

Industry update

Vol. 1 No.4



\$125,031

**April-June
2019 RD&E
Investment**



\$ 221,200

**2018/2019
RD&E
Investment**



\$332,180

**Forecast
investment
from 1 July
2019**

Upcoming events

30 Aug

Australian Rural Leadership Program applications close

11 Sept

Rural Women's Award Gala Dinner, Canberra ACT

**18-19
Feb**

evoke^{AG} 2020, Melbourne VIC

evoke^{AG} 2020

evoke^{AG} is returning to the iconic Royal Exhibition Building in Melbourne, Australia on 18-19 February 2020. Our inaugural event was a sell-out and those wishing to attend in 2020 are encouraged to secure their tickets. This year we have discounted Primary Producer tickets selling for \$770 and student tickets for \$440 (inc GST). evokeag.com/#tickets

Supporting emerging leaders

Applications are now open for the Australian Rural Leadership Program (ARLP). The ARLP is a 15-month leadership development program that takes place over five sessions across Australia and Vietnam.

Over 30 \$50,000 scholarships are available for people working in or wanting to contribute to the development of rural, regional and remote Australia. AgriFutures Australia is pleased to sponsor a ARLP recipient in Course 27 and welcomes applications from the ginger industry.

If you're interested in putting forward an application please speak with Lucinda (lucinda.staley@agrifutures.com.au).

Read more rural-leaders.org.au
agrifutures.com.au/ARLP

AgriFutures™ Ginger Program Advisory Panel

Nicole Christolodou (Chair)

Ethan Graham

Jason Keating

Scott Kirkwood

Ric Stevens

Dr Mike Smith

Lucinda Staley (AgriFutures Australia Manager, Research)

Meet Lucinda Staley

AgriFutures Australia is pleased to welcome Lucinda Staley to the AgriFutures team. Lucinda joins the team as Manager, Research – Rice, Export Fodder and Ginger with extensive experience working for the Grains Research and Development Corporation, (GRDC), the Victorian Farmers Federation (VFF) and international logistics German firm, DB Schenker. For any questions and or requests regarding the AgriFutures™ Ginger Program please contact Lucinda (lucinda.staley@agrifutures.com.au).



Lucinda Staley Manager, Research

Welcome Ethan and thank you Shane

AgriFutures Australia extends a warm welcome to Ethan Graham who recently joined the AgriFutures™ Ginger Program Advisory Panel. Ethan steps onto the panel taking up the position from former chair and panel member Shane Templeton.

Ethan is the owner and operator of Mountain View Agriculture, a family farm in the Glasshouse Mountains, Queensland. He established his family farming business in 2014 and using his land management, crop growth and leadership expertise has grown Mountain View Agriculture into a successful operation. Ethan acknowledges the challenges of growing ginger and appreciates the importance of RD&E to understand the impact of growing conditions on ginger yield and quality. Ethan is interested in the role technology (for example robotic sprayers) can play in the industry as well as the health benefits for consumers and development of disease free ginger.

Welcome Ethan and Shane, thank you for your guidance and vision for the AgriFutures™ Ginger Program over the past seven years.

Current projects

Project ID	Project Name	Start	Finish	Principal Investigator	Research Organisation
PRJ-011612	Improving ginger to future proof the industry against pests and disease	22/11/2017	29/11/2019	David Lee	University of the Sunshine Coast
PRJ-011522	Ginger Ninja: Automating disease detection in seed ginger stock	28/7/2019	18/6/2020	Matthew Dunbabin	Queensland University of Technology
PRJ-011627	Site-specific weed control for ginger cropping systems	01/07/2019	31/07/2022	Michael Walsh	The University of Sydney
PRJ-011849	Chemical Minor Use Permit Research	28/8/2019	28/7/2022	Zane Nicholls	QDAF
PRJ-010862	Review of the Biosecurity Plan for the Ginger Industry	01/06/2014	31/03/2023	Rodney Turner	Plant Health Australia Ltd

Recently complete projects

Project ID	Project Name	Start	Finish	Principal Investigator	Research Organisation
PRJ-008308	Improved tissue culture production of ginger clean planting material	30/11/2018	30/05/2019	Sharon Hamill	QDAF
PRJ-010755	Ginger Development and Extension	01/07/2018	31/07/2019	Zane Nicholls	QDAF

Project spotlight: Ginger Ninja: Automated disease detection in seed ginger stock

Project ID: PRJ-011522

Principal investigator: Matthew Dunbabin

Research Organisation: Queensland University of Technology

The Australian Ginger Industry Association's Industry Production Target aims to lift Australian ginger production from 8,000 to 12,000 tonnes per annum by 2021, while sustaining profitable farm gate prices. Key to achieving this is improving on-farm productivity. Pests and diseases pose a significant production concern to most ginger growers and are a constant threat to yields. Fusarium, in particular, is a key threat to seed ginger stock, as it can be spread through soil from infected plant material.

Identification and removal of diseased seed stock is currently performed manually and is a major production cost. The preparation of disease-free seed ginger takes place over three months and is a labour-intensive process (e.g. production of 400t requires about 20 people full-time for 12 weeks/year). Additionally, the nature of the process requires operators to stand for long periods of time while visually inspecting and preparing the seed stock.

Automation of Fusarium identification in ginger seed stock has the potential to significantly improve production rates and farm productivity. In recent years, camera technology and machine learning have demonstrated the ability to detect a range of pests

and invasive species over many agricultural systems. This project will leverage these technologies and pilot the development of a real-time automated vision-based system that aims to rapidly identify Fusarium infected seed ginger stock for segregation from non-diseased stock.

This project will investigate a combination of camera options and machine learning approaches in their ability to visually detect the presence of Fusarium in pre-cut ginger seed stock. The primary data collection will be conducted during the manual seed stock preparation. This will involve randomly selecting ginger seed stock from the production line. Each piece will be manually inspected for signs of disease, independently imaged using the camera options, and then a selection will be independently grown-out to confirm the presence/absence of Fusarium. The results of these independent assessments will be used to evaluate the performance of the developed algorithms.

This research aims to achieve an automation level for robust and real-time "sorting" diseased from non-diseased ginger. The core outcomes are expected to be a vision-based algorithm for Fusarium in cut ginger seed stock as well as an algorithm to help automatically detect the bottom of ginger root stock. While out of scope in this project, the technology developed in this project is expected to provide the foundations for factory-based automated cutting of the ginger stock for inspection and removing disease from the ginger and slicing into seed pieces.