AUSTRALIAN PORK LIMITED CALL FOR

TENDERS

2016/2017 Research, Development & Extension (RD&E) Program

May 2016
Background
Australian Pork Limited’s (APL) four Specialist Groups met in February 2016 to determine research, development, technology adoption and industry capability priorities for funding in 2016/17. The Specialist Groups are comprised of expert participants from industry, research providers, Federal and State government and APL Managers. The priorities have been incorporated into business plans that have now been reviewed by APL’s R&D Advisory Committee (RDAC) and have been recommended by the RDAC to the APL Board.

Priority Areas
This is a combined call for tender for research priorities for 2016/17 across the APL RD&E portfolio, including:

- Production and Welfare
- Environmental Management
- Food Safety, Biosecurity & Quality Assurance
- Program Monitoring and Evaluation

APL is seeking to fund programs/projects in the following key priority areas.

Reproduction & Welfare

1. Welfare Interventions

Continuous welfare improvement programs

The Australian pork industry has specific welfare considerations which, through industry and stakeholder engagement we are refining. These considerations include:

- The prevention of tail injuries as a consequence of tail-biting by pigs. Ensuring that when required pigs are provided with a humane death either through euthanasia or stunning at slaughter and;
- The overall care of breeding stock and progeny piglet welfare during farrowing and lactation.

The underlying behavioural mechanisms leading to tail biting are not well understood. When tail biting moves from gentle biting of the tail to inflicting deep wounds, this results in chronic pain and compromised animal welfare. The common method to prevent tail biting is tail docking. The industry is keen to reduce this reliance on tail docking and is seeking proposals that will enable the pork industry to better understand the causative factors leading to tail biting. Timeline < 2 years.

The humane euthanasia of pigs is unfortunately a required practice across all stages of pig production. Farm euthanasia protocols must therefore ensure that selected procedures are able to be conducted as soon as possible, to reduce any undue welfare impacts. These procedures must also take into account stockperson attitudes i.e. the unpleasantness for the stockperson to euthanise an animal - euthanasia procedures should not be objectionable to the person administering the technique. A proposal is sought for the development of Standards for Humane Euthanasia and Stunning of pigs, from birth to sale. Timeline < 1 year.

A continuous welfare improvement program which focuses on the overall farrowing and lactation management of both the sow and her piglets, will have whole-of-life benefits for pigs. Maintaining sow condition during lactation will ensure that the sow will not be required to mobilise greater amounts of body tissue reserves, and be more easily able to maintain physiological homeostasis, providing great benefits to both the sow and her offspring. Program One of the HIAP CRC is addressing the welfare implications of confinement during farrowing and lactation. Therefore proposals should not address the implications of, nor the removal of, confinement during farrowing and lactation. This tender is seeking proposals that enable the pork industry to implement continuous improvement systems for sows and piglets during farrowing and lactation. Timeline < 2 years.
Development of welfare biomarkers
There are a limited number of biomarkers used in animal welfare research to assess pain or stress. We know these are not definitive measures of pain, stress or other indicators of compromised welfare in the pig. To be able to quantify animal welfare, through validated welfare biomarkers, would be a powerful tool that will allow us to assess the impacts of production and various husbandry procedures on pigs. Furthermore, there should not be an assumption that one single biomarker is appropriate to define various aspects of welfare, but rather the development of multiple biomarkers. This tender seeks novel and innovative approaches to address the development of multiple welfare biomarkers to quantifiably assess the welfare of a pig. Timeline < 2 years

Providing environments conducive to positive affective states
To be able to quantify if a pig is in a positive or a negative affective state is difficult without misplaced subjective and emotive views. We need to move away from anthropomorphic views which can complicate how we perceive the welfare of our pigs and will detract from any robust scientific investigations. Environmental enrichment is often seen as the appropriate way to increase positive experiences in food producing animals. Unfortunately, environmental enrichment can often just be the addition of a substrate or objects which, may not lead to long-term positive experiences nor a truly enriched environment. Additionally, an environment which is conducive to a positive affective state is not simply achieved by minimising negative experiences. In order to maximise animal welfare we need to maximise the positive experiences and minimise any negative experiences over the entire life of the animal. This tender seeks novel approaches to identify practices and environments conducive to a positive affective state over a pig’s lifetime. Timeline < 2 years

For information on this priority please contact R&I Manager Robyn Terry

2. Improving herd feed conversion
Seasonal infertility
The summer period can be one of the most challenging times of the year for maintaining reproductive performance as the combination of high temperatures and increased day-length create environmental conditions that can be difficult to cope with and manage. Over time, significant effort has been spent on understanding and ameliorating the effects of seasonal infertility which varies markedly from farm to farm, even within the same area and with similar genotypes. However, every year, seasonal infertility remains an issue and impacts productivity. Nevertheless, we should not consider these issues to be inevitable or unchangeable and there is a need to continue research on this issue. The elimination of seasonal infertility would have a dramatic change in productivity and therefore a transformative impact. This tender seeks to:

- Management interventions, with a focus on the gilt and sow, which reduce the impact or ameliorate seasonal infertility. Timeline < 2 years
**Heat stress**

Not to be confused with seasonal infertility, heat stress negatively affects pig productivity. This is particularly the case when environmental conditions exceed the pigs’ thermal neutral zones during extreme summer conditions. Economic losses caused by heat stress can include: reduced and inconsistent growth rates, poor reproductive performance, increased mortalities and, decreases in carcase composition and value. Advances in the environment including cooling systems and providing cold water as opposed to water at room temperature, has only partially alleviated the negative impacts of heat stress with productivity continuing to decline. Through understanding the underlying biological mechanisms of how heat stress leads to reduced production efficiencies, we can then move toward strategies to mitigate heat stress. This tender is seeking proposals which addresses the following:

- Develop an understanding the underlying biological mechanisms of heat stress. Timeline <2 years.
- Strategies for the mitigation of chronic heat stress. Timeline < 2 years

**Herd feed conversion**

Many factors impact on HFC with one of the biggest impacts being feed wastage and pre-weaning and grower-finisher mortalities. The Pork CRC benchmarking data showing an average HFC of 3.77 and ranging from 3.4 to 4.0. Looking back over 10 years, we can estimate from slaughter numbers and sow herd sizes that born alive has increased by a modest 1.1 (APL data). Taking into account feed wastage being difficult to change and measure, and so too increasing born alive, a reasonable target was set to achieve a maximum HFC of 3.5. Therefore innovative production interventions which contribute to a Target HFC of 3.5 are sought. Timeline < 2 years

For information on these priorities please contact R&I Manager Robyn Terry

**Environmental Management**

1. **Innovation and Uptake of BMP’s**

**Explainer Video-Planning**

The pig industry has over the last few years seen growth in both conventional and outdoor production systems. This growth has been significantly impacted upon by regulatory and planning decisions by the misinterpretation of requirements, shifting and inconsistent regulations and outdated or consolidated guidelines and policies. These requirements fail to acknowledge industry specific risks, modern practices and new technologies and in some cases do not afford the same level of protection as current best management practices in our regularly updated industry guidelines and information. This proposal seeks to develop an ‘explainer’ video that will highlight the broad planning requirements for both conventional and outdoor pig production, highlight the key risks, and identify the science based industry guidelines and tools that can be used by both the producer and decision maker during an assessment process. Timeline <1 year
2. Validation of Industry Environmental Data

**Sludge profiling and determining sludge trigger point**

Sludge handling/desludging is seen as an issue amongst the majority of piggeries with effluent ponds and has been identified as a technical barrier/risk to the adoption of biogas systems. A recent APL project identified gaps that have a significant impact on pond design and extraction systems. Sludge profiling knowledge is essential in designing sludge extraction pipe work and choosing a suitable pump whilst the timing of desludging affects sludge handling, pump suitability and methane losses from covered ponds. This project seeks to generate sludge profiling information to assist producers in designing extraction systems, deciding when to desludge (triggers) and the desludging frequency that will facilitate ease of removal while minimising losses in methane potential. Timeline <3 years

3. New and Emerging Technologies

**Water purification Technology Review**

The Australian pork Industry is striving to develop a closed loop approach to waste management. Linking the effluent management system with technologies that convert the currently underutilised and low valued manure products into innovative products (fertiliser, feed, energy and clean water) may provide higher economic and agronomic return whilst removing handling and transport barriers. This project seeks proposals to conduct a desktop study into water purification technologies currently available that could be integrated into the closed loop system for the Australian pork industry. The study must consider scalability and cost benefit. Timeline <1 year

For information on these priorities please contact R&I Manager Janine Price

**Food Safety, Biosecurity & Quality Assurance**

1. Food Safety

**Rodent Control Strategies**

Rodents and other wildlife play a key role in the transmission of pig and zoonotic diseases. An effective disease barrier system cannot be achieved or maintained without appropriate rodent control. Few studies have been published to support endeavours by the Australian pork industry to understand key issues and manage any risks associated with the use of rodenticides to control rodent populations in piggeries. Further information is needed to determine critical control points that must be managed to mitigate contamination and reduce risk to non-targeted species. In addition, alternative strategies for on-farm rodent control would provide extra support to a robust integrated pest control strategy. The proposals should address:

- Identification of critical control points that must be managed on-farm to mitigate risks associated with rodenticide use.
- Provision of alternative and effective control strategies to manage rodent populations in piggery environments.
- Establish MRLs for second generation rodenticides.
- Develop communication strategies for rodent control.

Timeline <2 years

For information on this priority please contact R&I Manager Pat Mitchell
2. Exotic Disease

Exotic Disease Preparedness

Animal Health Australia has estimated that 1500-2000 pig holders are outside of the PigPass NVD system; connections with this group of producers should be strengthened. Strategies implemented from an Animal Biosecurity CRC project (2005-2008) in relation to disease detection and swill feeding by smallholders should be reviewed to determine whether the project’s recommendations have been implemented and identify the gaps that still need to be addressed. APL seeks to increase its engagement with small-holders with the development of targeted extension material to specifically assist this group of producers.

APL also routinely responds to enquiries from Department of Agriculture and Water Resources (DAWR) made by trading partners on the status of the Australian pig herd in relation to the presence of a number of exotic diseases. However, the Australian industry does not have active (as opposed to passive or opportunistic) surveillance data that can be used to demonstrate, and defend, Australia’s freedom from exotic diseases.

The proposals should address:

- Verification of compliance of peri-urban and regional smallholders in property to property movement reporting.
- Program co-ordinated by APL which ensures samples are submitted by pig vets during routine disease investigations are also submitted for diagnostic testing for a range of exotic diseases. Program must include establishment of a database, to be securely held by APL, to support disease-free claims. Timeline <2 years

For information on this priorities please contact R&I Manager Pat Mitchell
**Relationship to the Core Objectives of APL**
These research initiatives target APL’s Core Objectives. More information can be found in APL’s Strategic Plan 2015-2020

**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 be:

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);
3. A 10-slide PowerPoint presentation summarising the project and key outcomes; and
4. Scientific papers, conference presentations, producer talks and trade articles as appropriate and approved by APL.

**Timetable for the Current Tender**

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday 4 May 2016</td>
<td>Call made for tenders addressing research priorities</td>
</tr>
<tr>
<td>Thursday 2 June 2016</td>
<td>Deadline for research proposals to be received by APL</td>
</tr>
</tbody>
</table>
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.

Contracts will be issued using APL’s standard R&D Agreement which has been assessed by our legal
advisors. On that basis, negotiation of terms will not be entered into. A copy of the APL R&D
Standard Research Agreement can be found on APL’s website.

Lodgement of Response
Applicants wishing to respond to this Call for Tenders should contact the relevant APL Research &
Innovation Manager (refer to priority and below). All submissions are to be lodged as full
proposals using the “Research & Development Application” in PigNet
(https://www.pignet.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 PigNet in the Budget section
under “Contributions by others” and that the relevant organisation has been contacted.

Research and Innovation contacts
Manager, Production and Welfare
Dr Robyn Terry
Robyn.terry@australianpork.com.au
02 6270 8820

Manager, Environmental Management
Ms Janine Price
Janine.price@australianpork.com.au
02 6270 8827

Manager, Production Stewardship
Dr Pat Mitchell
Pat.mitchell@australianpork.com.au
03 5488 2306

Manager, Product Integrity
Ms Heather Channon
Heather.channon@australianpork.com.au
0423 056 045

Manager, Technology Transfer & Adoption
Ms Ashley Norval
Ashley.norval@australianpork.com.au
02 6270 8823