Australasian Pork Research Institute Ltd APRIL

PROJECT SUMMARY

Project Number and Title: 6A-105: *Food Waste to Pig Feed – Safe and Bio-secure*

Project Leader: Dr Valeria Anna Torok (South Australian Research and Development Institute).

Project Participants: Dr Byrony Tucker; Dr Reza Barekatain (South Australian Research and Development Institute).

Aims and Objectives: This project aimed to identify food safety, biosecurity risks, and economic feasibility of converting mixed human food waste into safe pig feed.

Method:
A regional techno-economic analysis (TEA) was conducted across five major pig producing regions in Australia (south-eastern Queensland, southern New South Wales, northern and western Victoria, south-eastern South Australia and south-western West Australia) to assess the feasibility of using mixed human food waste in pig diets. The TEA examined both wet and dry feeding systems to evaluate the practical and economic viability of converting food waste into a bio-secure feed ingredient compared with a standard grain-based diet.
Alongside the TEA, a pilot study was undertaken with weaner pigs fed either a 100% standard commercial diet (n=16) or an 80% standard diet plus 20% processed food waste (n=16). Food waste was macerated, heated to 100°C, dewatered, dried and milled (<3mm) before being tested for nutritional and microbial quality. Over 28 days, pig growth, feed intake, and health were monitored, while faecal samples were analysed for nutrient digestibility, gut microbiota were profiled, and pork loins assessed for meat quality (tenderness, colour, cooking loss). Statistical analysis was used to compare treatment outcomes.

Key Findings:

1. The TEA identified approximately **373,000 tonnes per year of untapped food waste** from commercial and industrial sources across five major pig producing regions in Australia.

2. Wet feed production was found to be feasible in all areas investigated, with dry feed ingredient production being feasible only on the eastern seaboard.

3. Although dewatering and drying feed waste incurs higher costs, the resulting feed ingredient is still cost competitive with standard pig feed (70% wheat, 30% canola) in states with higher feed waste volumes (NSW, QLD and VIC).

4. The four-week weaner trial found **no significant differences** in performance or faecal amino acid digestibility of weaner pigs fed a 20% mixed food waste additive compared to those fed only a commercial weaner diet. Additionally, no differences were observed between objective meat quality assessments, gut health, and intestinal microbiota between the two treatment groups.

Applications to Industry:

Australia currently lacks the legislative framework to support uptake by both the food and livestock industries. Safe implementation will therefore require the development of policy and legislative frameworks.

This work has been supported by the End Food Waste Cooperative Research Centre whose activities are funded by the Australian Government's Cooperative Research Centre Program.