

Innovation Projects

2020/21



INVESTING IN RESEARCH TO SUPPORT THE
ON-GOING IMPROVEMENT OF THE EGG INDUSTRY

The Innovation Program delivers research to the layer industry which improves farm productivity and enhances industry sustainability through an annual cycle of project development.

This process relies on meaningful engagement with stakeholders to ensure commercial relevance of each research project and increase the return on investment for levy payers.

Producer input, particularly at research updates and workshops is crucial in determining industry investment priorities. Producer ideas are tested in the annual Industry Snapshot Survey, which defines a set of key research questions.

These questions are used to engage researchers and the Innovation Industry Consultative Committee (ICC) assists in refining each project's scope and methodology. Each project is then contracted to a suitable research organisation.

Project outcomes are communicated to producers through workshops, research updates and resources such as posters, manuals and tools.

Australian Eggs is a not-for-profit company providing research, development and marketing of eggs for the benefit of all farmers regardless of their size, location or farming system.

Our marketing channels include:



TV, MAGAZINE, RADIO AND ONLINE
Advertising and engagement



SOCIAL MEDIA
Advertising

INNOVATION PROCESS IN ACTION

Gut Health Project

Study of gut microbiota of laying hens from different production systems

This project was the first of its kind for the layer industry. The aim was to understand how gut microbiota establishes in pullets raised on the floor and in cages and how it develops throughout life in cage and free range hens.

The study involved **100 farm visits, where 2,300 swabs and 2,400 tissue samples from the length of the hen digestive tract were collected.**

DNA analysis was used to identify the microbiota on each swab and sample and researchers correlated microbiota from cage and free range hens as they aged with feed composition and events in their lives.

The research found that although the composition of microbiota was very different between flocks and farms, **in all pullet flocks the first major source of microbiota was feed, and the pullets' microbiota changed when they were moved into the production area.**

Regardless of housing system, as the hens aged the variety of microbiota increased.

In this research **hens between one day and to 12 weeks old were most susceptible to bacterial infection. This reinforces the importance of providing quality, safe feed to layers throughout their life but especially in early life.**

Future gut health research opportunities

Tailoring pullet and layer feeds to improve gut health

Understanding the effect change, stress and disease on gut health

Optimising management in rearing for good gut health

Enhancing gut health in rearing to improve lifetime hen health & productivity





BIOSECURITY & FLOCK HEALTH

Optimising performance, health, flock consistency & egg quality characteristics through management

In this project researchers will work with free range farms to understand the management factors which influence common problems in free range systems such as variable peak of lay timing and inconsistent egg size and quality. One output will be a modelling tool which allows producers to see how altering management factors will affect downstream egg production and quality.

📅 PLANNED COMPLETION – JUNE 2023

Decontamination

Researchers will address knowledge gaps by developing a set of guidelines and procedures for every-day decontamination of layer production areas, which will help to manage the risk of disease infecting and spreading within the flock. The guidelines will be production system specific and include methods to validate efficiency of decontamination.

📅 PLANNED COMPLETION – FEBRUARY 2021

Sustainable worm control

Through surveying producers, collecting faecal samples and examining spent hens, researchers will be able to determine the prevalence and significance of worm infection in free range layer flocks in Australia. As this has not previously been researched

in Australia, researchers will also be developing better methods for diagnosing infection in the flock and assessing anthelmintic resistance within the national flock. With the research generated, a web-based tool will be created to assist producers in diagnosing and managing worms.

📅 PLANNED COMPLETION – APRIL 2021

Spotty Liver Disease epidemiology

Researchers will collect information and cloacal swabs from 30 free range flocks across Australia to find patterns in Spotty Liver Disease infection. This data will improve our understanding of how management factors affect or prevent flock infection of Spotty Liver Disease.

📅 PLANNED COMPLETION – NOVEMBER 2021

Biotechnology: black soldier fly for soil improvement

Australian Eggs is one of 6 contributing RDC's in this collaborative project. Researchers are developing a novel solution, using black soldier flies to convert agricultural waste into high quality fertiliser to improve soil. Researchers will also investigate whether black soldier fly can outcompete stable fly as a biosecurity measure and allow for manure spreading in currently prohibited areas.

📅 PLANNED COMPLETION – DECEMBER 2022



HUMAN HEALTH

Effects of egg consumption on vitamin D status

As recent research has shown that a serve of eggs contains up to 82% of adult daily vitamin D requirements. This research will investigate the role eggs play in preventing vitamin D deficiency. Participants will eat eggs five days a week, and initially assessed for vitamin D levels then re-tested after 3 months. This information will be used to continue to promote the value of eggs in a healthy diet to health care professionals and the community.

📅 PLANNED COMPLETION – APRIL 2021

Eggs to improve Choline intake in pregnancy

Choline is an essential nutrient which research shows is particularly important in pregnancy. In this research, 100 pregnant women will have their Choline levels measured then throughout their pregnancy keep track of their daily intake of foods known to be rich in Choline. Their Choline levels will be tested again at the end of the study. Based on the change in Choline levels and the foods eaten, researchers will be able to extrapolate the value of eggs in increasing the Choline level of pregnant women.

📅 PLANNED COMPLETION – MAY 2021



LIAISING WITH HEALTH CARE PROFESSIONALS on the health benefits of eating eggs



ANIMAL WELFARE

Practical strategies to measure hen welfare

Using the emerging field of microRNA to identify potential biomarkers of affective states in hens. This project will identify positive and negative markers that can be tested in pooled egg samples.

📅 PLANNED COMPLETION – DECEMBER 2020

Causes of on-farm smothering

Conducting a comprehensive study of 80 flocks in Victoria and Queensland to identify factors that are associated with smothering events. The results will provide a better understanding of interventions to prevent or minimise smothers.

📅 PLANNED COMPLETION – MAY 2021

Hen ranging behaviour in relation to UV light

Investigating UV light and light intensity and its effects on ranging behaviour of free range hens. This project will determine whether hens prefer or avoid high levels of UV or light intensity, how ranging behaviour is affected and will better inform shade requirements.

📅 PLANNED COMPLETION – SEPTEMBER 2021

Automated, real-time monitoring of bird and flock movement and behaviour

In this proof of concept study researchers will use artificial intelligence technology to detect certain behaviours in the flock and send an automated alert to staff. If this project yields ideal results this proof of concept could be further developed to assist in monitoring the wellbeing of the flock remotely and preventing events like pile ups and smothering.

📅 PLANNED COMPLETION – DECEMBER 2021

Non-invasive technology for gender determination of fertilised chicken eggs

Using an optical technique, researchers will be working on developing a device that can automatically determine the gender of chicken eggs. If the project is successful the result will be a desktop device suitable for hatcheries.

📅 PLANNED COMPLETION – JULY 2022



FOOD SAFETY

Protecting Australia's poultry using genetic restoration

In this proof of concept study researchers will attempt to embed genetic material from other poultry species into the layer hen genome. The specific genetic material relates to Avian Influenza resistance so there is the potential that it could do the same for the layer. This study will be limited to exploring the possibility of successfully implanting the foreign genetic material into cell lines and does not include any animal trials.

📅 PLANNED COMPLETION – SEPTEMBER 2021

This project is funded by Commonwealth grant funds.

Traceability for the egg industry

The output of this project will be a traceability solution for the industry. At the completion of the project the traceability solution will be available to producers and the supply chain, providing industry and customers with full transparency on the origin and production to purchase journey of the egg. The solution will be accompanied by significant extension and marketing activities so that producers, supply chain and customers are educated on its purpose and use.

📅 PLANNED COMPLETION – OCTOBER 2023





ENVIRONMENTAL SUSTAINABILITY

Nutrient mass balance on-farm

By carefully measuring the inputs and outputs of free-range flocks researchers will quantify how much nutrient is deposited on the range versus how much is deposited in the shed. This research will provide accurate and up to date information on the impact of free range laying flocks on the range area and provide resources to producers to assist in environmental management.

📅 PLANNED COMPLETION – OCTOBER 2020

Assessing the carbon footprint of the egg industry

By studying the inputs to the whole egg industry supply chain, the carbon footprint of the egg industry will be measured. This method for assessing the carbon footprint is a 'life cycle assessment' and will establish an industry benchmark to compare its carbon footprint with other industries and gauge future improvements. The researchers will also provide carbon mitigation options and determine the cost of production and supply chain pathway for a carbon neutral egg.

📅 PLANNED COMPLETION – NOVEMBER 2021

Cost effective and practical ways to regenerate layer hen ranges

Researchers will produce a range regeneration guide for industry, which will provide regeneration suggestions based on the unique requirements and means of the farm. To understand the most effective and practical ways to regenerate layer ranges, researchers will draw on international best practice, the experiences of Australian producers (from survey) and the outcomes of current on-farm regeneration projects over two years.

📅 PLANNED COMPLETION – JUNE 2023

NEW PRODUCER RESOURCE

Farm sustainability dashboard

Australian Eggs has developed a tool for producers to assess the sustainability of their egg business. The dashboard enables producers to review the sustainability of on-farm environmental, welfare, economic and production practices and provides practical guidance for making improvements to the business.

SCAN THE QR CODE BELOW TO VIEW OR USE THE TOOL



FEEDING & NUTRITION

Pullet to late lay nutrition

The outcome of this project will provide insight into how to optimise egg shell quality at peak lay through nutritional management from 18 weeks. Hens of lighter and average weight will be trial-fed on diets of either higher or lower nutritional density to 90 weeks. Feed efficiency and egg shell quality will be measured for the duration.

📅 PLANNED COMPLETION – APRIL 2021

Implementation of maximum profit layer diets

This short project builds on a recently completed project 'The economics of layer diet amino acid levels throughout lay'. The aim of the project is to review the data and modelling tools currently available to the layer industry and understand where the gaps are that are preventing adoption of max-profit and made-for-farm feed formulation of Australian layer diets.

📅 PLANNED COMPLETION – MAY 2021

Managing pullets for extended layer life, improved productivity and shell quality

The aim of this project is to understand how different lighting regimes and diets during rearing, either used singularly or together, can improve flock uniformity, egg production and persistency of production, egg size and egg quality, from 16 to 90+ weeks.

📅 PLANNED COMPLETION – FEBRUARY 2023

EDUCATION AND INDUSTRY CAPACITY



Integrated Schools Education: *All About Eggs* program

The aim of this ongoing program is to foster a community of Australian school students who are educated and engaged on the value of eggs and egg farming.

Following the refresh of program resources, in 2020/21 the program continues to be improved through the creation of new resources for all age levels. New resources will include an egg-based coding challenge, a 'Scrambled Physics' activity and development of student cooking resources.

Industry Capacity Building

Australian eggs continue to partner with 4 Up Skilling to provide training to the egg industry. 4 Up Skilling provide formal qualifications in egg farming (Certificates III, IV and Diploma) as well as remote induction modules to the egg industry, suitable for staff who are new to the industry. 4 Up Skilling also deliver on-site training for the team in safety, air quality, biosecurity and leadership. Formal qualifications can be delivered online and are designed to fit around full-time work. Training provided by 4 Up Skilling includes:

- **EggStart:** self-paced industry induction.
- **Cert III in Poultry Production:** designed for full time employees of the egg industry. Flexible delivery, available in workshop or webinar format and can be tailored for the egg business.

- **Cert IV in Poultry Production:** designed for supervisors and team-leaders in the egg industry.
- **Cert IV in Leadership and Management.**
- **Diploma in Agriculture (Poultry):** designed for managers or employees who have attained a Certificate IV or equivalent, the two-year course is delivered via intensive online workshops.

For more information contact:
research@australianeggs.org.au

Extension

The familiar extension workshop format has received an overhaul in 2020, with COVID 19 challenging Australian Eggs to transform the way that extension is delivered. Extension workshops will continue to be provided, albeit remotely, and the full suite of resources are still available.

In 2020/2021 two workshop streams will be delivered to industry:

Welfare training

In conjunction with industry experts, Australian Eggs has developed a welfare training package which is delivered as a series of webinars. The course offers a solid foundational understanding of facilitating good hen welfare on-farm and is suitable for people working on a commercial egg farm and most beneficial to individuals who work under general supervision, exercise limited autonomy and have some accountability for their own work.

Project updates

Project updates will be delivered by researchers, who will provide insight on how their current or recently completed research

projects could impact or influence on-farm processes. These workshops are most suitable for managers, supervisors or members of the egg business who are responsible for strategic business decisions.

As always, Australian Eggs resources can be delivered to you. To see the resources available and place an order please go to: www.australianeggs.org.au/for-farmers/tools-and-training



ESA and development of on-pack logo

The Egg Standards of Australia (ESA) is a voluntary quality assurance program available for all cage, barn and free range egg farms and all egg grading and packing floors. The ESA streamlines compliance requirements for market access and provides a pathway for continuous improvement for egg businesses. For more information see www.australianeggs.org.au/for-farmers/egg-quality-standards or to inquire about joining the ESA email esa@ausmeat.com.au

In the 2020/21 financial year development is underway for an ESA on-pack branding and accompanying protocol for use. Once completed producers will be able to place the ESA logo on their packaging to indicate to consumers that they are ESA certified. Workshops will be held for industry to explain use of the brand and marketing will be deployed to educate the public on the meaning of the new logo.

