

PigGas Report 20 – 412 sow, farrow to finish, conventional and deep litter piggery, WA.

December 2013



Production details

This is a conventional, continuous flow, farrow to finish piggery, with breeding and growing pigs on one site housed in either naturally ventilated sheds and/or straw based eco-sheds. Dry sows are group housed in conventional slatted floor pens for five weeks and then transferred to group housing in straw-based eco-sheds for the remainder of gestation. The farrowing and finisher sheds have underfloor flushing and the weaner sheds are straw-based eco-huts. The unit is a multiplier site for a breeding company and sells F1 gilts to other production units at around 95 - 105kg LW. Grandparent gilts and boars are purchased for the farm multiplier breeding program. The farm also has a small market for weaners and grower type pigs and markets bacon pigs at around 95 - 105 kg LW.

Feed consumption

All feed is prepared off-site and delivered to the farm with total consumption being around 2,330 tonnes per year.

Sales/Tranfers

Around 180 replacement gits and boars are introduced onto the unit each year with 1,144 F1 gilts sold as breeding stock. Other sales include 136 culled sows and boars, 708 weaners, 40 growers and 7872 bacon weight pigs – a total of 9,900 pigs.

Waste management systems

Manure is flushed from the dry sow, farrowing and finisher sheds in underfloor drains to a collection sump. From there, effluent is pumped over a run-down screen for solids separation. The liquid effluent is transferred to an anaerobic effluent pond and then runs to an evaporative pond. Spent litter from the dry sow and weaner shelters are removed after each batch of pigs.

Manure reuse systems

Effluent from the anaerobic holding ponds is used for flushing the piggery. Evaporation is used to remove the liquid effluent from the ponds, though if required, is irrigated onto pastures for sheep and cattle grazing.



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Solids from the run-down screen are removed from the site by a compost operator. Spent litter from the eco-sheds is also removed off-site on a regular basis.

On-Farm Baseline Emissions

The current on-farm baseline emissions for this piggery was **1,659 tonnes CO₂-e/year** with an emissions intensity of **2.30 kg CO₂-e/kg HSCW**.

On-Farm Emissions Reduction Scenario

This piggery is quite efficient with good feed efficiencies and relatively low levels of feed wastage. Energy consumption is quite low with supplementary heat only used in the farrowing rooms. Also there is minimal spreading of liquid effluent on the property and all solid manures (separated solids and spent litter) is removed from the site, so there is little potential for soil N₂O volatilisation, leaching or runoff.

It is unlikely that the potential to capture and use biogas to generate electricity at this site would be economic, though a site-specific feasibility evaluation would clarify this potential.

However like most conventional piggeries with anaerobic ponds, the majority of emissions on this piggery come from the release of methane along with other odorous emissions. An emissions reduction scenario was undertaken to calculate the reduction in GHG emissions by covering the anaerobic pond and flaring the biogas captured and released. This scenario would also considerably reduce odour emitted from the pond.

This scenario reduced on-farm emissions at the piggery from **1,659 to 831 tonnes CO₂-e/year** which is equivalent to an emissions intensity reduction of **50%** from **2.30 to 1.15 kg CO₂-e/HSCW**.



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Annual Greenhouse Gas Emissions Profile (calculated using PigGas)

Emissions	Current Emissions Baseline (kg CO ₂ -e/yr)	Reduction Scenario (kg CO ₂ -e/yr)
Pre-farm		
Grain	582,597	582,597
Milling & delivery	111,859	111,859
Pig freight	5,631	5,631
Straw & bedding	6,000	6,000
Total Pre-farm	706,086	706,086
On-farm		
<i>Fuels & energy</i>		
Purchased electricity	64,800	64,800
Fuel - stationary		
Fuel - transport	23,610	23,610
<i>Enteric CH₄</i>	84,201	84,201
<i>Manure management</i>		
MMS CH ₄	1,011,401	141,986
MMS – direct N ₂ O	286,713	327,514
MMS – Atmos. deposition N ₂ O	105,907	71,570
<i>Waste applied to soil</i>		
Soil – direct N ₂ O	65,687	94,168
Soil – leaching & runoff N ₂ O	16,455	23,589
Total On-farm	1,658,774	831,437
Post-farm		
Pig freight	24,575	24,575
Meat processing	294,465	294,465
Exported manure	112,249	105,409
Total Post-farm	431,288	424,448
Dressed weight sold - HSCW (kg/yr)	721,950	721,950
Carbon footprint	(kg CO₂-e / kg HSCW)	(kg CO₂-e / kg HSCW)
Pre-farm	0.98	0.98
On-farm	2.30	1.15
Post-farm	0.60	0.59
Total	3.87	2.72



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