AUSTRALIAN PORK LIMITED

CALL FOR TENDERS

2014/15 R&D PROGRAM

April 2014
**Background**

Australian Pork Limited’s (APL) six Specialist Groups met in February 2014 to determine research, development, technology adoption and industry capability priorities for funding in 2014/15. The Specialist Groups are comprised of expert participants from industry, research providers 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 2014/15 across the APL R&D portfolio, including:

- Genetics, Reproduction & Welfare
- Nutrition, Health & Physiology
- Industry Capability & Technology Transfer
- Environmental Management
- Food Safety, Biosecurity & Quality Assurance

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

**Genetics, Reproduction and Welfare**

1. **Improving Reproductive Efficiencies**

Reducing involuntary culling of lower parity sows will have a significant impact on reducing the cost of production. But sow retention is only one facet of improving reproductive efficiencies. Management of the sow prior to and during lactation must take into account many factors. Failing to satisfy the sows’ requirements as regards animal husbandry will impact on her natural ability to care for and raise her litter and her successful re-breeding. Studies seeking to address these issues should consider:

- Addressing risk factors associated with premature sow culling and mortality;
- Pre-natal influences affecting the dam which impact on survivability and growth of piglets;
- Development of a simple means of measuring muscle catabolism (body protein loss) in gestating and lactating sows;
- Interventions to improve mated gilt retention rate, and
- Interventions to reduce the impact of seasonal infertility.

2. **Breeding Females**

Regarding the pig slaughter generation, female offspring are more desirable as issues with meat taint are greatly reduced. Currently, a vaccine against boar taint exists and is used to not only to reduce taint but also as a behavioral modifier reducing riding and aggressive interactions between young boars. Such products however are not accepted across all supply chains or by all members of the community and their use remains limited. Proposals seeking to address this issue of breeding more females should:

- Develop a protocol whereby it will be possible to effectively and economically reduce the number of boars born in a litter, while still maintaining total litter size.

3. **Welfare Interventions**

Animal euthanasia is a sensitive issue in the pig industry. On occasion, methods deemed suitable for painless termination may not appear so to the uninitiated. In addition, many stockpeople struggle to euthanize a pig that they may have spent time and energy caring for and treating. Proposals addressing this area should:

- Provide practical and humane pig euthanasia protocols that could be tailored for individual farms based on pig ages and employee beliefs.
Ecoshelter management
Over the last decade or so, the use of eco-shelters has increased as they are perceived to be welfare friendly (as the pigs are weaned onto straw or rice hulls), and the shelters are able to house large numbers of animals at a relatively lower cost compared to conventional housing. Most welfare research has focused on conventional housing systems. Future welfare research should also focus on the management of pigs in these large groups as they present challenges that may not occur in conventional housing systems. The major outcome from proposals in this area should be:
▪ Protocols to maximise welfare of pigs reared in ecoshelters.

Novel Pain Markers
To meet accepted general principles for animal welfare there is a need to modify, prevent or minimise animals’ perception of pain following necessary human interventions. Pain research is a highly active area, particularly in biomedical science. As a consequence, the understanding of pain and its mechanisms are rapidly expanding, with a shift away from solely neuronal hypotheses to neuroimmune mechanisms of pain. It is timely with this shift in understanding and increasing body of pain research to re-assess if there are novel approaches that can be used to more objectively quantify pain in animals. Proposals for this 12 month project must include:
▪ A systematic literature search, which may include studies in humans and or/animals, for novel markers of pain. The proposal should also include a prioritised list of potential research ideas for mitigating pain in animals. It is also anticipated that proposals should include a plan for publication in a suitable peer-reviewed journal.

4. Community Engagement
Intensive pig production is a controversial issue for some sections of the community. Community concerns can impact on pork producer’s social licence to operate and may impact on consumer’s willingness to purchase pork. It is therefore critical that the Australian pork industry ensures that it understands the community’s attitude to welfare aspects of pork production and keeps abreast of changing attitudes and consumer responses. The successful project should:
▪ Incorporate an investigation to determine the level of community understanding of industry concerns and definitions i.e. develop an understanding of the consumers’ knowledge base as regards the pig industry.

One of the issues that in the future may impact on the industry is the push for provision of enrichment substrates and devices. Pigs are by nature curious animals and some groups have advocated that environmental enrichment/behavioural requirements be provided for all pigs. The commissioned project should:
▪ Determine the feasibility of provision of enrichment substrates as well as develop recommendations for provision of enrichment substrates for growing pigs.

Nutrition, Health and Physiology

1. Optimising Gilt Progeny Performance
Evaluating the cost incurred by the underperforming gilt progeny and strategies to minimise health and performance issues will be the core program of SG3 for the next 3 year period. The outcomes of this transformational priority are to optimise the gilt progeny performance by reducing variation and increasing MOFC for the gilt herd. This tender is seeking proposals to:
▪ Quantify the level of gilt progeny variation
▪ Investigate gestational, pre-lactational and lactational interventions to improve gilt progeny performance
▪ Weaning interventions that specifically target gilt progeny with outcomes potentially of benefit to all progeny
▪ Management interventions focussing on the impacts of weaning age and dam gestation length as well as early detection of stress and disease
2. Disease Expression
Improving the health of the herd leading to an improvement in feed efficiency is a concept which intuitively makes common sense however in reality no herd will be pathogen free. The considerable impact of mortality and disease on the feed efficiency of the herd needs to be understood and the contributing factors determined in order to develop strategies to achieve the objective of a reduction in post-weaning mortality by 1 percentage unit. This tender is seeking proposals to:
- Characterise factors effecting disease expression and growth aspects
- Investigate strategies to reduce mortality of the grower-finisher herd by 1 percentage unit
- Interactions of respiratory pathogens on immune response, carcase quality and carcase yield

3. Feed Efficiency Innovations
At a recent SG3 review meeting in 2013 it became apparent that variation in weaner weight and grower-finisher weight was a major source of production losses. As birth weight is highly correlated to weaning weight, reducing the variation in time to slaughter of the light and heavy weight piglets is difficult. This tender is seeking proposals to:
- Investigate alternative and innovative technologies to manipulate growth rate and feed efficiency at all stages of the production system, including pre-natal, gestation, farrow-wean and grower-finisher stages.

Industry Capability and Technology Transfer
1. An Application for Smartphones and Tablets to Access APL Research Resources, Materials and Updates
R&D outcomes need to be disseminated through a range of channels to promote rapid and wide spread adoption. In response to the shift to new and emerging communication technologies, APL recognises modern IT and social media have an increasing role and place in the world of agricultural extension, particularly in reaching various segments of industry. This is particularly the case for stockpeople, a segment which has traditionally missed out on R&D information yet they are integral in its implementation. Proposals are being sought for the development of a cross-platform Smartphone/Tablet Application, with information storage and decision assist ‘tool’ capabilities, for the Australian pork industry. The App should allow users to easily access a research resource library of videos, manuals, factsheets etc, have diagnostic/decision tree process capabilities, and receive push notifications. Simplicity is key and the best placed consultant will understand the importance in keeping the end users in mind.

Environmental Management
1. Pondless Treatment Systems
Traditional effluent management systems involve an anaerobic pond and associated storage ponds prior to evaporation or reuse of liquid/solids on site. The pork industry has explored the capture and use of renewable energy (biogas) on farm, mostly through covered anaerobic ponds, but is seeking an alternative holistic or closed loop approach to effluent management that integrates the waste, energy and water recovery aspects without the need for effluent treatment ponds. Projects are sought to investigate the individual or integrated technologies such as solid separation, energy recovery, nutrient recovery and water cleanup that don’t require ponds as the primary treatment option.* This project may involve collaboration with meat processing and other agricultural industries.

2. Pelletisation/Nutrient Extraction
Piggery liquid effluent and solids contain significant amounts of essential plant nutrients; however, these nutrients are often in a relatively dilute form, being mixed with large volumes of water which is costly and impractical to transport off-farm. Furthermore, raw liquid effluent and solids do not generally provide balanced nutrient requirements for agricultural crops. Technologies to extract the nutrients for processing into more concentrated, balanced fertiliser-type products have the potential to value–add piggery by-products, resulting in products that have a higher economic value which are
easier to handle and transport, with improved nutrient availability for plant uptake. Proposals and pilot type studies are being sought to enhance the industry’s knowledge of technologies suitable for the extraction and recovery of nutrients from effluent and manure. * This project may involve collaboration with meat processing and other agricultural industries.

3. **Energy Audit Program**

Recent results of an APL energy efficiency program have shown considerable variation in energy use between piggeries of similar production types. With the continual rise in energy prices (minimum of 25-40% across pig producing areas) and an industry goal of reducing resources and GHG emissions, there is the need to identify ways of reducing producer’s energy consumption and subsequent bills. This proposal seeks to develop and carry out an energy audit program for the Australian pork industry that can identify, quantify and suggest efficiency strategies to reduce energy use on site.

4. **Sludge Profiling and Determining Sludge Trigger Point**

Sludge handling/desludging is seen as an issue amongst the majority piggeries with effluent ponds and has been identified as the single biggest barrier/risk to the adoption of biogas systems. A recent APL project has evaluated existing sludge handling and management practices commonly used in other industries, in addition to generating some valuable sludge rheology data. A cost benefit analysis is also being carried out to assist producers in identifying appropriate sludge pumping equipment. From this work it was identified that gaps exist that have a significant impact on pond design and extraction systems. Sludge profiling knowledge is essential in designing sludge extraction pipe work and maximising pump use whilst knowing when to desludge is required to improve handling, pump suitability and reducing the loss of methane in covered ponds. This project seeks to generate complimentary information to assist producers in their decision making in relation to sludge profiling, removal trigger levels and desludging frequency to facilitate ease of removal while minimising losses in methane potential.

**Food Safety, Biosecurity and Quality Assurance**

1. **Major Review of APIQ®**

APIQ® Certification Policy requires a Major Review of the APIQ® program every four years; including a review of Standards, Policies, System, Documentation and Administration with the next Major Review scheduled for 2014/15. The Major Review is important to the program and industry and must be completed to maintain its credibility, integrity and robustness with all stakeholders. This year’s review includes a benchmark analysis of APIQ® against other domestic and international agricultural QA programs and Standards. It will identify impediments to uptake and draw on the findings and outcomes of the recently completed; ‘Third Party Evaluation – Outsourcing Management and Administration of APIQ®’ Project No. 2013/2128 and the ‘Review of Pork On-Farm HACCP Plan APIQ®’ Project No. 2013/2128.

A suitably experienced and qualified consultant/mediator is required to work with APIQ Management (APIQM) to:

- Identify, engage, coordinate and facilitate stakeholder working groups and committees to review specific aspects of APIQ®
- Conduct desk top reviews of APIQ® documents, templates and records
- Review opportunities for improvement identified in existing reports and make recommendations for implementation
- Conduct a benchmark analysis of APIQ® against other domestic and international agricultural QA programs
- Provide reports of findings, opportunities for improvement and recommendations from all review activities as listed below

The successful applicant will provide:

- Records of attendance and participation in consultation activities
- Minutes and records of discussions and all feedback received
- A benchmark analysis
- A Final Report outlining:
  - Opportunities for Improvement in APIQ®
  - Recommended revisions and amendments to Standards, Policies, Documentation, Management and administration of APIQ®
  - Be involved in the development of revised documentation for presentation and approval

**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 2010-2015.

**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**

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<th>Date</th>
<th>Action</th>
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<tr>
<td>Wednesday 30th April 2014</td>
<td>Call made for tenders addressing research priorities</td>
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<tr>
<td>Wednesday 4th June 2014</td>
<td>Deadline for research proposals to be received by APL</td>
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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 R&D 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 below). All submissions (except for Industry Capability & Technology Transfer) are to be lodged as full proposals using the “Research & Development Application” in PigNet (https://www.pignet.com.au/). Proposals addressing Industry Capability & Technology Transfer priorities should use the “Award/Scholarship Application”. 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 should ensure that this detail is included in PigNet in the Budget section under “Contributions by others”.

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