



PRESIDENTS WORD

Troy Prichard
ASPG PRESIDENT

In the December issue of the newsletter, we advised that guava root knot nematode (GRKN) was detected around Darwin. In late December it was identified on a commercial vegetable grower at Dimbulah in January 2023 it was discovered in a home garden at Hervey Bay. Obviously, its introduction into Australia and then into Queensland is very concerning.



GRKN is one of the major pests of sweetpotatoes, it has the potential to have big impacts on the industry with yield reductions and greater nematicide costs to control the nematode. It is far worse than the two existing nematodes we currently manage.

The best protection is to keep GRKN off your farm through good farm biosecurity in controlling the introduction of plant material, machinery, vehicles, and workers. I refer you to the GRKN article in this newsletter for more information.

One matter that recently came to light was that whilst ASPG is the eligible body for the marketing levy, AUSVEG is the eligible body for the R&D levy. Fortunately, in all practical terms Hort Innovation has engaged and consulted ASPG for both levies since 2017 when the marketing levy was introduced.

ASPG is currently working with Hort Innovation and Ausveg and plan to write to the Commonwealth Department to change the levy regulation and appoint ASPG as the PIB for the R&D levy.

For some time, there has been concerns with the value the industry sees from the expenditure of the 1% marketing levy and at the 2022 annual general meeting the consensus was to hold a grower vote on the future of the levy. There will be two options: retain the 1% levy and the second reduce the levy to 0%.

ASPG have engaged an experienced consultant (Trevor Ranford) to run a process of providing growers with an information package and organise a formal vote. Trevor led the process to introduce a Cheery industry levy. It is anticipated that the process will be completed this

year. If the result of the vote is to reduce the levy to 0% the remaining funds will need to be invested in marketing sweetpotatoes.

There is so much that goes on behind the scenes in ASPG to ensure that the best interests of our growers are kept at the forefront. Much of this work is engaging Hort Innovation around the research and development and marketing levies. As president I work closely with the Management Committee (listed below) and Peter Long our Executive Officer.

The management committee meets monthly for an hour via Zoom and any member is welcome to join, just contact Peter if you have an interest. Collectively we work to ensure that the voice of ASPG is heard in the right places. As always if you have an issue you would like to raise just pick up the phone.



You may recall ASPG and Hort Innovation held a research and development (R&D) project prioritisation workshop in October 2022. Six priority areas were identified and shortlisted for Hort Innovation to develop project scopes. Not all projects will commence as the available budget is approximately \$480,000 for the next 18 months. As additional R&D levy funds become available other projects will be developed. Several growers volunteered to be involved with project scoping, selection of the successful tenderer and members of the project reference panel.

Hort Innovation R&D Managers are currently progressing the following projects:

- Improving (virus) diagnostics & surveillance capability.
- Guava root knot nematode preparedness.
- Access to new varieties including their importation and evaluation under Australian growing conditions. The selection will focus on guava root knot nematode resistance.

Many would be aware the sweet potato industry has funded a three-year project to improve the quality of sweet potatoes on supermarket shelves. This project is being led by Tristan Kitchener and Andreas Klieber (refer page 12 quality project update). They have undertaken weekly assessments in-store and organised seven growers to insert data loggers into consignments to gather temperature and humidity data during transport. Importantly, they have presented the data to the three major supermarkets which have identified problems in the transport and storage of sweet potatoes. The sweet potato supply chain is varied, with some growers supplying direct to the distribution centres, and major capital agents supplying the major supermarkets.

In early March, I coordinated a successful meeting between Tristan and Andreas and the three largest Sydney agents for sweetpotatoes. David Welfare participated as a member of the project reference panel, as the Aldi National Quality Manager. The agents were: Hydro Produce, Colemans Fresh Produce and David Russo. All of these agents supply the three major supermarkets. It was an encouraging meeting with open conversation between the group and sharing of ideas as to how sweet potato shelf quality could be improved and project results to date.

ASPG and Hort Innovation recently signed a Sweetpotato Industry Strategic R&D and Marketing Levy Investment Advice Mechanism Memorandum of Understanding (MOU). The MOU outlines how Hort Innovation will engage and consult with sweetpotato growers to determine how the research and development and marketing levies will be invested and how the industry will participate in the process. The new advice mechanism replaces the Strategic Industry Advisory Panel (SIAP) where a limited number of grower members were appointed to represent the industry.

The MOU outlines the new process whereby there will be an annual workshop (organised by HI and ASPG) open to all growers. Volunteers (3 to 4) are invited to assist the respective HI research and development manager as the priority is scoped into a project. The first R&D workshop was



Brisbane Supermarket Displays

APRIL 2023



held in Bundaberg in October 2022. Once the future of the marketing levy is determined, a similar marketing workshop will be held.

As many would be aware, the Queensland Department of Agriculture and Fisheries (DAF) is a long-term provider of research for the sweetpotato industry. In April, Troy Prichard, Eric Coleman, and I met with three DAF senior managers to discuss current and potential future projects. DAF are seeking approval from management to commit another staff member to the sweetpotato team, which would be welcomed by the industry.

Whilst in Brisbane Troy, Eric and I visited the markets and around 14 supermarkets (Woolworths, Coles, Aldi and one greengrocer) to check sweetpotato displays. The quality of sweetpotatoes on display was highly variable from good to the very bad. In the main the quality in the markets was good to very good with the exception being some large whites.



Sweetpotato statutory levies and charge

(This information is provided by way of a refresher on the industry statutory levies and charges.)

There are two compulsory levies on sweetpotatoes. The levy funds are collected by the Commonwealth Government and transferred to Hort Innovation to be managed to deliver sweetpotato marketing and R&D projects. It is Hort Innovation role to engage the designated industry (Peak Industry Body or PIB) and seek advice on industry priorities for the investment of the levy funds.

The sweetpotato research and development levy was first introduced in 1996. Whilst the marketing levy was introduced in 2016. Both levies are part of the Primary Industries (Excise) Levies Regulation. Horticulture Innovation Australia Limited and Plant Health Australia (PHA) are responsible for the expenditure of the sweet potato levy.

The following are the levy funds collected in 2021/22. Based on the levies collected the total growers' sales were \$93.6 million.

2021/22 July - June	R&D levy	Marketing levy	Total
Levies paid by growers	\$454,099	\$936,285	\$1,390,384

On what is it levied: Sweetpotatoes that are produced in Australia and sold by the producer, used in the production of other goods or that are exported will attract a levy or charge. Under the Regulation sweetpotato means the starchy, tuberous roots of the genus and species known as *Ipomoea batatas*.



Levy charges: The sweet potatoes levy and charge rate comprises Emergency Plant Pest Response (EPPR), marketing, PHA and research and development (R&D).

Levy and charge component	Levy and charge rate
EPPR	0 per cent
Marketing	1 per cent of the sale value
PHA	0.015 per cent of the sale value
R&D	0.485 per cent of the sale value
TOTAL	1.5 per cent of the sale value

How is it calculated: The sweet potatoes levy and charge is calculated as a percentage of the sale value. The sweetpotatoes charge is not payable if the levy has already been applied to the sweet potatoes prior to export. GST is not applied to Australian Government levies and charges. There are no exemptions the sweetpotato levy and charge.

Who pays the levy: If you buy, sell, or export sweet potatoes you must lodge a quarterly return and payment. If you sell via an agent this is usually undertaken by them. A grower who sells their product by retail sale must lodge an annual return to the department and make a payment.



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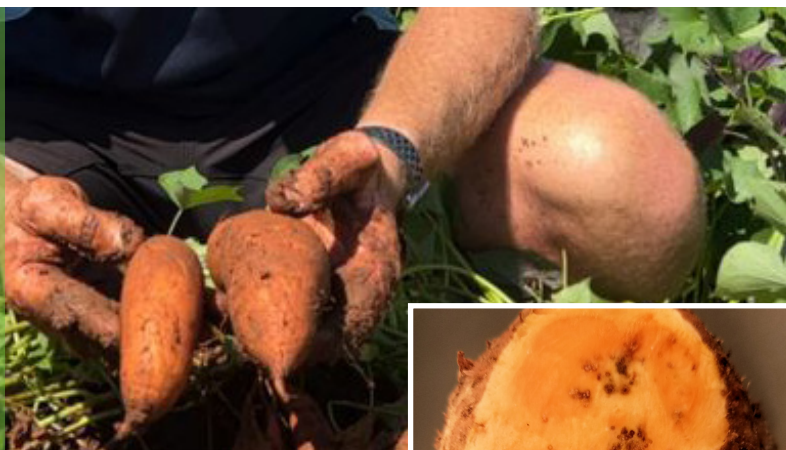
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GUAVA ROOT-KNOT NEMATODE (GRKN) (MELOIDOGYNE ENTEROLOBII) UPDATE



SUMMARISED BY EMMA CRUST, FORMER SWEETPOTATO RESEARCHER.

CURRENT PEST STATUS

Guava root-knot nematode (GRKN) (*Meloidogyne enterolobii*) is listed as the highest threat to the Australian sweetpotato industry due to its highly pathogenic and invasive nature. The first detection reported in Australia was in September 2022, on cucumber roots collected from a farm at Middle Point, Northern Territory (NT).

Further testing found GRKN on sweetpotato, cucumber, capsicum, butternut pumpkin, snake bean, zucchini, and chilli in the NT across four sites. These properties were 50 kilometres apart, indicating the pest may be widespread, prompting the Northern Territory Government to conduct further screening. This resulted in a total of seven properties with confirmed cases of GRKN in the NT. All properties are in or near Darwin.

Biosecurity Queensland announced they were working with a landholder in North Queensland after GRKN was identified on their property at Dimbulah. On 20 December 2023 watermelon, cucumber, sweetpotato and tomato plants with nematode symptoms were collected for testing and subsequently confirmed as GRKN. This was followed by a detection on a peri-urban property at Hervey Bay.

ASPGS INVOLVEMENT AND ANNOUNCEMENT

Plant Health Australia manage a national committee (Consultative Committee for Emergency Plant Pests [CCEPP]) that has the purpose of communicating information on new and emerging plant pests and making recommendations to PHA about responses to pests. ASPG is a member of the CCEPP, and, as such, four people are advised of all new plant pest incursions into Australia.

Each member of the committee was notified of the GRKN incursion and signed a Confidentiality Deed Poll that restricts sharing information until approved. These four people for ASPG are:

- Troy Prichard, President
- Eric Coleman, Treasurer
- Craig Henderson, Consultant and ASPG Plant Health Australia sweetpotato industry representative
- Peter Long, Executive Officer

Mid-February 2023, CCEPP recommended to the National Management Group that it is not feasible to eradicate GRKN from Australia as it is across Northern Territory and two locations in Queensland. This recommendation was accepted. ASPG advised all sweetpotato growers of the GRKN incursion via email on 27 October 2022. Troy Prichard later was interviewed for an article with ABC on GRKN and its implications for the sweetpotato industry, linked below.

https://www.abc.net.au/news/2023-02-19/guava-root-knot-nematode-detected-hervey-bay/101969688?utm_campaign=abc_news_web&utm_content=link&utm_medium=content_shared&utm_source=abc_news_web



Images left to right: GRKN egg masses visible inside storage root, bumps and cracking associated with GRKN on Covington Sweetpotato, egg masses of GRKN on a sweetpotato root (Overstreet et al.)

DISTRIBUTION AND MORPHOLOGY

GRKN is found in both tropical and subtropical parts of the world. Similarly, to other root knot nematodes, juveniles hatch from eggs in the soil. These juvenile nematodes travel in the soil to susceptible plant tissue and enter the roots. Once in the root, the juvenile nematode establishes a permanent feeding site and develops into a mature female. A single mature female can lay as many as 400 to 600 eggs in one life cycle, which is as short as 30 days in the peak of summer. These eggs hatch and the life cycle begins again. A large population with exponential breeding and easy transmission make this pest a prolific problem once infestation has occurred. GRKN are easily spread through water, soil, plant material, heavy rain, infested footwear, machinery and tools.

DAMAGE TO SWEETPOTATO CROPS

Infestation of GRKN results in greatly reduced yields due to deformed sweetpotato roots, which present symptoms of large cracks, severe pimpling, severe galling and dark spots in the flesh. Severe infestation can even result in crop death (with images of symptoms below).

PREPARING YOUR FARM

Now more than ever, adhering to biosecurity measures on farm is critical to prevent the spread of GRKN.

Some common strategies include:

- Minimising traffic from off-farm vehicles
- Ensuring staff come to work with clean clothing and decontaminate footwear
- Biosecurity signs highly visible to alert visitors not to enter the property without prior approval (image to the right)
- Wash down and sanitation of machinery between farms
- Decontaminating new or second-hand equipment/ machinery
- Preparing a biosecurity plan specific to your property.

BIOSECURITY PLAN AND QUEENSLAND RESPONSE

The Biosecurity Plan for the Sweetpotato Industry was endorsed in 2019. It lists GRKN as a high priority pest threat. The Department of Agriculture and Fisheries (DAF) has implemented a response to minimise the impacts of this pest on Queensland plant industries. Early detection for any high priority pest is critical for potential eradication or containment. Tracing and delimiting surveillance for GRKN is occurring across the five major horticultural production areas in Queensland, to determine the extent of spread within Queensland. This will inform DAF's future response in Queensland.

It is vital that growers report any suspect GRKN to Biosecurity Queensland on 13 25 23 or contact the Exotic Plant Pest Hotline on 1800 084 881. Alternatively, growers can contact Dr Juliane Henderson, BQ Plant Biosecurity Laboratory Manager (ph. 3708 8542; 0481 918 740) or Wayne O'Neill, DAF Plant Pathologist (ph. 3708 8451) to discuss any suspect reports. Further information on GRKN can be found on the Business Queensland website following this link: [Guava root-knot nematode | Business Queensland](https://www.businessqueensland.com.au/media/160d1ce63353a5f5bd/a996800a69ad1/guava%20root-knot%20nematode%20fact%20sheetpdf.pdf)

Reference: Overstreet, C, McGawley, E, Clark, C, Rezende, J, Smith, T & Sistrunk, M nd, 'Guava Root-knot Nematode: A Potentially Serious New Pest in Louisiana, viewed 14/03/2023, [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.lsuagcenter.com/~media/system/1/6/0/d/160d1ce63353a5f5bd/a996800a69ad1/guava%20root-knot%20nematode%20fact%20sheetpdf.pdf](https://www.lsuagcenter.com/~media/system/1/6/0/d/160d1ce63353a5f5bd/a996800a69ad1/guava%20root-knot%20nematode%20fact%20sheetpdf.pdf)

WARNING

FARM BIOSECURITY IN PLACE

Please contact the office before entering.

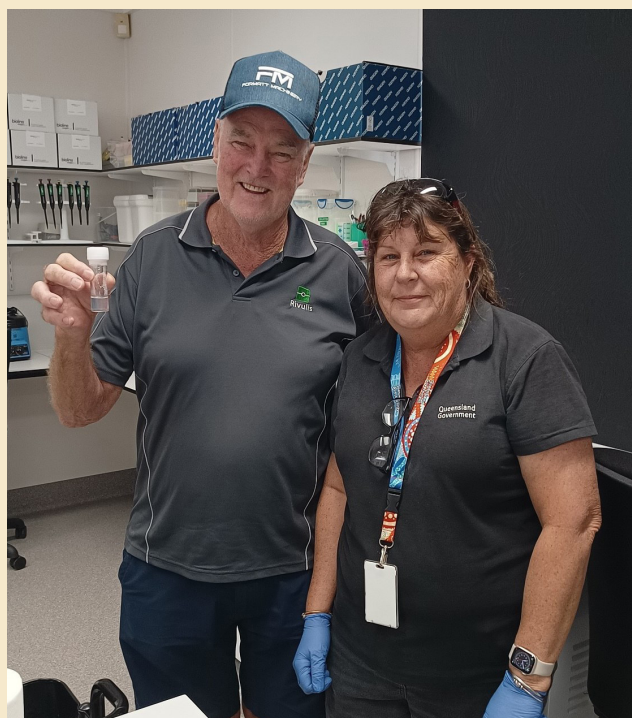


**Do not enter property without prior approval.
Keep to roadways and laneways.
Do not enter growing areas.**

AUSVEG

Plant Health
AUSTRALIA

Hort
Innovation



Crow Prichard holding a developing sweetpotato plant in tissue culture with sweetpotato PT lab manager Sandra Dennien (DAF).

Sweetpotato grower visit to the DAF sweetpotato PT laboratory

Crow (Kerry) Prichard recently visited the DAF sweetpotato pathogen testing (PT) laboratory at DAF's Gatton Research Facility. In this picture, Crow is holding a developing sweetpotato plantlet growing from a tiny group of cells taken from a sweetpotato plant subjected to virus removal therapy. This research is being conducted to enhance the DAF sweetpotato pathogen removal and pathogen testing program based at Gatton.

Potential new sweetpotato variety with resistance to Guava Root Knot Nematode for Australia



Australasian centre for sweetpotato genetics and propagation

PROUD PARTNERS OF LSU AG CENTRE 

PROVIDED BY AUS SWEETPOTATO SEED

Background

Aus Sweetpotato Seed, the Australian centre for sweetpotato genetics and propagation, has been working with Louisiana State University (LSU) for more than 10 years importing new sweetpotato varieties into Australia. In the last five years, there has been focussed efforts to import commercially viable lines to Australia with resistance to Guava root knot nematode (GRKN) [*Meloidogyne enterolobii*].

Aus Sweetpotato Seed currently meets all costs of the importation, quarantine and early production trials to test and prove new varieties under Australian conditions. They have recently been targeting varieties with Southern root knot nematode resistance also (*Meloidogyne Incognita*). After the US outbreak of Guava root knot nematode (GRKN) [*Meloidogyne enterolobii*] LSU has been screening existing germplasm (varieties) and started crossing these more actively to produce acceptable commercial lines with GRKN resistance. At this stage, it appears that LSU is the only research organisation with GRKN resistance in their genetic pool in the world.

To date in Australia, when it comes to GRKN resistance, we have Murasaki 29 which has shown high levels of resistance and Aus Sweetpotato Seed currently have two gold varieties in quarantine. One of the varieties is LA 14-31 and upon release from quarantine in July 2023 (all being well) they will propagate plant material and trial on their farm over the summer of 2023-24. Subject to successful performance trials, there will be a limited release into the major production regions for pre- commercial trials and if the varieties prove commercially successful, there will be a full release to all growers.

In the US *Meloidogyne javanica* is not an issue, so LSU has not undertaken screening or targeted breeding for resistance to this nematode species, which is currently one of our most devastating in Australia. Over the last 12 months Aus Sweetpotato Seed have entered into an agreement with LSU and are funding the development of a breeding nursery for resistance to *Meloidogyne javanica*. Aus Sweetpotato Seed has a strong relationship with LSU, and, in turn, there are significant and ongoing benefits for the Australian industry.

NEW VARIETY LA 14-31 WITH GRKN RESISTANCE

Performance

LSU conducted trials with LA 14-31 across seven sites and demonstrated a 37% increase in yield performance compared to Orleans. It should be remembered; this new variety needs to be tested under Australian conditions. In the US, they grow a single annual crop under mainly dryland conditions whilst in Australia all sweetpotato crops are irrigated and, in most regions, grown for 12 months of the year.

Characteristics

- Colour – red skin similar to Evangeline
- Exceptional shape!
- Fusarium wilt and soil rot resistance
- Southern Root Knot Nematode – susceptible
- Guava Root Knot Nematode - resistant
- Firm when baked with good colour





Queensland
Government

Department of Agriculture and Fisheries

Integrated Pest Management of Nematodes in Sweetpotatoes (Project: PW17001)

funded by Hort Innovation from sweetpotato levies matched by Federal funding.

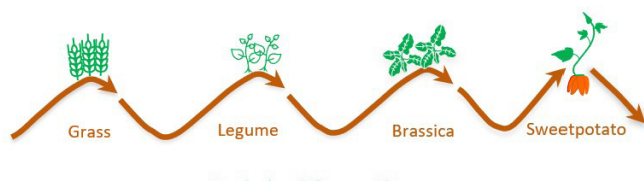
PROVIDED BY MS SANDRA DENNIEN, SWEETPOTATO RESEARCHER

Project aim: To extend existing knowledge and develop new knowledge on soil health and nematode management, specific to sweetpotato farming systems. The project is investigating a range of management options such as: control of volunteers and hosts, resistant rotation crops, low/minimum till, long term beds and efficacy of registered nematicides. Surveys conducted across production areas are being used to determine which nematode species are present in sweetpotato growing soils.

The latest milestone (110) was completed in February and has now been approved by Hort Innovation. With the project now in its final six months, the team are preparing for the final commercial harvests of the two long term farming system trials (Extensive and Intensive) in April and May. Intensive surveys continue and the large volume of data collected over the last four years is being collated and analysed in preparation for the final report in August 2023.



1. EXTENSIVE TRIAL:



Treatments: Grass/brassica + Nematicide, +Nil, + V furrow amendment, + Incorporated amendment, + Double amendment (V furrow + Incorporated amendment). Grass/legume + Nematicide, +Nil, + V furrow amendment, + Incorporated amendment, + Double amendment (V furrow + Incorporated amendment).

Following the second harvest of the Extensive trial in March 2022, organic amendments were added to the appropriate plots and hills were formed. The block was then sown to Swan oats in April 2022 followed by Nemsol (Brassica treatment) or Sunn Hemp (legume treatment) in September. In November, at the end of the rotation phase, the block was sprayed and slashed and soil samples were taken to determine pre plant nematode counts.

Root-knot nematode (RKN) numbers had reduced since the March harvest to relatively low levels in all treatments (Average of 10 or less per 200g of soil), however Reniform nematode numbers remained relatively high (over 200 nematodes per 200g soil) in some treatments. Free-living nematode numbers remained highest in the incorporated and double amendment treatments. Further amendments including the V furrow treatments were added to selected plots in December. Vydate was then applied as per label rates and the block was planted to Beauregard on the 6 December 2022. The third and final harvest of the Extensive trial is scheduled for late April 2023.



2. INTENSIVE TRIAL:

Treatments: Organic Matter, Compost, V-Furrow, Nil, Nimitz.

The third commercial crop from the Intensive trial was harvested in June 2022. The block was then planted with White French Millet followed by Jumbo Sorghum in late August. Soil samples taken, at the end of the rotation phase in December detected low RKN numbers in all treatments (mean of 5 or less per 200g dry soil), however, Reniform nematode numbers remained relatively high with over 100 nematodes per 200g soil in some treatments.

Total free-living nematode numbers were consistent across treatments apart from the Nimitz treatment which had a lower mean count. Organic amendments were added to the respective plots and Nimitz was applied as per label rates prior to bed forming in December. The fourth commercial crop of Beauregard was planted on the 15 December 2022 and is due to be harvested in May 2023.



3. SOIL CARBON COMPARISON

Soil Carbon levels in both the Intensive and Extensive amended plots at BRF, showed initial improvement at the commencement of the 5 year trial period, but then plateaued and in some cases declined slightly. The maximum TOC% attained was 2.4% in the Organic Matter treatment. To help determine an upper value for Carbon, a small non replicated survey of soils in the vicinity of the trial site was undertaken.

Results for a totally undisturbed, virgin scrub site gave a TOC Level of 7.22% while the result of a sample taken from a long term undisturbed tree line gave a level of 5.22% TOC. This compares with 1.85% TOC in soil collected from a cover cropped and fallowed block on a grower property. While this was quite a limited study it appears that TOC levels above 3 or 4% may not be achievable and within the trial we may have reached maximum Carbon levels for this cropping system.



Virgin scrub



Undisturbed tree line

4. INTENSIVE NEMATODE SURVEYS

The intensive nematode surveys throughout the major Australian production regions will continue until winter of 2023. This survey is being used to monitor nematode numbers being monitored in selected farm blocks over time. This will increase our understanding around how on-farm practices influence nematode populations over time. Free diagnostic sampling is also available to growers who want ad hoc information about nematode numbers in particular blocks. This service will be available until the project concludes in August 2023. Give Rach a call on 0436 928 512 if you have a block that requires a nematode count.

Although *Meloidogyne enterolobii* or Guava Root-knot nematode (GRKN) hasn't been detected in commercial sweetpotato production areas to date, the DAF sweetpotato research team have raised the bar when it comes to surveying and farm visits, as part of their prevention planning. Strategies include using disposable boot covers and gloves for each farm, additional cleaning and alcohol disinfection of sampling equipment between blocks to remove all soil, using fresh sampling containers in between farms and parking vehicles on paved roadways.

On-farm biosecurity measures are your front line of defence to keep GRKN (and many other pests) out of your property. Like other root-knot nematodes, *M. enterolobii* can be easily spread through infested soil and infected plant material. It is critical that growers are mindful of risk pathways and strive to avoid introduction to their property. Signage, restricted access (particularly to cropping areas), machinery wash-down and use of clean planting material are all measures which can help to reduce the risk. Simple, low-cost measures can make a big difference in keeping your farm safe.



Project staff collecting soil samples wearing disposable boot covers.

Good information about farm biosecurity is available through the Farm Biosecurity Website, including the Farm Biosecurity Action Planner. The Australian banana industry has also produced a lot of resources (e.g. Better Bananas On-farm Biosecurity) to help growers protect themselves from Panama disease, and many of the same biosecurity principles can be used to prevent *M. enterolobii* spread and protect sweetpotato farms.

If you see any unusual or particularly severe nematode damage to crops, contact Biosecurity Queensland on 13 25 23 or via the Report a Pest or Disease website portal.

5. LONG TERM POT TRIALS

Experiment aim: To investigate the incidence and type of skin damage on storage roots of Bellevue and susceptible control variety Beauregard, exposed to Reniform (*R. reniformis*) and Root-knot nematode (species *M. javanica*).

We were successful in obtaining a DAF innovation grant for Brett Day to conduct the Reniform experiment and the RKN experiment was conducted as part of the nematode project. Both experiments were planted in September 2022 and inoculated with 295,200 Reniform or RKN eggs per pot at 16 days after planting. The experiments were harvested and storage roots were assessed in February 2023. A representative soil sample was collected from each pot to determine nematode counts.

Roots were graded to industry standards and individual root weight, length, diameter and overall weight of fibrous roots was recorded. Storage roots were then individually inspected for damage according to DAF sweetpotato nematode assessment criteria. Roots produced by plants inoculated with Reniform nematode displayed a significantly higher incidence of 'dirty eyes' (darkened, sunken 'eyes' or lateral root scars). This indicates that infection with reniform nematode may increase the incidence of darkened, sunken eyes though no *R. reniformis* were observed in the 'eyes' under microscopic examination. Although the data on nematode numbers per pot at the conclusion of the experiment is still being analysed, the pots containing Bellevue had half as many Reniform nematodes as the Beauregard pots.

This may indicate that Reniform nematode reproduction is hampered in Bellevue roots. Brett has submitted a report on the Reniform experiment to DAF for approval. Data from the RKN experiment on storage root damage is currently being analysed. Potential correlations between skin damage and post-harvest RKN populations are also being investigated.



Sweetpotatoes harvested from the pot trial.

6. SECOND NEMATICIDE TRIAL

Preparations for the second experiment to assess the efficacy of registered nematicides to control RKN (species *M. javanica*) commenced in April 2022. A suitable red soil block at the Bundaberg Research Facility was identified and 1600 highly susceptible tomato plants cv. Tiny Tim were germinated in the plant houses at BRF and GRF. In May, each tomato plant was inoculated with 2000 *M. javanica* eggs and the 0.1Ha block was planted with a mixture of RKN susceptible cover crop species to promote RKN reproduction: Crimson Clover, Japanese Millet, Buckwheat Millet, Harpoon Barley, Chickpea and Jade Mung Bean.

In late August and September, 1300 nematode inoculated tomato plants were planted into the trial block in two batches to boost nematode numbers before trial installation. RKN populations were then allowed to increase over summer. Soil sampling in the proposed trial block in January 2023 indicated high numbers of RKN (2300 to 9000 nematodes per 200 gms of soil) across the site. The field trial was planted on 6 March 2023, treatments include Metham, Nimitz, Vydate, Salibro and a bare fallow treatment.



Project staff planting inoculated tomato plants into the trial block with a susceptible cover crop mix.

CAUSES AND MANAGEMENT STRATEGIES FOR SKIN LOSS IN SWEETPOTATO

(PROJECT: PW21002)

FUNDED BY HORT INNOVATION FROM SWEETPOTATO LEVIES AND MATCHED BY FEDERAL FUNDING.

Project aim: to identify mechanisms responsible for the strength/retention of skin and key factors that cause skin loss through sweetpotato production practices and handling pre farm gate. To develop and validate location-specific decision-making advisory systems and an industry-wide manual of best practices to reduce skin loss in sweetpotato.

Sweetpotatoes are harvested year-round in Australia. However, some popular sweetpotato varieties are prone to skin damage leading to dehydration when harvested during the cooler months. Skin damage is the major contributor to loss of quality causing downgrading of 10-30% of harvested product and resulting in economic losses.

The initial farmer field and packing shed surveys are continuing, however other project activities have been delayed due to ongoing sub contractual negotiations. Negotiations have been successful, and we are now awaiting final contracting.

THANKYOU!

We would especially like to thank McCrystal Ag, Prichard Farms, Windhum Farms and Mortimers Farms for their assistance with the field trials in Bundaberg.

DAF purchases new igloo for sweetpotato projects.

In late 2022, the sweetpotato team were successful in obtaining DAF funding to purchase a new igloo to replace the old shade house at Gatton Research Facility. This structure is used to maintain the DAF sweetpotato virus infected germplasm collection.

This is the largest collection of virus positive sweetpotato plants in the southern hemisphere outside of the international potato centre in Peru. Plants are kept in a strictly insect free environment in double screened quarantine mesh enclosures.



The new igloo housing the DAF sweetpotato virus infected germplasm collection.

Rach Langenbaker

Rach Langenbaker has been employed by the Department of Agriculture and Fisheries for over 20 years through its numerous changes, DPI, DPI & F, DEEDI, DAFF and currently DAF. Rach has worked with a diverse range of crops including avocados, macadamias, citrus and sugarcane but for the last thirteen years Rach has been working exclusively on agronomic research in sweetpotato.

Rach was initially employed by the DPI in September 2002 under a 12-month Horticulture traineeship with the citrus breeding and rootstock improvement program, after which she was employed as a DPI casual horticultural research assistant. It was during this time, that Rach developed her passion for horticulture and was happy to be a part of any team that required her skill set.

Rach was employed as a quality assurance officer, as part of the Biosecurity team participating in the citrus canker program in 2004 and the containment and eradication response to Sugarcane Smut Surveillance in 2006. By 2005 Rach was working on avocado and macadamia rootstock and scion selection, post-harvest fruit quality and nut drying systems.

Rach then started doing some casual work in sweetpotato projects with Russell McCrystal. Russ immediately recognised her great work ethic and excellent organisational skills and by February 2009, Rach was made a permanent DAF employee.

Rach was fortunate to be sponsored by ASPG to visit the US in 2015 where she visited sweetpotato field trials in Alabama, California and Louisiana and met US sweetpotato experts Mike Cannon and Dr Chris Clark. A highlight for Rach was visiting the Louisiana State University Sweetpotato Research Station in Chase, Louisiana and attending their annual field day.

Rach completed a Diploma in Agriculture in 2017 and was promoted to Experimentalist, technical officer level in October 2018. In 2019, Rach took on the role of WHS site

RESEARCHER PROFILE



representative at Bundaberg Research Facility (BRF) for the Horticulture and Forestry Science group and became centre leader for the BRF in 2022. Rach currently provides research extension services to the sweetpotato industry, implements and manages field and green house experiments, organises field days and manages casual and temporary staff. Rach is also a participant in the ASPG Emerging Leaders Program.

Improving root crop resilience and biosecurity in Pacific Island countries and Australia (Project HORT2018/19)

FUNDED BY THE AUSTRALIAN CENTRE FOR INTERNATIONAL AGRICULTURAL RESEARCH (ACIAR) FROM FEDERAL FUNDING.

PROJECT AIM:

To improve knowledge of sweetpotato viruses in neighbouring Pacific Island countries to inform potential biosecurity threats to Australia and improve diagnostic capacity through agreed international standards to support increased preparedness for sweetpotato biosecurity surveillance and response.

This project will continue to build on the existing collaborative relationships between Australian sweetpotato researchers and those from the Centre for Pacific Crops and Trees in Fiji.

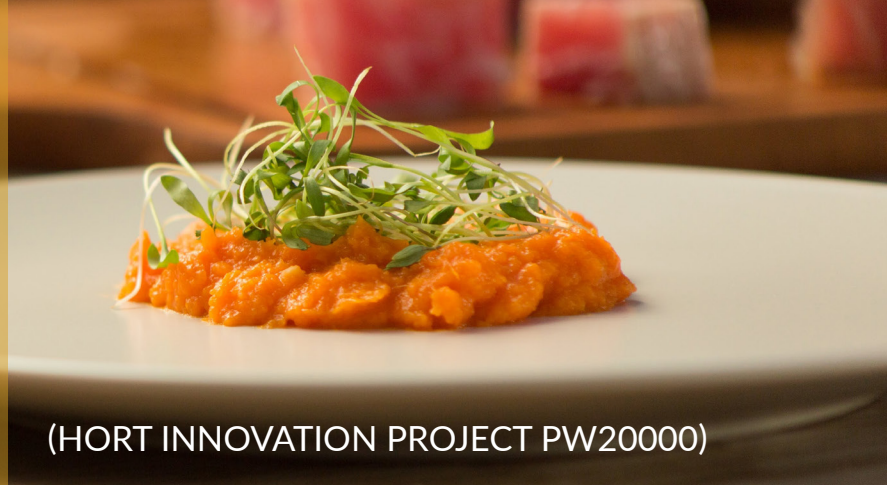
This collaboration will provide analysis of sequence data from control plants in the DAF sweetpotato virus positive collections to identify any new viruses and development of tests for those viruses. Australian work will also investigate possible insect vectors involved in transmission of Sweetpotato chlorotic fleck virus and sweetpotato collusive virus and glasshouse trials to determine optimal sampling parameters.

Sandra Dennien, Jean Bobby, Mary Firrell and five scientists and technical staff from Fiji recently completed a five-day sweetpotato pathogen testing (PT) training workshop at Gatton Research Facility.



PT training participants

SWEETPOTATO QUALITY IMPROVEMENT ROADMAP PROJECT UPDATE



(HORT INNOVATION PROJECT PW20000)

PROVIDED BY TRISTAN KITCHENER (KITCHENER PARTNERS), ANDREAS KLIEBER (QUALITY ASSOCIATES)

This project aims to improve the quality of sweetpotatoes by engaging key stakeholders across the supply chain including growers, wholesalers, processors and retailers to ensure quality can be monitored and maintained. This will lead to an increase in demand and consumption of sweetpotatoes.

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On 28 and 29 March 2023, the project team held discussions with growers in Cudgen and Bundaberg about the Quality Improvement Plan. It was stressed that all parts of the supply chain need to play their part in improving quality, and, ultimately, the consumer experience.

Project Leader, Tristan Kitchenier from Kitchenier Partners, provided a recap about the project aims and the current state of sweetpotato quality and its impact on industry success. He also presented the opportunities arising from improving the overall industry quality performance. This is summarised in Figure 1.

The roadmap for sweetpotatoes is detailed in Figure 2 below. Success for sweetpotato is to be positioned as an everyday staple that consumers see as a premium to standard potatoes; currently, in some retailers, sweetpotatoes are sold at a discount to standard potatoes. This will take a concerted effort by the whole sweetpotato industry, and most critically, a need to align interests and commit to working together to break the 'doom loop'.

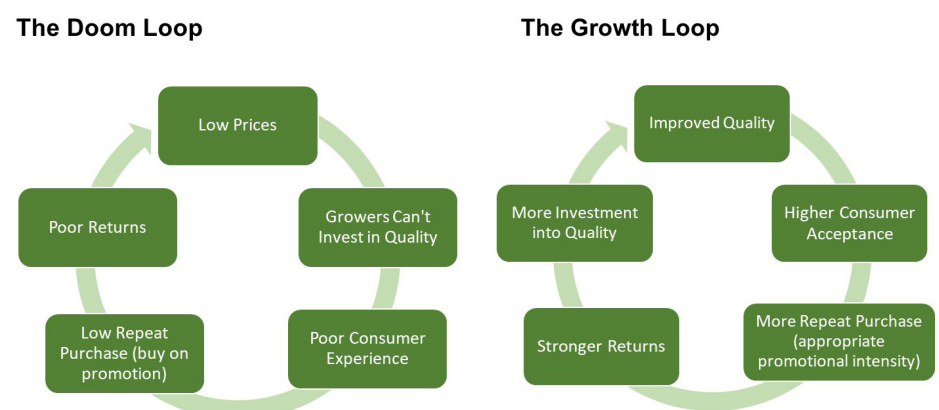


Cudgen workshop



Bundaberg workshop

Figure 1 From Doom Loop to Growth Loop



The Change Must Start **NOW!**



Figure 2 The Roadmap for the Sweetpotato Industry



Given the current 25% reduction in plantings, there may be a flow on of better returns to the remaining growers. However, with old stock from exiting growers still filtering through the market, this has not consistently materialised as yet.

Andreas Klieber, Quality Associates, technical lead for the project, presented the summary quality data for the last two years of the project, as well as a summary of the Escavox data logging trial that measured temperature and relative humidity.

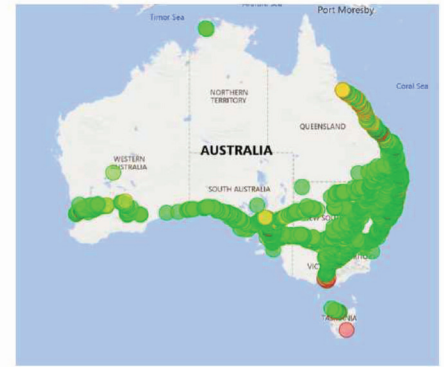
A key call out was that the quality of sweetpotatoes had not significantly improved over the last two challenging years. Some issues actually became worse, particularly bronzing that continued for several months longer in year two than in year

one. This was likely linked to the harvesting of older crops.

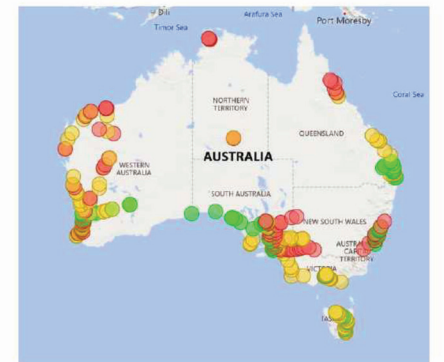
From the quality data, specific issues were identified that are, in the majority, impacting on the on-shelf quality of sweetpotatoes and holding back sales. These were:

- *Skinning and skin damage leading to dehydration and poor appearance;*
- *Stock age at harvest;*
- *Slow stock turn and poor stock remaining on shelf; and*
- *Chilling exposure in parts of the supply chain.*

The Escavox data pointed to the main chilling events occurring in distant locations (NT, northern QLD and WA) as well as for specific distribution centres. This may be due to temperatures in



Supplier legs



DC to Store legs

Figure 3 Comparison of Supplier and DC to Store temperature exposures (green = 12-20°C, red = chilling temperatures).

the distribution centre or in the distribution vehicle to stores. On some occasions, sweetpotatoes also experienced chilling conditions at the back of the store before being placed on the retail shelf.

The next steps of the project are to agree on grower priorities to address these issues, followed by retailer discussions regarding the support they can provide the industry to address quality issues, particularly through the actions required by produce teams in-store.

The project will further monitor sweetpotato quality in-store to determine progress in light of the quality improvement roadmap.

For more information and a copy of the Quality Improvement Roadmap contact Peter Long via email aspg.sec@gmail.com.

CASE STUDY



Business	Wolfies farms
Owners and Managers	Rodney Wolfenden and Brodie Wolfenden
Location	Rossmoya, 30mins north of Rockhampton
Area in production	350 acres (141 hectares), biennial cropped every other year
Varieties grown	Bellevue (100%). We have tried Beauregard, New Orleans and coloureds and they don't perform as well for us. We will stick with just gold Bellevue for the foreseeable future.
Main markets	Brisbane, Sydney, Melbourne, and Perth markets
Soil	Red volcanic loam
Water	Farm dams
Cover cropping	Half of the farm is cover cropped while the other half is under sweetpotatoes. We have experimented with multispecies but likely to move back to sorghum in summer and oats in winter mostly because of our lack of ability to irrigate the cover crop.
Growing calendar	First seed bed established first week of July. Second seed bed early March. Planting from September-May, harvesting 12 months/year.
Farm key goals	Develop consistency. We all have good paddocks and bad paddocks throughout the season, and I would like to better manage our yield volume and quality and be more consistent. Critical for continuous improvement is recording all activities (digital format) and production from each block and then just as critical is reviewing the records to refine treatments (eg watering, chemical, fertilizer, spraying, planting dates, harvest dates, plant spacing etc).
Regional location benefits	We sometimes benefit from different weather systems to Bundaberg so we may be able to harvest while the Bundaberg region is not able to. Likewise with planting windows. However, I think this benefit has become less over the years with bigger farms still digging in wet conditions due to their commitments to supermarket chains supply. Also, the better weather forecasting technology enables growers to increase harvests prior to rain events and pack during the rain event.
Major regional challenges	Rockhampton district is not a major horticultural centre therefore it is not as competitive with a limited number of service suppliers (eg irrigation parts, farm inputs).
Key climatic risks	Summer temperatures. We are a few degrees warmer than the major production region of Bundaberg, and this can create harsher conditions for planting in summer and transplant survival which is critical to crop yield.
Recent changes in business operation	We have started to have more team meetings and opening up lines of communication. We are creating more systematic workflow procedures so it's easier for people to follow and understand and work efficiently.
Most valuable innovations/change	Moving from double row 3m bed spacing to industry standard single row 1.5m row spacing in 2017. It required the purchase of new machinery including harvester, topper, tractors, trailers, and bed formers. While this is industry standard it allowed us to gain more consistent and higher yields.
Farm employees	We have relied heavily on backpackers but with the interruptions of Covid-19 we switched to Pacific Australia Labour Mobility (PALM) supplied through McCrystal Ag Services. I also believe there is benefit in having diversity amongst staff and we would like to hire from a couple of streams, so we still maintain a mix of locals, backpackers and labour hire.
Current improvements	We have started improving on farm accommodation so that it can be registered with the PALM scheme and allow us to house and hire more people through this program. It will give us more flexibility to hire backpackers and/or PALM workers in the future. Digitizing all records and trying to identify the best farm management software that suits our business. There are more demanding compliance protocols in place, and we need to keep pace with the reporting requirements for food production (and HR) with minimal time and labour inputs.

New Industry Service and Delivery Manager for the sweet potato industry

PROVIDED BY HORT INNOVATION



Jason Hingston has been appointed as the new Industry Service and Delivery Manager (ISDM) for the sweet potato industry. Jason comes to the role from Hort Innovation's regionally based Extension Team where he managed Industry Development projects for the company and identified regional RD&E needs from industries in Victoria and Tasmania.

As an Industry Services and Delivery Manager, Jason works with industries to identify and prioritise investments that will contribute to the profitability and sustainability of the sector. This involves consultation with a wide range of sweet potato growers and other industry stakeholders to understand their challenges and opportunities. For the sweet potato industry Jason will be a direct line in and out of Hort Innovation.

Jason has a unique set of skills, having gained a Bachelor of Agricultural Science from the University of Tasmania, with many years' experience working in the vegetable R&D

industry, on industry levy and privately funded projects. Jason also has on the ground extension experience working for the Victorian strawberry industry. Jason also spent time in technical sales for Australia's largest organic input supplier, gaining a sound understanding of drivers and impacts of farm profitability.

Jason will be touching base with growers in the coming months to learn what makes the sweet potato industry tick, so if you see him out and about, please be sure to say hello and make him welcome. You can reach Jason on Mobile: 0429 793 496 or jason.hingston@horticulture.com.au



Rotation Crop Resistance Ratings

To support growers, included is a complete list of rotation crops screened for resistance to root knot nematode. Follow this link to view the comprehensive list.

<https://www.aspg.com.au/wp-content/uploads/2022/11/UPDATED-RKN-Resistant-or-highly-resistant-Rotation-crops-top-logo-July-2022.pdf>

Rotation Crops with Highly Resistant or Resistant Rating to root knot nematode. This list only includes the cover crops that are Highly Resistant or Resistant to RKN. Follow this link to view the list.

<https://www.aspg.com.au/wp-content/uploads/2022/11/UPDATED-RKN-Resistant-or-highly-resistant-Rotation-crops-top-logo-July-2022.pdf>

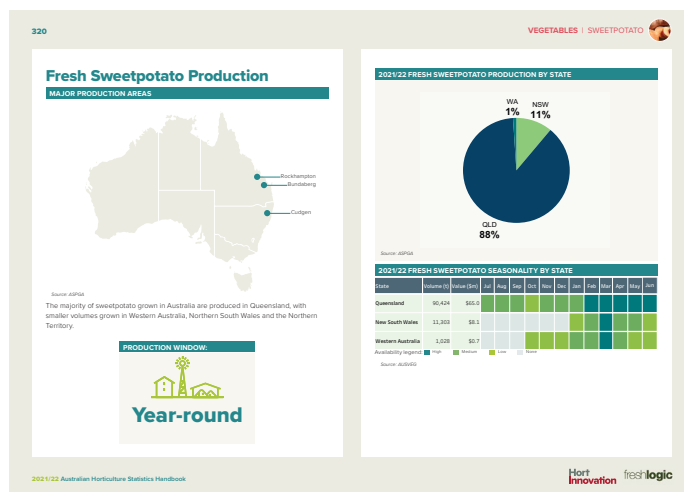
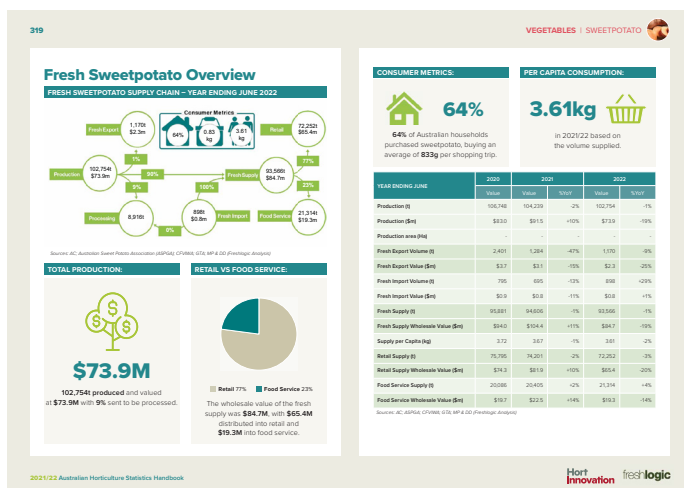
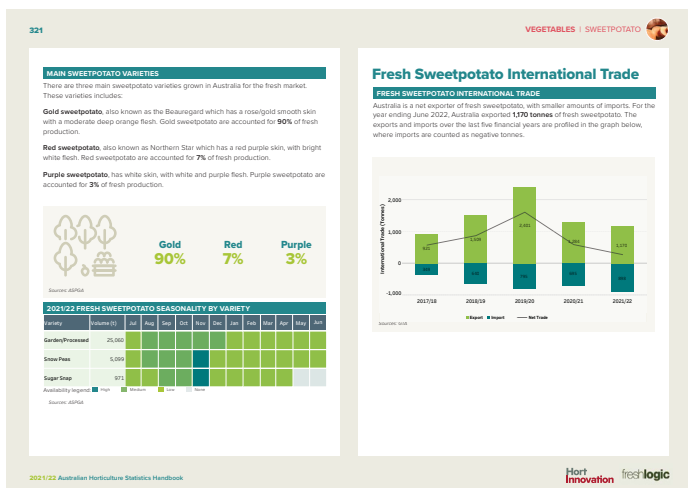
Rotation Crops Resistance to Reniform. Cover crops and their resistance ratings to reniform nematode. Follow this link to learn more.

<https://www.aspg.com.au/wp-content/uploads/2022/11/UPDATED-SUMMARY-OF-RESISTANCE-Reniform-Rotation-crops-top-logo-July-2022.pdf>



Your go-to-guide
for Australian
horticulture
industry data
is out now.

The 2020/21 edition of the Australian Horticulture Statistics Handbook provides the most up-to-date production, international trade, processing volumes and fresh-market distribution insights available to help you plan for the future. View it now at www.horticulture.com.au/hort-stats. The following data from the Hort Innovation Australian Horticulture Handbook 2021/22 may assist.



Current and recent sweetpotato R&D projects (December 2022)

PROJECT NAME	DELIVERY PARTNER	PROJECT DESCRIPTION	END DATE	BUDGET
Sweetpotato industry minor use program	Hort Innovation	Renewals and applications for new minor use permits for the sweetpotato industry required by the Australian Pesticides and Veterinary Medicines Authority.	Ongoing	\$2,900
Integrated pest management of nematodes in sweetpotatoes	Queensland Department of Agriculture and Fisheries	Extension and field work to develop new knowledge including cover crops, soil amendments, tillage options and the evaluation of new nematicide technologies.	26/08/2023	\$2.23 million
Review of the biosecurity plan for the sweetpotato industry	Plant Health Australia	Review and update the industry's biosecurity plan including high-priority endemic and exotic pests, diseases and weeds, along with the risk mitigation activities.	17/02/2023	\$74,653
Generation of data for pesticide applications in horticulture crops 2018	Peracto	Pesticide residue, efficacy and crop safety data is required to support label registration and minor use permit applications. It will support a Bayer DC-163 label registration application for the control of weevil and white fringe weevil. Also, a Syngenta label registration application for Tervigo (abamectin + iron chelate) for the control of root knot nematodes.	15/12/2023	
Strategic Agrichemical Review Process - Updates	AGK Services	Facilitate the 2021 Strategic Agrichemical Review Process for the sweetpotato industry including priorities and gaps regarding pest, disease and weed control.	15/04/2023	\$9,500
Regulatory support and response coordination (pesticides)	AKC Services	Provide key information regarding domestic and international pesticide regulation. An opportunity for industry to consider and develop responses to issues arising from actions proposed that may impact on grower ability to access and use needed pesticides.	1/7/2024	\$8,737
Improving quality of sweetpotato across the industry supply chain	Kitchener Partners	This project is improving the quality of sweetpotato across the industry by engaging key stakeholders across the value chain including growers, wholesalers and retailers so quality can be monitored and maintained in the long term.	01/07/2024	\$544,418
Sweetpotato Emerging Leaders Program	Australian Sweet Potato Growers' Association	A sweetpotato leadership program to build capability to grow professional knowledge and skills, raise awareness of innovations and gain insights into how they can manage their businesses better.	31/12/2024	\$124,575
Sweetpotato industry communications program	Australian Sweet Potato Growers' Association	Communicating to sweetpotato growers and industry stakeholders on the latest R&D and marketing activities, news, events and other critical information for sweetpotato businesses.	10/02/2025	\$116,780
Consumer behavioural data program	Nielsen	Provision of regular consumer behaviour data and insight reporting through the Harvest to Home platform (www.harvesttohome.net.au).	31/12/2024	\$100,876
Fund Impact Assessment 2020/21:	Ag Econ	Evaluate the impact of HI R&D investments across a sample of Hort Innovation R&D projects.	30/11/2022	\$11,587
Horticulture Impact Assessment Program 2020/21 to 2022/23	Ag Econ	Evaluate the impact of HI R&D investments, providing insights into the type and magnitude of impacts that are being generated across the company's strategic levy programs.	30/11/2025	\$6,218
Causes and management strategies for skin loss in sweetpotatoes	Queensland Department of Agriculture and Fisheries	Develop a comprehensive manual for growers on pre-and post-harvest best practices for reducing skin loss in commercial production systems.	30/03/2025	\$627,435
Australian horticulture international demand creation	Kantar Insights	Insights into what the international consumer wants and what drives consumer demand and decision-making across horticulture markets. The markets included: Japan, Singapore, Hong Kong, Korea, Malaysia, Taiwan, Indonesia, UAE, Vietnam, USA, Qatar, UK and India.	31/03/2023	\$9,750
Consumer usage and attitude tracking 2022/23	Fifty-Five Five	Category tracking service to allow various horticultural categories to better understand consumer usage and attitudes and the effectiveness of marketing campaigns. The project will also examine the effectiveness of HI marketing campaigns.	31/7/2023	\$7590
Surveillance and diagnostic framework for detecting soil-borne pathogens in vegetables	NSW Department of Primary Industries	This multi-industry investment is examining the potential to develop a national surveillance and diagnostic framework for soilborne pathogens of melon, onion, potato, sweetpotato and vegetable crops.	31/8/2023	
Marketing campaign evaluation modules FY22/23	Fifty-Five Five	The project examines the impact of HI's Apple and Pear, Avocado, Banana, Mango, Mushroom and Sweetpotato levy-funded marketing campaigns.	31/7/2023	
Generation of data for pesticide permit applications in horticulture 2022	Agreco, Eurofins Agrosience Services and Kalyx	The generation of pesticide residue, efficacy and crop safety data is required to support label registration and minor use permit applications and renewals made to the APVMA.	1/3/2026	