Project Leader: Stephen Wiedemann

Project Participants: Eugene McGahan, Caoilinn Murphy

Aims and Objectives :
1. To benchmark greenhouse gas emissions from Australian pork production using life cycle assessment
2. To determine emission hotspots in the production system and supply chain
3. To determine the mitigation potential of alternative manure management systems

Key Findings
- This study provides the first benchmark of greenhouse gas emissions from Australian pork across the full production system. This included emissions from feed production, housing, manure management and meat processing. Average impacts at the farm-gate are 3.6 kg CO2-e / kg live weight pork, or 6.36 +/- 1.03 kg CO2-e / kg wholesale (processed) pork.
- There is a broad range of impacts between different sized operations and different housing /manure management systems.
- Substantial opportunities exist for industry to reduce emissions. I.e.:
- Biogas capture with heat and power generation resulted in a 31-64% reduction in GHG from conventional housing.
- Deep litter housing resulted in a 38% reduction in GHG compared to conventional housing.
- The lowest modelled emissions from Queensland pork production (1.5 kg CO2-e / kg LW) were similar to Queensland chicken meat production (1.3 kg CO2-e / kg LWi)
- When manure management systems are the same, 88% of the variability in GHG can be predicted from differences in herd FCR, demonstrating that FCR is the most important production related indicator of GHG emissions.
- Installation of covered anaerobic ponds or digesters across 50% of the industry is expected to result approximately 30% lower GHG from pork.

Application to Industry
- Most emissions arise from manure management, followed by feed, housing and meat processing.
- GHG emissions can be reduced by changing housing / manure management systems – with the biggest improvements achieved by installing biogas and combined heat and power.
- Deep litter housing and outdoor production will also generate lower GHG than conventional housing.
- Apart from manure management, feed conversion ratio is the most important production parameter that influences emissions, and this can be used to predict GHG from conventional housing systems.

---

[i] Comparison study – Wiedemann et al. 2016 – resource use and environmental impacts from Australian chicken meat production, Journal of Cleaner Production, in press.