Final Report

VegNET - North & Far North Queensland

Project leader:

Bowen Gumlu Growers Association (BGGA)

Delivery partner:

Department of Agriculture and Fisheries (DAF) under contract with the Bowen Gumlu Growers Association (BGGA)

Project code:

VG19008

Project:

VegNET - North & Far North Queensland (VG19008)

Disclaimer:

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General project overview

The project will contribute to Outcome 5 of Horticulture Innovation Australia's (HI) *Vegetable Strategic Investment Plan* Improved industry capabilities for innovation and adoption and will have a significant responsibility for achievement of Strategy 5.1 – Communication and Extension of the Plan. It aims to facilitate the overall Australian vegetable regional capacity building program with outcomes delivered in North and Far North Queensland. This project will improve the capacity of levy-paying growers to adopt best management practices and new innovations arising from the improved extension of research outputs to address geographically and culturally diverse vegetable levy stakeholders. Secondly, the project will improve levy-paying growers' awareness and contribution to vegetable levy investments. The project will have a targeted and measurable impact on business longevity, sustainability, and profitability.

Summary

The VegNET Regional Development Officer (RDO) was hosted by the Bowen Gumlu Growers Association (BGGA) in Bowen, and delivery of VG19008 in the North and Far North Queensland regions has focused on developing opportunities in innovative practices, tools, and collaborations to meet the challenges of the environment, productivity, and profitability for regional vegetable growers. The Monitoring and Evaluation (M&E) priorities focused on biosecurity, productivity, and sustainability. Results from a grower survey in March 2021 and direct contact with growers identified the following priorities for 2021:

1. Improve or adopt new pest/disease control strategies and tools
2. Adopt of new technology/practices to improve agronomy/efficiency
3. Reduce the cost of inputs (example: electricity, irrigation, fertilisers)

Vegetable growers are currently facing multiple challenges including the continued incursion of fall armyworm (FAW) in capsicums and sweet corn and lack of access to seasonal workers for harvesting vegetable crops. In early 2021, the North and Far North Queensland regions were anticipated to be at 40-50% production capacity in response to the lack of seasonal labour to manage, harvest and pack produce. These issues have been unconducive to growers' formal collaboration and membership of the REAG. Subsequently, the RDO utilised the support of the BGGA management committee as an informal REAG to provide feedback and approval of Milestones and Workplans.

Delivery of VG19008 in the North and Far North Queensland regions focused on developing opportunities in innovative practices, tools, and collaborations to meet the challenges of the environment, productivity, and profitability for vegetable growers, this is also where the RDO had the most experience. As a result, the project delivered the following outputs:

- Delivery of two workshops in Ayr on 20 July 2021 and Gumlu on 21 July 2021 in collaboration with Ausveg, Department of Agriculture and Fisheries (DAF) and Growcom covering pest and diseases of vegetable crops in the Dry Tropics (Bowen to Ayr) including FAW, thrips and topsovirus and serpentine leaf miner, that attracted a total of 57 participants with another 18 engaged online,

- Identified the regions key priorities for extension of Research and Development (R&D), and continued to refine these over the course of the next 10 months,
- Developed and distributed a survey for Bowen, Gumlu and Burdekin vegetable growers via BGGA to understand the level of support required to meet the regions key priorities,
- Established connections within the National Biosecurity Network Community facilitated by HI to understand biosecurity key priorities around pest and disease awareness and management at a national, state, and regional level and how we may encourage a regional community of practice,
- Contributed to discussions and development of 'Future Reef Program Design and Support in Horticulture' of the *Reef 2050 Water Quality Improvement Plan* between the Department of Environment and Science (DES), specifically the Office of the Great Barrier Reef (OGBR) and DAF.
- Work with DAF, HI and BGGA to develop a communication and extension strategy for Queensland's FAW response in the Bowen, Gumlu and Burdekin region where the pest has caused significant economic losses to the sweetcorn and capsicum industry,
- Provide industry intelligence to DAF economists on regional vegetable production scales and market impediments, this data informs DAF's AgTrends advice available at: https://www.daf.qld.gov.au/strategic-direction/datafarm/qld-agtrends
- Co-authored of a case study published by the Australian Controlled Traffic Farming Association on grower Carl Walker's Controlled Traffic Farming (CTF) and Precision Agriculture (PA) adoption.

Through the delivery of these output actions, ongoing engagement and the dissemination of relevant information on regional challenges and priorities the project has been able to deliver increased capability and practice change to regional levy paying vegetable growers through outcomes such as:

- Improved grower knowledge of weather and condition data and and increased capability of growers to utilise real-time data services to make informed decisions in farm practice, particularly irrigation and chemical application. This serves to increase usage efficiency and lower input costs providing significant benefit at a time where the market for inputs has seen significant price increases and sustainable practice is in focus in North and Far North Queensland. It can be seen the gains through this has led to growers further investigating new technology such as precision and sensor based devices that will deliver efficiency gains in their farming operations.
- An improved community of practice amongst growers to pro-actively manage Biosecurity issues. This takes the form of improved preventitive efforts such as consistent standards in regional farm signage and monitoring as well as increased awareness and grower participation with BGGA, AUSVEG and DAF and in discussions around emerging threats and control measures. This can be further demonstrated through targeted attraction of support provided by market vendors such as Syngenta in 2021 to inform growers toward new pest and disease controls coming into market that can support their future needs.

Introduction

Large scale production of fresh produce in North and Far North Queensland is located primarily in the subregions of Whitsunday, Burdekin, Johnstone and Tablelands regions. These areas are also known as the Dry Tropics (Whitsunday and Burdekin) and Wet tropics (Johnstone to Tablelands). In 2020-21 the North and Far North Queensland regions have been estimated to to produce more than $800 million (GRP) of horticultural products including vegetables and tropical fruits (DAF AgTrends, 2021). While many growers in the region already export their produce, there is a significant opportunity for export expansion in North and Far North Queensland with many growers willing and able to grow their horticultural production with increasing demand from overseas markets, particularly in South East Asia.

In 2020-2021, vegetable growers in the region faced multiple challenges including unanticipated exotic pest incursions by Serpentine leaf miner and American serpentine leaf miner, FAW in capsicums and sweet corn, reduction in demand for some products and lack of access to seasonal workers for harvesting vegetable crops. Prior to the 2021 season, the North and Far North Queensland regions were anticipated to be at 40-50% production capacity in response to the lack of seasonal labour to manage, harvest and pack produce.

According to the Queensland AgTrends forecast for 2021, seasonal labour demand in the levy-paying vegetable industry in theNorth and Far North Queensland regions will peak between August and September at approximately 2325 full time equivalent (FTE) employees. During late 2020/early 2021, many vegetable growers were able to secure overseas seasonal workers that were already living and working in Australia on extended Visas, due to COVID-19 related travel restrictions, or seasonal labour under the Pacific Australia Labour Mobility scheme. Despite this, many growers were short-staffed during the peak production months of July, August, and September and this will likely continue into October.

The VegNET RDO has been hosted by the Bowen Gumlu Growers Association in its various forms for over 10 years to support vegetable levy payers in North and Far North Queensland. With constantly evolving and changing priorities for the industry the role has been active in collaborating with government, not-for profit, and private sources to deliver extension support where it is needed. Linkages to Ausveg, HI and DAF have been strengthened, particularly in the areas of biosecurity, pests, and diseases. The RDO's focus has championed place based initiatives including increasing awareness and use of the Bowen Weather Station Network and awareness of industry challenges posed by the need to provide increased protection to the Great barrier reef which surrounds all North and Far North Agricultural catchments.

Methodology

The BGGA have efficiently and effectively represented horticultural grower interests by promoting the industry and region and providing support through developing and delivering innovation, building capacity, and supporting business management. The BGGA has maintained a good relationship with HI and key stakeholders including Ausveg.

The BGGA volunteer management committee consists of innovative vegetable and fruit growers: Carl Walker (President), Ben Martin (Vice President) and Dale Williams (Treasurer). The BGGA has a strong internal team consisting of a General Manager Ry Collins, Project Manager Adelaide Belyea, Agricultural Workforce Development Officer Julia Wheway and Administration Officer Lisa Jackson. The team have strong internal communications with monthly general meetings where all members, non-members and industry support personnel encouraged to attend.

The RDO worked with Rural Consulting Group, a consultant employed by HI to assist with the development of the Monitoring and Evaluation (M&E) plans in December 2020. The RDO initially approached the role from a R&D perspective, which she was familiar with in her normal role, and attempted to identify what the R&D needs for the region were. However, as the project advanced, the RDO became more focused on *extending* the R&D as she became more familiar with discussing the growers' needs.

The RDO has identified the key roles for VegNET:

- Provide a point of contact for R&D information to increase knowledge of vegetable R&D, innovation, and technology in regional areas of North Queensland,
- Disseminate and increase the reach of information produced by Vegetable Levy Investment by HI,
- Provide regional content to established vegetable industry publications, such as Vegetables Australia magazine funded by HI,
- Target a broad audience, that includes vegetable levy payers and industry stakeholders, agronomists, consultants, government, and non-government regional service providers,
- Develop regional and national industry networks to enhance knowledge and application of vegetable R&D program outcomes,
- Facilitate co-innovation and adoption of vegetable R&D with stakeholders from across the value chain via appropriate extension strategies, including workshops, newsletters, and emails, and encouraging grower participation in activities in-person or online by service providers,
- Provide feedback on regional vegetable industry priorities, issues and opportunities to HI and key stakeholders,
- Support HI in achieving R&D objectives and strategies.

Achievements

- Delivered VegNET 2.0 project milestones (MS101/102/103/104/190) within project scope, budget and limits. Achievement criteria delivered included service delivery, participation in VegNET team activities, coordination of REAG group meetings and delivery of project artifacts including five year plan, 20/21 annual plan, stakeholder engagement plan, M&E plan, program logic, REAG Terms of Reference and milestone update reporting.

- Delivered two workshops in Ayr on 20 July 2021 and Gumlu on 21 July 2021 in collaboration with Ausveg, DAF and Growcom covering pest and diseases of vegetable crops in the Dry Tropics (Bowen to Ayr) including FAW, thrips and topsovirus and serpentine leaf miner, that attracted a total of 57 participants with another 18 engaged online,

- Identified the regions key priorities for extension of R&D, and continued to refine these over the course of the next 10 months,

- Developed and distributed a survey for Bowen, Gumlu and Burdekin vegetable growers via BGGA to understand the level of support required to meet the regions key priorities,

- Established connections within the National Biosecurity Network Community facilitated by HI to understand biosecurity key priorities around pest and disease awareness and management at a national, state, and regional level and how we may encourage a regional community of practice,

- Contributed to discussions and development of 'Future Reef Program Design and Support in Horticulture' between the Department of Environment and Science (DES), specifically the Office of the Great barrier Reef (OGBR) and DAF. DES and OGBR are the leading agency for implementing the *Reef 2050 Water Quality Improvement Plan*, however they require significant advice on the horticultural industry from DAF to develop support programs for future GBR recommendations for horticultural production regions and producers.

- Co-developed a collaborative proposal for future funding in consultation with DAF for 'Great Barrier Reef Horticulture Agronomy for Water Quality' that supports a dedicated project team will work with the vegetable growers in the Wet & Dry Tropics (Bowen, Gumlu and Burdekin) and Burnett-Mary,

- Supported and contributed to delivery of an innovation and AgTech forum with DAF in association with the Greater Whitsunday Alliance (Mackay, Issac and Whitsunday region),

- Worked with DAF, HI and BGGA to develop a communication and extension strategy for Queensland's FAW response in the Bowen, Gumlu and Burdekin region where the pest has caused significant economic losses to the sweetcorn and capsicum industry,

- Provided industry intelligence to DAF economists on regional vegetable production scales and market impediments, this data informs DAF's AgTrends advice available at: https://www.daf.qld.gov.au/strategic-direction/datafarm/qld-agtrends

- Co-authored of a case study published by the Australian Controlled Traffic Farming Association on grower Carl Walker's Controlled Traffic Farming (CTF) and Precision Agriculture (PA) adoption,

- Engaged Ausveg to develop a trial site for the IMAP Pests Project at Bowen to gather data on pest and disease pressure between May and August 2022, and link up with the Bowen Weather Station Network, local agronomists, and DAF researchers,

- Initiated a monthly 'R&D Spotlight' email to disseminate completed Vegetable Levy Investment projects to growers in the Bowen, Gumlu and Ayr region, the first email was set to be distributed 16 August 2021 via BGGA to over 80 growers.

Outputs

Foundational outputs, Table 1

Due Date	Description	Status
20/05/2020	Milestone 101 Agreement signed and executed	Achieved
01/10/2020	Milestone 102 Regional Extension Advisory Group (REAG) and Terms of Reference Established 5 Year Regional Extension Plan developed and approved by REAG	Achieved
11/11/2020	BGGA contract to DAF signed and executed	Achieved
01/12/2020	Milestone 103 Program logic Monitoring and Evaluation plan Stakeholder Engagement Plan 2020-21 Extension Plan developed and approved by REAG Progress report	Achieved
01/05/2021	Milestone 104 Progress report	Achieved
30/09/2021	Milestone 190 Final progress report 5 Year Regional Extension Plan	Achieved

Regional Priorities

In November 2020, the regional priorities were redeveloped as many of the identified priorities, such as: field and machine hygiene, chemical application accreditation, spray rig calibration and using weather data to make chemical application decisions, have been superseded by legislation, industry standards or quality assurance programs such as Enviroveg, Hort360, the Horticulture Code of Conduct and Reef Plan 2017-2022, and as such are the minimum standard all horticultural growers in the region are required or encouraged to implement. Similarly, priorities such as beneficial insect and mite releases for pest control, alternatives to plastic mulch films and trapping and surveillance for FAW are currently either being addressed or have been addressed in recent years through targeted R,D&E projects.

The RDO attended a BGGA meeting on 26 of November 2020 and presented the key extension priorities developed by the previous RDO to the members and committee, along with priorities that had been further refined since DAF commenced the project on 16 of November 2020. To assist understanding of the relative importance of the key extension priorities, they were categorised based on the 'Rodgers Adoption Bell-Curve model'. This model describes the adoption stages of a statistically normal population, however here, the priorities were categorised broadly into three groups, *see Figure 1*:

1. Innovative opportunities,
2. Best management practices, and
3. Minimum standards.

The BGGA committee and members present were consulted and asked to eliminate or add priorities that they believe have merit. Subsequently, the 'minimum standards' extension priorities were immediately eliminated from this list as these practices have been superseded by industry standards and codes.

From these categories three priority areas were identified and refined based on the previous RDO's work and became the regional priorities that would be developed in the Monitoring and Evaluation Plan, they are:

1. Biosecurity
    1.1. Establish a sensor network to track and forecast pest and disease incursions
    1.2. Establish Regional Biosecurity focus group for a coordinated approach to regional pest and disease management
2. Productivity
    2.1. Update industry gross margins for three regionally significant vegetable crops to be used for cost-benefit scenarios for adopting new practices or technologies
    2.2. Identify opportunities to develop new crops or managing native vegetation for control of crop pests
3. Sustainability
    3.1. Great Barrier Reef regulations information sessions
    3.2. Establish a study tour or group focused on sustainable business and environmental management

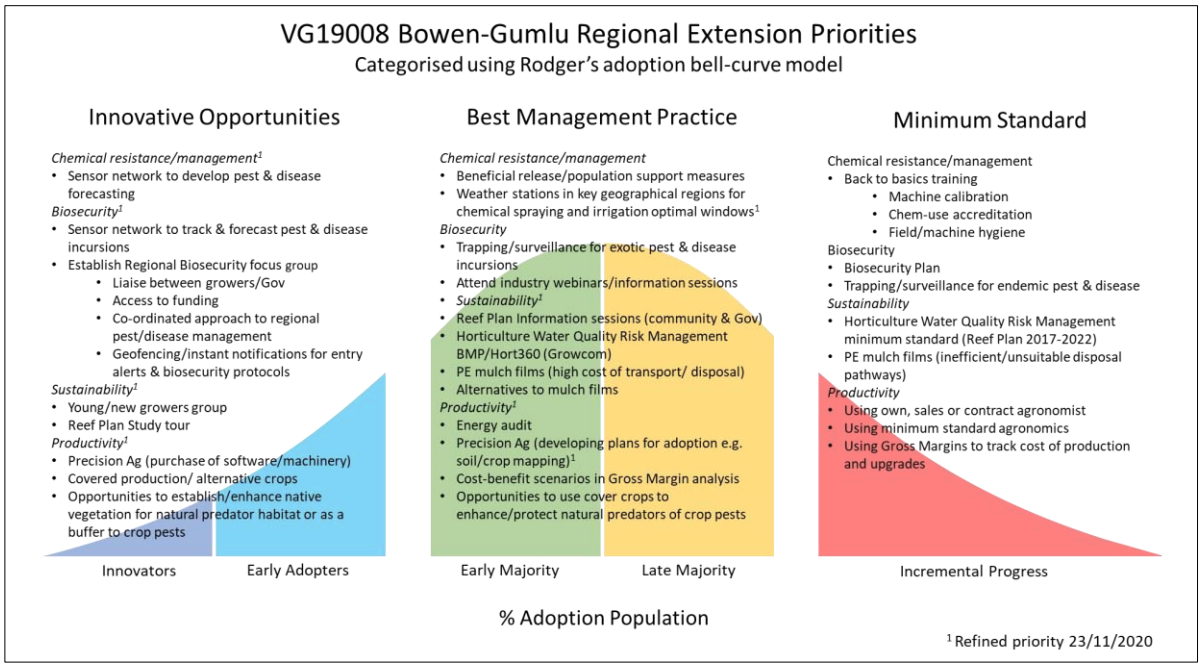

Figure 1: Extension priority areas categorised using the Rodgers adoption curve to illustrate industry relevance

Further refinement of the industry priorities was performed via an online survey delivered in March 2021 to BGGA members and non-members (BGGA members n=20, non-members n=40), see *Appendix* for survey questions. Only 10 businesses responded to the survey, 100% of these respondents were BGGA members. Increased engagement to non-BGGA members will be a focus of the next iteration of VegNET in order to provide greater connection toward collaborative opportunities offered by the project and the support BGGA offers to regional growers. Survey respondents were asked to rank several themes and regional priorities, *see Table 2 below*. Not surprisingly considering multiple exotic pest incursions recently, pest and disease management ranked highly in both questions, while improving productivity through adoption of new technologies and sustainable practices were ranked highly. When presented with several initiatives, over 70% of respondents listed the following as initiatives they are willing to be directly involved in:

- Join a study tour focused on innovative technology and practices from other growers, regions, or industries.
- Subscribe to a weather-station network and use hyper-local (data measured in your location) climate data for crop and pest management
- Work with a professional economist on gross margins and cost-benefit strategies

Table 2: Ranked regional extension priorities (n=10)

Priority	Overarching Themes	Extension Priorities
1 (very Important)	Pest management	Improve or adopt new pest/disease control strategies and tools
2	Productivity	Adopt of new technology/practices to improve agronomy/efficiency
3	Sustainability	Reduce the cost of inputs (example: electricity, irrigation, fertilisers)
4	On-farm biosecurity	Manage soil health
5	AgTECH (innovative technology on farm)	Diversify crop or cover cropping type
6 (least important)	Regional biosecurity	Protected cropping

General discussions with growers at meetings, events and during phone calls have also added additional priorities that the RDO did not initially focus on, these are:

1. Workforce development,
2. Identifying and/or accessing new markets, including organic, niche and export,
3. Developing knowledge and capacity in professional agronomists who provide agronomic advice to growers,
4. Agroecology, carbon farming and converting less productive land into areas that support pollinators and/or beneficial arthropod populations,
5. New chemicals, strategies, and surveillance tools to meet the FAW challenge for all vegetables and review the

economic cost of FAW control in non-sweet corn commodities,

6. Develop gross margins for new industries with a tropical focus such as protected cropping in soilless media,

Engagement methods and record keeping

During the project delivery phase, it was clear that despite the availability of digital communication applications such as webinars, videos and email, growers overwhelming preferred interacting one-on-one with service personnel. One of the survey questions covered how growers would prefer to be contacted and they responded that the top three preferred methods of communication were direct email, BGGA newsletter and phone calls. Based on this, the RDO continued to provide R&D updates via BGGA newsletters with direct emails where appropriate, such as forwarding relevant information directly to growers, passing on grant opportunities or webinar reminders. The RDO used phone calls to check in with growers for specific tasks or queries. Direct engagement with growers has proven challenging, particularly in peak production periods with direct visitation meetings to grower farms often cancelled due to unforseen operational issues on farms. Engagement via electronic communication was only slightly more successful with the RDO required to develop a variety of tailored communication methods on a grower by growers basis when communicating information or interacting with grower stakeholders.

A database was used to store information to keep track of RDO interactions, emails, and attendance at events, these have been summarised in the *Appendices*. This does not list all interactions as there were far too many, however the communication outputs that did or would potentially lead to extension outcomes were recorded here.

Communication Outputs, Table 3

Date	Description	Status/Comments
2020-2021	BGGA Newsletters: December 2020 February 2021 April 2021 May 2021 August 2021 September 2021 October 2021	Achieved
2020-2021	BGGA general meetings	Attend meeting (when held in Bowen) where possible and provide updates when requested to be presented at the meeting in RDO's absence
2020-2021	Vegetables Australia magazine VegNET column Autumn (January) Winter (April) 2021 Spring (August) 2021	Achieved

Date	Description	Status/Comments
	Summer (September) 2021 Vegetable grower Q&A - Spring 2021	
11/02/2021	Brisbane Markets Fresh Source Magazine	Achieved, BGGA-Brisbane Markets contracted obligation
Ayr (20/07/2021) and Gumlu (21/07/2021)	Pest and Disease workshop	Collaboration between Ausveg, DAF, Growcom and chemical specialists. • Ayr: 34 people to Ayr with another 18 online • Gumlu: 23 participants
Ongoing - numerous	Emails to BGGA and relevant growers	• Webinar/seminar notifications • Funding/scholarship/grant notifications and deadlines • Special interest news features
16/08/2021 – Ongoing	R&D Spotlight	Monthly email to vegetable levy-paying growers with comprehensive information on recent R&D funding by the vegetable levy (via HI) First issue "R&D Spotlight: Boosting beneficials in your vegetable crop" sent to BGGA for distribution 16/08/2021
2021	VegNET RDO Monthly meetings	• The RDO attended as many as possible remotely and contributed where appropriate • The BGGA General Manager (Ry Collins) has participated in monthly VegNET team video conferences where the RDO was unavailable
2020-21	Queensland Horticulture Council monthly video conferences and the annual face to face meeting with the QHC and Minister Mark Furner	Achieved, the BGGA President (Carl Walker) and General Manager (Ry Collins) participated in Queensland Horticulture Council monthly video conferences and the annual face to face meeting with the QHC and Minister Mark Furner
June 2021	Hort Connections Conference	Achieved, the BGGA General Manager (Ry Collins) attended the Hort Connections Conference in Brisbane in June 2021 representing the project

VegNET RDO development outputs

- Attend industry relevant online seminars including: FAW (Growcom), land management and ecosystems (NQ Dry Tropics), Understanding farmer decision making (APEN), Looking ahead: Setting the direction of levy investment for the next five years (HI),
- Virtual attendance Bundaberg Fruit and vegetable growers (BFVG) AgForum 2021
- Attend FAW response discussions, webinars and meetings held by DAF, Growcom and Ausveg
- Attend training in "Facilitating online meetings and seminars" via DAF (21/6/2021)
- Established connections within the National Biosecurity Network Community facilitated by HI,

- Co-authored of a case study published by the Australian Controlled Traffic Farming Association on grower Carl Walker's Controlled Traffic Farming (CTF) and Precision Agriculture (PA) adoption.

Monitoring and Evaluation outputs

Biosecurity

1. Increase awareness and use of hyperlocal sensor network for monitoring micro-climates in the Bowen horticultural district.

a) Hold ONE information session (accessing and understanding hyperlocal weather station data, and modifying chemical and pest control strategies), VegNET RDO in collaboration with DAF and MEA (Chris Monsour, Prospect Ag)

b) Hold ONE weather station site visit, delivered by VegNET RDO in collaboration with DAF and MEA

c) BGGA Newsletter article, delivered by VegNET RDO

d) Industry newsletter article, delivered by VegNET RDO

The RDO worked with the host growers to understand their skill and knowledge needs to develop a workshop event for effectively using the weather station data that will likely be delivered at the end of 2021 (**M&E 1.a,b**). The delivery of a field day/workshop was delayed due to administration and legal provisions regarding the ownership and management of the Bowen Weather Station Network. The RDO directed BGGA staff in early 2021 to develop a subscription model approved by the BGGA executive members to establish the Bowen Weather Station Network as a community wide tool to contribute to positive outcomes in vegetable production. The BGGA officially extended an invitation to BGGA member and non-member growers in September 2021 to increase the number of subscriptions to the weather stations.

The RDO is actively increasing awareness and applications of the weather station network in newsletters (local and national) and during meetings and phone calls with growers to meet **M&E 1.a-d**. There are currently three host growers actively using the weather stations with one grower of zucchini and tomato using the weather stations to make targeted decisions on chemical application timings and irrigation scheduling, harvesting schedules and working conditions. After comparing the differences between the Bureau of Meteorology weather station and the Bowen Weather Station Network, this grower is also planning on installing another privately funded weather station on another property to manage that farm independently. The RDO has worked with the host growers to develop the following procedures:

- Develop and assist in adoption of a Growing Degree Day calculation to determine fruit ripening, chill damage, and harvest timeframes,
- Develop temperature and leaf wetness alerts to alert growers to adverse weather conditions that may result in yield losses via heat and/or pest and diseases,
- Develop a maintenance schedule with the BGGA and contractor to ensure accuracy and reliability of the data,
- Develop a protocol with MEA to streamline the web portal dashboard to suit vegetable growers in the tropics.

At the time of developing the M&E Plan in May 2021, much of the anticipated outcomes included were of a R&D nature rather than extension of information to growers, an oversight by the RDO who normally works in R&D. The Bowen Weather Station Network was new at this stage, with growers and researchers only just beginning to understand how they might use the data and the variability of the data across the region. Many of these plans are yet to be finalised and while the project remains R&D focused, Sarah Limpus, DAF, will be working closely with the BGGA and the new RDO to further develop and extend the outcomes and benefits of the network.

One newsletter and one industry article were successfully developed and published in BGGA newsletters and Vegetables Australia magazine to promote awareness of the Bowen Weather Station Network, see inset of an excerpt from the Winter 2021 edition of Vegetables Australia **(M&E 1.c,d)**.

Weather Station Network Host: Dobe Farming Company

One weather station host, Dobe Farming Company producing tomatoes and zucchinis, previously relied on the Bureau of Meteorology (BOM) weather station located at the Bowen Airport just over 6 kilometres away from the farm.

Preliminary analysis of data collected from the automatic weather station at Dobe's Farm in 2020 indicates that minimum temperatures were up to two degrees Celsius (2°C) cooler than those recorded at the BOM site, while annual rainfall was 107 mm lower at the farm.

Brooke Dobe of Dobe Farming Company said the weather station records accurate farm-specific data such as temperature, humidity, wind direction, delta T and rainfall which allows us to make informed decisions relating to spraying conditions, irrigating, harvesting, and working conditions.

"Even though the BOM weather station is not that far away, we have found significant differences in rainfall and minimum temperature readings", says Miss Dobe.

Bowen is not known for its winter frosts; however, data at the other two weather stations are also showing significant variations to the BOM station, with one farm even recording temperatures below 2°C. A community-owned weather station network could alert growers to the risk of frosts, thanks to the strategic location of these weather stations that could prevent crop damage and yield loss.

Regional temperature differences result in local variations in fruit ripening, and in this time of labour shortages, fruit ripening predictions can be used to estimate harvest schedules and potentially share labour forces.

2. Improve biosecurity awareness and support in the regional and farming community.

a. Promote biosecurity updates, webinars, training, and events in the BGGA newsletter and email updates, facilitated by VegNET RDO and BGGA

b. Facilitate biosecurity information/discussion session during BGGA monthly meetings, facilitated by VegNET RDO

c. Perform surveys to understand initial and changing attitudes regarding biosecurity, delivered by VegNET RDO in collaboration with BGGA

d. Engage regional and national biosecurity, and research organisations to deliver region specific biosecurity seminars/events for growers that focus on the biosecurity key priorities highlighted by surveys delivered by VegNET RDO in collaboration with BGGA

e. Perform TWO farm movement audits to highlight the interconnectedness of regional farms and the importance of biosecurity protocols, delivered by VegNET RDO **(Post VG19008)**

f. VegNET RDO to attend critical pest/disease and biosecurity events online/in-person where accessible

All relevant biosecurity updates were communicated via BGGA newsletters or supplying the relevant information to the BGGA administration, such as workshop reminders, to be sent via BGGA contact lists **(M&E 2.a,b).** The RDO distributed *Exotic Pest Identification and Surveillance Guide for Tropical Horticulture* (2021) handbooks, published by Plant Health Australia, to growers at meetings and workshops and supplied residual copies to the BGGA for future distribution. DAF Biosecurity incursion alerts by Serpentine leaf miner, American serpentine leaf miner, kaphra beetle and FAW were forwarded to BGGA and communicated via the BGGA newsletters. A free training on Plant Biosecurity Surveillance targeted at growers and agronomists delivered online by Plant Health Australia was also advertised via the BGGA newsletter.

The RDO worked with DAF scientists Dr Siva Subramaniam and Dr Cherrie Gambley to communicate updates from levy-funded HI projects: *Co-developing and extending integrated Spodoptera frugiperda (fall armyworm) management systems for the Australian vegetable industry* (VG20003), *Identifying potential parasitoids of the fall armyworm, Spodoptera frugiperda, and the risk to Australian horticulture* (MT19015), and *Area wide management of vegetable diseases: viruses and bacteria* (VG16086) in BGGA newsletters and Vegetables Australia magazine.

The RDO actively sought out opportunities to attend biosecurity events, seminars and meetings **(M&E 2.d,f)** during VG19008, including:

- North Region FAW Vegetable Agronomy Coordination meeting with Dr Siva Subramaniam, Dr Olive Hood and BGGA
- Biosecurity Extension Network Community meeting (Jo Luck, HI)
- Rapid Aim fruit fly monitoring and weather stations with regional grower
- Syngenta Grow More field day
- Predictive modelling and Forecasting of Fruit Flies in Australia webinar by Department of Agriculture, Water, and Environment
- DAF Biosecurity Partners Forum

The RDO, in collaboration with Ausveg, Growcom, and DAF, delivered two 'Pest and Disease' regional events at Ayr and Gumlu **(M&E 2.d,f)**, see *Figure 2 and Appendices for flyer*. The workshops were delivered at Ayr on 20 July 2021 with 34 in-person and 18 online participants, and Gumlu on 21 July 2021 with 23 participants. The workshops included presentations from:

- Fall armyworm: opportunities for integrated management by Dr Siva Subramaniam, DAF
- Food safety & traceability in vegetables & melons by SP Singh, NSW DPI (Ayr)
- Tospoviruses & mosaic viruses in capsicums and melons by Denis Persley, DAF

- General biosecurity obligation & hitchhiker pests, by Ceri Pearce, DAF
- Varroa & bee diseases, by Rebecca Laws, DAF
- Serpentine & vegetable leafminer, by Callum Fletcher, AUSVEG
- Chemical developments in insect control by Nufarm, FMC, Bayer, and Syngenta

Figure 2: Dr Siva Subramaniam, DAF Entomologist, presenting at the Ayr Horticulture Pest and Disease workshop.

As previously discussed, a biosecurity component was included in the survey sent to Bowen, Gumlu and Burdekin vegetable growers **(M&E 2.c)**. The respondents indicated that on-farm and regional biosecurity awareness were key priorities of the region however when regional vs on-farm biosecurity is discussed with growers there is unsurprisingly more importance placed with on-farm biosecurity than developing a regional biosecurity network. In previous years, a prominent local agronomist performed area-wide surveillance and regular updates to the local community however there is currently no leadership and little engagement for regional biosecurity. With a lack of a regional biosecurity strategy, growers are left to do what they can to prevent and manage pest and disease incursions within their own farm boundaries.

In survey follow-up calls, the RDO spoke to several growers who flagged that a community washdown facility was required in the region as many growers use contractors for agronomy advice and chemical spraying. The RDO subsequently established contact with the Whitsunday Regional Council (WRC) to discuss the potential collaboration of the BGGA and the WRC to develop a proposal for a community washdown facility. These plans are not currently being developed but the BGGA/RDO may follow this up at a later date. The region has many farms that are very close together and, in the past, their boundaries have not always been defined with fencing or signage. Signage is now very common in the region due to the contribution of the previous RDO Eilis Walker in 2020, however many contractors working on utilities do not always contact the owners of the farms and in future it is potentially necessary for the RDO to assist growers in highlighting this communication between contractors and growers.

Productivity

3. Improve grower skills in developing gross margins for regionally significant vegetable crops and cost benefit scenarios for adopting new practices or technologies

a) Review and update THREE gross margins for vegetable crops, delivered by VegNET RDO in collaboration with economics expert **(Post VG19008)**

b) Hold ONE survey to understand baseline technology knowledge, skills, and support requirements, delivered by VegNET RDO in collaboration with BGGA

c) Hold ONE seminar/field day presenting cost-benefit demonstration and scenarios to growers with service providers as guest speakers, delivered by VegNET RDO in collaboration with BGGA **(Post VG19008)**

d) Develop one-on-one visits to assist growers with economics analysis and/or seminars for other technologies that are suitable for the community in the first round of surveying, facilitated by VegNET RDO **(Post VG19008)**

Many of the outcomes for Priority 3 were not designed to be delivered within VG19008 as they required the development of relationships and understanding of grower's production systems which take time to establish. Of the survey respondents, 70% indicated that they were willing to work with the RDO and an economist to develop cost-benefit scenarios for adoption of new technology and practices on farm **(M&E 3.b)** and further work is needed to understand growers' baseline technology knowledge, skills, and support requirements. The Bowen Weather Station Network host growers are also interested in developing a cost-benefit analysis of using hyperlocal weather data to make crop management decisions including pest and disease prevention windows, irrigation scheduling and applying crop protectant sprays. The RDO engaged DAF economists to understand what gross margin activities would likely contribute to developing a cost-benefit analysis and the feasibility of tracking these activities is currently being investigated. The economics of using weather stations to refine/improve yield is not straightforward; it requires comparing gross margins before and after weather station deployment and detailed information on yield/quality improvements, as well as efficiency data on chemical spraying equipment and farm machines. This will be included in a funding proposal for the further development and expansion Bowen Weather Station Network.

The RDO worked with DAF economists in May and September 2021 to capture industry intelligence on vegetable production forecasts for the Bowen, Gumlu and Burdekin regions for AgTrends, available on the DAF website. Based on the information the RDO contributed to AgTrends, it is forecast that horticulture gross value of production (GVP) will increase by 5.9% in 2020-21 from 2019-20. The key influences of this forecast on vegetables were labour shortages for hand-harvested crops (zucchini, capsicum, eggplant, pumpkins, and chili), a 16% volume reduction of sweet corn due to FAW damage and the unexpected FAW damage to 30% of capsicum crops in Gumlu. The AgTrends website is a very useful tool for growers and industry to gain insights on production forecasts and it also tracks trends in labour demand for all agricultural commodities produced in Queensland. Links to AgTrends and the labor demand tool have been communicated via BGGA newsletters.

4. Improve grower access to information on diversifying into new crops, varieties, or cover (cash) crops. AgTech and improving beneficial insect populations and agro-ecosystems with a tropical focus

a) Hold ONE survey to understand baseline technology knowledge, skills and support requirements, delivered by VegNET RDO in collaboration with BGGA

b) ONE field walk/webinar on a suitable topic or as below, facilitated by VegNET RDO **(Post VG19008)**

c) TWO review and repackage current and past research and for dissemination to growers based on survey results for topic focus **(Post VG19008)**

The RDO has communicated R&D throughout 2021 using the BGGA newsletters, BGGA email distribution list and Vegetables Australia magazine as the communication medium. Some of the topics that have distributed include:

- FAW projects Co-developing and extending Integrated Spodoptera frugiperda (fall armyworm) management systems for the Australian vegetable industry (VG20003), Identifying potential parasitoids of the fall armyworm, Spodoptera frugiperda, and the risk to Australian horticulture (MT19015) and 2020 FAW economic analysis performed by DAF,
- Pesticide imports, approvals and extensions as listed by the Australian Pesticides and Veterinary Authority (APVMA),
- Area wide management of vegetable diseases: viruses and bacteria (VG16086),
- Driving AgTech adoption across Australia (VG21000),
- DAF Biosecurity incursion alerts by Serpentine leaf miner, American serpentine leaf miner, kaphra beetle and FAW,
- Stakeholder consultation on Environmentally Relevant Activity (ERA 13A) Environmental Protection Act 1994, Office of the Great Barrier Reef,
- Seminars and online webinars held by OGBR, Soil Wealth and Integrated Crop Protections, Ausveg, AgForce, Growcom, Queensland Farmers Federation, Applied Horticulture Research, DAF, Society of Precision Agriculture Australia (SPAA), HI and RMCG,
- Free Plant Biosecurity Surveillance delivered online by Plant Health Australia.

The RDO initiated a monthly email to vegetable levy-paying growers with comprehensive information on recent R&D funding by the vegetable levy. The first issue titled ‘R&D Spotlight: Boosting beneficials in your vegetable crop’ was sent to BGGA for distribution on 16 August 2021.

The RDO has established connections within DAF Regional Industry Development (RID) Officers and industry to deliver an AgTech seminar at Bowen. The DAF RID officers planned to run the workshop in April 2021, however due to the current season ramping up to harvest in April and an expected labour shortfall across the months of June-September 2021 in the region, this has been postponed until late 2021-early 2022 on advice from regional vegetable growers. The RDO is working with the DAF RID officers to travel to Bowen for an intimate meeting with key growers, agronomists and industry leaders in AgTech to discuss the support and opportunities to support grower adoption of AgTech **(M&E 4.b,c)**.

The proposed outcomes for this meeting are:

- Understand grower's innovation capability and awareness of present, new, and emerging technologies,
- Understand grower's needs for support in new technology uptake and skill improvement, and future workforce support to enhance AgTech adoption,
- Potential for creation of an innovation and AgTech Hub in the Mackay and Bowen regions and/or internet portal with horticultural/northern Queensland specific information, see Agtech and Logistics Hub in Toowoomba for an example of this,
- Identify proactive AgTech experts and businesses in the region available to support AgTech adoption.

The RDO is working closely with DAF to review and rejuvenate a research trial conducted at Ayr in 2020 along that looked at types of cover crops for tropical condition that provide soil protection from erosion and sediment loss (Great Barrier Reef protection), cash crop and productivity improvement opportunities **(M&E 4.b,c).** This research trial is designed to be an on-farm demonstration site for new practices and technologies in cover cropping and nutrient management in vegetable crops and will allow growers to exchange information and discuss management practices with their peers, DAF officers and agronomists contracted to manage the site. It is expected that this site will provide opportunities for increasing knowledge and skills as well as exposure to local support and experts in the field of Agtech and agronomy.

Sustainability

5. Enhance grower engagement in sustainable business and environmental management practices

a) Advertise regulation/sustainable business updates, webinars, training, and events in the BGGA newsletter and email updates, facilitated by VegNET RDO and BGGA

b) VegNET RDO to attend relevant events online/in-person where accessible, key messages reported to BGGA meetings and newsletter if appropriate

c) Establish a community of practice group for "Next Gen" (eg, banana industry Next Gen growers) and selected service industry personnel eg, entry level agronomists, delivered by VegNET RDO in collaboration with BGGA **(Post VG19008)**

d) Produce ONE video and ONE industry relevant newsletter/magazine to promote the group and learnings, delivered by VegNET RDO in collaboration with BGGA **(Post VG19008)**

e) Facilitate and plan ONE study tour to another horticultural-growing district, delivered by VegNET RDO in collaboration with BGGA **(Post VG19008)**

f) Review and disseminate extension resources addressing plastic waste management and alternative products

The RDO attended consultation and contributed to the review of the final Environmentally Relevant Activity for cropping or horticulture activities (ERA 13A of the Environmental Protection Act 1994) and *Future Reef Program Design and Support in Horticulture* under *Reef 2050 Long-Term Sustainability Plan* between DES (OGBR) and DAF. These discussions require critical knowledge of horticulture practices, grower knowledge and skill requirements and support needs to develop timely and

appropriate programs for growers to achieve the *Reef 2050 Water Quality* improvement outcomes. The RDO's involvement in these activities will contribute to **M&E 5.a,b**. A partnership between VegNET, BGGA and DAF provides a unique opportunity to contribute to the *Reef 2050 Water Quality* improvement program and provides two-way feedback between government organisations and industry that would normally be performed under formal consultation events where open discussion opportunities can be constrained by the environment and relationships. The RDO has developed good relationships with both industry and government to communicate effectively to each party and understand motivations and concerns and make recommendations.

The RDO initiated and contributed to the development of a project proposal in partnership with the BGGA General Manager Ry Collins for funding to establish a community of practice and grower study tour under the Agrifutures Australia *Producer Technology Uptake Program*, submitted on 22 April 2021 **(M&E 5.c)**. Ultimately the proposal was unsuccessful, however it aimed to target growers in the Bowen, Gumlu and Burdekin region that are proactively seeking to adopt new technology on-farm and require support to connect with local support and advisory services, build individual skills and knowledge in AgTech and integrate new technology into existing infrastructure. As new funding opportunities arise, the BGGA will develop proposals to deliver these programs.

Refereed scientific publications

Nil

Outcomes

The RDO is achieved a clearer understanding of the key priorities for delivering extension, knowledge, and skill development support in the Bowen, Gumlu and Burdekin region and the combined survey and follow-up phone calls have been effective, although inefficient, in achieving this. This work is ongoing and is contributing to greater engagement with the vegetable growing community in this region. The RDO is working on a balance between providing local support and engagement with growers in far North Queensland with limited workhours and engagement opportunities.

The RDO worked with ASVEG to deliver information sessions in Ayr, Gumlu and Atherton and that assisted in the development of these engagement pathways. While the Atherton event was cancelled due to low engagement, the Ayr and Gumlu workshops were very successful with a total of 57 in-person participants and another 18 engaged online.

The RDO has prioritised attending and communicating at events and meetings with DAF and DES/OGBR in the development of *ERA 13A* and Future Reef Program Design and Support in Horticulture under *Reef 2050 Long-Term Sustainability Plan.* The relationship between the RDO, DAF and DES/OGBR is an important priority as future regulations that will affect horticultural agricultural practices are likely to be imposed more broadly across horticulture and the RDO and DAF are well placed to provide representation to horticultural growers. As a horticulturist, the RDO is able provide both critical knowledge of horticulture practices as well as the capability and needs for grower knowledge and skill requirements and support to develop timely and appropriate programs for growers to achieve the *Reef 2050 Water Quality* improvement outcomes and will continue to maintain the partnership between VegNET, BGGA and DAF.

The Bowen Weather Station Network has reached an important milestone with the three weather station host growers actively using the weather stations to make farm and crop management decisions. The RDO is working with the host growers to understand their skill and knowledge needs to develop a workshop event for effectively using the weather station data that will likely be delivered at the end of 2021.

Knowledge change outcomes:

- Weather station hosts understand and interpret weather data and how to manipulate irrigation scheduling, chemical application timings and pest/disease humidity threshold for pre-emptive control,
- Weather station hosts understand microclimatic zones at Bowen and recognise patterns in agronomics and/or pest and disease pressure in response to weather conditions,
- Growers are aware and understand their obligations to meet Environmentally Relevant Activity for cropping or horticulture activities (ERA 13A of the Environmental Protection Act 1994),
- Growers are aware of R&D in pest and disease management, soil and ecosystem health, AgTech and gross margins,
- Growers are aware of their general biosecurity obligation, recent improvements in pest and disease chemical options and application guidelines, identifying pests and diseases including recent incursions of serpentine leaf miner, American serpentine leaf miner and FAW, and maintaining the welfare of honeybees being hosted by growers for pollination purposes, a vital service for vegetable growers.

Practice change outcomes

- Weather station hosts are now practicing Irrigation scheduling based on weather station data including rainfall, humidity, temperature, and evaporation,
- Weather station hosts are changing their practices for chemical application timings and effectiveness using temperature, humidity, Delta-T generated by weather stations,
- Growers are using weather station data to develop calculations for growing degree days and heat and chill thresholds for crops to assist with management intervention decisions,
- Growers are practicing improved methods for integrated management of FAW, including alterations to chemical application strategies, types of chemicals used on-farm, encouraging, and releasing beneficial predators and parasitoids of FAW and early intervention and increased pest surveillance to manage populations early.

Intellectual property, commercialisation and confidentiality

Nil

Issues and risks

No issues or risks

Other information

No additional information to report

Appendices

Project Activities

This list is not exhaustive, it only features activities that have the potential to lead to extension opportunities

Date	Activity	Outcome/Comments
18/12/20	North Region FAW Vegetable Agronomy Coordination meeting with Dr Siva Subramaniam, Dr Olive Hood and BGGA	Approximately 15 attendees (online and in person) including growers, agronomists, and industry personnel
15/01/2021	Office of the Great Barrier reef (OGBR) /Department of Environment and Science (DES)	Environmentally Relevant Activity 13A (ERA) pre-consultation meeting – provide feedback regarding wording and vegetable production systems in the region. It is likely that general horticulture minimum standards will be introduced in 2022.
01/02/2021	DAF Climate and environmental data scientists	Develop opportunities for collaboration on Bowen Weather Station project, analysing and using hyper local weather data, DCAP and long paddock for heatwave/climate description. Smart farms, Gatton network of 50 weather stations via Telstra
01/02/2021	DAF Communications	FAW project communications development, agreed to work with Dr Siva Subramaniam to deliver communications directly to growers via email and BGGA newsletters
02/02/2021	Office of the Great Barrier reef (OGBR) /Department of Environment and Science (DES)	Consultation session on the draft standard Environmentally Relevant Activity 13A (ERA13A) with Stakeholders at the Bowen Research Facility
08/02/2021	Southern Vegetable Extension Network (SVEN) meeting	Delivered information regarding industry priorities and possible collaboration in FAW/pests/diseases
08/02/2021	DAF Industry Development Officer Helen Newell	Develop AgTech focus group to bring information/personal into the region
11/02/2021 and 05/03/2021 with follow-up	DAF Industry Development Officer Robert Nissan	AgTech and digital hub for growers/industry planned for April. Suggested time may not be suitable for Bowen-Gumlu growers and instead attempt to facilitate a small consultation meeting in April with an event planned for late 2021/early 2022. Note: this event did not take place due to availability of DAF IDO
12/02/2021	HI Dr Olive Hood, DAF and BGGA	Discussion of extra funding for delivery of FAW extension in regional plans, not currently included in operating.
04/03/2021	DAF Economist Dr Bill Johnston	Provide industry intelligence on forecasted production of veg at Bowen/Burdekin for AgTrends. Growers and industry leaders were contacted to ensure accurate information.
16/04/2021	Ry Collins, BGGA General Manager	Discussion of VG19008 and DAF's role
22/04/2021	Office of the Great Barrier reef (OGBR) /Department of Environment and Science (DES)	Attend workshop for future GBR Water Quality Program to provide feedback into current and future GBR programs to meet extension, science, landscape management.
30/04/2021	Bundaberg fruit and vegetable growers (BFVG) Ag Forum	Attended online, distribute relevant media to regional networks

Date	Activity	Outcome/Comments
07/05/2021	Collaboration with DAF scientists leading HI vegetable levy funded projects	Planning to deliver a monthly email to Bowen-Gumlu growers regarding FAW and area wide management data collected. This is still in negotiation as of the writing of this report.
13/05/2021	Office of the Great Barrier reef (OGBR) /Department of Environment and Science (DES)	Update on Environmentally Relevant Activity 13A (ERA13A) with Stakeholders at the Bowen Research Facility to be enforced on 01/07/2021
19/05/2021	DAF	Request for Proposal: Co-developing and extending *Spodoptera frugiperda* (FAW) management systems for the vegetable industry
20/05/2021	DAF Ayr Research Station cover crops/commercial capsicum crop trial (GBR funding)	Work with DAF to include opportunities to have field visits for interested growers, as a case study will be essential to demonstrate to growers' cost/benefit of irrigating cover crops to meet GBR protection guidelines in the future
20/05/2021 and 31/05/2021	Callum Fletcher, Ausveg	Discussion regarding planning of pest and disease workshop at Atherton to be delivered in 2021
14/06/2021 - ongoing	Office of the Great Barrier Reef (OGBR)/Department of Environment and Science (DES)	Attend workshop for future GBR Water Quality Program to provide feedback into current and future GBR programs to meet extension, science, landscape management. Discuss capability development for horticultural agronomists, exposing time-poor agronomists to the latest R&D is essential for assisting growers to meet GBR guidelines. This is ongoing at the time of writing this report.
17/06/2021 - ongoing	Biosecurity Extension Network Community meeting (Jo Luck)	Connect extension practitioners on plant biosecurity issues that would benefit from collaboration and coordination across industry and to share current biosecurity extension activities of interest.
18/06/2021	John McPhee, University of Tasmania and Australian Controlled Traffic Farming Association	Collaborate with Dr John McPhee and Carl Walker to develop case study to be printed by the Australian Controlled Traffic Farming Association journal. Published
21/06/2021	Rapid Aim fruit fly monitoring and weather stations with regional grower	Learn about RapidAIM fruit fly monitoring and work with grower on weather station troubleshooting, feedback for developing workshop on data use, inc. setting alerts, Delta-T and spraying, evapotranspiration, degree days for fruit ripening
21/06/2021 - ongoing	Measurement Engineering Australia – Justin Clarke	Bowen Sensor network (weather stations). Provide feedback on weather stations dashboards and growers concerns • Maintenance schedule and standards and developing a workshop and videos. • Work with contractor and MEA to create content. Justin to send info regarding models for pest and disease and maintenance instructions for weather stations • Don Delta station rain gauge not functioning • East Euri station not measuring leaf wetness correctly
23/06/2021 and 28/06/2021	Callum Fletcher, Ausveg	Planning meeting for pest/disease workshops for Ayr and Gumlu
24/06/2021	Syngenta Grow More field day	Opportunities for collaboration on field days in the future • Soil sampling protocol development for growers • DNA analysis for pest and predatory nematodes

Date	Activity	Outcome/Comments
		• Nematode population distribution and soil sampling protocols
25/06/2021	Dr Stephen Harper (University of Queensland and QUAFFI) Student Northern Agricultural Tour	Discuss the extent of the horticultural region and commodities at Bowen-Gumlu, my role in the vegetable industry and possible pathways to working in horticulture
15/07/2021	AgTech Showcase Webinar - Bundaberg	Australian and International AgTech providers for a rapid tour of the latest and greatest digital technology options for your farm, deliver relevant updates to BGGA via monthly newsletter
16/07/2021	Callum Fletcher, Ausveg	Ongoing organisation of workshops Regular updates on work program, regional priorities, and workshop development
20/07/2021 and 21/07/2021	Pest and Disease workshop	Ayr and Gumlu workshops held
03/08/2021	VegNET Monthly meeting	Attend online, share current/future opportunities
19/08/2021	DAF Economists Bill Johnston	Provide industry intelligence on forecasted production of veg at Bowen/Burdekin. Growers and industry leaders were contacted to ensure accurate information.
23/08/2021	Shakira Johnston (Ausveg)	IMAP Pests project – possible Bowen monitoring site Discussed: • Current Sentinel locations and types of data they can collect • They have weather stations attached and they are having difficulties determining how to incorporate weather data and pest data • Can measure fungal spores RDO proposed to secure a Bowen data collection site during the vegetable production season in 2022 to collect data on pest and disease pressure in association with weather station data, feedback form agronomists and management actions taken to address the data. This feedback has not been able to be collected at this stage and it would be invaluable as a proof of concept to the project and region RDO will be detailing the experiment proposal and meeting with AUSVEG again to develop this plan for 2022.
24/08/2021	HI webinar	Looking ahead: Setting the direction of levy investment for the next five years
06/09/2021	Predictive modelling and Forecasting of Fruit Flies in Australia webinar by Department of Agriculture, Water, and the Environment	Disseminate information via email/newsletter, waiting for recording to be made available for accuracy/links.
10/09/2021 - ongoing	Office of the Great Barrier Reef (OGBR)/Department of Environment and Science (DES)	Attend workshop for future GBR Water Quality Program to provide feedback into current and future GBR programs to meet extension, science, landscape management.
13/09/2021	Society of Precision Agriculture Australia (SPAA) Symposium	Disseminate information via email/newsletter, waiting for recording to be made available for accuracy/links.
16/09/2021	DAF Economist for GBR catchments	Sent via BGGA Assist economist to understand areas of crops/ numbers of farms were in the Bowen, Burdekin, and Atherton regions (all great Barrier Reef catchments). DAF is adding horticultural crops to FEAT online, an economics

Date	Activity	Outcome/Comments
		estimation tool to help growers with understand the cost/benefit from practice change in GBR catchments.
15/09/2021	DAF Biosecurity Partners Forum	Attend Biosecurity Partners Forum over several days' sessions, collate and distribute outcomes/priorities
23/09/2021	VegNET Monthly meetings	Attended online, wrap up of thoughts on VegNET

Five Year Extension Plan 2020-2025

Year	Outcomes	Outputs	Progress/Achievements	Collaborators
2020-21 (to 30 September 2021)	Develop and deliver annual workplan	• Monitoring and Evaluation • Stakeholder Engagement Plan	• Deliver 2020-21 action plan and regional priorities to BGGA general meeting, 30/11/2020 (5 growers, 4 staff) • Develop grower survey plus ongoing discussions with growers and stakeholders • 10 respondents to survey (25%) • Engage with other growers to understand priorities throughout 2020-21 (5 vegetable growers agreed to do to do a shortened survey over the phone) • Attend BGGA general meeting or provide updates where RDO is unable to attend	BGGA DAF Horticulture Innovation Australia Levy-paying vegetable growers
	Improve biosecurity awareness and support in the regional and farming community.	• Biosecurity updates and key messages delivered via BGGA newsletter • Deliver 2 x workshop on pests and diseases in collaboration with Ausveg, Growcom and DAF • Discussion of regional washdown facilities between growers and Whitsunday Regional Council (WRC) to encourage "come clean, go clean" mindset in the area	• All relevant biosecurity updates via collaborators supplied to BGGA for distributions and inclusion in each BGGA newsletter developed by RDO • Pest and disease workshops delivered at Ayr on 20/07/2021 with 34 people to Ayr with another 18 online, and Gumlu on 21/07/2021 with 23 participants • WRC contacted; plans have been flagged but not currently progressing • Distribute 'Exotic Pest Identification and Surveillance Guide for Tropical Horticulture', 2021, published by Plant Health Australia	BGGA Ausveg Growcom DAF Whitsunday Regional Council Plant Health Australia Levy-paying vegetable growers
	Increase use of hyper-local weather station network (funded by DAF 2019)	• ONE BGGA Newsletter article • ONE industry magazine article • Deliver 1 x workshop on using weather data for improve farm decision making • Economics of using hyper-local weather stations	• 1 x BGGA newsletter article and 1 x Vegetables Australia article delivered • Work with BGGA to develop policy for access and management of the weather station network • Due to lack of growers using the network (delays in roll-out) events were not developed for 2020-21	BGGA (owner of the weather station network) DAF (project leader) Measurement Engineering Australia (MEA) Prospect Agriculture Ausveg IMAP Pests Project Levy-paying vegetable growers
	Improve grower access to research, development and extension outcomes	• Attend Syngenta "Grow More" field day • Report new R&D in BGGA newsletters • Contact initiated with Ausveg and the IMAP Pests project to potentially have	• Discussed extension opportunities to help get more growers to events in the future (only 1 vegetable/melon grower attended the two-day long event) • Fall army worm (VG20003 and MT19015) and area wide management of vegetable diseases (VG16086) projects	BGGA and weather station network host growers (x3) Ausveg IMAP Pests Project Syngenta "Grow More" field days DAF Bowen Research Facility

Year	Outcomes	Outputs	Progress/Achievements	Collaborators
	with a tropical focus	Bowen incorporated as a test-monitoring site • Develop a R&D Spotlight email to communicate R&D project outcomes to growers along with other extension resources available and scientific readings on the subject	included in BGGA newsletter updates and Vegetables Australia Magazine • IMAP Pest Project coordinator Shakira Johnston engaged and emailed a detailed case study proposal to deploy a Sentinel at Bowen, 23/08/2021 • Distribute 'Greenhouse Cucumber Production Manual', 2019, published by NSW Local Land Services	NSW Local Land Services
	Enhance grower engagement in sustainable business and environmental management practices.	• Training and field day – Irrigation technology to improve water use efficiency and maximize yields • Key messages delivered via BGGA newsletter • Establish a Community of Practice (COP) group and develop terms of reference and communication strategy	• Contact and encourage vegetable growers and agronomists to attend the training event (26 attendees total with 2 vegetable agronomists and 3 mixed cropping growers) • RDO to attend the pre-consultation and consultation sessions held by DES for Environmentally Relevant activity (13A), 15/01/2021 (online), and 02/02/2021 (in person at the Bowen Research Facility). • Attend the follow-up session to assist with making amendments to ERA13A, 13/06/2021 (online) • New Environmentally Relevant activity (13A) developed by OGBR and DES to apply on 01/07/2021 information distributed via email and BGGA newsletter • Attend all DAF/DES/OGBR program 2022 to 2026 design (Reef Plan 2050) meetings to assist in the design of future reef project funding, filling research gaps and providing a horticultural perspective to the discussions, various dates throughout 2021	DAF, Horticulture Innovation Australia, Irrigation Australia DAF Office of the Great Barrier Reef (OGBR) Department of Environment and Science (DES)
2021-25	Understand needs for North Queensland Growers (Burdekin to Far North Queensland)	• Connect and develop relationships with grower groups and service providers in the regions • Develop strong network with Horticulture Innovation Australia Regional Extension Team Manager for Northern Australia, Dr Olive Hood and Head of Extension, Jane Wightman • Grower survey responses tracked over time • Refine extension workplan at each Milestone reporting event	• Attend relevant meetings and events in regions as an opportunity to develop networks and understand extension requirements • Attend 'North and North East Horticulture Extension Network' meetings, VegNET monthly meetings, Hort Connections (Ausveg), Southern Vegetable Extension Network (Bronwyn Ford, DAF) • Develop/refine grower survey plus ongoing discussions with growers and stakeholders • Extension plan (and refinements) approved by REAG	FNQ Growers BGGA Levy-paying vegetable growers DAF Growcom Horticulture Innovation Australia Ausveg

Year	Outcomes	Outputs	Progress/Achievements	Collaborators
	Continue to refine priority needs for regional (Bowen and Gumlu) Growers	• Grower survey responses tracked over time • Refine extension workplan at each Milestone reporting event	• Develop/refine grower survey plus ongoing discussions with growers and stakeholders • Extension plan (and refinements) approved by REAG	BGGA Levy-paying vegetable growers
	Improve biosecurity awareness and support in the regional and farming community.	• Hold 1 x workshop/seminar each year regarding new pest/disease incursions, R&D in pest/disease control and chemical company guest speakers • Develop relationships with DAF staff in vegetable R&D (Dr Siva Subramaniam, Sarah Limpus, Dr Cherrie Gambley) and Biosecurity Queensland • Establish a Community of Practice (COP) group and develop terms of reference and communication strategy	• Attend Biosecurity Extension Network Community meeting (Dr Jo Luck, HI) • Distribute industry alerts (DAF, Ausveg, Plant Health Australia) • Attend online meetings and events in biosecurity and R&D updates • 2 x COP/year (pre/post season) meeting with guest presenter. Provides an opportunity for growers, R&D, agronomists and industry to interact and learn together.	Ausveg (Callum Fletcher) Plant Health Australia Horticulture Innovation Australia DAF Syngenta Corteva Dow DuPont RMCG Jessica Volker Korvel Pty Ltd (Bowen agronomist) Bowen Crop Monitoring (Bowen Agronomist) Jamie Jurgens (VJK Produce, Bowen and Natural Solutions, Bowen) Levon Cookson (Arable Field Research. Bowen) Resellers: Elders, Nutrien, Bartec, E.E. Muir,
	Increase use of hyper-local weather station network (funded by DAF 2019)	• Deliver 1 x workshop on using weather data for improve farm decision making • Deliver 1 x workshop on chemical application efficiency in the Bowen region • Economics of using hyper-local weather stations • Expand weather station network to Gumlu, find a grower willing to host a	• Record number of growers attending events • Feedback from growers and providers to refine future events • Feedback from growers regarding weather station utilization and potential modelling/alerts where management interventions can benefit decision making • Gumlu growers engaged and using weather station	DCAP/Long Paddock DAF BGGA Levy-paying vegetable growers Bioclim (Tropical climate and biosecurity modelling) RIMPro (pest/disease modelling) Growcare (pest/disease modelling)

Year	Outcomes	Outputs	Progress/Achievements	Collaborators
		weather station in the region and funding to purchase/support		
	Improve grower access to research, development and extension outcomes with a tropical focus	• Distribute R&D Spotlight media and BGGA newsletters • Distribute grant opportunities and work with BGGA to develop extension projects • Develop opportunities to hold an "agronomists' breakfast" or event targeting agronomists and contract chemical and growing services with technical information regarding relevant RDE • Showcase DAF Smart farm at Gatton Research Facility (VG21000) and site tour of covered production green house at Ayr Research Facility • BGGA to sponsor innovative grower/young grower to attend Society of Precision Agriculture (SPAA) events, field days and conferences or similar	• Facilitate delivery of AgTech Events (various providers) • Record number of growers attending events • Feedback from growers and providers to refine future events • Develop Expression of Interest (EOI) and selection criteria to select study tour participants • Sponsored grower to write report/news article or video (with assistance from RDO) to be published in industry media and BGGA website	SPAA Bundaberg Fruit and Vegetable Growers (BFVG) DAF Ausveg (Callum Fletcher) Plant Health Australia Horticulture Innovation Australia DAF Syngenta Corteva Dow DuPont RMCG Jessica Volker Korvel Pty Ltd (Bowen agronomist) Bowen Crop Monitoring (Bowen Agronomist) Jamie Jurgens (VJK Produce, Bowen and Natural Solutions, Bowen) Levon Cookson (Arable Field Research. Bowen) Resellers: Elders, Nutrien, Bartec, E.E. Muir,
	Enhance grower engagement in sustainable business and environmental management practices.	• Develop opportunities for a study tour for growers to visit and learn from their peers in AgTech, soil health, pest and disease management and covered production • 1 x gross margin development and new technology/practice cost/benefit analysis workshop yearly • 1 x workshop exploring opportunities in carbon farming and agroecology	• Develop Expression of Interest (EOI) and selection criteria to select study tour participants • Number of study tour participants, visitations, feedback, and post-event follow-up of outcomes adopted on-farm • Number of workshop attendees • Feedback survey and analysis	BGGA DAF Levy-paying vegetable growers RMCG Soil Wealth and Integrated Crop Protection Bugs for Bugs Natural Solutions (Bowen) Carbon Farming Foundation Carbon Farmers of Australia

Year	Outcomes	Outputs	Progress/Achievements	Collaborators
				Australian Government Dept. Agriculture, Water and the Environment
	Improve grower access to markets and marketing opportunities	• 1 x market access/supply chain event in association with providers • Develop networks and support industry events such as Freshcare, Biosecurity ICA training, Fair Work and other accreditation providers to assist growers to maintain and improve access to markets • Identify technology that can assist growers in maintaining the quality of their produce as it travels through the supply chain (eg. Temperature loggers, new storage, and packaging technology)	• Distribute relevant market access material via email and BGGA newsletters • Identify and distribute R&D on supply chain technology • Record number of growers attending events • Feedback survey and analysis from growers and providers to refine future events	Freshcare Ausveg HI Growcom DAF and DAF Gatton Smart Farm Australian Government Dept. Agriculture, Water and the Environment
	Improve workforce development in the vegetable horticulture sector	• Support Workforce Development officer Queensland Agriculture Workforce Network (QAWN) • 1 x workforce development COP	• Work closely with the Workforce Development officer to deliver events in the region • Record number of growers attending events • Feedback survey and analysis from growers and providers to refine future events • Assist growers to access QAWN • Distribute knowledge and information via networks and discussions with growers	Julia Wheway, QAWN (hosted by BGGA) Leanne Kruss, QAWN (hosted by FNQ Growers) DAF (Industry Development Officers)

R&D Spotlight monthly email forward plan - Current and future projects (subject to change)

Date for R&D email	Finalised projects	HI Project Code	Project links
16 August 2021	Field and landscape management to support beneficial arthropods for IPM on vegetable farms	VG16062	https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/vg16062/
September 2021	RD&E program for control, eradication, and preparedness for vegetable leaf miner	MT16004	https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/mt16004/
October 2021	Optimising cover cropping for the Australian vegetable industry	VG16068	https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/vg16068/
November 2021	Adaptive area-wide management of Queensland fruit fly using the sterile insect technique: Guidelines for efficient and effective pest suppression and stakeholder adoption	ST15014 and ST15015	https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/st15014-and-st15015/
January 2022	Autonomous systems investments	VG15003 and VG15059	https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/vg15003-and-vg15059/
Ongoing projects			
TBD	iMapPESTS: Sentinel Surveillance for Agriculture	ST16010	https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/st16010/
TBD	Internal fruit rot of capsicum	VG17012	https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/vg17012/
TBD	Co-developing and extending integrated *Spodoptera frugiperda* (fall armyworm) management systems for the Australian vegetable industry And Identifying potential parasitoids of the fall armyworm, *Spodoptera frugiperda*, and the risk to Australian horticulture	VG20003 and MT19015	https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/vg20003/ https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/mt19015/
TBD	Area wide management of vegetable diseases: viruses and bacteria	VG16086	https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/vg16086/
TBD	Parasitoids for the management of fruit flies in Australia	MT19003	https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/mt19003/

R&D Spotlight email example

From: LIMPUS Sarah
Sent: Monday, 16 August 2021 2:16 PM
To: Admin - Bowen Gumlu Growers Association
Subject: R&D Spotlight: Boosting beneficials in your vegetable crop

For distribution via IDM email account to member and non-member fruit and vegetable growers – please delete before sending

Hello,

This is the first in a series of emails that will bring recent research and development projects to your inbox. We hope that you find the information and links here useful to your production systems.

Boosting beneficials in your vegetable crops
There has been considerable amount of investment recently to understand the role of beneficial arthropods, including insects, mites, and spiders, in vegetable crops. After recent incursions of fall armyworm, serpentine and American serpentine leaf miner, there is more pressure than ever to identify alternative pest control strategies to add to our Integrated Pest Management repertoire. The project *Field and landscape management to support beneficial arthropods for IPM on vegetable farms* (VG16062*) surveyed pest and beneficial arthropod populations in vegetable crops including sweetcorn, bean and capsicums and the environments in which they were grown.

Takeaways
1. Pest density was lower in crops adjacent to riparian vegetation or fields with intentionally planted nature strips or trap crops compared to weedy or cropped areas.
2. These areas also had higher densities of beneficial arthropods including parasitoids and predatory beetles, however high beneficial population did not always result in high pest control due as this was dependent on crop management practices.
3. Beneficial arthropods can move up to 20 m into crops from a nature strip or vegetation and using unfarmed areas of the field, such as roadways or sprinkler rows, had a higher cost benefit ratio.
4. Farmers can actively influence the distribution of pests and beneficial arthropods by maintaining natural vegetation, controlling weeds and planting trap or nectar producing plants within vegetable fields.

More information
- Fact sheet: How does the surrounding landscape affect beneficials on your farm?
- Fact sheet: Boosting beneficials in your vegetable crop
- *Field and landscape management to support beneficial arthropods for IPM on vegetable farms* (VG16062) Final report

*VG16062 is funded by Hort Innovation, using the vegetable research and development levy and contributions from the Australian Government, this project was led by Charles Sturt University in conjunction with IPM Technologies, the University of Queensland and NSW Department of Primary Industries (2017-2020).

Other extension resources
- Cesar Australia: https://cesaraustralia.com/blog/category/integrated-pest-management/
- Soil Wealth: New guides: Pesticide effects on beneficials in vegetable crops | Articles and publications | Resources | Soil Wealth Integrated Crop Protection

Scientific readings
- Balzan et al. 2016. Landscape complexity and field margin vegetation diversity enhance natural enemies and reduce herbivory by Lepidoptera pests on tomato crop. BioControl, 61: pp 141–154.
- Gagic et al. 2018. Ecosystem service of biological pest control in Australia: the role of non-crop habitats within landscapes. Austral Entomology, 57: pp194– 206.
- Parry et al. 2015. Plant composition modulates arthropod pest and predator abundance: Evidence for culling exotics and planting natives. Basic and Applied Ecology, 16, pp 531-543.
- Qureshi et al. 2010, A comparison of alternative plant mixes for conservation bio-control by native beneficial arthropods in vegetable cropping systems in Queensland Australia. Bulletin of Entomological Research, 100: pp 67–73
- Tschumi et al. 2016. Tailored flower strips promote natural enemy biodiversity and pest control in potato crops. Journal of Applied Ecology, 53: pp1169-1176.

Kind regards, sarah

Sarah Limpus

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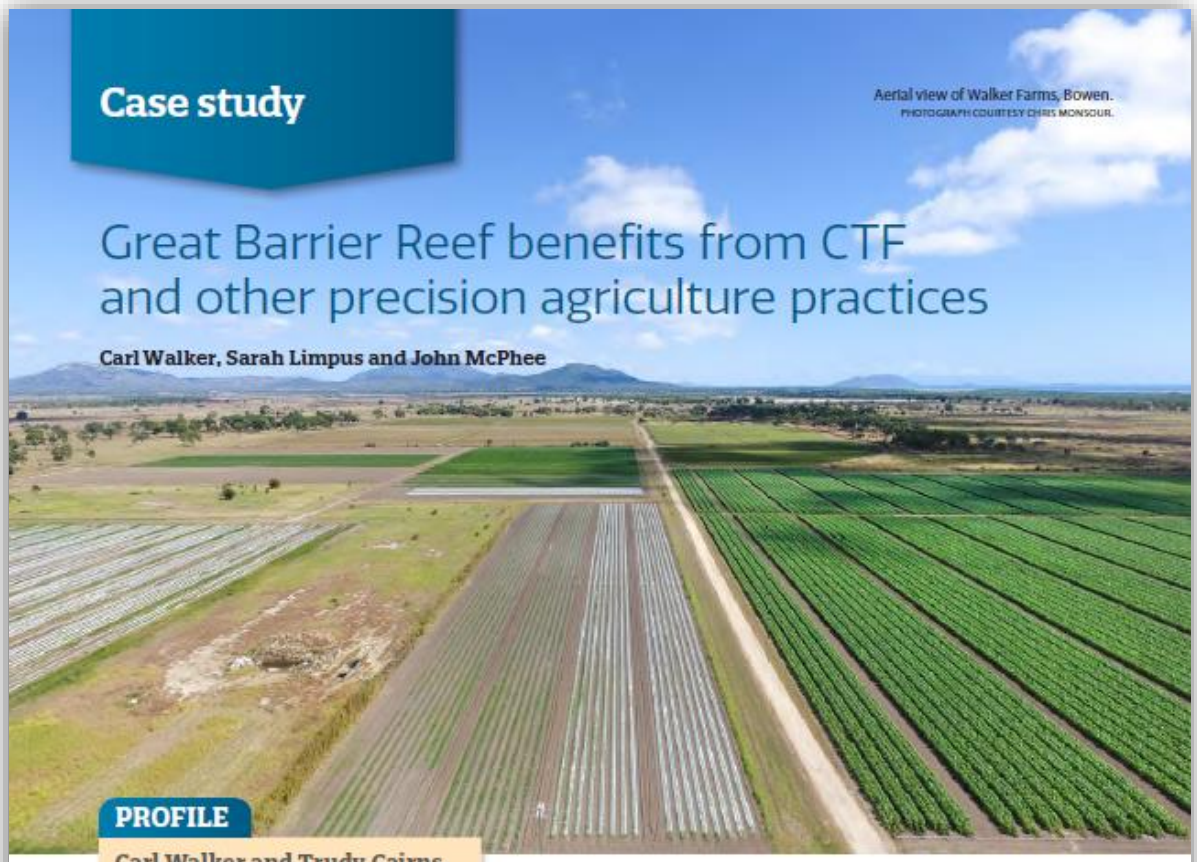
Horticulture pest and Disease Workshop Flyer

Australian Controlled Traffic Farming Association (ACTFA), Issue 8 July 2021

Case study



Aerial view of Walker Farms, Bowen.
PHOTOGRAPH COURTESY CHRIS MONSOUR.

Great Barrier Reef benefits from CTF and other precision agriculture practices

Carl Walker, Sarah Limpus and John McPhee

PROFILE

Carl Walker and Trudy Cairns, Walker Farms, Bowen, Queensland

Farming system

34 ha irrigated vegetable cropping

Annual rainfall: 890 mm, summer dominant

Soil types: variable from sands to heavy loam

Crops: capsicums, cherry tomatoes, cucumber, pumpkin

CTF track gauge – 1.5 m (60")		Power/working width
Tractor	John Deere 6140	105 kW (140 hp)
Guidance	Trimble FmX RTK 2 cm	
Bed former	Front mounted spreader for basal fertiliser application, rear mounted bed former plus plastic in one operation	1.5 m (1 bed of ~1 m top width)
Seeder	Locally made water wheel transplanter Acorn air seeder (through plastic) for cucumbers and pumpkins	1.5 m (1 bed)
Cultivators	A range of discs, tines and powered implements	3 m (1 bed + 2 x ½ bed)
Sprayer	Hardie twin stream air sprayer Shield sprayer	15 m 3 m (2 beds)
Spreader	Hodge Industries spreader with VR Twin hopper front mounted fertiliser spreader with VR	3 m (2 beds)

Farm business and cropping enterprise

Walker Farms is owned and operated by Carl Walker and Trudy Cairns and son Troy Walker. The business has been in operation for 26 years and focuses on growing capsicums, cherry tomatoes and cucumbers for the domestic fresh vegetable market and pumpkins for export. Produce is packed and marketed under the Phantom Produce brand through central markets in Australia and exported to NZ and Japan.

The 34 ha farm is situated on the Don River flood plain and has the challenges of variable soils, being in a flood zone, on an old salt pan and close to the ocean, with the Don River flowing out to the Great Barrier Reef Marine Park. The closest production block is about 100 m from the Don River, and the farm is only 3 km from the river mouth. It is common to have three different soil types, ranging from sand to heavy loam, within 200 m of bed length. Given the location and the soil variability, environmentally sustainable production practices are high on the business agenda and have been influential in decisions regarding the adoption of controlled traffic, variable rate fertiliser application technology and cover crops.

Crops are grown in beds using plastic mulch and drip irrigation. Early planting depends on seasonal rainfall but generally starts in early March. The latest plantings of the season occur in July with the aim of wrapping up harvest by the end of October due to competition from southern producers and the onset of the tropical summer heat. Production blocks are sown down to cover crops over the summer.

Cultivation is required to prepare beds for each cropping cycle. Therefore, the controlled traffic system is very much focused on the maintenance of permanent wheel tracks (which is what controlled traffic is, after all). To ensure the best quality fruit, crops are harvested by hand into buckets and transferred to bulk bins for transport to the packing shed.

CTF adoption

Why, when and how?

Carl adopted RTK GPS guidance in 2010 as the start point of establishing the controlled traffic system. This allowed the beds and wheel tracks to be reliably formed and maintained in the same place each season. The motivation was to improve soil structure.

The cropping system was already based on beds for the types of crops grown and some cultivation implements were reconfigured to match the CTF system. Some implements are still configured to cultivate the whole working width (i.e. including shallow tillage in the wheel track zones) but these are gradually being replaced with equipment designed to just work the beds.

What changed?

Carl has observed many of the expected changes with the adoption of controlled traffic. There have been savings in fuel and time for bed preparation, and noticeable improvements in soil structure without the impacts of wheel traffic. The soil is more aerated and healthier, resulting in more uniform crop yield across the various paddocks and different planting blocks.

Improvements in soil structure have also resulted in improvements in irrigation performance and made irrigation management easier. It is now possible to apply more uniform watering across the paddock, although there are still some issues with sandy soils at the ends of rows and strips of heavier soils that cross the blocks. Soil moisture monitoring equipment is used to track water use and irrigation scheduling, and the improved soil structure has brought benefits of reduced leaching of water and fertiliser and unrestricted root growth.

LEFT: Transplanting capsicums.
BELOW: Capsicum transplants.
PHOTOGRAPHS COURTESY SARAH LIMPUS.

Regional Priorities Survey

1. What products do you farm?
   - Vegetables, levy-paying (example: sweet corn, capsicum, pumpkin ect.)
   - Vegetables, non-levy paying (example: tomato, sweet potato)
   - Vegetables, other levy paying (example: sweet potato)
   - Fruit trees
   - Annual fruit (example: Melon, strawberries)
   - Other
2. How do would you rank the importance of the following overarching themes? (1=most important, 6=least important)
   - On-farm biosecurity
   - Regional biosecurity
   - Pest management
   - AgTECH (innovative technology on farm)
   - Productivity
   - Sustainability
3. To help me understand what your priorities are in 2021 and how I can design extension opportunities for you, please rate the importance of the following priorities. Scale: 1 = Very important, 6 = least important.
   - Improve or adopt new pest/disease control strategies and tools
   - Adopt of new technology/practices to improve agronomy/efficiency
   - Protected cropping
   - Reduce the cost of inputs (example: electricity, irrigation, fertilisers)
   - Diversify crop or cover cropping type
   - Manage soil health
4. Do you require assistance to develop knowledge and skills to help you improve these priorities (from Q3)?
5. To help tailor contact with you, which of the following methods would you prefer I use to provide you with updates or correspondence? -Select all that apply
   - Direct email
   - Bowen Gumlu Growers Association newsletter
   - Phone call
   - Face-to-face
   - Tele-meeting
6. I am developing several industry support initiatives in 2021, please rank which initiative/s you would you be willing to be involved in. (1-not interested, 2-somewhat interested, 3-yes)
   - Work with a professional economist on gross margins and cost-benefit strategies
   - Work with the VegNET RDO to map biosecurity risk pathways on your farm and develop targeted biosecurity protocols
   - Join a study tour focused on innovative technology and practices from other growers, regions or industries
   - Subscribe to a weather-station network and use hyper-local (data measured in your location) climate data for crop and pest management
7. To ensure that key priorities are relevant to levy-paying growers in the Northern Queensland region, a Regional Extension Advisory Group (REAG) is required to liaise with the VegNET RDO to deliver high-quality outcomes. The REAG would meet bi-monthly (online or in person as preferred), review the regional plans and approve/comment via phone call or email. Please register your interest in joining the REAG by selecting your response below.
8. To contact and work with you, please provide your contact details. These details will be kept CONFIDENTIAL and will only be used by the VegNET RDO for the purposes of sharing information with you about the VegNET project (VG19008).