



PLANT BIOSECURITY
science foundation

2021 'Grow it, Taste it, Don't Waste it!'

(focus on fruit and vegetables)

DAF Hermitage Research Facility Schools Plant Science Competition

Research Impact Report/Final Report (PBSF032)

15 December 2021

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This document should be cited as:

Kerrie Rubie, 2021, APBSF Project Final Report, DAF 'Grow it, Taste it, Don't Waste it!' Hermitage Research Facility Schools Plant Science Competition

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1. Executive Summary

The 2021 competition, titled '**Grow it, Taste it, Don't Waste it!**', focussing on fruit and veggies and the role science and agriculture plays in the sustainable production of nutritious and healthy food for the world's people, began on Tuesday 29th January in celebration of the International Year of Fruit and Vegetables.

Students from all year levels (P-12) from across Australia, partaking in the '**Plant Science Awards**' section of the competition conducted hands-on experimental investigations on vegetable plants, researched horticultural pests and diseases, undertook interesting taste testing and food spoilage experiments and pitched a new idea or concept to help combat global food wastage.

The '**QuestaGame Pest Invaders BioQuest**' section of the competition immersed students in a fun, citizen science adventure, using a mobile gaming app to spot and identify pests that impact plant life and interfere with agricultural production.

Students with a flair for art entered the '**Art in Agriculture Awards**' section that combines science and art in a fun, interesting and creative way to enhance their learning of fruit and veggies and how important they are for a healthy and nutritious diet. The art project was linked with the National Science Week theme for students 'Food: Different by Design' and students were asked to create a "superhero" character to help promote a new super fruit or veg that had been developed in a science lab.

The competition attracted more than **3,600 participants** from **130 schools** across all states of Australia (except ACT) and **155 competition entries** were received from Queensland, New South Wales and South Australian schools.

Once again, Covid-19 forced lockdowns in southern states of Australia during the year and threatened to lockdown SE Queensland while preparations for our annual Awards Day & Ag Science Expo were underway. Due to the uncertainty around cases potentially spilling over from northern New South Wales into Queensland and the threat of impending snap lockdowns, the competition organising committee made the decision to hold our Awards ceremony virtually again and pushed the date back from 17 August to 12 October (to allow extra time for adjusting the planning from an in-person event to an online one).

In order to bring some of the popular elements from our in-person event to the online platform, a 'virtual awards week' was organised with 3 webinars (held on 3 different days) scheduled for students and guests to join:

- 1) [DAF Virtual Awards Ceremony](#) | 12 October 2021 | 1pm-2pm
- 2) [QuestaGame Pest Invaders 'Play to Protect' session](#) | 13 October 2021 | 1pm-1:45pm
- 3) [Street Science 'Future of Food' online show](#) | 14 October 2021 | 2pm-2:45pm

The DAF Virtual Awards Ceremony attracted 60 registrations with an estimated wider audience of 330 students from across Australia watching the event live. This well exceeded the numbers joining in for our 2020 virtual Awards Ceremony. The session featured pre-recorded messages from Qld Minister for Agriculture Industry Development and Fisheries and Rural Communities, Mark Furner MP, DAF's Deputy Director General, Bernadette Ditchfield and UQ's Professor Neena Mitter who attended live as our keynote presenter, talking to students and guests about her pathway to an exciting career in agriculture and her horticultural research work, and she also participated in a Q&A session with attendees.

Competition winners were announced during the DAF Virtual Awards Ceremony and prizes including \$1000 tertiary education scholarships, \$1000 conference awards, \$1000 QuestaGame travel scholarship, \$500 scientific journal subscriptions, gifts cards valued at between \$30 to \$350, \$500 UQ FEAST camp scholarships, educational/science/gardening/art goods, trophies and medallions were posted to schools.

The 'Grow it, Taste it, Don't Waste it!' competition attracted widespread traditional and social media attention (as noted below under Achievements, Impacts and Outcomes) and registrations are already flowing in for the 2022 competition.

2. Introduction

The Department of Agriculture and Fisheries (DAF), Hermitage Research Facility (HRF) Schools Plant Science Competition (SPSC) is an annual competition open to all primary and secondary school students from years P-12 throughout Australia and offers engaging ways for students to gain understanding and skills in key areas identified within the Australian science curriculum. Encouraging the next generation of people who will be involved in agricultural/science careers is crucial to how we will face the future and is a key purpose of the competition.

The competition is designed with an awareness of Australian Curriculum, Assessment and Reporting Authority (ACARA) requirements. The agricultural science-themed topics, experiments and activities link well with the science curriculum across the 3 strands (Science Enquiry, Science Understanding and Science as a Human Endeavour).

Running since 1997, the competition has attracted over 115,000 students nation-wide and through their participation, a number of students have become inspired to pursue tertiary studies and careers in agricultural science.

3. Aim

The main aims of the competition are to:

1. Stimulate an interest in science and agriculture in young people and to promote science and agriculture as a rewarding career.
2. Encourage children to think about local, state, national and global issues, in relation to agricultural science and the environment around them.

3. Provide students an opportunity to connect with DAF scientists and learn about “real-world” agricultural science research projects conducted by DAF.
4. Familiarise students with the concept and interpretation of scientific experiments.
5. Foster an awareness of government (DAF), industry (sponsors) and the community (schools and their families) working together towards a sustainable future.

4. Methods/Process

The 2021 competition was organised/promoted in the following manner:

- Important dates:
 - Competition opened – 29 January 2021
 - Student Workshops – scheduled for May/June 2021
 - Competition closed – 25 June 2021
 - Winners notified – mid/late July 2021
 - Awards Day & Ag Science Expo – scheduled for 17 August 2021
- The competition organising committee: **Kerrie Rubie, Professor Andrew Borrell, Dr Barbara George-Jaeggli, Tracey Shatte, Katie McIvor** (all DAF Hermitage staff) and **Simon Hamlet** (Teacher, DET) select an agricultural science related topic at the end of each year, develop the various experiments and activities, write the full competition instructions and guidelines and distribute (via email) to registered schools in January (in time for the start of Term 1).
- Funding opportunities and sponsorships are sought each year with the following organisations supporting the 2021 competition - **Gold sponsors:** Queensland Government (DAF), Plant Biosecurity Science Foundation, Grains Research & Development Corporation (GRDC); **Silver sponsors:** the University of Queensland, the Paul Johnston Memorial Trust, The Crawford Fund; and **Bronze sponsors:** Ag Institute of Australia (AiA), Primary Industries Education Foundation (PIEFA), the Warwick Art Gallery, Queensland University of Technology, Selected Seeds and John & Chris Purdie.
- The competition coordinator liaises closely with the QuestaGame team (based in Cairns) to organise details of the **QuestaGame Pest Invaders BioQuest** that is run externally but is included as part of the Hermitage Schools Plant Science Competition.
- A communications plan is developed (in consultation with the DAF ‘Communication and Engagement’ team) and outlines the timely delivery of traditional media releases, social media posts and the development of promotional materials.
- Emails (and follow up registration reminders) distributed to over 1,400 teachers on the competition database with information on the competition.
- DAF and sponsors/supporters (including the Primary Industries Education Foundation (PIEFA), Science Teachers Association of Queensland (STAQ) and National Science Week) share competition information and updates through their networks/contacts via social media channels, websites and email/newsletters

- DAF distribute state-wide media releases to coincide with the start of the competition (in January/February) and the annual Awards Day & Ag Science Expo (in August) each year.
- Project Leader (Kerrie Rubie) manages a [Schools Plant Science Competition Facebook group](#) with current member numbers at 134.
- Competition information is posted on the DAF competition website (www.daf.qld.gov.au/hermitage-competition)
- Competition details are listed on STAQ's website as a feeder competition for the STAQ/BHP Billiton Science Awards.
- The DAF communication and engagement team assist with the design of promotional materials required for the competition, as required, including artwork/production of banners, flyers, posters, certificates, email banners, supply of images, promotional seed stick/business card packs and badges.
- Upon request, various schools are visited by DAF staff (or online webinars are organised) to help promote agricultural science and the competition to students.
- Student workshops (either in-person or via webinars), facilitated by DAF staff or external companies, are organised in May/June. However, workshops did not go ahead in 2021 due to the competition coordinator working reduced hours until May 2021 for medical reasons.
- An invitation to the Awards Day & Ag Science Expo is distributed to all schools registered for the competition, all local Warwick schools, local PROBUS group, DAF staff and Minister, competition sponsors/supporters and the general community.
- The competition coordinator attends regional and national science education conferences to promote the competition to hundreds of education/industry/government delegates via presentations and trade displays. Unfortunately, no conferences were attended in 2021 due to Covid-19 restrictions/lockdowns.

5. Achievements, Impacts and Outcomes

- The 2021 competition attracted **wide spread media attention** with articles featuring in both traditional and social media platforms including - the National Tribune, Mirage News, Clifton Courier, ABC radio; United Nations, Science Teachers Association of Queensland (STAQ), PIEFA 'Primezone', The Crawford Fund, Queensland Government (DAF), the Australian Government's Office of the Chief Scientist, various school newsletters plus Queensland Agriculture, QuestaGame and The Crawford Fund social media accounts.
- **130 schools registered** from QLD, NSW, VIC, TAS, SA, WA & NT.
- An estimated **3,600 students reached** across Australia.
- A total of **155 science and art entries were received** from schools throughout Queensland, New South Wales and South Australia.
- The 2021 competition was again **successfully run in an online format** (due to Covid-19 restrictions) with a Virtual Awards Week held over 3 days in October, attracting over 330

students and guests from across Australia (a larger audience than our usual in-person event)!

- Due to holding the Awards Day & Ag Science Expo virtually again this year, the overall costs to run the 2021 competition were reduced, allowing for approximately 50% of the PBSF funding to be spent on a project involving the professional re-development of all competition units (resources) to better align with the Australian Curriculum (including the establishment of detailed lesson plans) in order to attract more teachers to the competition and use our suite of agricultural science resources in the classroom at any time.
- The **QuestaGame 'Pest Invaders' BioQuest**, specifically supported by the PBSF involved school students/teams engaging in a mobile gaming app to photograph and identify potential invasive insects, plants (weeds) and animals found in the environment, with their findings also being recorded in CSIRO's Atlas of Living Australia. A total of **33 teams** participated in 2021 with **2,491 sightings** made, **4,227 identifications** recorded and **621 species mapped!** A participating international team, all the way from the USA, were amongst the Pest Invaders BioQuest prize winners!
- Students are given the opportunity to further engage and develop their interest in science and agriculture through the competition's major prizes. Three students received Conference Awards this year, with the option to attend either *'The Crawford Fund Annual Conference: Food & Nutrition Security - The Biosecurity, Health, Trade Nexus'* being held in December 2021 in Canberra, or the *'Plant Biosecurity Research Symposium'* being held in May 2022 in Adelaide. Three students were recipients of the UQ FEAST Scholarships and will attend the 5-day FEAST (science) Camp at UQ Gatton, in July 2022. The overall QuestaGame 'Pest Invaders' BioQuest Champion's prize is a trip to Cairns to visit the QuestaGame team at their headquarters at the James Cook University and enjoy a day out exploring tropical ecosystems and will likely be planned for April 2022.

Students participating in the competition gain further skills and knowledge in STEM including scientific method and understanding, investigating agricultural science issues (national and global), scientific report writing, mathematics, teamwork, communication, technology and art and our competition units are often incorporated into the Australian Curriculum.

Below are examples of feedback provided, this year, from participating teachers:

"Thank you to all involved in organising such a wonderful, real-life learning experience for the children. It is an awesome competition to enter and be involved in."

"Thanks very much Kerrie for the wonderful virtual awards on Tuesday and Science presentation yesterday. We really enjoyed them."

"Well done Kerrie! Thank you for the well organised, informative and inspiring DAF Virtual Awards Ceremony. We really enjoyed the Street Science 'Future of Foods' virtual show. It was so interesting, fun, informative, relevant to theme, amazing and educational. Dr Shaz is a wonderful presenter. Thank you Kerrie for organising it."

The Hermitage Schools Plant Science Competition has just been acknowledged, within our department, by receiving a **Highly Commended Award** in the current DAF Achievement Awards.

6. Discussion and Conclusion

The competition, currently in its 25th year, continues to be very successful. We continually attract a high number of schools and many have become regular participants, registering each year eager to take on a new and interesting plant science project challenge.

Many teachers incorporate the competition project into their unit of study within the Australian Curriculum. The competition also complements the **Primary Connections** program which links science with literacy and is an innovative approach to teaching and learning which aims to enhance primary school teachers' confidence and competence for teaching science.

We frequently receive positive feedback from the education sector, students, general community, sponsors and DAF staff which is great encouragement for the organising committee.

We are proud of the way we have quickly adapted to the challenges Covid-19 has presented and have been able to run the competition successfully, for the second year in a row now, in an online format. Our fingers are crossed though for less restrictions and lockdowns in 2022 and a return to our usual face-to-face events with students and stakeholders.

We believe the DAF Hermitage Schools Plant Science Competition will continue to grow in popularity and stature throughout the country and with support from sponsors, the Department of Agriculture and Fisheries and the Department of Education we will continue to offer the competition to schools throughout Australia.

7. Recommendations

N/A

8. Appendices, References, Publications

Please attached (via email):

1. 2021 'Grow it, Taste it, Don't Waste it!' Instructions and Guidelines
2. 2021 Media Attention
3. 2021 Invitation to the Virtual Awards Week
4. 2021 Competition Registration list

Note: A full and comprehensive Final Report on the 2021 competition will be forwarded to DAF staff and sponsors/supporters in 2022.



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