Hort Innovation

Final Report

A review of the scientific literature on the health and nutrition of sweetpotato

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Project code:

PW20001

Project:

A review of the scientific literature on the health and nutrition of sweetpotato (PW20001)

Disclaimer:

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Contents

Public summary

Australians consume less than the recommended amounts of vegetables for good health, and there is a goal for growth in the Australian sweet potato industry.

This project reviewed the scientific evidence available on the nutrition and health characteristics and attributes of Australian sweet potato and produced educational resources for health, fitness and sweet potato industry audiences.

Enhanced knowledge and awareness of the nutrition and health benefits and dietary usage of sweet potatoes in health and fitness professionals enables increased recommendation of sweet potatoes to their clients and communities. Increased knowledge of the health and nutrition attributes of sweet potato and how these can be legally communicated within existing regulatory and legal requirements will help the sweet potato industry include appropriate health and nutrition messages within their marketing activities. Gaps and opportunities for future research and development are identified.

The sweet potato industry can expect an increase in the use of project resources and ultimately sales of Australian sweet potato.

The resources produced by this project are:

A. Sweet potato nutrition and health: a scientific literature review
B. Sweet potatoes: Nutrition-Health-Enjoyment (resource for health and fitness professionals)
C. Australian sweet potato website content report
D. Sweet potato health and nutrition claims guide (for industry)
E. Sweet potato health stakeholder strategy

This project represents the foundation for immediate and future sweet potato industry communications including compliant health and nutrition claims, updating australiansweetpotatoes.com.au and further engaging health and fitness professionals to increase usage recommendations.

Keywords

Sweet potato; vegetables; health; nutrition; nutrients, health benefits; healthy diet

Introduction

Background

Australians consume less than the recommended amounts of vegetables for good health; Less than one in ten consume the recommended five serves of vegetables daily[1]. Economic modelling conducted by Hort Innovation found if Australians ate 10% more vegetables per day, all levels of government would reap $100 million dollars per year in health savings, and vegetable growers would earn an additional $23 million per year in additional profit (VG15031).[2] The Australian sweet potato Strategic Investment Plan (2022-26) aims to increase demand, production and sustainability, but has identified one third of Australian shoppers are unaware of the health benefits consumers of sweet potato, and consumer awareness of how to cook sweet potatoes is variable or low. There is alignment between industry goals and national health goals in increasing sweet potato consumption.

This project contributes to the sweet potato Strategic Investment Plan (2022-26):
Demand creation: contribute to improving consumer knowledge, attitudes, and purchase intent to drive volume growth.
- Increase domestic consumer demand for fresh Australian sweet potatoes through improving knowledge, attitudes and purchase intent

Rationale

There is a role for both internal and external stakeholders to grow knowledge and awareness, and health and fitness professionals are trusted advisors about healthy eating. The health and fitness professional groups chosen to target were dietitians, maternal, child and family health nurses and fitness professionals. While there are health benefits of sweet potato consumption for all ages, targeting infants starting solids was prioritized to promote health but also to encourage lifelong liking. Maternal, child and family health nurses are primary health care givers able to influence this group. The frail elderly was identified as a nutritionally vulnerable group, with growing awareness about the high prevalence of malnutrition and importance of good nutrition to maintain independence and quality of life. Sweet potato is an ideal food for both groups due to its nutrient-density, flavour, and texture.

This project reviewed the scientific evidence available on the nutrition and health characteristics and attributes of Australian sweet potato and produced educational resources for health, fitness, and sweet potato industry audiences.

Enhanced knowledge and awareness of the nutrition and health benefits and dietary usage of sweet potatoes in health and fitness professionals enables increased recommendation of sweet potatoes to their clients and communities and enhances the place of sweet potato in dietary advice and planning. Quality targeted information helps to popularize sweet potato as a nutritious, delicious and versatile vegetable.

The use of nutrient and health-related claims is a specialist area due to the risks posed by using non-compliant claims in marketing communication, yet health and nutrition are of high interest to consumers and health professionals. Providing guidance to the sweet potato industry to make accurate and compliant claims is an opportunity to inform and inspire increased sweet potato consumption. This project will deliver a claims guide that will be very useful for the sweet potato industry and the Hort Innovation marketing team to create and develop future marketing and communications campaigns. The guide will also serve as a substantiation document in the event of any queries regarding the consumer report or website content.

Significance for industry

The sweet potato industry can expect an increase in the use of project resources and ultimately sales of Australian sweet potato.

The resources produced by this project are:

A. Sweet potato nutrition and health: a scientific literature review
B. Sweet potatoes: Nutrition-Health-Enjoyment (Consumer-friendly report)
C. Australian sweet potato website content Report
D. Sweet potato health and nutrition claims guide
E. Sweet potato health stakeholder strategy

This project represents the foundation for current and future sweet potato industry communications including compliant health and nutrition claims, updating australiansweetpotatoes.com.au and further engaging health and fitness professionals.

This project draws on the insights and data of other Hort Innovation projects:

AV 18004 Communicating the nutrition and health benefits of avocado
AL 16007 Educating health professionals on Australian almonds
MU 17002 Educating health professionals on Australian mushrooms
OL 19001 Educating health professionals on Australian olives and olive products
HN 17002 Nuts for Life- educating health professionals
PT 19002 Educating health professionals about Australian potatoes
VG 16064 Tools and interventions for increasing children's vegetable knowledge
MT 17017 Vegetable cluster consumer insights program
PW 19000 Australian sweet potato market insight reports
ST 19041 Phenomenom- The Good Mood Food Module
AV 20003 Educating health professionals on the nutrition and health benefits of avocados
ST 19036 Nutritional analysis across horticultural commodities

Methodology

The specific activities undertaken, and the resources produced are listed below:

Table 1. Methodology summary

Resource produced	Audience	Purpose	Content	Method	Format
A. Sweet potato, nutrition and health – a scientific literature review	Hort Innovation, Industry & health professionals	Review nutrition science on sweet potato. Identify gaps in R&D.	Key messages Future R&D recommendations	Review literature using scientific conventions	MS Word
B. Sweet potatoes: Nutrition-Health-Enjoyment (Consumer-friendly report)	Industry and consumers/clients of health professionals	Inform and inspire sweet potato consumption through accessible health and nutrition information	Health benefits Key messages Culinary ideas for specific populations (e.g kids, aged)	Translate science into simple language	Adobe PDF
C. Australian sweet potato website content Report	Industry	Improve website content	Web content review recommendations	Assess claims Identify enhancements	MS Word
D. Sweet potato health and nutrition claims guide	Industry	Guide industry and marketing activities	Allowable claims and scientific substantiation	Reconcile nutrient content against regulatory requirements	MS Word
E. Sweet potato health stakeholder strategy	Industry	Inform and educate health stakeholders	Which stakeholders? What information to provide?	Identify suitable communication channels. Identify opportunities and content according to learned audience insights	MS Powerpoint

A. *Sweet potato nutrition and health: a scientific literature review*
A scientific literature review for sweet potato and associated varieties (orange, white and purple) was undertaken, primarily in health outcomes using human research. Owing to the growing interest of health stakeholders in environmental sustainability, some findings on this were included. The report includes formal recommendations for future R&D based on gaps identified in the literature. As requested by the evaluation panel, we compared the nutritional composition of the three main flesh types: gold, white and purple using data obtained from ST19036 – Nutritional analysis of across horticultural commodities, although data for white skinned, white fleshed varieties were not undertaken.

NOTE: The original project plan was to have this document designed however this was overturned due to the large size of the report (and the associated cost). In addition, it is a primary reference for industry rather than a health professional resource as they are most likely to prefer the summary report.

B. *Sweet potatoes: Nutrition-Health-Enjoyment* (resource for health and fitness professionals)
Utilizing the evidence from the scientific literature above, a 20-page interactive and a printable PDF report was produced and designed that translates the scientific information from the literature review into everyday consumer-friendly language. Two PDF formats were provided so they could be easily incorporated into the existing website and/or printed off for future health professional education events. As this resource is primarily targeted at health and fitness professionals for educational purposes, it does not strictly comply with the FSANZ Standard 1.2.7 usually required when making nutrition and health claims, thereby loosening restrictions around representing the evidence around the health and nutrition benefits of sweet potato. This strategy and the associated risk level was discussed with the Hort Innovation R&D team and this approach agreed. The report includes nutrition information, health and disease associations, role in different age groups, product usage suggestions, as well as storage and seasonal information.

A small professional reference group was established with a representative from each target audience to obtain feedback on the quality and suitability of this report, as outlined in the M&E Plan. This was done via a survey- see Appendix A. Feedback was used to refine the content.
NOTE: the cost of design was higher than originally budgeted because extra pages were required.

C. *Australian sweet potato website content Report*
Australiansweetpotatoes.com.au was reviewed to assess health and nutrition content to ensure it is up to date and incorporates relevant new information from this project, and compliance with the FSANZ Food Standards Code and Australian Consumer Law. A new health professional page and site map to place new content developed in A and B above is included in the recommendations.

D. *Sweet potato health and nutrition claims guide*
The new nutrient composition data for sweet potato produced by ST19036 – *Nutritional analysis of across horticultural commodities* was compared to the nutrient criteria in the FSANZ Food Standard 1.2.7 and the regulatory RDIs (Schedule 1) for both adults and children 1-3 years of age, to develop the maximum number of consumer-friendly nutrition and health claims that comply with the Code, as well as The *Australian Consumer and Competition Act*.

E. *Sweet potato health stakeholder strategy*
The health stakeholder strategy includes key target audiences, why they have been selected, and the activities that can be undertaken to influence them most effectively. The project staff utilized their extensive professional networks and experience in health care professional communication to produce this report. Learning and insights were gained from previous Hort Innovation projects targeting health professionals with health and nutrition information (see list above in the Introduction).

NOTE: The original project plan was to commission a communication agency to provide recommendations, however after discussions with the agency it was concluded that project staff had extensive knowledge and experience to develop this strategy without external advice.

Results and discussion

Deliverable A. Scientific Literature Review (selected content)

Executive summary

This document is divided into two parts: the first part contains a review of the scientific literature for professional and industry stakeholders. The content can be used to develop future resources for health influencers. The second part contains recommendations for the sweet potato industry based on insights derived from the scientific literature.

Scientific insights about sweet potato

Sweet potato is a nutritionally important crop with a long history of use around the world as a nutritious food and a traditional medicine for a range of ailments. It is also colourful, versatile and appealing with none of the bitter flavours present in some vegetables. Importantly it is also affordable. In Australia sweet potato has significant potential to enhance the nutritional quality of diets and particularly in nutritionally vulnerable groups such as Aboriginal and Torres Strait Islanders and the frail elderly, as well as groups with high nutritional needs like infants, children, pregnant and breastfeeding women. Consuming more sweet potato could address the gap between recommended and actual vegetable consumption in Australia – only one in thirteen adults consume the recommended daily serves of vegetables.

Sweet potato is a whole plant food, a nutrient-rich vegetable and a 'quality carbohydrate' with a secure place in dietary guidance for public health. Sweet potato is an excellent source of beta-carotene, or provitamin A, that is recommended to consume in higher amounts than Recommended Dietary Intakes (RDIs) to achieve chronic disease risk reduction. Sweet potato is a good source of fibre that is important for gut health – a burgeoning field of health research demonstrating multiple benefits throughout the body. Vitamin C in sweet potato is important for immunity, a benefit that has become more relevant in a post COVID-19 world. Sweet potato is phytonutrient-rich with each colour group offering different nutrient benefits for health enhancement and disease risk reduction, albeit on a low-level evidence base. Orange (or gold) sweet potato is loaded with vitamin A and beta-carotene, and some cultivars of purple sweet potato offer disease-fighting anthocyanin levels similar to other purple fruits and vegetables such as cherries, grapes, plums, raspberries, eggplant and red radishes. Biofortification, as has occurred in low-income countries, offers the opportunity to further enhance the nutritional strengths of sweet potato. Agronomic research can produce cultivars with low-acrylamide forming potential and processing methods can be optimised to reduce acrylamide formation to support the safety of roasted sweet potato and sweet potato fries that are becoming increasingly popular.

Sweet potato has environmental advantages in an increasingly sustainability-aware community. It is a resilient crop that can be grown in warm and dry conditions. It is a nutritious plant food at a time when plant-based diets are being embraced as good for the environment as well as for health. Food waste is an issue of great concern and sweet potato has demonstrated how product innovation can avoid crop surpluses in landfill, while also creating value-added product from the waste stream.

Recommendations for the sweet potato industry

There is considerable potential for developing sweet potato as an ingredient in the development of nutritious processed foods, and to consider sweet potato leaves as a new 'super food'. Sweet potato flour is a nutritious, gluten-free ingredient for the growing number of people identifying as gluten-intolerant and could be increasingly used for nutrient enriched, brightly coloured bakery products. Components of sweet potato offer the opportunity of developing health-enhancing ingredients for the food industry, such as resistant starch, and anthocyanins for the nutraceutical industry.

Nutrition and health research in humans has been mostly carried out in developing countries where sweet potato is used as an important source of pro-vitamin A in populations with low vitamin A status. Most of the clinical research into the health benefits of the phytochemicals in sweet potato has been conducted in *in-vitro* and in animal models. As a result, many of the nutrition and health benefits of sweet potato are supported by low level evidence and this underlines the need for more, as well as higher-level, research in comparable populations to Australia, such as gold-standard RCCTs (Randomised, placebo-Controlled, Clinical Trials). The Glycemic Index (GI) of different Australian sweet potatoes varies widely between medium and high and is based on old data (1987-2007). New testing is required to confirm the GI ratings for local cultivars and different cooking methods to better inform advice for metabolic disease prevention and management. Preparation, cooking and serving advice may improve glycemic response, especially for people with

diabetes and prediabetes.

Deliverable B. Sweet potatoes: Nutrition-Health-Enjoyment (selected content)

Introduction

Australian sweet potatoes are super good

Sweet potato is one of Australia's favourite root vegetables, which is not surprising given its creamy texture and sweet, earthy flavour. And did you know they're not potatoes at all, but from an entirely different plant family? They come in a variety of colours, they're easy to cook, loaded with nutrients and taste great. Whether it's gold (orange), red, purple or white, sweet potatoes can be added to a variety of sweet and savoury dishes. They can be enjoyed steamed, mashed, roasted or grated– even sliced or spiralised raw into salads (yes, you can eat sweet potato raw). Sweet potato is good for all ages – it's a perfect first food for babies, liked by kids and adults and ideal for the frail elderly. Sweet potatoes can boost nutritional wellbeing. They are rich in nutrients and phytonutrients including fibre, vitamin C and B6, folate, magnesium, potassium and manganese. Gold varieties contain impressive amounts of beta-carotene and vitamin A.

In Australia, sweet potato has significant potential to enhance the nutritional quality of diets, particularly in nutritionally vulnerable groups such as the frail elderly. Consuming more sweet potatoes could address the yawning gap between recommended and actual vegetable consumption in Australia - just short of one in ten adults consume the recommended daily serves of vegetables. Start super charging meals and snacks with healthy, colourful and tasty sweet potatoes.

Table of contents and summary of content

Sweet potatoes are solid performers: Easy nutritious, delicious, versatile, economical

Varieties: Comparison of nutrition and flavour, texture

What's in a sweet potato? Nutrition information and nutrients present in higher amounts

Super sweet potatoes - nutrient rich plant foods
The essential nutrients and phytochemicals and how they contribute to better health and reduced risk of chronic disease: vitamins, carotenoids, antioxidants and anthocyanins, dietary fibre and resistant starch. Carbohydrate quality and glycemic index (GI).

One serve of gold sweet potato
One serve (150g) of gold sweet potato provides 139% daily recommended vitamin A, 45% of vitamin C, 32% of folate, 19% vitamin C and 16% fibre.

Sweet potatoes for optimal health
Sweet potatoes can play a helpful role in the following: diet quality. Longevity, weight management, diabetes management, cardiovascular health, reduced cancer risk, brain health, mental wellbeing and mood, managing constipation, liver health, arthritis therapy, immune support.

Sweet potatoes through the ages and stages
As a nutrient-dense food, sweet potatoes can support groups with increased nutritional needs such as infants and toddlers, children, pregnant and breastfeeding women and the elderly.
Sweet potatoes also offer environmental sustainability advantages.

Cooking sweet potatoes
Advice and tips on purchase and storage, preparation and cooking, and cooking for best nutritional value and flavour.

Delicious ways to enjoy sweet potato
Sweet potatoes are very versatile and delicious as wedges, in soups, salads, as a side dish (mashed, crushed, stuffed), in dips, with toppings as a toast alternative, in curries, frittata, baking, puddings and pies and in smoothies.

Deliverable C. Website content review and update recommendations

Recommendations to update existing website with new information from this project. A major recommendation is to add a new 'health professional' page to Australiansweetpotatoes.com.au to house the report (Deliverable B, above)

Deliverable D. Sweet potato nutrition and health claims guide (selected content)

This report provides guidance to Horticulture Innovation and the Australian sweet potato Industry to make and substantiate nutrition and health claims within marketing and communication activities for sweet potatoes. While the claims identified in this document may be permitted, it is a marketing decision as to whether they are used, either in whole or in part. Professional nutrition marketing advice is recommended for wording variations from those proscribed.

The report includes a list of nutrition and health claims (FSANZ and ACCC compliant) that can be made, and the nutrition information panels required as substantiation. Tables 6-8 in the Appendixes explain how these claims comply with the Australian Food Standards Code and further explanation is provided from page 11 of how and where to make these claims.

It is recommended that this report is only used as internal document for stakeholders (including food regulators if required) and relevant sweet potato industry advertising and PR agencies for substantiation purposes only. This document is not suitable for consumer audiences.

The serving sizes and nutrient data used are those specified in ST19036 – *Nutritional analysis of across horticultural commodities* and the applicable national food regulatory framework has been applied – Food Standards Australia and New Zealand (FSANZ) health claims Standard 1.2.7 - as well as Australian Consumer Law.

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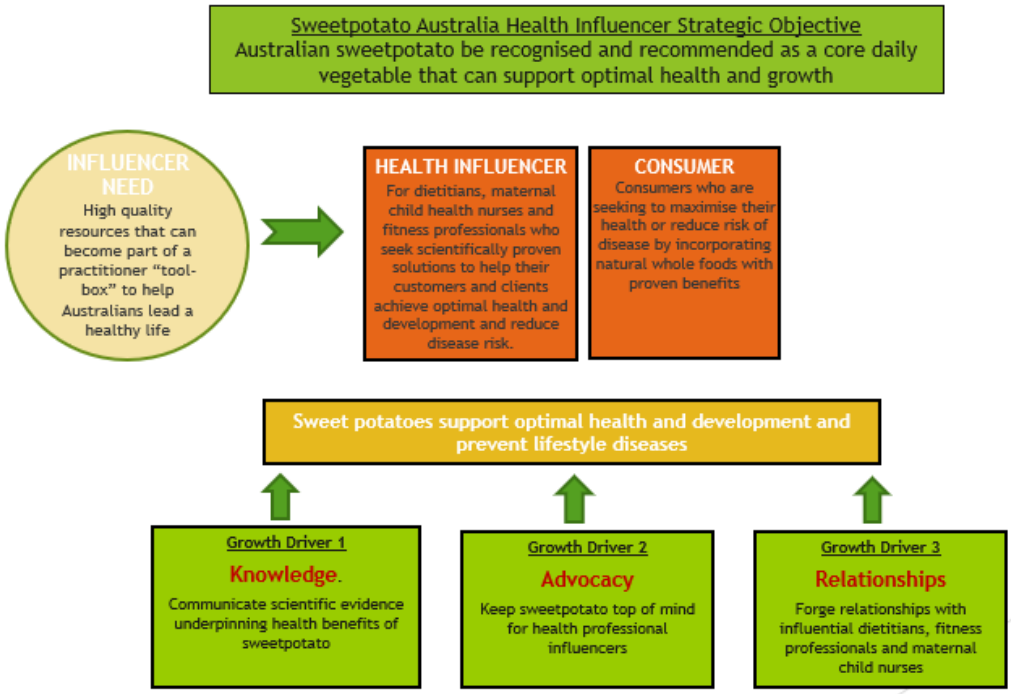
Deliverable E. Sweet potato health stakeholder (selected content)

Strategic Framework



Strategic Pillars

Knowledge	Advocacy	Relationships
Raise awareness amongst dietitians, fitness professionals and maternal nurses about the health benefits of Australian sweetpotato	**Increase recommendations and empower health professionals to include sweetpotato in every day meal plans and diet recommendations**	**Establish influencer relationships to drive advocacy and recommendations of Australian sweetpotato**
Communicate science and position sweetpotato as a core component of a healthy diet, including infants	Develop relevant resources for health professional's toolbox	Leverage KOLs (Key Opinion Leaders) with large community reach to amplify sweetpotato messages
Approach	**Approach**	**Approach**
• Create dedicated health professional web page that educates dietitians about the science and health benefits of Australian sweetpotato • Establish communication strategy for ongoing engagement (e.g. newsletters, conferences, webinars, podcasts, social media)	• Develop patient/client-centric resources that health professionals can use as part of their tool kit • Conduct benchmark research to determine baseline knowledge and attitudes towards sweetpotato • Engage with health professionals via an ongoing program of communication to consistently remind them to recommend sweetpotato.	• Influencer outreach program and associated activities (e.g. sweetpotato farm event). • KOL advisory group / professional reference group (PRG) – select KOL influencers to advise on strategic direction for sweetpotato nutrition research • Create a calendar of engaging events to deepen connection with priority audiences

Outputs

Table 2. Output summary

Output	Description	Detail
A. *Sweet potato nutrition and health: a scientific literature review*	A resource for industry	This will be made available via Hort Innovation. Feedback has been received and incorporated from Hort Innovation R&D staff.
B. *Sweet potatoes: Nutrition-Health-Enjoyment* (health & fitness professional report)	An online resource for health and fitness professionals, and Hort Innovation. Potential to print for future stakeholder events, e.g. health & fitness conferences	It is recommended this resource be made available online at a new health professional page of australiansweetpotatoes.com.au – a suggested extension activity Feedback has been received and incorporated from a small reference group including representatives of the key target audiences (as per the M&E Plan)
C. Australian sweet potato website content Report	A resource for industry	This is an internal stakeholder resource that will be made available via Hort Innovation. It is a foundational resource that outlines extension activities to ensure regulatory compliance and enhance online information for health and fitness audiences
D. *Sweet potato health and nutrition claims guide*	A resource for industry	This is an internal stakeholder resource that will be made available via Hort Innovation
E. Sweet potato health stakeholder strategy	A resource for industry	This is an internal stakeholder resource that will be made available via Hort Innovation. It is a foundational resource that outlines extension activities to enhance engagement with these health and fitness audiences
F. Stakeholder survey	A M&E tool	A survey was developed and administered to a small professional Reference Group to obtain feedback on B. *Sweet potatoes: Nutrition-Health-Enjoyment* (Consumer-friendly report). Results are reported as a Powerpoint document

Images

Figure 1. Deliverable B cover image

Figure 2. Deliverable E Health influencer strategy title slide image

Outcomes

Table 2. Outcome summary

Outcome	Alignment to fund outcome, strategy and KPI	Description	Evidence
End of project outcomes: Industry is confident to produce evidence-informed nutrition and health communication.	**SIP outcome 1**: Demand creation **Strategy**: increase domestic consumer demand though improving knowledge attitudes and purchase intent. **KPI**: Positive influence on consumer preference	Industry resources produced: Scientific Literature Review, Nutrition and health Claims Guide. Evaluation in industry stakeholders is out of scope for this project.	Distribution of these resources is required before feedback can be obtained and is out of scope for this project.
Nutrition and health stakeholders recommend sweet potato due to enhanced understanding of benefits.	**KPI**: Use of nutritional information to support increase in consumer demand	Key influencer groups identified. Deliverable B. Health & fitness professional report produced.	Health Professional Reference Group Survey implemented. Results used to refine report. Post-distribution evaluation not possible and out of scope of this project
Identify gaps in knowledge on the health and nutrition of sweet potato to help guide further investment	**SIP Outcome 2**: Increased profitability, efficiency and sustainability through innovative R&D, sustainable best management practices and varieties. **Strategy**: Identify and evaluate varieties with superior agronomic performance and product quality attributes that meet consumer requirements	Industry R&D recommendations are made in the Scientific Evidence Review.	Implementation will depend on industry access to, and assessment of, the recommendations in the Scientific Evidence Review
Increased industry awareness of the health and nutrition benefits sweet potatoes provide	**SIP outcome 1**: Demand creation **KPI**: Use of nutritional information to support increase in consumer demand	Nutrition and Health Claims Guide produced	Post-distribution evaluation is recommended but out of scope of this project. Recommend this to be conducted by Hort Innovation or extension activity contractor.
Consumers are informed and inspired to consume sweet potato	**SIP outcome 1**. Demand creation **KPI**: Positive influence on consumer preference	Addition of new information to the Australian sweet potatoes website and distribution of deliverable B. Health & fitness professional report is required before consumer impact can be shown.	Out of scope of this project. Extension activities are required before this outcome can be achieved.
Intermediate outcomes: Industry stakeholders have nutrition	**SIP outcome 1**: Demand creation **KPI**: Use of nutritional information to support	Nutrition and Health Claims Guide produced (Deliverable D)	Out of scope of this project. Recommend evaluation to be conducted by Hort Innovation or extension

messages and claims and the evidence to support them.	increase in consumer demand		activity contractor.
External stakeholders have appealing and credible nutrition benefits to share with consumers	**SIP outcome 1**. Demand creation **KPI**: Positive influence on consumer preference	Deliverable B. Health & fitness professional report produced.	Out of scope. Recommendation as above.

Monitoring and evaluation

This project was to develop resources only and does not include the dissemination or implementation of these resources. The project deliverables are underpinned by expressed R&D needs and have already deemed as relevant by the evaluation committee. Therefore, evaluation questions relate to process effectiveness rather than outcome effectiveness.

Table 3. Key Evaluation Questions

Key Evaluation Question	**Project performance**	**Continuous improvement opportunities**
Effectiveness 1. To what extent has the project achieved its expected outcomes?	The project has developed five new tools (deliverables) for use by both industry and health and fitness stakeholders/influencers.	Evaluation of these tools/resources is recommended as part of extension activities
Relevance 2. How relevant was the project to the needs of intended beneficiaries?	The needs of external health and fitness stakeholders were identified during the development of the resources. The needs of industry were identified in the RFP and further obtained from feedback received at milestones.	Evaluation of tools/resources for each stakeholder group is recommended as part of extension activities
Process appropriateness 3. How well have intended beneficiaries been engaged in the project?	Industry has been engaged as far as is possible during the project, mostly though feedback from drafts submitted at milestones and from feedback from Hort Innovation R&D staff	As part of extension activities, it is recommended to develop contacts with a leader/representative of growers, and also sweet potato marketing in order to share knowledge, insights and identify any strategic alignment
Efficiency 5. What efforts did the project make to improve efficiency?	Deliverables have been delivered to a high standard, on time and within budget. Professional networks were utilised to access representatives from professional groups. Linkages were made with other relevant projects such as *ST 19036 Nutritional analysis across horticultural commodities* to ensure efficient data sharing and issues resolution.	N/A

Health professional reference group survey results

When asked about the Health & Nutrition Summary Report, the reference group responded as follows.

80% rated the quality of the resource as *very high*; 20% rated as *high* quality

60% said the resource increased their knowledge about nutrition of sweet potatoes *a great deal*; 40% said it increased their knowledge *a moderate amount*.

60% *strongly agreed* the resource was evidence-based; 40% *agreed*.

80% were *very likely* to share the benefits they learned from the resources with patients/clients/communities; 20% were *likely* to share the benefits they learned.

Q. What is the one thing you learned from this resource?

A. "I really enjoyed the comparison between different (sweet) potatoes and the different nutrient compositions associated with different cooking methods"
A. "that you can eat sweet potato raw. This is a game changer! I tried it myself at home and realised how nice it is raw. This offers a whole new opportunity for time-poor consumers. This message should be ramped up where possible as it takes the barrier of cooking away from the eating opportunity."
A. "Nutritional value to support different chronic diseases"
A. "GI of raw and cooked sweet potato; leaves can be eaten; and updated my info on health benefits."
A. "Sweet potato has more fibre than pumpkin."
A. "It's sustainability"
A. "I like the quality carb message. It goes beyond just GI which is questionable for sweet potatoes as the GI varies so much based on cooking etc."
A. "Great first food for children."
A. "GI references."
A. "It has numerous benefits when included in a balanced diet."

"It is a fabulous resource and with permission I would happily share with our database and keep as a resource…visually appealing and easy to read and understand"- *JM, leading fitness professional*

Recommendations

Recommendations for growers

Development of a high anthocyanin sweet potato variety.

Consider biofortification to enhance phytochemical content.

Evaluate the opportunity for sweet potato tops as a 'new' green vegetable.

Evaluate the development of resistant starch from sweet potato as a functional food ingredient.

Promote the use of sweet potato juice as a fermented beverage, sweet potato as an ingredient in bakery products, heathier children's snacks and gluten-free products such as noodles.

Promote sweet potato fries as a healthier alternative to potato fries and investigate acrylamide reduction strategies.

Investigate alternative uses for the sweet potato waste stream, such as sweet potato flour and a distilled alcoholic beverage.

Recommendations for sweet potato industry

Consider how the findings from this project can be incorporated into consumer marketing materials and ensure consistent messaging across difference audiences.

Enhance the practical tips and recipes for raw sweet potato. Eating sweet potato raw is considered a new and valuable insight by health influencers.

Add nutrition information to the recipes on the Australian Sweet Potatoes website to address needs of health and nutrition professionals, and enable 'health tags' to assist consumers choose recipes that address their specific needs, e.g., 'High fibre', 'low salt', 'high protein', 'heart-friendly', 'diabetes-friendly' etc.

Recommendations for researchers

Nutrition intervention research in the frail elderly within institutional contexts to evaluate the nutritional, health and wellbeing impact of adding sweet potato to the menu.

Nutrition intervention research on the impact of sweet potato on glycemic control in people with diabetes.

Applied nutrition research into the potential for sweet potato to contribute to food security and improved nutrition and health outcomes for remote Indigenous communities.

Healthy and sustainable food systems are of peak interest to health stakeholders as well as an obligation under the UN Sustainable Development Goals. Further research into the sustainability characteristics of sweet potato is recommended and these communicated to health professional as well as other stakeholders.

Recommended extension activities for Hort Innovation

New extension project(s) to:

- Implement stakeholder engagement recommendations.
- Implement website enhancement and update recommendations
- Disseminate and evaluate Nutrition and health claims guide for industry.
- Commission new glycemic index (GI) testing of sweet potato as existing values are very old.

Intellectual property

No project IP or commercialisation to report.

Acknowledgements

Thanks to Camilla Humphries and Jacqui Simpson from Hort Innovation for their support to implement this project, and the team on ST 19036 *Nutritional analysis across horticultural commodities* for their expertise and assistance with nutrient composition data.

References

1. Australian Institute of Health & Welfare 2019. Poor diet (web report). Available at https://www.aihw.gov.au/reports/food-nutrition/poor-diet/contents/poor-diet-in-adults
2. Hort Innovation 2016. Economic modelling of the impact of increased vegetable intake on health costs and grower returns. Available at https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/vg15031/

Appendix A

Professional reference group survey questions

What is your professional affiliation?

Nutrition professional Nurse Fitness professional

How would you rate the overall quality of this resource?

Very poor Poor Average Good Very good

How much has this resource increased your knowledge of the nutrition and health benefits of sweet potato?

Not at all Very little A little Significantly A lot

How well do you agree this resource is evidence based?

Strongly disagree disagree Not sure Agree Strongly agree

How likely are you to share the benefits you have learned with your patients/clients/communities?

Not at all likely Somewhat likely Not sure quite likely Very likely

What is one thing you learned from this resource?

(open ended)

What is one characteristic of sweet potato you believe will have the most relevance to your patients/clients/communities?

(Open ended)

Is there anything you'd suggest to improve the resource?

Open ended