



PLANT BIOSECURITY
science foundation

2019 'Pest Invaders' DAF Hermitage Research Facility Schools Plant Science Competition

Research Impact Report/Final Report (PBSF007)

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1. Executive Summary

The 2019 'Pest Invaders' competition was a huge success with 153 schools registered from across Australia and just over 3,600 students directly engaged in experiments and activities to help them discover the impact invasive pests have on the native environment and agricultural production, on both a national and international level.

As an extension of the competition, students were also engaged in 'Invasive Pest' Student Workshops held in Toowoomba and Rockhampton (facilitated by DAF/BQ staff), teachers were invited to a local Art + Science Workshop (at the Warwick Art Gallery – competition supporter) and all participants were invited to the annual Awards Day & Ag Science Expo held at the Hermitage Research Facility in August, during National Science Week, with TV personality "Ranger Stacey" attending as our keynote speaker.

Students were awarded prizes that involved immersing themselves in further science/education, including - tertiary education scholarships, scientific journal subscriptions, science camps and an industry conference (Plant Biosecurity Research Symposium, Brisbane).

We received a great deal of positive feedback from students, teachers, sponsors/supporters and DAF staff involved in the 2019 'Pest Invaders' competition and are confident that we are successfully encouraging young people to develop an interest in agriculture and science and to consider careers in this field.

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.

The competition has been running since 1997 and has attracted over 115,000 students nation-wide during this time.

In 2019, we asked students to have fun with hands-on, engaging, scientific experiments and activities to learn more about invasive pests and the impact they have on our native environment and agricultural production.

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 affecting the environment around them.

3. Provide students an opportunity to interact 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 DAF, industry (sponsors) and the community (schools) working together towards a sustainable future.

4. Methods/Process

The 2019 competition was executed/promoted in the following manner:

- The competition organising committee (Kerrie Rubie, Professor Andrew Borrell, Tracey Shatte, Katie McIvor (all DAF Hermitage staff) and Simon Hamlet (Teacher, DET) select an agricultural science related topic ('Pest Invaders' 2019), develop the various experiments and activities and write the full competition instructions and guidelines for distribution (via email) to registered schools.
- A communications plan is developed (in conjunction with the DAF communication and engagement team) and outlines the timely delivery of media releases and promotional activities.
- 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 share competition information and updates through social media channels and via email (through their networks/contacts).
- 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.
- Competition information is posted on the DAF competition website at (www.daf.qld.gov.au/hermitage-competition) and details are sent to competition sponsors/supporters to share on their websites as well (eg, Primary Industries Education Foundation Australia (PIEFA) and National Science Week, Science Teachers Association of Queensland (STAQ)).
- 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 to help promote agricultural science and the competition to students.
- Student state-wide Workshops, facilitated by DAF staff or external companies, are organised at various locations throughout Queensland in May/June.
- An invitation to the Awards Day & Ag Science Expo is distributed to all registered schools, all local Warwick schools, local PROBUS group, DAF staff, competition sponsors/supporters and related industries who are invited to participate in the event with trade displays.

- Awards Day & Ag Science Expo flyer is designed, printed and placed on display in Warwick's Rose City Shopping World and IGA Supermarket noticeboard to encourage community members to attend.
- DAF Ministerial Briefs are prepared for approval to seek new sponsorships and to invite the Minister/DG to the annual Awards Day & Ag Science Expo.
- 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.
- Competition details are now listed on STAQ's website as a feeder competition for the STAQ/BHP Billiton Science Awards.

5. Achievements, Impacts and Outcomes

- **153 schools registered** from QLD, NSW, VIC, TAS, SA, WA & NT.
- **193 barley net blotch disease experiment kits** sent to schools.
- An estimated **3,629 students reached** across Australia.
- 2019 competition attracted two new major sponsors - **Plant Biosecurity Science Foundation** and **QuestaGame**.
- QuestaGame designed a new '**Pest Invaders' BioQuest**, specifically for competition participants (and other schools interested in joining the quest) which involved registered players engaging in a mobile gaming app to photograph and identify potentially 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 **60 teams registered** for the Pest Invaders BioQuest, with **1,608 sightings** and **2,082 identifications** recorded and **371 different species mapped!** A participating **team from New Zealand** were amongst the QuestaGame prize winners!
- '**Student Invasive Pest Workshops**' were organised in Queensland (Toowoomba and Rockhampton), during May, and were attended by **110 students** and facilitated by DAF scientists and BQ officers with the aim to engage participants in further hands-on, interactive and fun learning opportunities related to the topic.
- The Warwick Art Gallery (competition supporter) hosted a free '**Unseen' workshop** exploring the intersections between art and science, facilitated by artist Donna Davis and Ecologist Dr Sapphire McMullen-Fisher. **3 teachers** from Biddeston, Meringandan and Warwick (registered in the schools plant science competition) attended, together with the competition coordinator. The workshop included a field visit to learn research, documentation and identification skills and then explore how this data can be used artistically and as an entry point for inspiration in the creative process.

- The competition coordinator attended **CONASTA 68** in Darwin from 7-10 July 2019, manned a competition trade display and attended various workshops and keynote presentations throughout the conference. Over 300 delegates were in attendance and 85 delegates (most of which hearing about the competition for the first time) signed up for further information on future competitions!
- A total of **255 science and art entries were received** in the competition.
- Annual **Awards Day & Ag Science expo**, held at the Hermitage Research Facility in Warwick, attracted **260 students and guests from 18 schools** throughout Sth Qld and Nth NSW.
- **Ranger Stacey** (TV presenter, from Totally Wild) attended the Awards Day & Ag Science Expo as keynote speaker and also participated in the event's Agricultural Careers Forum.
- '**Conference Award**' recipients attend the '**Plant Biosecurity Research Symposium**' at The Edge, State Library Brisbane on the 15th & 16th August 2019, with positive feedback received from conference organisers and student/parent attendees. The 3 winning students participated in a special "interview" session to explain their competition projects and career aspirations to conference delegates.
- Two students were recipients of the **UQ FEAST Scholarships** and will attend the 5 day FEAST Camp at UQ Gatton, in July 2020.
- A new **Facebook Group** was trialled for the competition in 2019, as part of a DAF Digital Extension Toolbox Pilot Project. The closed group was created by the competition coordinator on 14 June and currently has 48 members consisting of schools, teachers, DAF staff, sponsors and supporters. It is hoped this group will continue to grow and become a great space for sharing information, photos, videos, questions, updates, event details, career pathways and just about anything else related to the competition and agricultural science in general.

The main aim of our competition is to stimulate an interest in agriculture and science in young people and to promote agriculture and science as a rewarding and exciting career choice.

This is achieved, not only by students partaking in the competition's hands-on experiments and activities, but also through extended activities and support offered including Queensland-wide student workshops, school visits by DAF scientists and staff, the annual Awards Day & Ag Science Expo and a large range of prizes including scholarships to attend agricultural science conferences and camps. Below is feedback provided this year from a parent of a student who won major prizes in our previous competitions and is now studying at university:

"A little update on Joel: he has almost completed his B App Sc at CQU. Since Christmas break he has also been doing research work at CQIRP (CQ Innovation & Research Precinct), looking at antioxidant levels in various agricultural products through non-invasive means. He is meant to be presenting on some of his findings at the Australasian Grain Science Conference in Melbourne later this month, which is very exciting for him (in

a nerve-wracking way!). He admits that he probably wouldn't have been interested in an agricultural research topic if it hadn't been for the Hermitage competition. It really showed him the relevance of science in agriculture. So keep up the good work! The students can get so much out of it."

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, team work, communication, technology and art and our competition units are often incorporated into the Australian Curriculum.

Each year, major prize winners from the Schools Plant Science Competition are encouraged to enter their project entries in the Science Teacher's Association of Queensland's (STAQ) annual Science Contest and the national BHP Billiton Science Awards, with students receiving varying levels of success in both competitions. This year, year 9 student, **Michelle Springolo** has been selected amongst the 26 young Australians as a **BHP Billiton Science & Engineering Awards finalist** with her 'Pest Invaders' project. This is the first time in 8 years that we've have had a finalist in the BHP Awards!

6. Discussion and Conclusion

The competition, now in its 23rd 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 now incorporate the competition project as a 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. (Ref: www.primaryconnections.org.au/)

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 believe the DAF Hermitage Research Facility Schools Plant Science Competition will continue to grow in popularity and stature and with support from sponsors, DAF and the education department we will continue to offer the competition to schools throughout Australia.

7. Recommendations

N/A

9. Appendices, References, Publications

Please attached (via email):

1. 2019 'Pest Invaders' Competition Instructions and Guidelines

2. 2019 Media Attention
3. 2019 Invitation to Student Workshops
4. 2019 Invitation to Awards Day & Ag Science Expo
5. 2019 Awards Day & Ag Science Expo Program
6. 2019 Competition Registration list

Note: A full and comprehensive Final Report on the 2019 competition will be forwarded to DAF staff and sponsors/supporters in early 2020.



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