

PigGas Report 33 – 6,880 sow, farrow to finish, conventional and deep litter multisite piggery, WA.

May 2014



Production details

This is a large corporately owned piggery, with breeding and growing pigs housed on five sites. Being a closed herd, no external pigs are brought into the piggery and approximately 80% of all sows are artificially insemination.

The nucleus breeding herd contains approximately 1,070 sows farrow to finish in 4 conventional climate-controlled and naturally ventilated flushed sheds plus 3 deep litter sheds. It provides gilts and boars to two additional breeding sites, weaned piglets to two grow-out sites, and finisher pigs for sale.

The two additional breeding sites contain approximately 1,050 sows farrow to weaning in 7 conventional flushed sheds and 4,760 sows farrow to weaning in 18 conventional flushed sheds respectively. Both of these breeding sites supply weaned piglets to two grow-out sites, one of which consists of 17,750 pigs in 90 naturally ventilated deep litter sheds and the other consists of 34,440 pigs in 15 tunnel ventilated conventional flushed sheds.

Feed consumption

All feedstuffs are cereal-based and are purchased off-site and milled and mixed off-site. The total feed consumed is 40,310 t/yr.

Sales/Tranfers

Approximately 3,380 gilts/yr are transferred internally from the nucleus breeding herd to the two additional breeding sites for mating and approximately 142,300 suckers/yr are transferred from the three breeding sites to the two grow-out sites. A total of 136,120 pigs/yr are sold with a total dressed weight of 10,760 t/yr.

Finisher pigs are sold into a range of domestic markets at an average of 101 kg live weight.



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Waste management systems

On the nucleus site, the two breeder sites and one grow-out site, conventional sheds are flushed with recycled effluent. The effluent is treated in primary anaerobic ponds followed by secondary facultative ponds. All effluent then flows to final storage/evaporation ponds. Effluent is recycled for shed flushing from these final ponds. A screw-press separator is used to remove some solids from shed effluent prior to pond treatment on one of the grow-out sites.



On the nucleus site and grow-out deep litter site, the straw-based deep litter sheds contain and absorb all manure in solid form which is removed by front-end loader at the end of each growing batch of pigs.

Manure reuse systems

No effluent is irrigated on any site with pond treatment systems. All treated effluent is evaporated from the final storage/evaporation ponds. Dried sludge from the evaporation ponds is eventually removed and exported off-site. Approximately 8% of the total pond nutrients are exported off-site in dried sludge from these ponds. Solids separated by the screw-press separator on one of the grow-out sites is exported off-site.



All spent litter solids from the nucleus site and from the deep litter grow-out site are spread on-site onto pasture land. The total combined area of the piggery sites is approximately 400 hectares.



On-Farm Baseline Emissions

The current baseline emissions for this piggery total **40,798 tonnes CO₂-e/yr** with an emissions intensity of **3.79 kg CO₂-e/kg HSCW**.

On-Farm Emissions Reduction Scenario

The piggery management is currently considering the feasibility of capturing biogas (methane) from the treatment pond system at the grow-out site and generating electricity for use on that site and on one of the breeding sites. This scenario was modelled (see table below) and would reduce on-farm emissions **from 40,798 t/yr to 23,589 t/yr** and reduce emissions intensity in kg CO₂-e/kg HSCW **from 3.79 to 2.19 (42% reduction)**.



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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	10,076,478	10,076,478
Milling & delivery	1,934,684	1,934,684
Pig freight	0	0
Straw & bedding	59,741	59,741
Total Pre-farm	12,070,902	12,070,902
On-farm		
<i>Fuels & energy</i>		
Purchased electricity	1,864,686	861,328
Fuel - stationary	201,238	201,238
Fuel - transport	14,570	14,570
<i>Enteric CH₄</i>	1,420,325	1,420,325
<i>Manure management</i>		
MMS CH ₄	31,243,801	14,780,896
MMS – direct N ₂ O	2,127,724	2,140,972
MMS – Atmos. deposition N ₂ O	1,476,482	822,892
<i>Waste applied to soil</i>		
Soil – direct N ₂ O	1,958,243	2,676,416
Soil – leaching & runoff N ₂ O	490,540	670,442
<i>Offsets</i>	0	0
Total On-farm	40,797,610	23,589,080
Post-farm		
Pig freight	94,263	94,263
Meat processing	4,304,069	4,304,069
Exported manure	640,534	233,227
Total Post-farm	5,038,865	4,631,559
Dressed weight sold - HSCW (kg/yr)	10,760,172	10,760,172
Carbon footprint	(kg CO₂-e / kg HSCW)	(kg CO₂-e / kg HSCW)
Pre-farm	1.12	1.12
On-farm	3.79	2.19
Post-farm	0.47	0.43
Total	5.38	3.74



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