RETASTE Conference Abstracts
RETASTE-AAF-1265-In-person Oral
Rethymno, September 16-18, 2026
© Author(s) 2026 CC BY 4.0 License
DOI:10.5281/zenodo.23678233

Feasibility of Producing a Treated Mixed Human Food Waste Feed Ingredient for the Pig Industry

Valeria Torok[1,*], Bryony Tucker[2], Kat Heinrich[3], Mark Rawson[3], Kristian Le Gallou[3], Minerva Bailey[3], David Henman[4], Reza Barekatain[5] and John R. Pluske[6]

[1]*Food Sciences, South Australian Research and Development Institute, Urrbrae, SA 5064, Australia. School of Animal and Veterinary Sciences, Adelaide University, Roseworthy, SA 5371, Australia*
[2]*School of Animal and Veterinary Sciences, Adelaide University, Roseworthy, SA 5371, Australia. Pigs and Poultry, South Australian Research and Development Institute, Roseworthy, SA 5371, Australia*
[3]*Rawtec, Somerton Park, SA 5044, Australia*
[4]*JBS Australia, Corowa, NSW 2646, Australia*
[5]*Pigs and Poultry, South Australian Research and Development Institute, Roseworthy, SA 5371, Australia. Present address: University of Sydney, Brownlow Hill, NSW 2570, Australia*
[6]*Australasian Pork Research Institute Ltd., Willaston, SA 5118, Australia. Present address: The University of Melbourne, Parkville, VIC 3010, Australia*

ACCEPTED

Abstract

Livestock can convert unavoidable food waste into valuable animal protein (Torok et al., 2022). However, restrictions apply to what is legally allowable to mitigate the risk of emergency animal disease incursions. In Australia, mixed human food waste containing meat, or which has come into contact with meat, is defined as prohibited pig feed. This is not permitted to be fed to pigs unless rendered, or under jurisdictional permit has undergone cooking processes (ensuring a core temperature ≥100°C for a minimum of 30 min, or equivalent is reached) and subject to compliance verification (AHA, 2023). However, Japan has developed a successful mixed human food waste (containing animal product) to livestock feed industry, which is regulated and encouraged by national policy (zu Ermgassen et al., 2016). This study aimed to determine the techno-economic feasibility of utilising treated mixed human food waste into a pig feed ingredient in five key Australian pork production regions, and to determine the impact of feeding treated mixed food waste on pig performance. The techno-economic analysis considered both wet and dry feeding systems in the production of a feed ingredient as compared with a standard wheat-based diet. Approximately, 373,000 tonne/pa of untapped mixed food waste were identified from commercial and industrial sources which could support up to six food waste to feed manufacturing facilities of varying scales. Wet feed production was found to be technically and economically feasible in all regions investigated, with dry feed ingredient production being feasible in three of the regions investigated. Thirty-two male weaner pigs (age 21.5±0.3 days) were randomly assigned to either an 'Experimental' or 'Control' meal diet (n=4 pig/pen; n=4 pens/diet) and fed on an *ad libitum* basis for 32 days. The Experimental diet contained 20% mixed human food waste (fruit and vegetables, juice bar pressings, bakery products, meat trimmings and seafood by products sourced from a supermarket and processed, heat treated and dried into a feed ingredient). The Control diet contained no food waste and was wheat-based. Data on performance, faecal amino acid digestibility and ileal contents were collected for comparison between diets. There were no

significant differences (P>0.05) between start and end liveweights, average daily gain, average daily feed intake, feed conversion ratio, faecal amino acid digestibility and ileal microbiota between diets. This study demonstrated no detrimental impacts of feeding treated mixed food waste at 20% inclusion on weaner performance, faecal amino acid digestibility and ileal gut health. Utilising the identified volumes of mixed food waste for pig feed could lower the demand for conventional grain-based feed ingredients by 6%, and reduce food waste going to landfill by 5%. Further research is required to explore long-term effects of feeding treated mixed food waste on pig production at a commercial scale.

Keywords: Ecofeed, porcine, techno-economic analysis, production parameters

References

Animal Health Australia, 2023. Prohibited Pig Feed Compliance and Awareness. Retrieved on 14 April 2025 from https://animalhealthaustralia.com.au/prohibited-pig-feed-compliance-and-awareness/

Torok, V.A., Luyckx, K., Lapidge, S., 2021. Human food waste to animal feed: opportunities and challenges. Animal Production Science 62, 1129-1139. https://doi.org/10.1071/AN20631

zu Ermgassen, E.K.H.J., Phalan, B., Green, R.E., Balmford, A., 2016. Reducing the land use of EU pork production: where there's swill, there's a way. Food Policy 58, 35-48

Acknowledgments: The work was supported in part by the Australasian Pork Research Institute Limited and the End Food Waste Cooperative Research Centre whose activities are funded by the Australian Government's Cooperative Research Centre.

ACCEPTED