

PigGas Report 28 – 205 sow, farrow to finish, conventional and deep litter piggery, SA.

May 2014



Production details

This is a family owned conventional and deep litter piggery, with breeding and growing pigs housed on one site in seven naturally ventilated sheds. The lactating sows, half of the dry sows and all finishers are housed in conventional flushed or hosed sheds. Half of the dry sows and all of the weaners and growers are housed in deep litter sheds. The pigs are sold as baconers at an average of 94 kg live weight.



Feed consumption

All cereal-based pig feeds are purchased off-site as pelleted rations for each class of stock. The total feed consumed is 1,105 t/yr.

Sales/Tranfers

4,656 pigs/yr are sold with a total dressed weight of 329 t/yr.

Waste management systems

Manure is automatically hosed or flushed from each conventional shed in underfloor drains to collection sumps. From there, effluent is pumped to a screw-press separator which separates coarse solids from the effluent stream. The effluent from the screw-press separator then flows to one of two anaerobic ponds which are used alternately. Overflow from the anaerobic pond is pumped onto land. Spent litter manure from the deep litter sheds is removed regularly by front-end loader and stockpiled for a short period.



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Manure reuse systems

When one anaerobic pond is full of sludge, it is taken off-line and desludged while the other pond is used. Any overflow effluent from the working anaerobic pond is pumped onto pasture areas. Spent litter manure from the deep litter sheds is removed regularly by front-end loader and trucked off-site to neighbours for reuse. Solids from the screw press separator are composted on-site and exported to neighbours. Total property area is 24 ha with no other crops or animals grown apart from the pigs.

On-Farm Baseline Emissions

The current baseline emissions for this piggery total **718 tonnes CO₂-e/yr** with an emissions intensity of **2.18 kg CO₂-e/kg HSCW**.

These figures are low because about half of the total manure remains in solid form in the deep litter sheds, reducing potential pond methane. In addition, spent litter and separated solids are exported off-site, thereby decreasing land application emissions.

On-Farm Emissions Reduction Scenario

To improve farm viability, this piggery is undertaking an expansion program to increase production from **205 sows** to **280 sows** farrow to finish, a 37% increase. To facilitate the expansion, an additional deep litter shed for dry sows and a conventional flushed shed for growers have recently been constructed.

To help offset the resultant overall emissions increases, the owners have undertaken to reduce emissions intensity by installing 11 kW of solar electricity generation capacity and plan to install desludging pipes into the anaerobic pond to allow regular sludge removal off-site by vacuum tanker, thereby reducing nitrogen applied on-site to land by 20%.

This scenario (see table below) increased on-farm emissions **from 718 t/yr to 966 t/yr** (35% increase) because of the production increase, but reduced emissions intensity **from 2.18 to 2.15 kg CO₂-e/kg HSCW (1% reduction)** because of offsets activities. The solar panels will replace about 25% of total site electricity usage.



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Annual Greenhouse Gas Emissions Profile (calculated using PigGas)

Emissions	Current Emissions Baseline	Reduction Scenario (kg CO ₂ -e/yr)
Pre-farm		
Grain	276,252	381,401
Milling & delivery	53,040	73,229
Pig freight	596	774
Straw & bedding	4,680	6,472
Total Pre-farm	334,569	461,876
On-farm		
<i>Fuels & energy</i>		
Purchased electricity	45,917	62,284
Fuel - stationary	17,382	21,993
Fuel - transport		
<i>Enteric CH₄</i>	42,353	57,268
<i>Manure management</i>		
MMS CH ₄	436,820	611,936
MMS – direct N ₂ O	105,554	135,863
MMS – Atmos. deposition N ₂ O	40,130	55,365
<i>Waste applied to soil</i>		
Soil – direct N ₂ O	25,991	31,476
Soil – leaching & runoff N ₂ O	4,045	4,898
<i>Offsets</i>	0	-14,742
Total On-farm	718,191	966,341
Post-farm		
Pig freight	4,370	5,968
Meat processing	135,198	184,660
Exported manure	43,551	67,509
Total Post-farm	183,118	258,137
Dressed weight sold - HSCW (kg/yr)	328,898	449,825
Carbon footprint	(kg CO₂-e / kg HSCW)	(kg CO₂-e / kg HSCW)
Pre-farm	1.02	1.03
On-farm	2.18	2.15
Post-farm	0.56	0.57
Total	3.76	3.75



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