnarvon (25/3) on Fall army worms, Area wide disease management update, VegNET WA farm biosecurity project, Qfly outbreak management update Flyers for activities and events have been circulated	Risk management is important to effectively maintain collaborator network and to modify project activities when appropriate. attached
10	22/3/2021	Zoom meeting	Participated in a zoom meeting re Plastic waste management in vegetable production in Carnarvon	Get involved in a group to join effort to address the Plastic waste management in vegetable production in Carnarvon. The group included DPIRD, Carnarvon Grower Association, Gascoyne water corporation, Local government, VegetalesWA, DWE Got to understand the problem and its impact on farm hygiene and sanitation which may contribute to farm biosecurity risk. Contributed a suggestion re a provision of grower education to improve plastic waste management practice.	
11	24/3	Workshop	Organized a plant disease management and farm biosecurity workshop in Wanneroo	Growers are provided with up to date info re Fall army worm; diseases discovered under the area wide management of plant diseases, Qfly outbreak and control measures, Farm biosecurity project updates	Copy of list of participants attached Flyers for activities and events attached
12	25/3/2021	Obtaining farm biosecurity survey network feedback survey	Maintaining involved in the proposed network to get information updated	Obtained the farm biosecurity survey network feedback survey which will be used as a reference for this project	An opportunity for RDO to engage in a large plant biosecurity network

13		Workshop  Obtain grower feedback	Organized a plant disease management and farm biosecurity workshop in Carnarvon  Visited 2 growers in Carnarvon after the workshop to gain their feedback	Growers are provided with up to date info re Fall army worm; diseases discovered under the area wide management of plant diseases, Qfly outbreak and control measures, Farm biosecurity project updates  Growers' feedback are positive re the relevancy of the information provided. But more practical solutions should be developed to assist growers to effectively control the introduced pests. Growers got updated info and alert to be better prepared for possible issues such as FAW. Farm biosecurity concept is reinforced to enhance growers' awareness.	Copy of list of participants and flyer attached
14	22/4/2021	Zoom meeting	Participated in a zoom meeting 2 re Plastic waste management in vegetable production in Carnarvon	Introduce the team to the National Non-packing Plastic waste management project and provided the team with project document.	
15	17/6/2021	Zoom meeting	Biosecurity extension Community meeting	Maintain engaging in the national Biosecurity extension Community	See more details in Appendix
16	19-20/7/2021	Field works	American serpentine leaf miner investigation in Carnarvon with DPIRD	Samples were collected. No ASL recorded. ASL information and threat were communicated to 14 visited growers. Visited growers got updated info and alert to be better prepared for possible issues	
17	15-16/8/2021	Field works	virus and bacteria diseases sampling in association with Areawide management of virus and bacteria diseases management project	Routine scan on virus and bacteria diseases threat. Found diseases were informed to growers along with recommended enforcing farm biosecurity and diseases control measures. RDO stay updated with pest and disease trend and got knowledge enriched whilst working with plant pathologists. Growers got updated info and alert re discovered pests and diseases in their area to be better prepared for possible issues	
18	26/8	Workshop	Workshop	Workshop with 6 growers on Farm biosecurity planning and implementation review in Carnarvon  6 farm biosecurity plans were reviewed and updated as well as future actions identified	More info is in M&E report Great progress in terms of learning and practicing farm biosecurity concept. This help growers to integrate this practices with appropriate chemical use in crop protection and QA.
19	14/9/2021	Workshop	Growers lead Open discussion forum on Farm biosecurity and Bacterial diseases management	A growers lead discussion fashion was practices.  Growers' need information are exploded.  Scientists and other stakeholders play supporting growers learning.	Growers' feedback revealed this extension fashion is most preferable  " It is like getting understand more about my car, its problem and ways to fix it rather than listening others introducing a new car"

				<p>The grower pickup of Farm biosecurity concept and practices got enhanced when they are integrated with a specific pest/disease management.</p> <p>Possible practical changes are defined right in the meeting and committed trying by growers.</p>	
20	23/9/2021	Workshop	Growers lead Open discussion forum on Farm biosecurity and Bacterial diseases management	<p>A growers lead discussion fashion was practices.</p> <p>Growers' need information are exploded.</p> <p>Scientists and other stakeholders play supporting growers learning.</p> <p>The grower pickup of Farm biosecurity concept and practices got enhanced when they are integrated with a specific pest/disease management.</p> <p>Possible practical changes are defined right in the meeting and committed trying by growers.</p>	Growers' feedback revealed this extension fashion is most preferable

Table 3. Activities, Outputs and outcomes of the accredited chemical training project

	Dates	Activities	Outputs	Outcomes	Remarks
	4/12/2020 to 29/4/2021	Workshops / discussion meetings:	<p>Workshops / discussion meetings:</p> <p>Electronic newsletters: Multiple inclusions in vegetablesWA's weekly (delivered 1530 Friday) e-news Example - <a href="https://vegetableswa.cmail19.com/t/ViewEmail//55D9C489394CA4EF2540EF23F30FEDED/725D34D3F29EC0AC22947492D9797BBC">https://vegetableswa.cmail19.com/t/ViewEmail//55D9C489394CA4EF2540EF23F30FEDED/725D34D3F29EC0AC22947492D9797BBC</a></p> <p>Magazine articles:  2020 Summer Edition of WA Grower magazine</p> <p>Website:  Social media: Facebook:  Consumer Page</p> <p>Targeted event invitations:</p> <p>Engagement meetings:</p>	<p>Confirmed Chemical Certification Courses</p> <p><b>2021</b> 17<sup>th</sup> -18<sup>th</sup> May – Perth 21<sup>st</sup> -23<sup>rd</sup> June – Perth (<i>Venue TBC</i>) 16<sup>th</sup> -18<sup>th</sup> August – Perth (<i>Venue TBC</i>) 22<sup>nd</sup> -24<sup>th</sup> November - Perth (<i>Venue TBC</i>)</p> <p><b>2022</b> 1<sup>st</sup> -3<sup>rd</sup> February – Perth (<i>Venue TBC</i>) May – <i>Date and Venue TBC</i> August - <i>Date and Venue TBC</i> November - <i>Date and Venue TBC</i></p> <p>VegNET RDO Update – Page 57</p> <p><a href="https://issuu.com/vegetableswa/docs/wagrower_summer_20_lr">https://issuu.com/vegetableswa/docs/wagrower_summer_20_lr</a></p> <p>Updated development of VegNET WA page on vegetablesWA website <i>in progress</i> <a href="https://vegetableswa.com.au/">https://vegetableswa.com.au/</a></p> <p><a href="https://www.facebook.com/groups/1641522495930877">https://www.facebook.com/groups/1641522495930877</a> Private Grower page <a href="https://www.facebook.com/vegetablesWA">https://www.facebook.com/vegetablesWA</a></p> <p>Chemical Accreditation Course – 10 attendees in Wanneroo Targeted Grower emails to be issued closer to the dates - 21<sup>st</sup> -23<sup>rd</sup> June – Perth (<i>Venue TBC</i>) 16<sup>th</sup> -18<sup>th</sup> August – Perth (<i>Venue TBC</i>) 22<sup>nd</sup> -24<sup>th</sup> November - Perth (<i>Venue TBC</i>)</p> <p><b>2022</b> 1<sup>st</sup> -3<sup>rd</sup> February – Perth (<i>Venue TBC</i>) May – <i>Date and Venue TBC</i> August - <i>Date and Venue TBC</i> November - <i>Date and Venue TBC</i></p> <p>North Metropolitan TAFE Industry Advisory Group Meeting invitation from Neha Umaretiya (Head of Programs for Horticulture) to attend as vegetable industry advisor for updates to TAFE Horticulture Certificates and Diplomas Central Regional TAFE consultation with Jenny Reid (Commercial Business Coordinator) to confirm chemical course delivery and</p>	

				dates.	
	17-18/5/2021		Chemical Accreditation Course	Chemical training class for 8 growers held in Wanneroo. All attended grower were accredited and qualified for Freshcare 4.2 requirement.	
	22-23/6/2021		Chemical Accreditation Course	Chemical training class for 9 growers held in Wanneroo (22-23 June 2021). Assessment process toward accreditation is in progress.	
	17/8/2021		Workshop	Group assistance on Freshcare 4.2 for 6 growers in Carnarvon. All involved growers have completed their Freshcare 4.2 upskilling and have submitted their completed audit forms.	
	26/8/2021		Meetings	Group assistance on Freshcare 4.2 for 2 growers in Geraldton (26 August 2021) Both growers have completed their Freshcare 4.2 upskilling and have submitted their completed audit forms and passed farm audits to obtain FreshCare 4.2 certificate	
	28-29/9/2021		Chemical Accreditation Course	Chemical training class for 9 growers held in Wanneroo (22-23 June 2021). Assessment process toward accreditation is in progress.	
	30/9		Chemical Accreditation Course planning	29-30 November for the last full course for the year	

Table 4. Activities, Outputs and outcomes of project toward developing RDOs – Growers – stakeholders relationships

No	Dates20	Activities	Outputs	Outcomes	Remarks
1	11/12/2020	AusVEG-RDOs catch up	Missing due to conflicting with VegetablesWA Annual General Meeting	Recapture the meeting summary via AusVEG's email	
2	14/12	Article for AusVEG	Article on "VegNET WA RDOs' focuses and workplan"	Article was published on AusVEG magazine to introduce "VegNET WA RDOs' focuses and workplan" to vegetable growers nationally	This RDO service is not within the approved project scope. However, this help strengthening RDO-grower trust and relationship which is essential for extension services delivery.
3		Collecting technical information resources	Collecting Technical resources from AHR under "diseases management theme"	Resources collected to store in VeGNET resources folder that are later provided to growers when problem occur. Collected technical resources include: (i) Managing Foliage diseases; (ii) Fungicides and Fungicide Resistance; (iii) Management of lecture anthracnose; (iv) Management of Sclerotinia in vegetable crops; (v) Chili spacing; and (vi) Potato soft rot.	
4		Assisted grower	Phone communication with the grower and the seeds supplier re a complain about pumpkin seeds quality	An solution was set between the grower and the seeds supplier	
5	15-17/12	Provide language assistance to NSW RDO	Check and provide suggestions to improve the Vietnamese translation of 3 factsheets on Serpentine Leaf miner	Language assistance was provided to NSW RDO	
6	21/12/2020	Assist Berry IDO – Helen Newman	Sharing experience on how to organize language assistance to Vietnamese berry growers and the feedback collection techniques	Strengthened relationship among RDO working in various disciplines; sharing RDOs' concerns and interests.	Over 90% of WA berry growers are Vietnamese
7	24/12	Publication	An article "VegNET WA Strategy – A roadmap for enhancing WA vegetable growing businesses" was produced.	The article was published on VegetablesWA quarterly magazine and facebook pages. The VegNET WA strategy is advertised to all vegetable grower in WA,	Increased grower awareness about VegNET project and VegNET WA services
8	5-9/1/2021	Fire emergency response	Timely updating DFES alerts, and Fire ban alerts, hot works ban issued by local governments to growers in the affected ares in both English and Vietnamese	Growers got updated alerts to act accordingly	This RDO service is not within the approved project scope. However, this help strengthening RDO-grower trust and relationship which is essential for extension services delivery.
9	6-8/1/2021	Article for AusVEG and article for VegetablesWA magazine	Article on "VegNET WA looking ahead for 2021" Article on "Improving water and fertilizer use efficiency"	Both articles got published. Increased grower awareness about VegNET project and VegNET WA services	AusVEG magazine autumn 2021 p 11  VegetablesWA magazine Summer 1/2021

10	12/1	Organise meeting with REAG and Regional Extension Coordinator	Setting a meeting venue and contents for REAG approval on VegNET WA strategy and focusses	A meeting was set on 27/1 where REAG approval on VegNET WA strategy and focusses was achieved	This is a significant achievement that place a foundation toward getting essential support for successful execution of project activities throughout the project course
11	20/1 – 14/3/2021	Language assistance for growers to pass Freshcare farm auditing	Provided language assistance for 5 growers in Carnarvon and 3 growers in Perth to close all Correction Action Required (CARs) to pass Freshcare farm auditing.	3 growers in Carnarvon and 3 growers in Perth achieved Freshcare Certificates. 2 growers in Carnarvon understand that their need to go further training to gain better understanding to correctly implement the Freshcare standard requirements. The Training on Freshcare 4.2 is planned for 5/2021	This RDO service is not within the approved project scope. However, this help strengthening RDO-grower trust and relationship which is essential for extension services delivery.
12	30/1/2021 to 01/3/2021	Emergency response to Covid lock down, Bush fire, Harvest and vehicle movement ban, bad weather and water flooding in carnarvon	(i) Provided language assistance to relay important info to growers so that growers' businesses can maintain operating or stop operating when required such as - Mask wearing, distancing between employees. - checkpoint pass requirement for employees - How inputs suppliers operate during the lock down and restriction. -Qfly quarantine measure for vegies delivery - Fire alert updates - Flood warning updates -Road closure (ii) Maintaining contact to key growers in affected zone to obtain info and provide and feedbacks to the office. (iii) Relaying food safety advice to growers in flooded area (iv) Developed and published "flood incident check list" to growers.	Growers got updated info and alert to prepare for and to act toward maintaining suitable operating or stop operating when required. VegetablesWA office get updated info of impacts of those incidents to growers and their businesses so that appropriate help and services were provided to them. Collaboration among RDOs, local growers association, DPIRD, NRM was strengthened while provide essential services to growers in affected areas. RDOs got community development skills enhanced. These services are not within the approved project scope. However, this help strengthening RDO-grower trust and relationship which is essential for extension services delivery.	Part of these activities were performed "from home" during Covid lock down and further restriction from 31/1 to 14/2/2021.
13	10/2/2021	Language assistance and information transfer	Provided language assistance to translate DPIRD notice re government assistance to flood recovery in Carnarvon then transferred the info to growers	These services are not within the approved project scope. However, this help strengthening RDO-grower trust and relationship which is essential for extension services delivery.  RDOs-DPIRD collaborators relationship is strengthened which is essential for extension services delivery.	
14	22/2 to 26/2/2021	Travel to Carnarvon to assist with flood recovery effort and Carnarvon field day and to inform growers about	Provided language assistance to: (i) Relay growers request to DPIRD for topsoil lost assessment and other flood damages to seek for government assistance. (ii) Presentations at Carnarvon	Growers got updated info and alert to prepare for and to act toward maintaining suitable operating or stop operating when required. VegetablesWA office get updated info of impacts of flooding incident to growers and their businesses so that appropriate help and services were provided to them.	

		possible farm biosecurity issues cause by water flood	field day	Collaboration among RDOs, local grower association, DPIRD, NRM was strengthened while provide essential services to growers in affected areas. RDOs got community development skills enhanced. These services are not within the approved project scope. However, this help strengthening RDO-grower trust and relationship which is essential for extension services delivery.	
15	5/3/2021	Assisting Berry RDO	Provided language assistance at the workshop organized by Berry RDO	These services are not within the approved project scope. However, this help strengthening relationship among RDOs which is essential for extension services delivery.	
16	07/4/2021	Assisting Labour Scheme coordinator	Provided language assistance for the Labour Scheme coordinator to assist a Vietnamese grower to complete her application and fulfill requirements to be approved employer	These services are not within the approved project scope. However, this help strengthening relationship among RDOs and growers and other service providers which is essential for extension services delivery.	
17	08/4/2021	AusVEG article	Submitted an article to AusVEG	A Vietnamese grower profile and his adoption of irrigation innovation is highlighted.	AusVEG magazine Winter 2021 edition – (not published yet)
18		Response to Seroja cyclone	Inform Vietnamese community in Carnarvon and Geraldton re: 'Unusual' threat as potentially three cyclones forming off Western Australian coast. Updated cyclone information by April 9 in bilanguage re warning and advices on "Tropical cyclone track map image – system 1" from BOM.COM.AU . Continued monitoring the changes to timely response when needed. Maintaining contact to growers in affected areas to the cyclone impacts updated. Working collaboratively with DPIRD to provide language assistance for damage assessment	These services are not within the approved project scope. However, this help strengthening relationship among RDOs and growers and other service providers which is essential for extension services delivery.	
19	9/4/2021	AusVEG RDOs catch up	Participated in vietual AusVEG RDOs catch up	Been updated with VegNET project activities in other areas	
20	12-22/4	Assist Seroja cyclone recovery	Maintaining contact to key growers in affected zone to obtain info and provide and feedbacks to the office. Relaying food safety advice to growers in affected sarea Assisted DPIRD team to contact growers and provided language assistance for damages assessment.	14 growers in Geraldton got their cyclone damages assessed. Assessment completed by 23/4	
	22/4	VegNET RDOs	Join to VegNET catch up via zoom.		



		catch up		Been updated with VegNET project activities in other areas	
21	28/4	Contact DPIRD to inquire the recovery assistance from government	A discussion with Rohan Prince – Director of Irrigated agriculture, DPIRD WA	Detailed reports will be provided to Truyen in 1-2 days The reports will be relayed to growers	
22	20/7	Soil Restoration meeting and Carnarvon Research Station Field day	Assisting growers engaging in soil restoration program and test the topsoil salinity	16 (20% of total) growers got the agreement form completed to get topsoil filled. Soil salinity was tested to show suitable salt level for vegetable growing.	
23	23/9	VegNET RDOs catch up	Join to VegNET catch up via zoom.	VegNET 2.0 wrap up	

Appendix 2a. List of Water and nutrition focused grower group

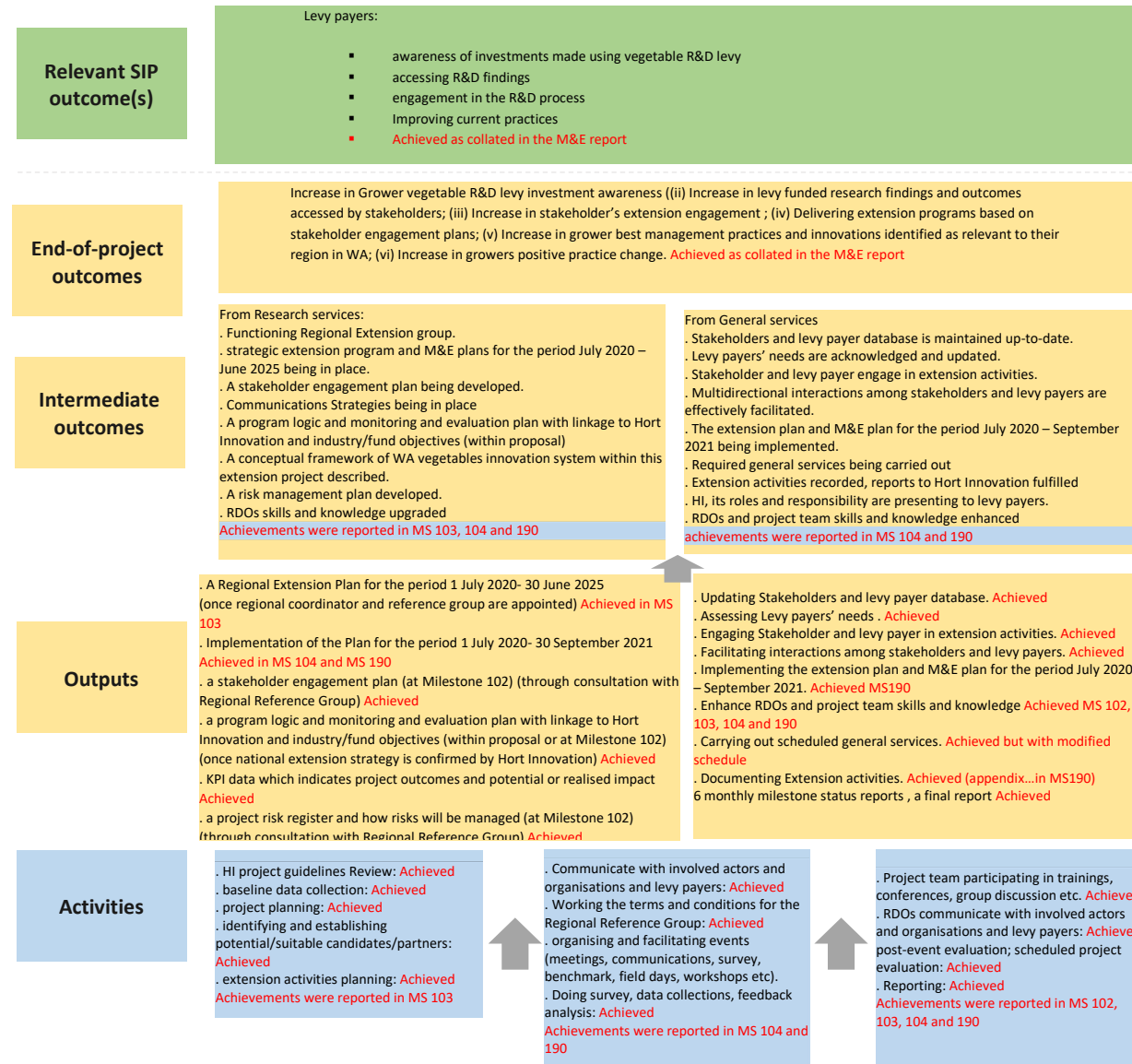
No	Names	Farm area (ha)	Farm Locations
1	Mr. Chuck	20	74 Safari Pl, Carabooda
2	Mr. Huong	19.5	93 Safari Place, Carabooda
3	Mr. Chi Lieu	10	Lot 440 Old Yanchep Road, Carabooda
4	Mrs. Van	15	42 Delich Road, Carabooda
5	Mr. Son Luong	15	110 Wesco Road, Nowergup
6	Mrs. Tha	15.5	31 Safari Place, Carabooda
7	Mr Thanh	2.0	109 Rousett Rd, Mariginup
8	Mr. Tho	8.0	348 Gibbs Road, Carabooda
9	Mr. Nguyen Van	16.0	135 Wesco Road, Nowergup
10	Mr. Vinh	19.0	348 Godel Rd, Nowergup
11	Mr. Khai	12.0	192 Gibbs Rod, Carabooda

Appendix 2b. List of farm biosecurity focused grower group

No	Names	Farm area (ha)	Farm Locations
1	Mr. Phuong	10.0	83 Mc Glade Road, Carnarvon
2	Mr. Cung	10.0 (lease)	676 South river Road, Carnarvon
3	Mr. Thang	16.0	197 North river Road, Carnarvon
4	Mr. Tanh	15	368 South River Road, Carnarvon
5	Mr. Hung	15	102 Mc Glade Road, Carnarvon
6	Mr. Tho	15.5	635 South river Road, Carnarvon
7	Mr. Su Tran	14.0	500 Robinson street, Carnarvon

## Appendix 3. VegNET WA M&E report

Table1. The overall project outcomes against project logic



**Project M&E: Improving water and fertiliser use efficiency**

Logic Level	Description from logic	What to measure	Data Collection method	Recorded final outcomes and project impact
<b>Activities and outputs</b>	1. Stakeholders and growers engagement <sup>1</sup>	Confirmation of participation	Log of confirmation of participation	Stakeholders and growers engagement achieved (see the list of stakeholder collaborators is in MS 103 and its appendix)
	2. Focus grower group and project ally establishment <sup>2</sup>	Meeting attendance	Log of attendance, list of focus grower group, list of project ally members	Focus grower group and project ally establishment achieved. The list of Focus grower group is in the appendix showing irrigation assessment reports
	3. Delivery of 3 workshops	Workshop attendance	Log of delivery schedule and attendance	Delivered of 2/3 planned workshops.
	4. RDO Field work <sup>3</sup> (Development of case studies)	case studies  tools developed	Outputs from case studies	Case studies achieved where a cross cases analysis showed improved growers' practices by decreasing irrigation time from 90 minutes to 30 minutes time saving 63% of water and fertiliser while Percentage of marketable product increased from 60% to 80%. This also helped identifying constraints for innovation adoption which include: (i) labour shortage (to increase number of

<sup>1</sup> See Stakeholders and growers engagement plan

<sup>2</sup> A group of 6-10 growers (who have earlier had participated in the survey on water and fertiliser use within the project area) assembled to participate in a discussion about and to provide feedback on the project plan (aims and objectives, activities, collaboration opportunities, introduced innovations, potential benefits, constraints, solutions and, final outcomes.

<sup>3</sup> The RDO field work to benchmark on the water and fertiliser use with participating growers to identify the gaps for improvement and to determine the practice changes and innovations/technologies involved to achieve the targeted benefits. A decision tree for decision making in practice change in irrigation and fertiliser application is developed with grower contribution. An example of benchmarking on irrigation and fertiliser application in in appendix 1.

Article on Overflow magazine: [https://issuu.com/irrigationaustralia/docs/overflow\\_65\\_wint2021?fr=sMmJiOTExNjA2OTQ](https://issuu.com/irrigationaustralia/docs/overflow_65_wint2021?fr=sMmJiOTExNjA2OTQ) (page 24-25)

Logic Level	Description from logic	What to measure	Data Collection method	Recorded final outcomes and project impact
	<p>5. Benchmark current water and fertiliser use<sup>4</sup></p> <p>6. Develop a decision tree for decision making in practice change</p>	Decision trees developed <sup>5</sup>	<p>Outputs from benchmarking</p> <p>Outputs from Decision trees development</p>	<p>irrigation shift manually); (ii) short of resources to upgrade irrigation controllers to the automatic system.</p> <p>Benchmark current water and fertiliser use achieved by daily assess the soil moisture output data in which growers' practice change by reducing irrigation time clearly display.</p> <p>2 demonstration participation growers got convinced by visual illustration of water leakage beyond the rootzone and instantly taking RDOs' suggestions to reduce watering time from 90 minutes to 30 minutes each time.</p> <p>3 Other members of the focus group copied the improved practices at various levels by reducing 10% - 20% watering time without having daily soil moisture indicators.</p>
<b>Change by service providers</b>	80% of allied trade participants providing targeted and relevant advice	The nature of advice given by service providers post participation	Survey	
<b>KASA change by Farmers</b>	80% of attendees in the program have a greater understanding of managing water and nutrient management 'on farm'.	Understanding of key principles	Survey	This project obviously achieved 100% of attendees in the program have a greater understanding of managing water and nutrient management 'on farm' right after observing the visual illustrations at the field day and at grower demonstration sites. Those demonstration included of root zone concept, the function of water movement against irrigation time, the water leakage.

<sup>4</sup> See Benchmarking questionnaires

<sup>5</sup> See Decision tree template in appendix 1

Logic Level	Description from logic	What to measure	Data Collection method	Recorded final outcomes and project impact
<b>Practice change by farmers</b>	Attendees can demonstrate a 10% savings in water and nutrient management as a result of attending the training.	Water and nutrient use	Input assessment survey	<p>2/ 11 growers demonstrated 66% reduce of water, electricity and fertiliser by reduced 2/3 of irrigation time.</p> <p>3/11 grower reduced 10% - 20% watering time.</p> <p>6/11 growers committed certain level of practice change by splitting irrigation to small shifts and shorten the total watering time on small scale next cropping season.</p>
<b>Outcomes</b>	Reduction in input costs such as water and fertilizer.	Water use, nutrient inputs and associated costs, yields.	Case studies	<p>5/ 11 growers saved water, fertiliser and energy resources. The highest save was 66% reduce of water, electricity and fertiliser by reduced 2/3 of irrigation time while the rate of marketable product got 20% increase due to increase of fruit size.</p> <p>6/11 growers committed certain level of practice change by splitting irrigation to small shifts and shorten the total watering time on small scale next cropping season.</p> <p>900 plus WA vegetable growers received this information about this project and its demonstration results via 4 articles in VegetablesWA magazine of which 2 were republished on AusVeg magazine.</p> <p>Lessons learn from demonstrations along with other gains such as the strong collaborators network, the functioning focus growers group, grower competency in water saving practices are good stock to be carried over to VegNET 3.0</p>

## Reporting plan

Report type and timing	To whom	Achievement
Three or six-monthly project progress reports on activities, participation, outputs, and milestones.	Supervisor and/or project reference group, to them inform and to get feedback	Achieved
Articles, papers, and presentations highlighting achievements	Media channels, industry newsletters and events, and/or conferences	Achieved
Annual reports, collating progress reports, plus evaluation findings and/ Specific milestone reports	Supervisor (and/or project reference group) who will forward to investors and/or regional stakeholders	Achieved
Final report, collating progress reports, plus evaluation findings and/ specific milestones	Supervisor (and/or project reference group, who will forward to investors and/or regional stakeholders	Achieved

Table 1 List of activities completed by the Regional Development Officers from December 2020 for the Water and fertilizer use improvement project

No	Dates	Activities	Outputs	Outcomes	Remarks
1	04/12/2020	Language assistance and grower engagement	Translate and spread out the invitation to growers re meeting with local governments, Depart. of Water to seek for alteration of 10% water cutting plan.	<p>Growers got updates information on how the proposal of 10% cutting of water allocation was made and works done by various stakeholders to assist growers to scope with it.</p> <p>12 growers later participated in the water field day in Carabooda co-organised by DPIRD and Irrigation Australia.</p> <p>11 of these grower have then joined to irrigation system efficiency assessment program funded by DPIRD and collaborated with RDO. These growers were then join to form a water focus grower group that engaged with the water and fertilizer project with thin VegNET WA project.</p> <p>2 of these growers got a demonstrations set up in their farm: use of digital soil moisture monitor technique and adopted new irrigation ways that saved them up to 60% of water and fertiliser</p>	Today the final decision on 10% water cutting has not been made yet.
2	08/12/2020	Developing collaborators network	Email to targeted stakeholders to present the RDOs focuses and workplan and suggest an establishment of a collaboration network	Obtain agreements via reply emails from all targeted stakeholders listed in the stakeholders engagement plan (except Alan Nankivell National TPP Coordinator, AUSVEG) (Please see stakeholders engagement plan in MS 103)	This is a significant achievement that place a foundation toward getting essential support for successful execution of project activities throughout the project course
3	09/12/2020	webinar	Participated in webinar re “Using Soil Moisture technology to inform decision on irrigation managing” organized by Hugh - Victoria RDO	<p>Copied the information presentation techniques to apply to grower meeting in the water and fertilizer use improvement project.</p> <p>Improvement will be made when conduct the grower meeting later by combining soil moisture technology with the root zone concept and with the illustration by an advanced grower who has adopted this innovation for 4 years</p>	<p>Collaboration among VegNET RDOs to utilize each other resources and expertise</p> <p>RDO’s knowledge enriched.</p>
4	10/12	Zoom meeting	Participated in zoom meeting with Geraldton growers, Depart of water (DWE), DPIRD, Mid-West Development Commission to discuss possibility to alter water use contracts between growers and DWE toward better flexibility terms to adapt to seasonal variation of water demand by growers	Growers get explanations from the water supply company and understand that the fix rate of daily use was involved in the contract based on specific design of infrastructure of the water supply company.	The outcomes did not make growers happy.



5	14, 15, 16/12	Email and phone communication with DPIRD Collaborators – Neil Lantzke and David Rowe	Planned for a meeting to develop workplan together for this project and to confirm the tasks, roles and contribution from each party	<p>A collaboration principle established:</p> <p>DPIRD: provide equipment (lending from Irrigation Australia member – Wildeye), and technical support for the field demonstration.</p> <p>RDOs: engaging with growers to establish the focus grower group and select suitable farm properties for field demonstrations set up and facilitate the knowledge transfer from technical collaborators to growers</p> <p>A Wildeye technician: Assist installing the soil moisture monitoring devices and set up data logging accounts for RDOs and for grower participants</p>	A strong RDOs - DPIRD- Private Supplier – growers is start to take shape.
6	18/12 /2020 to 28/1/ 2021	Engagement with growers  Communicate with collaborators	<p>18 visits and 41 phone discussions were made to 11 growers of focus groups for water project and 7 growers of focus groups of farm biosecurity project</p> <p>Email contact and meetings was made with collaborators at DPIRD and Irrigation Australia re possible reduction of the number of field trials and case studies</p>	<p>The project workplans were introduced to growers</p> <p>6 growers agreed to set field trials on their properties to compare their conventional irrigation practices with the suggested irrigation innovation using soil moisture monitoring to assist irrigation management.</p> <p>Inspections of those 6 growers were made to select 4 suitable one for trial purpose. These will be use as case studies in the project</p> <p>Unfortunately, only 2 are suitable for trial.</p> <p>Collaborators get aware of obstacles in setting field trials.</p> <p>Agreed to reduce the number of case studies to 2.</p>	<p>13/18 growers committed trying new technology</p> <p>Promptly inform collaborators obstacles and changes during the course of collaboration helped to maintain collaboration spirit and effective collaborative works.</p> <p>7 personel (3 persons of Wildeye and 4 of DPIRD participated in 3 meetings with RDO)</p>
7	10/2/2021	Maintain contact to project collaborators	Communicated with project collaborators re changes of project activities and schedule due to Covid lock down and restriction	<p>Maintaining the leadership role among project collaborators.</p> <p>Keep collaborators updated with changes so that they can be prepared for.</p> <p>Collaborator network maintained to continue working together.</p>	
8	10- 11/3/2021	Grower visits	14 grower visits North Perth to maintain RDOs commitment to deliver water project activities after Covid lock down and maintaining grower engagement.	<p>Grower engagement maintained. 11 growers are keen to learn and stay committed with up taking innovation information.</p> <p>Acknowledge the loss of seasonal window to establish field trials as</p>	11 growers of the focus group visited of which 2 demonstrations were set up at 2 growers' farm properties that fit to given available equipment resource

				planned. Acknowledge the loss of seasonal window due to Covid lock down and restriction that make the establish field trials impossible. This requires changes of project activities, outputs and outcomes.	
9	12/3/2021	Grower visits with DPIRD	Visited 2 growers' properties to prepare for demonstration on Soil moisture monitoring technology	Sites and crops were selected to set up demonstrations	2 growers involved in demonstrations.
10	07/4	Preparing for Cover Crop coaching clinic in Gingin	Finalised the field day plan with growers and with service provider - AHR	Date and venue for the event fixed Contribution from each party agreed The event will be on 28/4	The event was postponed due to Covid lockdown during 24-27/4 and further restrictions.
11	12/4	Meeting with Wildeye	Meeting with Wildeye – a soil moisture monitoring innovators to discuss possible collaboration to disseminate this innovation to growers	Getting to understand each other interests and services. A collaboration was initiated Additional technical support to this project beside other collaborators	Conflict interests need to be well maintained with a private company to protect growers' interest. 3 collaborators involved.
12	19/4	Field works	Installing the soil moisture monitoring devices	Got the soil moisture monitoring demonstration set up at 2 farm properties	3 growers (of 2 farm businesses) and 2 collaborators from Wildeye and DPIRD involved
13	21/4	Communication with collaborators	Communicated with Wildeye and DPIRD technicians to set up accounts for data logging	In progress	2 collaborators from Wildeye and DPIRD involved
14	24/4	Response to Covid lock down	Discussed with AHR re postponing the Cover crop coaching clinic event to to Covid lock down	The event was postponed due to Covid lockdown during 24-27/4 and further restrictions and will be resumed when appropriate	Promptly communicate with collaborators to make changes of the planned activities is crucial.
15	19/4	workshop	Educate growers to: - download Wildeye app - assess and understand the output data - integrate the data into decision making to make changes in irrigation practices - Assessment the preliminary gains/lost - Planning for further actions	2 demonstration involved grower obtained: - Wildeye app downloaded to smartphones - Daily assess and understand the output data - integrated the data into decision making to make changes in irrigation practices by reducing irrigation time by 70%. - Saved 70% water, electricity, fertilisers - Better fruit size and increased marketable produce by 40% - Committed to continue the trial to finetune the changed practices and	6/11 members of focus grower group, 1 collaborator from DPIRD involved. See more details in M&E report 2 growers committed adopting innovation by installing affordable digital irrigation controllers. 5 growers of the group express difficulties to adopt innovation due to resource shortage, specific crop types and inherited irrigation system

				reinforce the gains. Collaborators: Committed to continue engaging next season	characteristic designs.
16	20/4 to 2/6	Meetings and Communication with involved growers and collaborators	Consult with Collaborators re: -Trial progress -Trial results and further collaboration opportunities	RDOs: identified the constraints and solutions for further improvements (affordable automatic irrigation controllers to overcome additional labor requirement due to practice changes )	3 person in DPIRD and 2 from Wildeye involved. An article resulted from the demonstration was published in VegetablesWA mag and republished in Irrigation Australia Mag.
17	20/7	Soil Restoration meeting and Carnarvon Research Station Field day	Assisting growers engaging in soil restoration program and test the topsoil salinity	16 (20% of total) growers got the agreement form completed to get topsoil filled. Soil salinity was tested to show suitable salt level for vegetable growing.	This activity is not directly related to the project plan, however it influences soil fertility, thus growers 'practices re water and fertiliser application.  16/80 growers benefit from this service. Others were able to complete the form themselves.
18	25/8	Attend event	Waterwise Irrigation Expo	RDO engaged with irrigation service providers to explore info re automatic irrigation controllers. A few affordable automatic irrigation controller brands were selected to introduce to growers  RDO's knowledge increased	Discussed with a new collaborator to invite him to involve in VegNET 3.0 to transfer affordable digital irrigation controller to growers.
19	27/9	Workshop	Got plan for the soil moisture monitoring demonstration wrapped up by a focus group meeting by 27/9/2021	The event was postponed (4/6 growers of the focus group absent due to unforeseen matters; one of the 2 key growers involved in demonstration closed farming business due to illness).  It was agreed that the event will be resumed in Summer 2021.	This project will be carried over to VegNET 3.0 to amplify the achievements.

**VegNET WA M&E report**

**Project name: Farm biosecurity**

Logic Level	Description from logic	What to measure	Data Collection method	Recorded final outcomes and project impact
<b>Activities and outputs</b>	7. Stakeholders and growers engagement <sup>6</sup>	Confirmation of participation	Log of confirmation of participation	Stakeholders and growers engagement achieved (see the list of stakeholder collaborators is in MS 103 and its appendix)
	8. Focus grower group and project ally establishment <sup>7</sup>	Meeting attendance	Log of attendance, list of focus grower group, list of project ally members	Focus grower group and project ally establishment achieved. The list of Focus grower group is in the appendix showing irrigation assessment reports
	9. Delivery of 3 workshops	Workshop attendance	Log of delivery schedule and attendance	Delivered of 5/3 planned workshops. 2 additional workshops were organised to introduce innovative approach to promote integrating farm biosecurity practices with a specific pest management.
	10. RDO Field work <sup>8</sup> (Development of case 4 studies)	case studies, tools developed	Outputs from case studies	A cross cases study was achieved where factors influencing growers' farm biosecurity planning and practising were identified. This enable RDOs improving the extension planning and extension methods to make information transfer more effectively.  The lesson learn: the innovative approach to promote integrating farm biosecurity practices with a specific pest management made better impact in term of gaining better growers' interest when they see the direct impact of farm biosecurity to control a specific pest.
	11. Benchmark current grower KASA re farm biosecurity practices			

<sup>6</sup> See Stakeholders and growers engagement plan

<sup>7</sup> A group of 6-10 growers (who have earlier had participated in the survey on water and fertiliser use within the project area) assembled to participate in a discussion about and to provide feedback on the project plan (aims and objectives, activities, collaboration opportunities, introduced innovations, potential benefits, constraints, solutions and, final outcomes.

<sup>8</sup> The RDO field work to benchmark growers' current practice on farm biosecurity using farm biosecurity checklist and practices templates attached.

Logic Level	Description from logic	What to measure	Data Collection method	Recorded final outcomes and project impact
	12. Develop a decision tree for decision making in practice change	Current Farm biosecurity practices  Farm biosecurity action planner	Outputs from benchmarking  Outputs from Farm biosecurity action planner <sup>9</sup>	A benchmark of progress on grower practice change on farm biosecurity after 8-months time was achieved.  The statistical analysis of benchmarking results was achieved to enable better understanding on the levels of practice change among grower member of the focus group
<b>Change by service providers</b>	80% of allied trade participants providing targeted and relevant advice	The nature of advice given by service providers post participation	Survey	
<b>KASA change by Farmers</b>	80% of attendees in the program have a greater understanding of planning and practicing farm biosecurity	Understanding of key principles	Survey	The benchmarking of practice change regarding to practising farm biosecurity before and after the project showed 100% (7/7 grower member of the focus group) carried practice change in farm biosecurity. However, the level of practice change varies among growers in the group. One grower got highest number of farm biosecurity checklist boxes sticked is 31/38 (81% of complete farm biosecurity checklist) whilst 6 other growers got 18/38 to 26/38 boxes sticked (47%-68% of the checklist) as compared to initial average of 11/38 boxes sticked (27% ). The level of practice change as a result of this project were 20% to 54% among this grower focus group members.
<b>Practice change by farmers</b>	Attendees can demonstrate understanding and competent in developing and implementing farm biosecurity plan for their own as a result of attending the training.	Having farm biosecurity planner and facility in place	Assessment survey	The growers' developed action plans demonstrate understanding and competent in developing and implementing farm biosecurity plan for their own as a result of attending the training

<sup>9</sup> Action planner template attached

Logic Level	Description from logic	What to measure	Data Collection method	Recorded final outcomes and project impact
<b>Outcomes</b>	understanding and competent in developing and implementing farm biosecurity plan for their own in place	Having farm biosecurity planner and facility in place and signs of farm biosecurity implementing	Case studies	Basically, the growers' developed action plans demonstrate understanding and competent in developing and implementing farm biosecurity plan for their own as a result of attending the training. These plan are updating over time.

## Reporting plan

Report type and timing	To whom	Achievements
Three or six-monthly project progress reports on activities, participation, outputs, and milestones.	Supervisor and/or project reference group, to them inform and to get feedback	Achieved
Articles, papers, and presentations highlighting achievements	Media channels, industry newsletters and events, and/or conferences	Achieved
Annual reports, collating progress reports, plus evaluation findings and/ Specific milestone reports	Supervisor (and/or project reference group) who will forward to investors and/or regional stakeholders	Achieved
Final report, collating progress reports, plus evaluation findings and/ specific milestones	Supervisor (and/or project reference group, who will forward to investors and/or regional stakeholders	Achieved

## Benchmarking results against Farm Biosecurity Checklist to 7 growers

This checklist is intended as a resource for growers implementing biosecurity practice to reduce the risk of pests and disease entry.

Biosecurity Practice	Before	In place	In progress	No	N/A
<b>Vehicle Cleaning</b>					
Wash down facilities are provided on site for machinery, equipment and vehicles	0	3 (42%)	0		
Run-off water from wash down facilities are collected in a tank for disposal or drains into a special pit as used for spray tank runoff	0	0	0		
Clean down facilities are located near farm entrances and away from growing areas	0	1 (14%)	0		
A hard pad is provided in vehicle wash down area	0	0	0		
High pressure water and air hoses are available for removal of plant and soil from machinery, equipment and vehicles	4	4	0		
Wash-down facility and surrounds are inspected frequently for potential sources of contamination (eg. organic matter and host weeds)	0	3 (42%)	0		
Records of wash down facility inspections are logged	0	0	0		
Machinery is inspected and disinfected before entering growing areas	0	1 (14%)			
	4/56 (7%)	12/56 (21%)			
<b>Vehicle Movement</b>					
Visitor vehicle access is restricted to designated parking areas	0	7 (100%)			
Only on-site vehicles are used to transport equipment and visitors around the farm	7 (100%)	7 (100%)			
Vehicle movement is kept to a minimum in growing areas	7 (100%)	7 (100%)			
Designated tracks are used to limit vehicle movement on growing areas	7 (100%)	7 (100%)			
Machinery and vehicles are cleaned before moving off property	0	1 (14%)	2 (28%)		
	21/35 (60%)	29/35 (82%)			
<b>Staff and Farm Visitors</b>					
Footbaths and brushes are easily accessible and used	0	1 (14%)			
Visitor clothing, footwear and tools are checked for soil and organic matter before entering the farm	0	0	0		
Staff are trained in biosecurity and farm hygiene practices	0	4 (56%)	3 (42%)		



Visitors are inducted in biosecurity expectations prior to moving around the farm	0	1 (14%)	3 (42%)		
Visitors sign a register to monitor movements between farms	3 (42%)	7 (100%)			
Appropriate hygiene supplies are available to staff and visitors (hand sanitiser, gloves, foot baths, overalls)	3 (42%)	7 (100%)			
Contractor entry is conditional to a biosecurity induction and hygiene protocols	3 (42%)	7 (100%)			
	9/49 (18%)	27/49 (55%)			
<b>Biosecurity Practice</b>	Before	In place	In progress	No	N/A
	<b>Growing Areas and Controlled Access</b>				
Gate signs requesting phone check in and providing farm contact numbers are visible at main entrances	3 (42%)	7 (100%)			
Farm is divided into 'zones' with restricted or minimised people, machinery and equipment movement between zones	7 (100%)	7 (100%)			
A sanitation procedure is in place where there is regular movement of people, machinery or equipment between zones	0	1 (14%)	3 (42%)		
There is regular communication with neighbours, government agencies and industry stakeholders regarding minimising pests and disease infection risk	3 (42%)	3 (42%)	0		
Boundary fences are regularly inspected and maintained	0	1 (14%)	0		
Vermin, feral animal, weed and wildlife populations are managed in line with regulations to prevent pest and disease spread	0	0	0		
	13/42 (31%)	19/42 (45%)			
	<b>Plants and Materials</b>				
Records of planting material are maintained	7 (100%)	7 (100%)			
Planting material are sourced from reputable suppliers	7 (100%)	7 (100%)			
Imported seed are sourced from reputable suppliers	0	0	0		NA
Records of seed or seedling tests are logged	7 (100%)	7 (100%)			
	21/21 (100%)	21/21 (100%)			
	<b>Monitoring</b>				
Symptom monitoring is regularly conducted in crops	7 (100%)	7 (100%)			
Symptom monitoring is regularly conducted in neighbouring vegetation	3 (42%)	7 (100%)			

Staff are trained to recognise symptoms of pest and disease infection	0	1 (14%)	0		
Staff know how and where to report suspect plant disease symptoms	0	1 (14%)	0		
Activities and results of pest and disease monitoring are recorded, including lack of observations	0	0	0		
Monitoring records are well organised and maintained	0	0	0		
A written farm management plan is maintained	0	0	0		
	10/49 (20%)	16/49 (32%)			
	<b>Packaging and pallets</b>				
Packaging materials are new and never recycled.	7 (100%)	7 (100%)			
Unused boxes and bins are stored on clean hard floors in a covered area.	7 (100%)	7 (100%)			
Pallets are clean of organic material and soil.	7 (100%)	7 (100%)			
Dirty pallets are cleaned in the wash down area.	0	0	0		NA
	21/21 (100%)	21/21 (100%)			

Table 2 List of activities completed by the Regional Development Officers from December 2020 to September 2021 and the outcomes for the Farm biosecurity project

No	Dates2020	Activities	Outputs	Outcomes	Remarks
1	08/12/2020	Developing collaborators network	Email to targeted stakeholders to present the RDOs focuses and workplan and suggest an establishment of a collaboration network	Obtain agreements via reply emails from all targeted stakeholders listed in the stakeholders engagement plan (except Alan Nankivell National TPP Coordinator, AUSVEG) (Please see stakeholders engagement plan in MS 103)	This is a significant achievement that place a foundation toward getting essential support for successful execution of project activities throughout the project course  Confirmation emails from collaborators attached
2	6/1/2021 to today	Assistance to Qfly outbreak in WA	Engaged with the Biosecurity team in DPIRD to obtain updated information and to provide assistance including language assistance for Qfly inspection activities.  The list of Vietnamese growers in Qfly affected are who need language assistance was established and provided to DPIRD team.  Provided language assistance to translate flyers, updates, quarantine requirements.  Relay updates info to all growers through various channels: SMS text message, phone call, facebook posts	Grower got up to date info and alert on the Qfly outbreak incident to act accordingly to comply to the Qfly response and quarantine regulations.  The RDOs-grower linkage is maintained and strengthened over time.  Growers' practices (produce marketing and cooperation with inspection) observed complying to biosecurity regulation as a result gain by these activities	5 Collaborators from DPIRD and 5 Affected growers involved in inspection.  No breach of biosecurity regulation recorded at the market during this time period.  The biosecurity team detects no Qfly for over 60 days since Feb 2021. The Qfly-free area declared in June 2021.
3	13/1	Meeting with Collaborator	Meeting with Graham McAlpine – Perth NRM to exchange info re effort to enhance growers'	Achieved commitment to support each other in farm biosecurity services.	

			awareness and practices on farm biosecurity	Better understand each other interests and practices for effective collaboration	
4	14/1	Communication with AusVEG's biosecurity coordinator – Callum Fletcher	Phone chat	Strong commitment from AusVEG's biosecurity coordinator to support VegNET WA activities in farm biosecurity.  A zoom meeting was set on 19/1 then move to 22/1 to discuss possibility to organize biosecurity workshops in WA together.	
5	22/1	Communication with biosecurity collaborators	A Zoom chat setting	A zoom meeting happened among VegNET WA RDOs, AusVEG's biosecurity coordinator, Area wide management of disease project team from DPIRD (Craig Webster and Dominic Wright and Monica) and Fall army worm researcher (Helen Pafford).  A Plan for a road show to conduct a series of workshop in Carnarvon, Perth and Southwest with the present of all collaborators achieved.  Contribution from each involved parties agreed	
6	18/12 /2020 to 28/1/ 2021	Engagement with growers	18 visits and 41 phone discussions were made to 11 growers of focus groups for water project and farm biosecurity project	The project workplans were introduced to growers  6 growers agreed to sit in the focus group and participate in case studies on growers' awareness, capability of develop and implement the farm biosecurity plan.	11 participating growers develop positive attitude toward learning and trying farm biosecurity practices
7	22/2 to 26/2/2021	Travel to Carnarvon to assist with flood recovery effort and Carnarvon field day and to inform growers about possible farm biosecurity issues cause by water flood	(i) Consult with biosecurity and plant pathologist to get advice on biosecurity threat caused by flooding incident and relay their advice to growers in flood affected area. (ii) Assisted the grower survey on farm biosecurity conducted by NRM	Growers got updated info and alert to be better prepared for possible issues at post-flooding stage.  Collaboration among RDOs, local growers and NRM was strengthened.  The result of grower survey on farm biosecurity conducted by NRM will be shared to RDOs	
8	4/3/2021	Zoom meeting	Participated in zoom meeting with the Qfly response team at DPIRD to obtain updates and advice on Qfly quarantine measure to relay to growers  Posting obtained updates and advice on Qfly quarantine measure to growers	Grower got up to date info and alert on the Qfly outbreak incident to act accordingly to comply to the Qfly response and quarantine regulations.  The RDOs-grower linkage is maintained and strengthened over time.	
9	5/3/2021	Zoom meeting with	Review the post-Covid lock down and travel	Acknowledged the travel restriction will stop collaborators coming	Risk management is important to

		Farm biosecurity project collaborators	restriction situation to organize workshops in Perth and Carnarvon	from Victoria, thus the planned workshop contents will be changed but contributions from collaborators within WA remain the same.  2 workshops on pests and diseases management and farm biosecurity were fixed for Perth (24/3) and Carnarvon (25/3) on Fall army worms, Area wide disease management update, VegNET WA farm biosecurity project, Qfly outbreak management update  Flyers for activities and events have been circulated	effectively maintain collaborator network and to modify project activities when appropriate.  Flyers for activities and events attached
10	22/3/2021	Zoom meeting	Participated in a zoom meeting re Plastic waste management in vegetable production in Carnarvon	Get involved in a group to join effort to address the Plastic waste management in vegetable production in Carnarvon. The group included DPIRD, Carnarvon Grower Association, Gascoyne water corporation, Local government, VegetalesWA, DWE  Got to understand the problem and its impact on farm hygiene and sanitation which may contribute to farm biosecurity risk.  Contributed a suggestion re a provision of grower education to improve plastic waste management practice.	
11	24/3	Workshop	Organized a plant disease management and farm biosecurity workshop in Wanneroo	Growers are provided with up to date info re Fall army worm; diseases discovered under the area wide management of plant diseases, Qfly outbreak and control mearsures, Farm biosecurity project updates	Copy of list of participants attached  Flyers for activities and events attached
12	25/3/2001	Obtaining farm biosecurity survey network feedback survey  Workshop	Maintaining involved in the proposed network to get information updated  Organized a plant disease management and farm biosecurity workshop in Carnarvon	Obtained the farm biosecurity survey network feedback survey which will be used as a reference for this project  Growers are provided with up to date info re Fall army worm; diseases discovered under the area wide management of plant diseases, Qfly outbreak and control mearsures, Farm biosecurity project updates	An opportunity for RDO to engage in a large plant biosecurity network  Copy of list of participants and flyer attached
13		Obtain grower feedback	Visited 2 growers in Carnarvon after the workshop to gain their feedback	Growers' feedback are positive re the relevancy of the information provided. But more practical solutions should be developed to assist growers to effectively control the introduced pests.  Growers got updated info and alert to be better prepared for possible issues such as FAW. Farm biosecurity concept is reinforced to	

				enhance growers' awareness.	
14	22/4/2021	Zoom meeting	Participated in a zoom meeting 2 re Plastic waste management in vegetable production in Carnarvon	Introduce the team to the National Non-packing Plastic waste management project and provided the team with project document.	
15	17/6/2021	Zoom meeting	Biosecurity extension Community meeting	Maintain engaging in the national Biosecurity extension Community	See more details in Appendix
16	19-20/7/2021	Field works	American serpentine leaf miner investigation in Carnarvon with DPIRD	Samples were collected. No ASL recorded. ASL information and thread were communicated to 14 visited growers. Visited growers got updated info and alert to be better prepared for possible issues	
17	15-16/8/2021	Field works	virus and bacteria diseases sampling in association with Areawide management of virus and bacteria diseases management project	Routine scan on virus and bacteria diseases thread. Found diseases were informed to growers along with recommended enforcing farm biosecurity and diseases control measures. RDO stay updated with pest and disease trend and got knowledge enriched whilst working with plant pathologists. Growers got updated info and alert re discovered pests and diseases in their area to be better prepared for possible issues	
18	26/8	Workshop	Workshop	Workshop with 6 growers on Farm biosecurity planning and implementation review in Carnarvon 6 farm biosecurity plans were reviewed and updated as well as future actions identified	More info is in M&E report Great progress in terms of learning and practicing farm biosecurity concept. This help growers to integrate this practices with appropriate chemical use in crop protection and QA.
19	14/9/2021	Workshop	Growers lead Open discussion forum on Farm biosecurity and Bacterial diseases management	A growers lead discussion fashion was practices. Growers' need information are explored. Scientists and other stakeholders play supporting growers learning. The grower pickup of Farm biosecurity concept and practices got enhanced when they are integrated with a specific pest/disease management. Possible practical changes are defined right in the meeting and committed trying by growers.	Growers' feedback revealed this extension fashion is most preferable " It is like getting understand more about my car, its problem and ways to fix it rather than listening others introducing a new car"

20	23/9/2021	Workshop	Growers lead Open discussion forum on Farm biosecurity and Bacterial diseases management	<p>A growers lead discussion fashion was practices.</p> <p>Growers' need information are exploded.</p> <p>Scientists and other stakeholders play supporting growers learning.</p> <p>The grower pickup of Farm biosecurity concept and practices got enhanced when they are integrated with a specific pest/disease management.</p> <p>Possible practical changes are defined right in the meeting and committed trying by growers.</p>	Growers' feedback revealed this extension fashion is most preferable
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**VegNET WA M&E report**

**Project name: Chemical Certification to align with Industry and QA accreditation Standards**

Logic Level	Description from logic	What to measure	Data Collection method	Project impacts
<b>Activities and outputs</b>	13. Stakeholders and growers engagement <sup>10</sup>	Confirmation of participation	Log of confirmation of participation	Strong stakeholders and growers engagement throughout the project life was developed where 3/4 accredited chemical classes were implemented and one has been scheduled by November 2021.
	14. Project collaboration consultation	attendance	Log of attendance, list of grower participants, list of project ally members	
	15. Delivery 4 proposed courses	Course attendance	Log of delivery schedule and attendance	
<b>Change by service providers</b>	100% of allied trade participants providing proposed course	Certification rate	Survey	
<b>KASA change by Farmers</b>	80% of attendees in the program have a greater understanding and skill in chemical handle, transport, storage, use and disposal	Level of competency in complying with Chemical requirement of Freshcare certification scheme	Survey <sup>11</sup>	18 attendees, including 9 Vietnamese speaking growers, completed the chemical class and being waiting for their assessment results A number of growers have expressed interest to attend the coming class in November.

<sup>10</sup> See Stakeholders and growers engagement plan

<sup>11</sup> This survey use Freshcare internal audit checklist, chemical part (F4)



Logic Level	Description from logic	What to measure	Data Collection method	Project impacts
<b>Practice change by farmers</b>	Attendees can demonstrate understanding and competent in chemical handle, transport, storage, use and disposal as a result of attending the training.	Comply with Chemical requirement of Freshcare certification scheme	survey <sup>12</sup>	
<b>Outcomes</b>	understanding and competent in chemical handle, transport, storage, use and disposal	Certificates		<p>26 attendees in the program proved having a greater understanding and skill in chemical handle, transport, storage, use and disposal.</p> <p>This enhanced skill enable grower attendees to upgrade their product quality standard by moving further to Freshcare training and achieving Freshcare standard certification.</p> <p>This skills and knowledge upgrade benefits the grower attendees not by increase the money profit nor the yield of produces rather than increasing confidence and reputation in vegetable production and business management.</p> <p>The industry's reputation in term of food safety and environment care are more secured.</p>

<sup>12</sup> This survey use Freshcare Farm audit report, chemical part (F4)

## Reporting plan

Report type and timing	To whom	Achievements
Three or six-monthly project progress reports on activities, participation, outputs, and milestones.	Supervisor and/or project reference group, to them inform and to get feedback	Achieved
Articles, papers, and presentations highlighting achievements	Media channels, industry newsletters and events, and/or conferences	Achieved
Annual reports, collating progress reports, plus evaluation findings and/ Specific milestone reports	Supervisor (and/or project reference group) who will forward to investors and/or regional stakeholders	Achieved
Final report, collating progress reports, plus evaluation findings and/ specific milestones	Supervisor (and/or project reference group, who will forward to investors and/or regional stakeholders	Achieved

Table 3 List of activities completed by the Regional Development Officers from December 2020 for the accredited chemical training project

	Dates	Activities	Outputs	Outcomes	Remarks
	4/12/2020 to 29/4/2021	Workshops / discussion meetings:	<p>Workshops / discussion meetings:</p> <p>Electronic newsletters:</p> <p>Multiple inclusions in vegetablesWA's weekly (delivered 1530 Friday) e-news</p> <p>Example -</p> <p><a href="https://vegetableswa.cmail19.com/t/ViewEmail/j/55D9C489394CA4EF2540EF23F30FEDED/725D34D3F29EC0AC22947492D9797BBC">https://vegetableswa.cmail19.com/t/ViewEmail/j/55D9C489394CA4EF2540EF23F30FEDED/725D34D3F29EC0AC22947492D9797BBC</a></p> <p>Magazine articles:</p> <p>2020 Summer Edition of WA Grower magazineWebsite:</p> <p>Social media:</p> <p>Facebook:</p> <p>Consumer Page</p> <p>Targeted event invitations:</p> <p>Engagement meetings:</p>	<p>Confirmed Chemical Certification Courses</p> <p><b>2021</b></p> <p>17<sup>th</sup> -18<sup>th</sup> May – Perth</p> <p>21<sup>st</sup> -23<sup>rd</sup> June – Perth (<i>Venue TBC</i>)</p> <p>16<sup>th</sup> -18<sup>th</sup> August – Perth (<i>Venue TBC</i>)</p> <p>22<sup>nd</sup> -24<sup>th</sup> November - Perth (<i>Venue TBC</i>)</p> <p><b>2022</b></p> <p>1<sup>st</sup> -3<sup>rd</sup> February – Perth (<i>Venue TBC</i>)</p> <p>May – <i>Date and Venue TBC</i></p> <p>August - <i>Date and Venue TBC</i></p> <p>November - <i>Date and Venue TBC</i></p> <p>VegNET RDO Update – Page 57</p> <p><a href="https://issuu.com/vegetableswa/docs/wagrower_summer_20_lr">https://issuu.com/vegetableswa/docs/wagrower_summer_20_lr</a></p> <p>Updated development of VegNET WA page on vegetablesWA website</p> <p><i>in progress</i></p> <p><a href="https://vegetableswa.com.au/">https://vegetableswa.com.au/</a></p> <p><a href="https://www.facebook.com/groups/1641522495930877">https://www.facebook.com/groups/1641522495930877</a> Private Grower page</p> <p><a href="https://www.facebook.com/vegetablesWA">https://www.facebook.com/vegetablesWA</a></p> <p>Chemical Accreditation Course – 10 attendees in Wanneroo</p> <p>Targeted Grower emails to be issued closer to the dates -</p> <p>21<sup>st</sup> -23<sup>rd</sup> June – Perth (<i>Venue TBC</i>)</p> <p>16<sup>th</sup> -18<sup>th</sup> August – Perth (<i>Venue TBC</i>)</p> <p>22<sup>nd</sup> -24<sup>th</sup> November - Perth (<i>Venue TBC</i>)</p> <p><b>2022</b></p> <p>1<sup>st</sup> -3<sup>rd</sup> February – Perth (<i>Venue TBC</i>)</p>	

				<p>May – <i>Date and Venue TBC</i></p> <p>August - <i>Date and Venue TBC</i></p> <p>November - <i>Date and Venue TBC</i></p>	
17-18/5/2021		Chemical Accreditation Course		North Metropolitan TAFE Industry Advisory Group Meeting invitation from Neha Umaretiya (Head of Programs for Horticulture) to attend as vegetable industry advisor for updates to TAFE Horticulture Certificates and Diplomas	
22-23/6/2021				Central Regional TAFE consultation with Jenny Reid (Commercial Business Coordinator) to confirm chemical course delivery and dates.	
17/8/2021		Chemical Accreditation Course		Chemical training class for 8 growers held in Wanneroo. All attended grower were accredited and qualified for Freshcare 4.2 requirement.	
26/8/2021				Chemical training class for 9 growers held in Wanneroo (22-23 June 2021). Assessment process toward accreditation is in progress.	
		Workshop		Group assistance on Freshcare 4.2 for 6 growers in Carnarvon.	
28-29/9/2021				All involved growers have completed their Freshcare 4.2 upskilling and have submitted their completed audit forms.	
30/9		Meetings		Group assistance on Freshcare 4.2 for 2 growers in Geraldton (26 August 2021)	
		Chemical Accreditation Course		Both growers have completed their Freshcare 4.2 upskilling and have submitted their completed audit forms and passed farm audits to obtain FreshCare 4.2 certificate	
		Chemical Accreditation Course planning		Chemical training class for 9 growers held in Wanneroo (22-23 June 2021). Assessment process toward accreditation is in progress.	
				29-30 November for the last full course for the year	



## VegNET WA M&E report

Table1. The overall project outcomes against project logic

<p><b>Relevant SIP outcome(s)</b></p>	<p>Levy payers:</p> <ul style="list-style-type: none"> <li>▪ awareness of investments made using vegetable R&amp;D levy</li> <li>▪ accessing R&amp;D findings</li> <li>▪ engagement in the R&amp;D process</li> <li>▪ Improving current practices</li> <li>▪ <b>Achieved as collated in the M&amp;E report</b></li> </ul>		
<p><b>End-of-project outcomes</b></p>	<p>Increase in Grower vegetable R&amp;D levy investment awareness ((ii) Increase in levy funded research findings and outcomes accessed by stakeholders; (iii) Increase in stakeholder's extension engagement ; (iv) Delivering extension programs based on stakeholder engagement plans; (v) Increase in grower best management practices and innovations identified as relevant to their region in WA; (vi) Increase in growers positive practice change. <b>Achieved as collated in the M&amp;E report</b></p>		
<p><b>Intermediate outcomes</b></p>	<p>From Research services:</p> <ul style="list-style-type: none"> <li>. Functioning Regional Extension group.</li> <li>. strategic extension program and M&amp;E plans for the period July 2020 – June 2025 being in place.</li> <li>. A stakeholder engagement plan being developed.</li> <li>. Communications Strategies being in place</li> <li>. A program logic and monitoring and evaluation plan with linkage to Hort Innovation and industry/fund objectives (within proposal)</li> <li>. A conceptual framework of WA vegetables innovation system within this extension project described.</li> <li>. A risk management plan developed.</li> <li>. RDOs skills and knowledge upgraded</li> </ul> <p><b>Achievements were reported in MS 103, 104 and 190</b></p>	<p>From General services</p> <ul style="list-style-type: none"> <li>. Stakeholders and levy payer database is maintained up-to-date.</li> <li>. Levy payers' needs are acknowledged and updated.</li> <li>. Stakeholder and levy payer engage in extension activities.</li> <li>. Multidirectional interactions among stakeholders and levy payers are effectively facilitated.</li> <li>. The extension plan and M&amp;E plan for the period July 2020 – September 2021 being implemented.</li> <li>. Required general services being carried out</li> <li>. Extension activities recorded, reports to Hort Innovation fulfilled</li> <li>. HI, its roles and responsibility are presenting to levy payers.</li> <li>. RDOs and project team skills and knowledge enhanced</li> </ul> <p><b>achievements were reported in MS 104 and 190</b></p>	
<p><b>Outputs</b></p>	<ul style="list-style-type: none"> <li>. A Regional Extension Plan for the period 1 July 2020- 30 June 2025 (once regional coordinator and reference group are appointed) <b>Achieved in MS 103</b></li> <li>. Implementation of the Plan for the period 1 July 2020- 30 September 2021 <b>Achieved in MS 104 and MS 190</b></li> <li>. a stakeholder engagement plan (at Milestone 102) (through consultation with Regional Reference Group) <b>Achieved</b></li> <li>. a program logic and monitoring and evaluation plan with linkage to Hort Innovation and industry/fund objectives (within proposal or at Milestone 102) (once national extension strategy is confirmed by Hort Innovation) <b>Achieved</b></li> <li>. KPI data which indicates project outcomes and potential or realised impact <b>Achieved</b></li> <li>. a project risk register and how risks will be managed (at Milestone 102)</li> </ul> <ul style="list-style-type: none"> <li>. Updating Stakeholders and levy payer database. <b>Achieved</b></li> <li>. Assessing Levy payers' needs . <b>Achieved</b></li> <li>. Engaging Stakeholder and levy payer in extension activities. <b>Achieved</b></li> <li>. Facilitating interactions among stakeholders and levy payers. <b>Achieved</b></li> <li>. Implementing the extension plan and M&amp;E plan for the period July 2020 – September 2021. <b>Achieved MS190</b></li> <li>. Enhance RDOs and project team skills and knowledge <b>Achieved MS 102, 103, 104 and 190</b></li> <li>. Carrying out scheduled general services. <b>Achieved but with modified schedule</b></li> <li>. Documenting Extension activities. <b>Achieved (appendix...in MS190)</b></li> <li>. 6 monthly milestone status reports , a final report <b>Achieved</b></li> </ul>		
<p><b>Activities</b></p>	<ul style="list-style-type: none"> <li>. HI project guidelines Review: <b>Achieved</b></li> <li>. baseline data collection: <b>Achieved</b></li> <li>. project planning: <b>Achieved</b></li> <li>. identifying and establishing potential/suitable candidates/partners: <b>Achieved</b></li> <li>. extension activities planning: <b>Achieved</b></li> </ul> <p><b>Achievements were reported in MS 103</b></p>	<ul style="list-style-type: none"> <li>. Communicate with involved actors and organisations and levy payers: <b>Achieved</b></li> <li>. Working the terms and conditions for the Regional Reference Group: <b>Achieved</b></li> <li>. organising and facilitating events (meetings, communications, survey, benchmark, field days, workshops etc).</li> <li>. Doing survey, data collections, feedback analysis: <b>Achieved</b></li> </ul> <p><b>Achievements were reported in MS 104 and 190</b></p>	<ul style="list-style-type: none"> <li>. Project team participating in trainings, conferences, group discussion etc. <b>Achieved</b></li> <li>. RDOs communicate with involved actors and organisations and levy payers: <b>Achieved</b></li> <li>. post-event evaluation; scheduled project evaluation: <b>Achieved</b></li> <li>. Reporting: <b>Achieved</b></li> </ul> <p><b>Achievements were reported in MS 102, 103, 104 and 190</b></p>

**Project name: Improving water and fertiliser use efficiency**

**Article on Overflow magazine: [https://issuu.com/irrigationaustralia/docs/overflow\\_65\\_wint2021?fr=sMmJiOTExNjA2OTQ](https://issuu.com/irrigationaustralia/docs/overflow_65_wint2021?fr=sMmJiOTExNjA2OTQ) (page 24-25)**

Logic Level	Description from logic	What to measure	Data Collection method	Recorded final outcomes and project impact
<b>Activities and outputs</b>	1. Stakeholders and growers engagement <sup>1</sup>	Confirmation of participation	Log of confirmation of participation	Stakeholders and growers engagement achieved (see the list of stakeholder collaborators is in MS 103 and its appendix)
	2. Focus grower group and project ally establishment <sup>2</sup>	Meeting attendance	Log of attendance, list of focus grower group, list of project ally members	Focus grower group and project ally establishment achieved. The list of Focus grower group is in the appendix showing irrigation assessment reports
	3. Delivery of 3 workshops	Workshop attendance	Log of delivery schedule and attendance	Delivered of 2/3 planned workshops.
	4. RDO Field work <sup>3</sup> (Development of case studies)	case studies  tools developed	Outputs from case studies	Case studies achieved where a cross cases analysis showed improved growers' practices by decreasing irrigation time from 90 minutes to 30 minutes time saving 63% of water and fertiliser while Percentage of marketable product increased from 60% to 80%. This also helped identifying constraints for innovation adoption which include: (i) labour shortage (to increase number of

<sup>1</sup> See Stakeholders and growers engagement plan

<sup>2</sup> A group of 6-10 growers (who have earlier had participated in the survey on water and fertiliser use within the project area) assembled to participate in a discussion about and to provide feedback on the project plan (aims and objectives, activities, collaboration opportunities, introduced innovations, potential benefits, constraints, solutions and, final outcomes.

<sup>3</sup> The RDO field work to benchmark on the water and fertiliser use with participating growers to identify the gaps for improvement and to determine the practice changes and innovations/technologies involved to achieve the targeted benefits. A decision tree for decision making in practice change in irrigation and fertiliser application is developed with grower contribution. An example of benchmarking on irrigation and fertiliser application in in appendix 1.

Logic Level	Description from logic	What to measure	Data Collection method	Recorded final outcomes and project impact
	<p>5. Benchmark current water and fertiliser use<sup>4</sup></p> <p>6. Develop a decision tree for decision making in practice change</p>	Decision trees developed <sup>5</sup>	<p>Outputs from benchmarking</p> <p>Outputs from Decision trees development</p>	<p>irrigation shift manually); (ii) short of resources to upgrade irrigation controllers to the automatic system.</p> <p>Benchmark current water and fertiliser use achieved by daily assess the soil moisture output data in which growers' practice change by reducing irrigation time clearly display.</p> <p>2 demonstration participation growers got convinced by visual illustration of water leakage beyond the rootzone and instantly taking RDOs' suggestions to reduce watering time from 90 minutes to 30 minutes each time.</p> <p>3 Other members of the focus group copied the improved practices at various levels by reducing 10% - 20% watering time without having daily soil moisture indicators.</p>
<b>Change by service providers</b>	80% of allied trade participants providing targeted and relevant advice	The nature of advice given by service providers post participation	Survey	
<b>KASA change by Farmers</b>	80% of attendees in the program have a greater understanding of managing water and nutrient management 'on farm'.	Understanding of key principles	Survey	This project obviously achieved 100% of attendees in the program have a greater understanding of managing water and nutrient management 'on farm' right after observing the visual illustrations at the field day and at grower demonstration sites. Those demonstration included of root zone concept, the function of water movement against irrigation time, the water leakage.

<sup>4</sup> See Benchmarking questionnaires

<sup>5</sup> See Decision tree template in appendix 1



Logic Level	Description from logic	What to measure	Data Collection method	Recorded final outcomes and project impact
<b>Practice change by farmers</b>	Attendees can demonstrate a 10% savings in water and nutrient management as a result of attending the training.	Water and nutrient use	Input assessment survey	<p>2/ 11 growers demonstrated 66% reduce of water, electricity and fertiliser by reduced 2/3 of irrigation time.</p> <p>3/11 grower reduced 10% - 20% watering time.</p> <p>6/11 growers committed certain level of practice change by splitting irrigation to small shifts and shorten the total watering time on small scale next cropping season.</p>
<b>Outcomes</b>	Reduction in input costs such as water and fertilizer.	Water use, nutrient inputs and associated costs, yields.	Case studies	<p>5/ 11 growers saved water, fertiliser and energy resources. The highest save was 66% reduce of water, electricity and fertiliser by reduced 2/3 of irrigation time while the rate of marketable product got 20% increase due to increase of fruit size.</p> <p>6/11 growers committed certain level of practice change by splitting irrigation to small shifts and shorten the total watering time on small scale next cropping season.</p> <p>900 plus WA vegetable growers received this information about this project and its demonstration results via 4 articles in VegetablesWA magazine of which 2 were republished on AusVeg magazine.</p> <p>Lessons learn from demonstrations along with other gains such as the strong collaborators network, the functioning focus growers group, grower competency in water saving practices are good stock to be carried over to VegNET 3.0</p>

## Reporting plan

Report type and timing	To whom	Achievement
Three or six-monthly project progress reports on activities, participation, outputs, and milestones.	Supervisor and/or project reference group, to them inform and to get feedback	Achieved
Articles, papers, and presentations highlighting achievements	Media channels, industry newsletters and events, and/or conferences	Achieved
Annual reports, collating progress reports, plus evaluation findings and/ Specific milestone reports	Supervisor (and/or project reference group) who will forward to investors and/or regional stakeholders	Achieved
Final report, collating progress reports, plus evaluation findings and/ specific milestones	Supervisor (and/or project reference group, who will forward to investors and/or regional stakeholders	Achieved

Table 1 List of activities completed by the Regional Development Officers from December 2020 for the Water and fertilizer use improvement project

No	Dates	Activities	Outputs	Outcomes	Remarks
1	04/12/2020	Language assistance and grower engagement	Translate and spread out the invitation to growers re meeting with local governments, Depart. of Water to seek for alteration of 10% water cutting plan.	Growers got updates information on how the proposal of 10% cutting of water allocation was made and works done by various stakeholders to assist growers to scope with it.  12 growers later participated in the water field day in Carabooda co-organised by DPIRD and Irrigation Australia.  11 of these grower have then joined to irrigation system efficiency assessment program funded by DPIRD and collaborated with RDO. These growers were then join to form a water focus grower group that engaged with the water and fertilizer project with thin VegNET WA project.  2 of these growers got a demonstrations set up in their farm: use of digital soil moisture monitor technique and adopted new irrigation ways that saved them up to 60% of water and fertiliser	Today the final decision on 10% water cutting has not been made yet.
2	08/12/2020	Developing collaborators network	Email to targeted stakeholders to present the RDOs focuses and workplan and suggest an establishment of a collaboration network	Obtain agreements via reply emails from all targeted stakeholders listed in the stakeholders engagement plan (except Alan Nankivell National TPP Coordinator, AUSVEG) (Please see stakeholders engagement plan in MS 103)	This is a significant achievement that place a foundation toward getting essential support for successful execution of project activities throughout the project course
3	09/12/2020	webinar	Participated in webinar re “Using Soil Moisture technology to inform decision on irrigation managing” organized by Hugh - Victoria RDO	Copied the information presentation techniques to apply to grower meeting in the water and fertilizer use improvement project.  Improvement will be made when conduct the grower meeting later by combining soil moisture technology with the root zone concept and with the illustration by an advanced grower who has adopted this innovation for 4 years	Collaboration among VegNET RDOs to utilize each other resources and expertise  RDO’s knowledge enriched.
4	10/12	Zoom meeting	Participated in zoom meeting with Geraldton growers, Depart of water (DWE), DPIRD, Mid-West Development Commission to discuss possibility to alter water use contracts between growers and DWE toward better flexibility terms to adapt to seasonal variation of water demand by growers	Growers get explanations from the water supply company and understand that the fix rate of daily use was involved in the contract based on specific design of infrastructure of the water supply company.	The outcomes did not make growers happy.

5	14, 15, 16/12	Email and phone communication with DPIRD Collaborators – Neil Lantzke and David Rowe	Planned for a meeting to develop workplan together for this project and to confirm the tasks, roles and contribution from each party	<p>A collaboration principle established:</p> <p>DPIRD: provide equipment (lending from Irrigation Australia member – Wildeye), and technical support for the field demonstration.</p> <p>RDOs: engaging with growers to establish the focus grower group and select suitable farm properties for field demonstrations set up and facilitate the knowledge transfer from technical collaborators to growers</p> <p>A Wildeye technician: Assist installing the soil moisture monitoring devices and set up data logging accounts for RDOs and for grower participants</p>	A strong RDOs - DPIRD- Private Supplier – growers is start to take shape.
6	18/12 /2020 to 28/1/ 2021	Engagement with growers  Communicate with collaborators	<p>18 visits and 41 phone discussions were made to 11 growers of focus groups for water project and 7 growers of focus groups of farm biosecurity project</p> <p>Email contact and meetings was made with collaborators at DPIRD and Irrigation Australia re possible reduction of the number of field trials and case studies</p>	<p>The project workplans were introduced to growers</p> <p>6 growers agreed to set field trials on their properties to compare their conventional irrigation practices with the suggested irrigation innovation using soil moisture monitoring to assist irrigation management.</p> <p>Inspections of those 6 growers were made to select 4 suitable one for trial purpose. These will be use as case studies in the project</p> <p>Unfortunately, only 2 are suitable for trial.</p> <p>Collaborators get aware of obstacles in setting field trials.</p> <p>Agreed to reduce the number of case studies to 2.</p>	<p>13/18 growers committed trying new technology</p> <p>Promptly inform collaborators obstacles and changes during the course of collaboration helped to maintain collaboration spirit and effective collaborative works.</p> <p>7 personel (3 persons of Wildeye and 4 of DPIRD participated in 3 meetings with RDO)</p>
7	10/2/2021	Maintain contact to project collaborators	Communicated with project collaborators re changes of project activities and schedule due to Covid lock down and restriction	<p>Maintaining the leadership role among project collaborators.</p> <p>Keep collaborators updated with changes so that they can be prepared for.</p> <p>Collaborator network maintained to continue working together.</p>	
8	10- 11/3/2021	Grower visits	14 grower visits North Perth to maintain RDOs commitment to deliver water project activities after Covid lock down and maintaining grower engagement.	<p>Grower engagement maintained. 11 growers are keen to learn and stay committed with up taking innovation information.</p> <p>Acknowledge the loss of seasonal window to establish field trials as</p>	11 growers of the focus group visited of which 2 demonstrations were set up at 2 growers' farm properties that fit to given available equipment resource

				planned. Acknowledge the loss of seasonal window due to Covid lock down and restriction that make the establish field trials impossible. This requires changes of project activities, outputs and outcomes.	
9	12/3/2021	Grower visits with DPIRD	Visited 2 growers' properties to prepare for demonstration on Soil moisture monitoring technology	Sites and crops were selected to set up demonstrations	2 growers involved in demonstrations.
10	07/4	Preparing for Cover Crop coaching clinic in Gingin	Finalised the field day plan with growers and with service provider - AHR	Date and venue for the event fixed Contribution from each party agreed The event will be on 28/4	The event was postponed due to Covid lockdown during 24-27/4 and further restrictions.
11	12/4	Meeting with Wildeye	Meeting with Wildeye – a soil moisture monitoring innovators to discuss possible collaboration to disseminate this innovation to growers	Getting to understand each other interests and services. A collaboration was initiated Additional technical support to this project beside other collaborators	Conflict interests need to be well maintained with a private company to protect growers' interest. 3 collaborators involved.
12	19/4	Field works	Installing the soil moisture monitoring devices	Got the soil moisture monitoring demonstration set up at 2 farm properties	3 growers (of 2 farm businesses) and 2 collaborators from Wildeye and DPIRD involved
13	21/4	Communication with collaborators	Communicated with Wildeye and DPIRD technicians to set up accounts for data logging	In progress	2 collaborators from Wildeye and DPIRD involved
14	24/4	Response to Covid lock down	Discussed with AHR re postponing the Cover crop coaching clinic event to to Covid lock down	The event was postponed due to Covid lockdown during 24-27/4 and further restrictions and will be resumed when appropriate	Promptly communicate with collaborators to make changes of the planned activities is crucial.
15	19/4	workshop	Educate growers to: - download Wildeye app - assess and understand the output data - integrate the data into decision making to make changes in irrigation practices - Assessment the preliminary gains/lost - Planning for further actions	2 demonstration involved grower obtained: - Wildeye app downloaded to smartphones - Daily assess and understand the output data - integrated the data into decision making to make changes in irrigation practices by reducing irrigation time by 70%. - Saved 70% water, electricity, fertilisers - Better fruit size and increased marketable produce by 40% - Committed to continue the trial to finetune the changed practices and	6/11 members of focus grower group, 1 collaborator from DPIRD involved. See more details in M&E report 2 growers committed adopting innovation by installing affordable digital irrigation controllers. 5 growers of the group express difficulties to adopt innovation due to resource shortage, specific crop types and inherited irrigation system

				reinforce the gains. Collaborators: Committed to continue engaging next season	characteristic designs.
16	20/4 to 2/6	Meetings and Communication with involved growers and collaborators	Consult with Collaborators re: -Trial progress -Trial results and further collaboration opportunities	RDOs: identified the constraints and solutions for further improvements (affordable automatic irrigation controllers to overcome additional labor requirement due to practice changes )	3 person in DPIRD and 2 from Wildeye involved. An article resulted from the demonstration was published in VegetablesWA mag and republished in Irrigation Australia Mag.
17	20/7	Soil Restoration meeting and Carnarvon Research Station Field day	Assisting growers engaging in soil restoration program and test the topsoil salinity	16 (20% of total) growers got the agreement form completed to get topsoil filled. Soil salinity was tested to show suitable salt level for vegetable growing.	This activity is not directly related to the project plan, however it influences soil fertility, thus growers 'practices re water and fertiliser application.  16/80 growers benefit from this service. Others were able to complete the form themselves.
18	25/8	Attend event	Waterwise Irrigation Expo	RDO engaged with irrigation service providers to explore info re automatic irrigation controllers. A few affordable automatic irrigation controller brands were selected to introduce to growers  RDO's knowledge increased	Discussed with a new collaborator to invite him to involve in VegNET 3.0 to transfer affordable digital irrigation controller to growers.
19	27/9	Workshop	Got plan for the soil moisture monitoring demonstration wrapped up by a focus group meeting by 27/9/2021	The event was postponed (4/6 growers of the focus group absent due to unforeseen matters; one of the 2 key growers involved in demonstration closed farming business due to illness).  It was agreed that the event will be resumed in Summer 2021.	This project will be carried over to VegNET 3.0 to amplify the achievements.

VegNET WA M&E report

Project name: Farm biosecurity

Logic Level	Description from logic	What to measure	Data Collection method	Recorded final outcomes and project impact
<b>Activities and outputs</b>	1. Stakeholders and growers engagement <sup>1</sup>	Confirmation of participation	Log of confirmation of participation	Stakeholders and growers engagement achieved (see the list of stakeholder collaborators is in MS 103 and its appendix)
	2. Focus grower group and project ally establishment <sup>2</sup>	Meeting attendance	Log of attendance, list of focus grower group, list of project ally members	Focus grower group and project ally establishment achieved. The list of Focus grower group is in the appendix showing irrigation assessment reports
	3. Delivery of 3 workshops	Workshop attendance	Log of delivery schedule and attendance	Delivered of 5/3 planned workshops. 2 additional workshops were organised to introduce innovative approach to promote integrating farm biosecurity practices with a specific pest management.
	4. RDO Field work <sup>3</sup> (Development of case 4 studies)	case studies, tools developed	Outputs from case studies	<p>A cross cases study was achieved where factors influencing growers' farm biosecurity planning and practising were identified. This enable RDOs improving the extension planning and extension methods to make information transfer more effectively.</p> <p>The lesson learn: the innovative approach to promote integrating farm biosecurity practices with a specific pest management made better impact in term of gaining better growers' interest when they see the direct impact of farm biosecurity to control a specific pest.</p>

<sup>1</sup> See Stakeholders and growers engagement plan

<sup>2</sup> A group of 6-10 growers (who have earlier had participated in the survey on water and fertiliser use within the project area) assembled to participate in a discussion about and to provide feedback on the project plan (aims and objectives, activities, collaboration opportunities, introduced innovations, potential benefits, constraints, solutions and, final outcomes.

<sup>3</sup> The RDO field work to benchmark growers' current practice on farm biosecurity using farm biosecurity checklist and practices templates attached.

Logic Level	Description from logic	What to measure	Data Collection method	Recorded final outcomes and project impact
	5. Benchmark current grower KASA re farm biosecurity practices	Current Farm biosecurity practices	Outputs from benchmarking	A benchmark of progress on grower practice change on farm biosecurity after 8-months time was achieved.
	6. Develop a decision tree for decision making in practice change	Farm biosecurity action planner	Outputs from Farm biosecurity action planner <sup>4</sup>	The statistical analysis of benchmarking results was achieved to enable better understanding on the levels of practice change among grower member of the focus group
<b>Change by service providers</b>	80% of allied trade participants providing targeted and relevant advice	The nature of advice given by service providers post participation	Survey	
<b>KASA change by Farmers</b>	80% of attendees in the program have a greater understanding of planning and practicing farm biosecurity	Understanding of key principles	Survey	100% (7/7 grower member of the focus group) carried practice change in farm biosecurity. However, there is high variation (40% to 80% of complete farm biosecurity action planner) regarding to levels of change among growers.
<b>Practice change by farmers</b>	Attendees can demonstrate understanding and competent in developing and implementing farm biosecurity plan for their own as a result of attending the training.	Having farm biosecurity planner and facility in place	Assessment survey	The growers' developed action plans demonstrate understanding and competent in developing and implementing farm biosecurity plan for their own as a result of attending the training
<b>Outcomes</b>	understanding and competent in developing and implementing farm biosecurity plan for their own in place	Having farm biosecurity planner and facility in place and signs of farm	Case studies	Basically, the growers' developed action plans demonstrate understanding and competent in developing and implementing farm biosecurity plan for their own as a result of attending the training. These plan are updating over time, but grower express

<sup>4</sup> Action planner template attached



Logic Level	Description from logic	What to measure	Data Collection method	Recorded final outcomes and project impact
		biosecurity implementing		doubt re ability this practice to absolutely prevent pest and diseases incursion to their farms.

## Reporting plan

Report type and timing	To whom	Achievements
Three or six-monthly project progress reports on activities, participation, outputs, and milestones.	Supervisor and/or project reference group, to them inform and to get feedback	Achieved
Articles, papers, and presentations highlighting achievements	Media channels, industry newsletters and events, and/or conferences	Achieved
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## Benchmarking results against Farm Biosecurity Checklist to 7 growers

This checklist is intended as a resource for growers implementing biosecurity practice to reduce the risk of pests and disease entry.

Biosecurity Practice	In place	In progress	No	N/A
<b>Vehicle Cleaning</b>				
Wash down facilities are provided on site for machinery, equipment and vehicles				
Run-off water from wash down facilities are collected in a tank for disposal or drains into a special pit as used for spray tank runoff				
Clean down facilities are located near farm entrances and away from growing areas				
A hard pad is provided in vehicle wash down area				
High pressure water and air hoses are available for removal of plant and soil from machinery, equipment and vehicles				
Wash-down facility and surrounds are inspected frequently for potential sources of contamination (eg. organic matter and host weeds)				
Records of wash down facility inspections are logged				
Machinery is inspected and disinfected before entering growing areas				
<b>Vehicle Movement</b>				
Visitor vehicle access is restricted to designated parking areas				
Only on-site vehicles are used to transport equipment and visitors around the farm				
Vehicle movement is kept to a minimum in growing areas				
Designated tracks are used to limit vehicle movement on growing areas				
Machinery and vehicles are cleaned before moving off property				
<b>Staff and Farm Visitors</b>				
Footbaths and brushes are easily accessible and used				
Visitor clothing, footwear and tools are checked for soil and organic matter before entering the farm				
Staff are trained in biosecurity and farm hygiene practices				
Visitors are inducted in biosecurity expectations prior to moving around the farm				
Visitors sign a register to monitor movements between farms				
Appropriate hygiene supplies are available to staff and visitors (hand sanitiser, gloves, foot baths, overalls)				
Contractor entry is conditional to a biosecurity induction and hygiene protocols				

Biosecurity Practice	In place	In progress	No	N/A
<b>Growing Areas and Controlled Access</b>				
Gate signs requesting phone check in and providing farm contact numbers are visible at main entrances				
Farm is divided into 'zones' with restricted or minimised people, machinery and equipment movement between zones				
A sanitation procedure is in place where there is regular movement of people, machinery or equipment between zones				
There is regular communication with neighbours, government agencies and industry stakeholders regarding minimising pests and disease infection risk				
Boundary fences are regularly inspected and maintained				
Vermin, feral animal, weed and wildlife populations are managed in line with regulations to prevent pest and disease spread				
<b>Plants and Materials</b>				
Records of planting material are maintained				
Planting material are sourced from reputable suppliers				
Imported seed are sourced from reputable suppliers				
Records of seed or seedling tests are logged				
<b>Monitoring</b>				
Symptom monitoring is regularly conducted in crops				
Symptom monitoring is regularly conducted in neighbouring vegetation				
Staff are trained to recognise symptoms of pest and disease infection				
Staff know how and where to report suspect plant disease symptoms				
Activities and results of pest and disease monitoring are recorded, including lack of observations				
Monitoring records are well organised and maintained				
A farm management plan is maintained				
<b>Packaging and pallets</b>				
Packaging materials are new and never recycled.				
Unused boxes and bins are stored on clean hard floors in a covered area.				
Pallets are clean of organic material and soil.				
Dirty pallets are cleaned in the wash down area.				

<b>Farm Biosecurity Action Planner</b>			
<b>Risk</b>	<b>Estimated risk rating*</b> (0 = no risk, 10 = high risk)	<b>Mitigation practices</b>	<b>Action</b>
<p><b>Vehicle movement</b> With multiple entry sites, vehicle access cannot be controlled, making it difficult to stop visitors moving into growing regions.</p> <p>These risks are increased when the vehicles have been exposed to different growing areas.</p>		<p>Visitor vehicles are restricted to parking only at designated areas and on site vehicles travel on designated pathways between growing areas.</p> <p>Gate signs direct traffic and inform visitors about property access points, and who to contact for queries.</p>	
<p><b>Vehicle hygiene</b> Areas where organic matter can become lodged, such as tyre treads and grilles, can incubate CGMMV.</p> <p>Runoff from clean down areas can carry CGMMV.</p>		<p>Clean vehicles and equipment at dedicated on site facilities that are well maintained and away from growing areas.</p> <p>Keep dedicated equipment and vehicles for on farm use.</p>	
<p><b>Staff and Farm Visitors on farm - Note1</b> Visitors and staff can carry CGMMV from other areas on the farm or other growing regions.</p> <p>Staff that are untrained in good biosecurity practices can spread diseases, pests and degrade biosecurity systems in place.</p>		<p>Visitor clothing, footwear and tools are checked for organic matter and soil, and are cleaned down before entering the farm.</p> <p>Cleaning facilities including footbaths and brushes are maintained and accessible for visitors and staff.</p> <p>Staff are inducted in on farm biosecurity practices and visitors are made aware of biosecurity expectations prior to moving around the farm.</p> <p>All visitors report to the farm office and sign a visitor register upon entering the property.</p>	

Table 2 List of activities completed by the Regional Development Officers from December 2020 to September 2021 and the outcomes for the Farm biosecurity project

No	Dates2020	Activities	Outputs	Outcomes	Remarks
1	08/12/2020	Developing collaborators network	Email to targeted stakeholders to present the RDOs focuses and workplan and suggest an establishment of a collaboration network	Obtain agreements via reply emails from all targeted stakeholders listed in the stakeholders engagement plan (except Alan Nankivell National TPP Coordinator, AUSVEG) (Please see stakeholders engagement plan in MS 103)	This is a significant achievement that place a foundation toward getting essential support for successful execution of project activities throughout the project course Confirmation emails from collaborators attached
2	6/1/2021 to today	Assistance to Qfly outbreak in WA	Engaged with the Biosecurity team in DPIRD to obtain updated information and to provide assistance including language assistance for Qfly inspection activities. The list of Vietnamese growers in Qfly affected are who need language assistance was established and provided to DPIRD team. Provided language assistance to translate flyers, updates, quarantine requirements. Relay updates info to all growers through various channels: SMS text message, phone call, facebook posts	Grower got up to date info and alert on the Qfly outbreak incident to act accordingly to comply to the Qfly response and quarantine regulations. The RDOs-grower linkage is maintained and strengthened over time. Growers' practices (produce marketing and cooperation with inspection) observed complying to biosecurity regulation as a result gain by these activities	5 Collaborators from DPIRD and 5 Affected growers involved in inspection. No breach of biosecurity regulation recorded at the market during this time period. The biosecurity team detects no Qfly for over 60 days since Feb 2021. The Qfly-free area declared in June 2021.
3	13/1	Meeting with Collaborator	Meeting with Graham McAlpine – Perth NRM to exchange info re effort to enhance growers' awareness and practices on farm biosecurity	Achieved commitment to support each other in farm biosecurity services. Better understand each other interests and practices for effective collaboration	
4	14/1	Communication with AusVEG's biosecurity coordinator – Callum Fletcher	Phone chat	Strong commitment from AusVEG's biosecurity coordinator to support VegNET WA activities in farm biosecurity. A zoom meeting was set on 19/1 then move to 22/1 to discuss possibility to organize biosecurity workshops in WA together.	
5	22/1	Communication with biosecurity collaborators	A Zoom chat setting	A zoom meeting happened among VegNET WA RDOs, AusVEG's biosecurity coordinator, Area wide management of disease project team from DPIRD (Craig Webster and Dominic Wright and Monica) and Fall army worm researcher (Helen Pafford). A Plan for a road show to conduct a series of workshop in Carnarvon, Perth and Southwest with the present of all collaborators achieved. Contribution from each involved parties agreed	
6	18/12 /2020 to 28/1/ 2021	Engagement with growers	18 visits and 41 phone discussions were made to 11 growers of focus groups for water project and farm biosecurity project	The project workplans were introduced to growers 6 growers agreed to sit in the focus group and participate in case studies on growers' awareness, capability of develop and implement the farm biosecurity plan.	11 participating growers develop positive attitude toward learning and trying farm biosecurity practices
7	22/2 to 26/2/2021	Travel to Carnarvon to assist with flood recovery effort and Carnarvon field day	(i) Consult with biosecurity and plant pathologist to get advice on biosecurity threat caused by flooding incident and relay their advice to growers in flood	Growers got updated info and alert to be better prepared for possible issues at post-flooding stage. Collaboration among RDOs, local growers and NRM was strengthened.	

		and to inform growers about possible farm biosecurity issues cause by water flood	(ii) affected area. Assisted the grower survey on farm biosecurity conducted by NRM	The result of grower survey on farm biosecurity conducted by NRM will be shared to RDOs	
8	4/3/2021	Zoom meeting	Participated in zoom meeting with the Qfly response team at DPIRD to obtain updates and advice on Qfly quarantine measure to relay to growers Posting obtained updates and advice on Qfly quarantine measure to growers	Grower got up to date info and alert on the Qfly outbreak incident to act accordingly to comply to the Qfly response and quarantine regulations. The RDOs-grower linkage is maintained and strengthened over time.	
9	5/3/2021	Zoom meeting with Farm biosecurity project collaborators	Review the post-Covid lock down and travel restriction situation to organize workshops in Perth and Carnarvon	Acknowledged the travel restriction will stop collaborators coming from Victoria, thus the planned workshop contents will be changed but contributions from collaborators within WA remain the same. 2 workshops on pests and diseases management and farm biosecurity were fixed for Perth (24/3) and Carnarvon (25/3) on Fall army worms, Area wide disease management update, VegNET WA farm biosecurity project, Qfly outbreak management update Flyers for activities and events have been circulated	Risk management is important to effectively maintain collaborator network and to modify project activities when appropriate. Flyers for activities and events attached
10	22/3/2021	Zoom meeting	Participated in a zoom meeting re Plastic waste management in vegetable production in Carnarvon	Get involved in a group to join effort to address the Plastic waste management in vegetable production in Carnarvon. The group included DPIRD, Carnarvon Grower Association, Gascoyne water corporation, Local government, VegetalesWA, DWE Got to understand the problem and its impact on farm hygiene and sanitation which may contribute to farm biosecurity risk. Contributed a suggestion re a provision of grower education to improve plastic waste management practice.	
11	24/3	Workshop	Organized a plant disease management and farm biosecurity workshop in Wanneroo	Growers are provided with up to date info re Fall army worm; diseases discovered under the area wide management of plant diseases, Qfly outbreak and control mearsures, Farm biosecurity project updates	Copy of list of participants attached Flyers for activities and events attached
12	25/3/2001	Obtaining farm biosecurity survey network feedback	Maintaining involved in the proposed network to get information updated	Obtained the farm biosecurity survey network feedback survey which will be used as a reference for this project	An opportunity for RDO to engage in a large plant biosecurity network
		Workshop	Organized a plant disease management and farm biosecurity workshop in Carnarvon	Growers are provided with up to date info re Fall army worm; diseases discovered under the area wide management of plant diseases, Qfly outbreak and control mearsures, Farm biosecurity project updates	Copy of list of participants and flyer attached
13		Obtain grower feedback	Visited 2 growers in Carnarvon after the workshop to gain their feedback	Growers' feedback are positive re the relevancy of the information provided. But more practical solutions should be developed to assist growers to effectively control the introduced pests. Growers got updated info and alert to be better prepared for possible issues such as FAW. Farm biosecurity concept is reinforced to enhance growers' awareness.	
14	22/4/2021	Zoom meeting	Participated in a zoom meeting 2 re Plastic waste management in vegetable production in Carnarvon	Introduce the team to the National Non-packing Plastic waste management project and provided the team with project document.	

15	17/6/2021	Zoom meeting	Biosecurity extension Community meeting	Maintain engaging in the national Biosecurity extension Community	See more details in Appendix
16	19-20/7/2021	Field works	American serpentine leaf miner investigation in Carnarvon with DPIRD	Samples were collected. No ASL recorded. ASL information and threat were communicated to 14 visited growers. Visited growers got updated info and alert to be better prepared for possible issues	
17	15-16/8/2021	Field works	virus and bacteria diseases sampling in association with Areawide management of virus and bacteria diseases management project	Routine scan on virus and bacteria diseases threat. Found diseases were informed to growers along with recommended enforcing farm biosecurity and diseases control measures. RDO stay updated with pest and disease trend and got knowledge enriched whilst working with plant pathologists. Growers got updated info and alert re discovered pests and diseases in their area to be better prepared for possible issues	
18	26/8	Workshop	Workshop	Workshop with 6 growers on Farm biosecurity planning and implementation review in Carnarvon 6 farm biosecurity plans were reviewed and updated as well as future actions identified	More info is in M&E report Great progress in terms of learning and practicing farm biosecurity concept. This help growers to integrate this practices with appropriate chemical use in crop protection and QA.
19	14/9/2021	Workshop	Growers lead Open discussion forum on Farm biosecurity and Bacterial diseases management	A growers lead discussion fashion was practices. Growers' need information are explored. Scientists and other stakeholders play supporting growers learning. The grower pickup of Farm biosecurity concept and practices got enhanced when they are integrated with a specific pest/disease management. Possible practical changes are defined right in the meeting and committed trying by growers.	Growers' feedback revealed this extension fashion is most preferable "It is like getting understand more about my car, its problem and ways to fix it rather than listening others introducing a new car"
20	23/9/2021	Workshop	Growers lead Open discussion forum on Farm biosecurity and Bacterial diseases management	A growers lead discussion fashion was practices. Growers' need information are explored. Scientists and other stakeholders play supporting growers learning. The grower pickup of Farm biosecurity concept and practices got enhanced when they are integrated with a specific pest/disease management. Possible practical changes are defined right in the meeting and committed trying by growers.	Growers' feedback revealed this extension fashion is most preferable



**VegNET WA M&E report**

**Project name: Chemical Certification to align with Industry and QA accreditation Standards**

Logic Level	Description from logic	What to measure	Data Collection method	Project impacts
<b>Activities and outputs</b>	<ol style="list-style-type: none"> <li>Stakeholders and growers engagement<sup>1</sup></li> <li>Project collaboration consultation</li> <li>Delivery 4 proposed courses</li> </ol>	<p>Confirmation of participation</p> <p>attendance</p> <p>Course attendance</p>	<p>Log of confirmation of participation</p> <p>Log of attendance, list of grower participants, list of project ally members</p> <p>Log of delivery schedule and attendance</p>	<p>Strong stakeholders and growers engagement throughout the project life was developed where 3/4 accredited chemical classes were implemented and one has been scheduled by November 2021.</p>
<b>Change by service providers</b>	100% of allied trade participants providing proposed course	Certification rate	Survey	
<b>KASA change by Farmers</b>	80% of attendees in the program have a greater understanding and skill in chemical handle, transport, storage, use and disposal	Level of competency in complying with Chemical requirement of Freshcare certification scheme	Survey <sup>2</sup>	<p>100% attendees in the program proved having a greater understanding and skill in chemical handle, transport, storage, use and disposal.</p> <p>8/26 of attendees in the program passed the course assessment to get certificates</p>

<sup>1</sup> See Stakeholders and growers engagement plan

<sup>2</sup> This survey use Freshcare internal audit checklist, chemical part (F4)

Logic Level	Description from logic	What to measure	Data Collection method	Project impacts
				<p>18 attendees, including 9 Vietnamese speaking growers, completed the chemical class and being waiting for their assessment results</p> <p>A number of growers have expressed interest to attend the coming class in November.</p>
<b>Practice change by farmers</b>	Attendees can demonstrate understanding and competent in chemical handle, transport, storage, use and disposal as a result of attending the training.	Comply with Chemical requirement of Freshcare certification scheme	survey <sup>3</sup>	
<b>Outcomes</b>	understanding and competent in chemical handle, transport, storage, use and disposal	Certificates		<p>26 attendees in the program proved having a greater understanding and skill in chemical handle, transport, storage, use and disposal.</p> <p>This enhanced skill enable grower attendees to upgrade their product quality standard by moving further to Freshcare training and achieving Freshcare standard certification.</p> <p>This skills and knowledge upgrade benefits the grower attendees not by increase the money profit nor the yield of produces rather than increasing confidence and reputation in vegetable production and business management.</p> <p>The industry's reputation in term of food safety and environment care are more secured.</p>

<sup>3</sup> This survey use Freshcare Farm audit report, chemical part (F4)



## Reporting plan

Report type and timing	To whom	Achievements
Three or six-monthly project progress reports on activities, participation, outputs, and milestones.	Supervisor and/or project reference group, to them inform and to get feedback	Achieved
Articles, papers, and presentations highlighting achievements	Media channels, industry newsletters and events, and/or conferences	Achieved
Annual reports, collating progress reports, plus evaluation findings and/ Specific milestone reports	Supervisor (and/or project reference group) who will forward to investors and/or regional stakeholders	Achieved
Final report, collating progress reports, plus evaluation findings and/ specific milestones	Supervisor (and/or project reference group, who will forward to investors and/or regional stakeholders	Achieved

Table 3 List of activities completed by the Regional Development Officers from December 2020 for the accredited chemical training project

Dates	Activities	Outputs	Outcomes	Remarks
4/12/2020 to 29/4/2021	Workshops / discussion meetings:	<p>Workshops / discussion meetings:</p> <p>Electronic newsletters: Multiple inclusions in vegetablesWA's weekly (delivered 1530 Friday) e-news Example - <a href="https://vegetableswa.cmail19.com/t/ViewEmail/j/55D9C489394CA4EF2540EF23F30FEDED/725D34D3F29EC0AC22947492D9797BBC">https://vegetableswa.cmail19.com/t/ViewEmail/j/55D9C489394CA4EF2540EF23F30FEDED/725D34D3F29EC0AC22947492D9797BBC</a></p> <p>Magazine articles: 2020 Summer Edition of WA Grower magazine</p> <p>Website: Updated development of VegNET WA page on vegetablesWA website <i>in progress</i> <a href="https://vegetableswa.com.au/">https://vegetableswa.com.au/</a></p> <p>Social media: Facebook: <a href="https://www.facebook.com/groups/1641522495930877">https://www.facebook.com/groups/1641522495930877</a> Private Grower page <a href="https://www.facebook.com/vegetablesWA">https://www.facebook.com/vegetablesWA</a></p> <p>Consumer Page</p> <p>Targeted event invitations:</p> <p>Engagement meetings:</p>	<p>Confirmed Chemical Certification Courses</p> <p><b>2021</b> 17<sup>th</sup> -18<sup>th</sup> May – Perth 21<sup>st</sup> -23<sup>rd</sup> June – Perth (<i>Venue TBC</i>) 16<sup>th</sup> -18<sup>th</sup> August – Perth (<i>Venue TBC</i>) 22<sup>nd</sup> -24<sup>th</sup> November - Perth (<i>Venue TBC</i>)</p> <p><b>2022</b> 1<sup>st</sup> -3<sup>rd</sup> February – Perth (<i>Venue TBC</i>) May – <i>Date and Venue TBC</i> August - <i>Date and Venue TBC</i> November - <i>Date and Venue TBC</i></p> <p>VegNET RDO Update – Page 57</p> <p><a href="https://issuu.com/vegetableswa/docs/wagrower_summer_20_lr">https://issuu.com/vegetableswa/docs/wagrower_summer_20_lr</a></p> <p>Updated development of VegNET WA page on vegetablesWA website <i>in progress</i> <a href="https://vegetableswa.com.au/">https://vegetableswa.com.au/</a></p> <p><a href="https://www.facebook.com/groups/1641522495930877">https://www.facebook.com/groups/1641522495930877</a> Private Grower page <a href="https://www.facebook.com/vegetablesWA">https://www.facebook.com/vegetablesWA</a></p> <p>Chemical Accreditation Course – 10 attendees in Wanneroo Targeted Grower emails to be issued closer to the dates - 21<sup>st</sup> -23<sup>rd</sup> June – Perth (<i>Venue TBC</i>) 16<sup>th</sup> -18<sup>th</sup> August – Perth (<i>Venue TBC</i>) 22<sup>nd</sup> -24<sup>th</sup> November - Perth (<i>Venue TBC</i>)</p> <p><b>2022</b> 1<sup>st</sup> -3<sup>rd</sup> February – Perth (<i>Venue TBC</i>) May – <i>Date and Venue TBC</i> August - <i>Date and Venue TBC</i> November - <i>Date and Venue TBC</i></p> <p>North Metropolitan TAFE Industry Advisory Group Meeting invitation from Neha Umaretiya (Head of Programs for Horticulture) to attend as vegetable industry advisor for updates to TAFE Horticulture Certificates and Diplomas Central Regional TAFE consultation with Jenny Reid (Commercial</p>	

				Business Coordinator) to confirm chemical course delivery and dates.	
	17-18/5/2021		Chemical Accreditation Course	Chemical training class for 8 growers held in Wanneroo. All attended grower were accredited and qualified for Freshcare 4.2 requirement.	
	22-23/6/2021		Chemical Accreditation Course	Chemical training class for 9 growers held in Wanneroo (22-23 June 2021). Assessment process toward accreditation is in progress.	
	17/8/2021		Workshop	Group assistance on Freshcare 4.2 for 6 growers in Carnarvon. All involved growers have completed their Freshcare 4.2 upskilling and have submitted their completed audit forms.	
	26/8/2021		Meetings	Group assistance on Freshcare 4.2 for 2 growers in Geraldton (26 August 2021) Both growers have completed their Freshcare 4.2 upskilling and have submitted their completed audit forms and passed farm audits to obtain FreshCare 4.2 certificate	
	28-29/9/2021		Chemical Accreditation Course	Chemical training class for 9 growers held in Wanneroo (22-23 June 2021). Assessment process toward accreditation is in progress.	
	30/9		Chemical Accreditation Course planning	29-30 November for the last full course for the year	



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Table 4 List of activities completed by the Regional Development Officers from December 2020 for VegNET and AusVEG catch up and Emergency responses and the outcomes

No	Dates20	Activities	Outputs	Outcomes	Remarks
1	11/12/2020	AusVEG-RDOs catch up	Missing due to conflicting with VegetablesWA Annual General Meeting	Recapture the meeting summary via AusVEG's email	
2	14/12	Article for AusVEG	Article on "VegNET WA RDOs' focuses and workplan"	Article was published on AusVEG magazine to introduce "VegNET WA RDOs' focuses and workplan" to vegetable growers nationally	This RDO service is not within the approved project scope. However, this help strengthening RDO-grower trust and relationship which is essential for extension services delivery.
3		Collecting technical information resources	Collecting Technical resources from AHR under "diseases management theme"	Resources collected to store in VeGNET resources folder that are later provided to growers when problem occur. Collected technical resources include: (i) Managing Foliage diseases; (ii) Fungicides and Fungicide Resistance; (iii)Management of lecture anthracnose; (iv)Management of Sclerotinia in vegetable crops; (v) Chili spacing; and (vi) Potato soft rot.	
4		Assisted grower	Phone communication with the grower and the seeds supplier re a complain about pumpkin seeds quality	An solution was set between the grower and the seeds supplier	
5	15-17/12	Provide language assistance to NSW RDO	Check and provide suggestions to improve the Vietnamese translation of 3 factsheets on Serpentine Leaf miner	Language assistance was provided to NSW RDO	Collaboration among VegNET RDOs to utilize each other expertise
6	21/12/2020	Assist Berry IDO – Helen Newman	Sharing experience on how to organize language assistance to Vietnamese berry growers and the feedback collection techniques	Strengthened relationship among RDO working in various disciplines; sharing RDOs' concerns and interests.	Over 90% of WA berry growers are Vietnamese
7	24/12	Publication	An article "VegNET WA Strategy – A roadmap for enhancing WA vegetable growing businesses" was produced.	The article was published on VegetablesWA quarterly magazine and facebook pages. The VegNET WA strategy is advertised to all vegetable grower in WA,	Increased grower awareness about VegNET project and VegNET WA services
8	5-9/1/2021	Fire emergency response	Timely updating DFES alerts, and Fire ban alerts, hot works ban issued by local governments to growers in the affected ares in both English and Vietnamese	Growers got updated alerts to act accordingly	This RDO service is not within the approved project scope. However, this help strengthening RDO-grower trust and relationship which is essential for extension services delivery.
9	6-8/1/2021	Article for AusVEG and article for VegetablesWA magazine	Article on "VegNET WA looking ahead for 2021" Article on "Improving water and fertilizer use efficiency"	Both articles got published. Increased grower awareness about VegNET project and VegNET WA services	AusVEG magazine autumn 2021 p 11  VegetablesWA magazine



					Summer 1/2021
10	12/1	Organise meeting with REAG and Regional Extension Coordinator	Setting a meeting venue and contents for REAG approval on VegNET WA strategy and focusses	A meeting was set on 27/1 where REAG approval on VegNET WA strategy and focusses was achieved	This is a significant achievement that place a foundation toward getting essential support for successful execution of project activities throughout the project course
11	20/1 – 14/3/2021	Language assistance for growers to pass Freshcare farm auditing	Provided language assistance for 5 growers in Carnarvon and 3 growers in Perth to close all Correction Action Required (CARs) to pass Freshcare farm auditing.	3 growers in Carnarvon and 3 growers in Perth achieved Freshcare Certificates. 2 growers in Carnarvon understand that their need to go further training to gain better understanding to correctly implement the Freshcare standard requirements. The Training on Freshcare 4.2 is planned for 5/2021	This RDO service is not within the approved project scope. However, this help strengthening RDO-grower trust and relationship which is essential for extension services delivery.
12	30/1/2021 to 01/3/2021	Emergency response to Covid lock down, Bush fire, Harvest and vehicle movement ban, bad weather and water flooding in carnarvon	(i) Provided language assistance to relay important info to growers so that growers' businesses can maintain operating or stop operating when required such as - Mask wearing, distancing between employees. - checkpoint pass requirement for employees - How inputs suppliers operate during the lock down and restriction. -Qfly quarantine measure for vegies delivery - Fire alert updates - Flood warning updates -Road closure (ii) Maintaining contact to key growers in affected zone to obtain info and provide and feedbacks to the office. (iii) Relaying food safety advice to growers in flooded area (iv) Developed and published "flood incident check list" to growers.	Growers got updated info and alert to prepare for and to act toward maintaining suitable operating or stop operating when required. VegetablesWA office get updated info of impacts of those incidents to growers and their businesses so that appropriate help and services were provided to them. Collaboration among RDOs, local growers association, DPIRD, NRM was strengthened while provide essential services to growers in affected areas. RDOs got community development skills enhanced. These services are not within the approved project scope. However, this help strengthening RDO-grower trust and relationship which is essential for extension services delivery.	Part of these activities were performed "from home" during Covid lock down and further restriction from 31/1 to 14/2/2021.
13	10/2/2021	Language assistance and information transfer	Provided language assistance to translate DPIRD notice re government assistance to flood recovery in Carnarvon then transferred the info to growers	These services are not within the approved project scope. However, this help strengthening RDO-grower trust and relationship which is essential for extension services delivery.  RDOs-DPIRD collaborators relationship is strengthened which is essential for extension services delivery.	
14	22/2 to 26/2/2021	Travel to Carnarvon to assist with flood recovery effort and Carnarvon field	Provided language assistance to: (i) Relay growers request to DPIRD for topsoil lost assessment and other flood damages to seek for	Growers got updated info and alert to prepare for and to act toward maintaining suitable operating or stop operating when required. VegetablesWA office get updated info of impacts of flooding incident to growers and their businesses so that	

		day and to inform growers about possible farm biosecurity issues cause by water flood	(ii) government assistance. Presentations at Carnarvon field day	appropriate help and services were provided to them.  Collaboration among RDOs, local grower association, DPIRD, NRM was strengthened while provide essential services to growers in affected areas. RDOs got community development skills enhanced. These services are not within the approved project scope. However, this help strengthening RDO-grower trust and relationship which is essential for extension services delivery.	
15	5/3/2021	Assisting Berry RDO	Provided language assistance at the workshop organized by Berry RDO	These services are not within the approved project scope. However, this help strengthening relationship among RDOs which is essential for extension services delivery.	
16	07/4/2021	Assisting Labour Scheme coordinator	Provided language assistance for the Labour Scheme coordinator to assist a Vietnamese grower to complete her application and fulfill requirements to be approved employer	These services are not within the approved project scope. However, this help strengthening relationship among RDOs and growers and other service providers which is essential for extension services delivery.	
17	08/4/2021	AusVEG article	Submitted an article to AusVEG	A Vietnamese grower profile and his adoption of irrigation innovation is highlighted.	AusVEG magazine Winter 2021 edition – (not published yet)
18		Response to Seroja cyclone	Inform Vietnamese community in Carnarvon and Geraldton re: 'Unusual' threat as potentially three cyclones forming off Western Australian coast. Updated cyclone information by April 9 in bilanguage re warning and advices on "Tropical cyclone track map image – system 1" from BOM.COM.AU . Continued monitoring the changes to timely response when needed. Maintaining contact to growers in affected areas to the cyclone impacts updated. Working collaboratively with DPIRD to provide language assistance for damage assessment	These services are not within the approved project scope. However, this help strengthening relationship among RDOs and growers and other service providers which is essential for extension services delivery.	
19	9/4/2021	AusVEG RDOs catch up	Participated in vietual AusVEG RDOs catch up	Been updated with VegNET project activities in other areas	
20	12-22/4	Assist Seroja cyclone recovery	Maintaining contact to key growers in affected zone to obtain info and provide and feedbacks to the office. Relaying food safety advice to growers in affected sarea Assisted DPIRD team to contact growers and provided language assistance for damages assessment.	14 growers in Geraldton got their cyclone damages assessed. Assessment completed by 23/4	

	22/4	VegNET RDOs catch up	Join to VegNET catch up via zoom.	Been updated with VegNET project activities in other areas	
21	28/4	Contact DPIRD to inquire the recovery assistance from government	A discussion with Rohan Prince – Director of Irrigated agriculture, DPIRD WA	Detailed reports will be provided to Truyen in 1-2 days The reports will be relayed to growers	
22	20/7	Soil Restoration meeting and Carnarvon Research Station Field day	Assisting growers engaging in soil restoration program and test the topsoil salinity	16 (20% of total) growers got the agreement form completed to get topsoil filled. Soil salinity was tested to show suitable salt level for vegetable growing.	
23	23/9	VegNET RDOs catch up	Join to VegNET catch up via zoom.	VegNET 2.0 wrap up	