

PigGas Report 30 – 420 sow, farrow to finish, conventional and deep litter piggery, SA.

May 2014



Production details

This is a medium sized family owned conventional and deep litter piggery on two sites. Being a closed herd, all breeding sows are selected from within the herd and artificially inseminated. The breeding site comprises three conventional naturally ventilated sheds with underfloor effluent drains. These sheds house lactating sows and dry sows held for mating. There are also three deep litter shelters housing dry sows. Piglets weaned at the breeding site are transferred to the grow-out site where pigs are grown from 3 weeks to 21 weeks of age in 16 deep litter shelters.

Feed consumption

The majority of cereal-based feed ingredients are purchased off-site and milled and mixed into rations on-site. Total feed consumed at 2,001 t/yr.



Sales/Tranfers

Finisher pigs are sold from the grow-out site at an average of 90 kg live weight. 6,184 pigs/yr are sold with a total dressed weight of 452 t/yr.

Waste management systems

On the breeder site, effluent is drained from the conventional sheds to an anaerobic pond followed by a facultative pond. A vacuum tanker regularly removes effluent and sludge from the two ponds and transfers it to the grow-out site where it is mixed into spent litter compost windrows. Spent litter from the three breeding site deep litter shelters is removed by front-end loader and transported to the grow-out site and composted. Spent litter removed from the 16 deep litter shelters at the grow-out site is windrowed and composted on site.



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Manure reuse systems

No effluent is irrigated from the ponds to land. All compost comprising deep litter solids from both sites and effluent from the breeding site is exported off-site to another property where it is used in cereal hay and cattle production enterprises. Total piggery property area is 60 hectares.



On-Farm Baseline Emissions

The current baseline emissions for this piggery total **1,147 tonnes CO₂-e/yr** with an emissions intensity of **2.53 kg CO₂-e/kg HSCW**. This incorporates an emissions offset produced by an existing 30 kW solar power array at the piggery. This piggery has low emissions because most pigs are housed on deep litter rather than in conventional sheds, avoiding significant pond methane generation. In addition, there are no land application emissions for this piggery because all effluent and manure is exported off-site in compost.



On-Farm Emissions Reduction Scenario

There is only one possible option to further reduce greenhouse gas emissions. The owners are considering covering the anaerobic lagoon and flaring the biogas. This option is for the sole purpose of reducing the breeder site odour which may improve community amenity. (Note: The small volume of effluent generated at the breeding site is less than one twentieth of the quantity generated by viable piggery projects which generate carbon credits and/or power from covered ponds.)

This scenario (see table below) reduced on-farm emissions **from 1,147 t/yr to 876 t/yr** and reduced kg CO₂-e/kg HSCW **from 2.53 to 1.94 (23% reduction)**.



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Annual Greenhouse Gas Emissions Profile (calculated using PigGas)

Emissions	Current Emissions Baseline	Reduction Scenario (kg CO₂-e/yr)
Pre-farm		
Grain	500,333	500,333
Milling & delivery	0	0
Pig freight	0	0
Straw & bedding	9,328	9,328
Total Pre-farm	509,661	509,661
On-farm		
<i>Fuels & energy</i>		
Purchased electricity	65,687	65,687
Fuel - stationary	9,425	9,425
Fuel - transport	18,113	18,113
<i>Enteric CH₄</i>	121,667	121,667
<i>Manure management</i>		
MMS CH ₄	313,730	60,033
MMS – direct N ₂ O	503,776	503,776
MMS – Atmos. deposition N ₂ O	129,454	112,390
<i>Waste applied to soil</i>		
Soil – direct N ₂ O	0	0
Soil – leaching & runoff N ₂ O	0	0
<i>Offsets 30kW solar power</i>	-15,289	-15,289
Total On-farm	1,146,563	875,801
Post-farm		
Pig freight	0	0
Meat processing	180,927	180,927
Exported manure	182,501	202,221
Total Post-farm	363,428	383,148
Dressed weight sold - HSCW (kg/yr)	452,317	452,317
Carbon footprint	(kg CO₂-e / kg HSCW)	(kg CO₂-e / kg HSCW)
Pre-farm	1.13	1.13
On-farm	2.53	1.94
Post-farm	0.80	0.85
Total	4.47	3.91



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