

Summary - 2024 Green Paper¹

Context:

The need for the Australian pork industry to continually improve and advance overall research strategy and outcomes through an industry-informed, and more cohesive and coordinated, research and development (R&D) program was recognised by the Boards of APL and APRIL in 2023. Through the formation of a Pork Industry Insight Panel (PIIP), a workshop was held in August 2023 and publication of an inaugural Green Paper occurred in April 2024.

The 2024 PIIP met in November 2024 and comprised APL and APRIL Board members and staff together with a range of invited producers, processors, researchers and research providers, and industry personnel. The PIIP worked through a structured evaluation comprising an environmental scan of the industry, identification of the key deliverables industry is seeking from any investment in R&D, i.e., Growth, (being) Disease-Free, Progress Social Licence, Profitability and Sustainability. To ensure the PIIP conducted a thorough overview of the entire pork value chain, seven segments (Genetics, Farms, Primary Processing, Secondary Processing, Tertiary Processing, Wholesale and Export, and Retail) were assessed in a matrix according to 19 disciplines (Health, Nutrition, Management, Housing, Biosecurity, Environment, Welfare, Transport and Freight, Quality, Food Safety, Yield, People, Market Access, Social Licence, Information and Insights, Communication, Technology and Marketing).

Most attention was focused on the Genetics and Farms segments, with the disciplines receiving most attention being Health, Nutrition, Management, Housing, Biosecurity, and Welfare, and those with the least attention being Utilities, Quality, Market Access, Social Licence, Information and Insights, Communication, Technology, Marketing. In total, across all segment x discipline combinations, 196 challenges, 136 opportunities, and 24 targets were identified. The numbers were substantially fewer in the post farm-gate segments than for the pre-farm gate segments.

Key discussion points:

There was excellent engagement and interaction amongst the 2024 PIIP with an overarching sense of positivity about the current state of the Australian pork industry. Nonetheless, there was some divergence of opinion relating to the most appropriate mechanism(s) to further understand pig genetic improvement and alternative designs for farrowing accommodation. For the former, it

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was recognised that Australia has a genetic lag relating to sow productivity when compared to other countries but, conversely, has world-equalling wean to finish performance and efficiency. Matters related to what could be gained from hybrid vigour using existing Australian genetics, what advanced genetic technologies may be available to improve productivity, the need to consider the underlying total cost of production relative to profitability with greater litter sizes and not compromising the high-health herd status that currently exists, were all mentioned.

The PIIP resolved that greater understanding of farrowing systems with different spatial footprints, underpinned with robust objective assessments of sow and piglet welfare and performance data, was desirable. Discussions pertaining to pig care and wellbeing reinforced the need for evidence-based enrichment options for use at all phases of production to improve welfare, pain management and avoidance, and suitable biomarkers for positive welfare attributes.

The negative impacts of disease on productivity especially in relation to the lack of new/existing vaccines and regulatory hurdles preventing them from the market, reducing the industry's reliance on antibiotics in production all systems, and stronger antimicrobial stewardship were all raised. Emergency animal disease (EAD) preparedness and the need to be continually working with Federal and State Government agencies to maintain operational continuity in the event of an EAD incursion was reiterated. Maintaining high-health-status genetic nucleus herds in the light of any biosecurity breach/EAD event that may jeopardise the future of the gene pool, and hence the viability of the Australian industry, was deemed not-negotiable.

Discussion in the PIIP also focussed on the environment and particularly emissions, and that the industry requires a proactive approach to carbon-counting methodologies and calculations and more options for reducing emission outputs through all parts of the value chain. Promoting Australian fresh pork as a clean and green, low-emissions source of protein and nutrients for consumers was discussed. The contributions by the Australian pork industry to net food and protein supply, overall human well-being, and the communities in which the industry operates, were also discussed.

Issues of access to capital and building infrastructure were considered, with the PIIP reiterating the many challenges faced across the entire value chain by the lack of labour, especially skilled labour in middle to senior management roles, and a looming inter-generational gap in skills and know-how. In the tertiary research sector, the PIIP talked about a general disconnect between research institutions' overall strategies/directions and the needs for R&D and education/training specifically aligned to those of the pork industry. It was agreed that developing a more efficient, cohesive and better directed R&D (and education and training) program between APL, APRIL and industry would assist in bridging the gap between research providers and the needs of industry.

The ongoing need to address the cost of production through feeding and nutrition was deliberated, with issues including lowering feed costs, improving carcass and growth efficiency, exploring the use of economically viable alternative raw materials, rapid detection/quantification of feed wastage and better/improved feed bin/silo allocation of feeds and their management being mentioned.

In the post-farm gate segments, avoiding any possibility of foreign object contamination in carcasses was given strong endorsement. The PIIP commented on the need for a national program for

monitoring the effectiveness of stunning, including CO₂ stunning, in all abattoirs. Discussion in secondary and tertiary processing centred on e.g., cold-chain concerns, the recognition of supply and demand risks linked to new pharmaceutical technologies (5th quarter), and reducing energy and water costs. For retail, achieving a greater share of domestic meat consumption in Australia was paramount, for example by creating more and higher value-added products, more permanent pork menu items in quick service restaurants, and the development of new or improved smallgoods products using Australian pork.

Considerable discussion occurred as to how traditional and (or) generative artificial intelligence (AI) methodologies could be harnessed to capitalise on the potential value of existing or future datasets for more efficient and profitable pig management and forecasting/prediction, e.g., better ways of understanding industry supply and demand. This extended into how AI could be used to e.g., reduce piglet mortality/enhance piglet and sow welfare at farrowing and allow for welfare assessments at critical points such as farrowing, lairage, and slaughter.

The 2024 PIIP were also asked to highlight other issues/matters these under Research, Extension, Commercialisation, Education and Training, and Other. This exercise reaffirmed the general concerns about the current state of the Australian R&D ecosystem (e.g., adequacy and number/availability of research facilities, research staff and funding), the need to revisit, modify and strengthen extension and communication activities for the benefit of the industry, further opportunities for commercialisation, and a focus on renewed efforts in education and training, particularly in the tertiary sector, to ensure a new generation of people interested and passionate in working with pigs and committing to the pork industry can occur.

Some of the challenges, opportunities and targets identified in the 2024 Green Paper have already/are likely already being addressed by private companies and organisations, some of which will be commercial-in-confidence and hence unavailable to the wider pork industry. In recognition that R&D and education and training other than that supported by APL and APRIL occurs, e.g., R&D done by producer groups and State Government compensation funds, Australian Government supported projects, this year's Green Paper compiled a database of other publicly available R&D and education and activities occurring in Australia. The Chief Scientist will update and maintain that repository and it will become a standard feature of future editions of the Green Paper.

The 2024 Green Paper contains some key messages and outcomes that are not all related to R&D and education and training activities, e.g., with applications to extension and communication and adoption, policy, marketing. It is anticipated that the 2024 Green Paper can inform and guide future APL and APRIL activities in such areas.

The 2024 Green Paper and this Summary have been prepared by the Chief Scientist for the Australian Pork Industry (a jointly funded role between APL and APRIL), Professor John Pluske, as an impartial, non-binding, priority-free overview of the state of the entire value chain of the Australian pork industry as of November 2024.

Research Priorities:

From the 2024 Green Paper, the following major research priorities have been identified:

1. **Pig Genetics** – working to enhance the rate of genetic improvement in the Australian pork industry while maintaining current or better health status.
2. **Pig Care and Wellbeing** – providing novel tools or approaches to support continuous improvement and assessment of pig care and wellbeing and demonstrate the welfare credentials of Australian pork.
3. **Pig Health and Antimicrobial Stewardship** – delivering novel technologies and approaches to mitigate risks and production impacts of infectious diseases, enhance emergency animal preparedness, and reduce antibiotic use.
4. **Environment, Human Capacity and Society** – delivering practical and meaningful tools to assess environmental impact, to identify practices to improve sustainability, and build a resilient and skilled rural and regional workforce.
5. **Pig Processing** – ensuring a sustainable processing sector for the future.
6. **Feeding and Nutrition** - making positive contributions to lowering the overall cost of production.
7. **Retail** – achieving a greater share of domestic meat consumption in Australia.
8. **Data and Information** - exploiting the benefits of technologies with existing and future information for more efficient and profitable pig production, processing, and understanding of market trends.