AUSTRALIAN PORK LIMITED

Call for tenders – 2018/2019 Research, Development & Extension (RD&E) Program

April 2018




Background

Australian Pork Limited's (APL) four Specialist Groups met in February 2018 to determine research, development, technology adoption and industry capability priorities for funding in 2018/19. The Specialist Groups are comprised of expert participants from industry, research providers and APL Managers. The priorities have been incorporated into business plans that were reviewed by APL's R&D Advisory Committee (RDAC), recommended by the RDAC to the APL Board and approved through this process.

Priority Areas

This is a combined call for tender for research priorities for 2018/19 across the APL RD&E portfolio, including:

- Production and Welfare
- Environmental Management
- Biosecurity and Product Integrity

APL is seeking to fund research programs/projects in the following key priority areas. All proposals must be submitted via APL's online portal PigConnect by COB 18 May 2018. If you have previously submitted a research proposal to APL you will be able to use your previous username and will be prompted to change your password. If this will be your first time applying for APL R,D&E funding please register at https://pigconnect.australianpork.com.au

Basefunding

APL, together with the Australasian Pork Research Institute Limited (APRIL), significantly invest to provide access to research facilities through base funding. These facilities include Rivalea, SunPork North, SunPork South, PIWA and Roseworthy.

If your proposed project requires the use of base funded facilities, it is essential that you discuss and confirm availability with the contact person at the proposed facility before submitting your proposal. If you are not certain if your proposal should include base funding, please contact the relevant APL R&D Manager to discuss.

Details on the base funded facilities including, location, availability, and costs that will be incurred above what is offered by the base funding facility, can be obtained from:

- Rivalea: Dr Rob Smits (RSmits@rivalea.com.au)
- SunPork North: Robert Hewitt (robert.hewitt@sunporkfarms.com.au)
- SunPork South: Dr Kate Plush (kate.plush@sunporkfarms.com.au)
- PIWA: Emalyn Loudon (emalyn@live.com.au)
- Roseworthy: Dr Cameron Ralph (Cameron.Ralph@sa.gov.au)

When submitting an R&D proposal using a base funded facility, you must complete the basefunding spreadsheet within the application process.

Specialist Group 2 – Production and Welfare

Revisiting technologies available to the Australian pork industry to improve production efficiencies

The pork industry has an array of nutritional technologies available to assist with optimising production efficiencies. However, new generations of these products and their current usage rates need to be revisited to ensure they are being used as cost-effectively as possible. This may include strategic use of technology(s) in a different way than currently applied. More cost effective (either by being more bioactive and thereby using lower levels) and/or alternative sources of vitamins and mineral supplements are needed to keep cost of production in check and to ultimately reduce it.

Applications are sought that address:

- new protocols for the use of feed additive technologies (such as betaine, cysteamine, medium chain fatty acids (e.g. CLA) and chromium/ nano-chromium) currently available to the pig industry to improve production efficiencies.
- Cost effective alternatives to current feed additive such as Vitamins A and E, zinc oxide and copper sulphate that are essential for optimum growth and development.

Timeline: <2 years

Reducing vaccine variability and improving efficacy

Australia continues to struggle to get access to a number of new vaccine technologies, partially due to the high cost of registration and relatively small demand. Given this, it is imperative that we reduce vaccine variability and improve the efficacy of those vaccines currently available for use to prevent disease. While considerable success has been achieved in vaccine development against many bacterial pathogens, vaccines may often fail (quite often for unknown reasons) with significant and disastrous consequences.

Environmental factors (shed ventilation and temperature, water quality, stocking density, vaccine storage, administration etc.) can also affect vaccine efficacy variability and in a low antibiotic use production system, these factors will need to be better controlled. Similarly, use of other technologies in combination with vaccine programs may also reduce the variability in efficacy.

- Management protocols that enhance the efficacy of vaccines used for respiratory diseases
- Protocols for decreasing pathogen load
- Targeted pre-biotic/ probiotic use

Timeline: <2 years

Precision livestock farming (PLF) technologies – on-farm demonstration and industry implementation

There are a number of technologies available on the market that can aid in the automatic real-time monitoring and collection of production data to inform management decisions. However, adoption of these technologies in Australian pig production systems is low due to the unknown nature and/or benefit (cost and production) of these technologies.

This project seeks to demonstrate a number of technologies in established production sites to improve animal management and health, collect data and provide the information generated to support the further adoption of PLF technologies on Australian farms. Technologies that may be implemented include (but aren't restricted to):

- Remote weighing of animals
- Automatic sorting systems for large groups
- Health monitors (real-time monitoring e.g. cough monitors, temperature, iron monitoring of piglets)
- Water and feed monitors (used in conjunction with weight monitoring to calculate feed conversion efficiency)
- Behaviour monitoring (health and welfare)

Key expected outcomes of the proposed demonstration site(s) are:
- Validation and demonstration of technological innovations to the business
- Improved business performance and profitability
- Improved animal health and welfare

Timeline: < 2 years

For further information on Specialist Group 2 research priorities contact Dr Rebecca Athorn, Manager, Production Innovation via email: rebecca.athorn@australianpork.com.au or Ph: 02 6270 8827 or 0436 655 015

Specialist Group 3 – Environment

Standardised methodology - testing effluent samples for NATA labs

Current recommended testing methods for VS (volatile solids) content in effluent, used by all labs in Australia, generates an error in the results of up to 25%. Technically, the error is created because the total solids (TS) sampling protocol requires heating the sample to 103-105˚C. This results in some volatiles being lost in the vapour which causes a problem when trying to test the efficiency of biogas treatment systems / effluent systems because the testing can't be done accurately. The error is also not consistent (either between piggeries or between different stages in the treatment system) so no standard factor can be applied. As more piggeries aim to improve biogas efficiency, it will become more important for test methods to be more accurate. This project should aim to work with a laboratory to establish a custom laboratory protocol that could be submitted to NATA for approval and used Australia wide.
Timeline: 1 year

Large scale biogas to compressed natural gas

Biogas is a valuable resource that pork producers can tap into to insulate against rising energy costs, value-add the pork production chain and mitigate emissions and odours associated with piggery effluent. The biogas mixture, consisting mostly of methane and carbon dioxide, is produced when pig manure and spilt feed that drains to an effluent pond are broken down naturally by microorganisms present in the effluent pond. Larger producers are capturing so much biogas that they now flare up to 60%. This project aims to work with the energy industry to demonstrate a range of methodologies that can be used to capture the excess biogas, cleaning it of CO_2 and make it transportable and available to other energy markets, such as fuel for transport trucks that move pigs. This project presents an opportunity to underpin further implementation of biogas systems by pork producers and should aim to be scalable for maximum benefit to the industry.
Timeline: 1 year

Net reporting tool to offset on-farm emissions

Piggeries with a requirement to report emissions through the National Pollutant Inventory (NPI) are currently not able to report emissions that have been offset on farm. Most piggeries that trigger NPI reporting currently use the simple reporting template in the emission estimation technique manual to estimate gross NH_3 emissions. Other techniques can be used, although these need to be approved by the relevant environmental agencies. There are no methods or tools that subtract emissions that have been offset on farm. There are some factors in the NPI that haven't been updated for a long time, and it is unclear if the method is accurately reporting for different types of piggeries, particularly those with covered ponds. This project will develop a simple spreadsheet to provide the ability for farms to easily calculate on-farm offset amounts. Recommendations are to be provided after consultation with The Department of the Environment and Energy regarding how best to use this information.
Timeline: 1 year

Small scale biogas adoption

Recent advances in biogas adoption in European piggeries have shown that biogas adoption is possible at a small scale. The technology is available at 60, 100, 150 Nm^3/hr raw biogas. Biogas is most often used to offset on farm energy costs but can also be used for the following: flaring for odour mitigation, steam boiler for pelletising feed, heating tallow storage tanks, chilling lactating sow drinking water, snout cooling – cool air, sow cooling pads – circulate cool water. This project will involve conducting a cost benefit analysis to determine potential uptake by smaller producers and investigate power purchase agreements that involve low or no costs for the producer in the short term. It is envisaged that a piggery with less than 500 sows will be involved as a potential demonstration site to support small scale biogas adoption.
Timeline: 1 year

Small scale syngas plant to use spent bedding

As fossil fuels are being rapidly divested globally, sources of renewable energy are required. Large quantities of biomass and organic wastes are being produced by piggeries. This provides a distributed waste supply. An option for using waste streams in piggeries is the use of a gasification unit which is a robust and simple gasification technique designed for small scale integration. It would provide batch processing with storage, drying and gasification in one unit. Spent bedding can be used to generate energy without pre-treatment. This project aims to pilot a small gasification unit and utilise green waste, spent bedding and effluent solids to generate syngas to produce energy at a piggery. The alternative is to transport spent bedding to an operational facility to demonstrate 'proof of concept', gather and analyse data to demonstrate further feasibility.
Timeline: 1 year

For further information on Specialist Group 3 research priorities contact Denise Woods, Manager Environment via email: denise.woods@australianpork.com.au or Ph: 02 6270 8826 or 0418 697 595

Specialist Group 4 – Biosecurity and Food Safety

Predictive shelf life tool for pork

The longevity of fresh pork can be influenced by factors including processing conditions, the type of packaging, storage temperature, cut type and whether cuts are moisture infused. The development of a shelf life prediction tool for fresh Australian pork will reduce the reliance on microbiological tests and allow greater flexibility in meeting performance standards, optimising storage management for product destined to different markets, both export and domestic.

The successful proposal for this tender must:

- Develop a tool that can quantify levels of pathogens, spoilage, microbial growth and meat quality on pork shelf life.
- Identify interventions that, if implemented, could improve product microbiological quality of high risk products.

Timeline: 1 year

For further information on the above Specialist Group 4 research priority contact Tony Abel, Manager Product Integrity via email: tony.abel@australianpork.com.au or Ph: 02 6270 8812 or 0419 978 775

Relationship to the Core Objectives of APL

These research initiatives target APL's Core Objective s. More information can be found in APL 2015-2020 Strategic Plan

Specific Terms of Reference

Research providers successfully tendering for projects to meet the objectives described above will be responsible for:

1. Assembling expertise from within or between organisations to deliver one or more of the research outcomes identified earlier;
2. Designing scientific studies, in consultation with APL, to provide new information and know- how;
3. Securing access to research facilities (laboratories, equipment, on-farm demonstration sites) and the necessary approvals for the conduct of the research;
4. Developing a comprehensive project plan which includes detailed methodologies and budgets and describes the cash and in-kind contributions to the project, and subsequently delivering the research within budget;
5. Analysing and reporting all data generated in formal reports to APL; and
6. Disseminating key findings from the research to the wider scientific community in a variety of formats subject to approval by APL.

Specific Outputs Required

Specific outputs required by APL will include:

1. Progress reports against milestones/decision points agreed with APL that detail project findings from individual experiments;
2. A comprehensive final report (following approval of a draft by APL) detailing all aspects of the research conducted (methodology, data, analysis and conclusions), submitted on the APL Final Report template; and
3. Scientific papers, conference presentations, producer talks and trade articles as appropriate and approved by APL.

Timetable for the Current Tender

Date	Action
Thursday 19 April 2018	Call made for tenders addressing research priorities
Friday 18 May 2018	Deadline for research proposals to be received by APL

General Conditions of Contracts

Research contracts entered into with APL will require:

1. Confidentiality to be maintained with disclosure only with approval of APL;
2. Copyright of all documentation and intellectual property to be vested pro-rata to the agreement parties on the basis of equity invested, or as agreed by the parties;
3. The project to be undertaken in an impartial, objective and professional manner consistent with good scientific principles and practice;
4. Applicants to provide their own insurance cover for the risks pertaining to the project;
5. Applicants to identify any areas of potential conflict of interest during the application process, or during the course of any supported project;
6. Opportunities for variation to the project objectives and work schedules subject to mutual agreement; and
7. Any material provided by APL to be used only for work specific to the project, unless expressly approved by APL.

Lodgement of Response

Applicants wishing to respond to this Call for Tenders should contact the relevant APL Research & Innovation Manager. All submissions are to be lodged as full proposals using the Research & Development Application in PigConnect (https://pigconnect.australianpork.com.au/). Finalised proposals for research will be developed and assessed using APL's research & development assessment processes. For proposals that require the use of base funded facilities, applicants must ensure that this detail is included in their PigConnect lodged proposal.