

PigGas Report 43 – 44 sow, farrow to finish, conventional piggery, WA

September 2014

Production details

This is a small, conventional, farrow to finish piggery with breeding and growing pigs housed in naturally ventilated sheds. Most of the pigs are sold at light bacon weight (approximately 95kg live weight) into the local market. The farrowing shed uses electric heating for the piglets and evaporative cooling for the sows.

In addition to the piggery, the property of 2,114 hectares includes a small cattle and sheep breeding operation as well as a 300 bird poultry layer unit. Around 1,400 hectares are used for cereal production comprising mainly barley, wheat and lupins.

Feed consumption

Most feed grain is grown and milled on-site and mixed with purchased protein and feed additive concentrates. Total feed usage is 212 tonnes per year.

Sales/Transfers

438 bacon pigs/yr are sold with a total dressed weight of 35t/yr.

Waste management systems

The piggery utilises two effluent flushing designs. One is a plug-flow sluice gate system in the dry sow shed and the other utilises tipping bucket flushing in the farrowing and grower sheds which are flushed daily. The effluent is drained via a channel directly to three anaerobic (facultative) treatment ponds. No solid separation is undertaken prior to pond treatment. This system uses about 8ML of scheme water and 2ML of rainwater per year.



Manure reuse systems

No effluent is irrigated from the pond treatment system. All treated effluent is evaporated from the final storage/evaporation pond. There is an effluent recycling pump installed if water needs to be removed from the pond at any stage.



The National PigGas Extension Project is funded by Ian Kruger Consulting, the Australian Government and Australian Pork Limited.

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On-Farm Baseline Emissions

Like most conventional piggeries with anaerobic ponds, the majority of emissions on this piggery come from pond methane. Higher than normal levels of feed wastage contributed to pond loading rates and methane emissions. The current baseline emissions for this piggery total **280 tonnes CO₂-e/yr** with an emissions intensity of **8.02 kg CO₂-e/kg HSCW**.

On-Farm Emissions Reduction Scenario

Three scenarios are modelled to reduce emissions. The first is to reduce feed wastage of the sows and growing pigs by 5% through careful feeding and adjustment of feeders. The second is to increase overall pig production by 20% through improved mating, farrowing and weaning targets to achieve an annual bacon sales increase from 438 around 526 pigs. While this will increase the total emissions on-site, it will reduce the emissions intensity. The third scenario is to offset all piggery electricity usage by installing a 9KVA solar panel system which will offset on-site greenhouse gas emissions by approximately 16.4 t CO₂-e/yr.

These three scenarios combined reduced on-farm emissions **from 280 t/year to 250 t/year** and reduced emissions intensity **from 8.02 to 6.06 kg CO₂-e/kg HSCW (24%)**.

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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	52,967	57,304
Milling & delivery	10,170	11,002
Pig freight	0	0
Straw & bedding	0	0
Total Pre-farm	63,136	68,306
On-farm		
<i>Fuels & energy</i>		
Purchased electricity	16,400	16,400
Fuel - stationary	1,147	1,147
Fuel - transport	2,698	2,698
<i>Enteric CH₄</i>	7,656	8,635
<i>Manure management</i>		
MMS CH ₄	223,501	206,868
MMS – direct N ₂ O	2,325	2,472
MMS – Atmos. deposition N ₂ O	9,300	9,889
<i>Waste applied to soil</i>		
Soil – direct N ₂ O	13,926	14,808
Soil – leaching & runoff N ₂ O	3,489	3,709
<i>Offsets (9kVA solar power)</i>	0	-16,400
Total On-farm	280,441	250,228
Post-farm		
Pig freight	0	0
Meat processing	13,980	16,522
Exported manure	0	0
Total Post-farm	13,980	16,522
Dressed weight sold - HSCW (kg/yr)	34,951	41,304
Carbon footprint	(kg CO₂-e / kg HSCW)	(kg CO₂-e / kg HSCW)
Pre-farm	1.81	1.65
On-farm	8.02	6.06
Post-farm	0.40	0.40
Total	10.23	8.11



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