PigGas Report 13 – 600 sow, farrow to finish, conventional piggery, Vic.

December 2013

Production details

This is a family owned conventional piggery, with breeding and growing pigs on one site in twelve naturally ventilated sheds. Pigs are sold as 'baconers' at an average of 95 kg live weight.

Feed consumption

All feedstuffs used in the piggery are purchased off-site. Cereal based diets consumed total 3,992 t/yr. In addition, liquid whey and whole milk by-products totalling 10.4 ML/y are fed to the growing pigs.

Sales/Tranfers

12,436 pigs/yr are sold with a total dressed weight of 931 t/yr. External contractors transport the pigs to the abattoir. For biosecurity reasons, only 37 breeder pigs are transferred into this closed herd each year.

Waste management systems

Manure is flushed and hosed from all sheds and drains to a concrete sump. Effluent is then pumped to a 0.5mm run-down screen to remove course solids which are exported off-site. From the screen, effluent is them pumped to a large 34 ML anaerobic pond followed by an 8 ML holding pond.

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Manure reuse systems

Effluent from the holding pond is irrigated to lucerne, rye grass and clover pasture areas which are cut for hay and silage production. Total property area is 72 ha, most of which is used to graze cattle and sheep.

On-Farm Baseline Emissions

The current baseline emissions for this piggery total **3,889 tonnes CO_2-e/yr** with an emissions intensity of **4.18 kg CO_2-e/kg HSCW**.

On-Farm Emissions Reduction Scenario

Tthe majority of emissions on this piggery (2,925 t CO_2-e/y or 84%) come from pond methane.

The owners are considering constructing a new 5 ML covered anaerobic pond to capture methane. No solids will be separated prior to the pond, allowing maximum methane production potential of the pond influent. The methane produced from the covered pond will be combusted to generate electricity, replacing all electricity currently used on-site. In addition, waste heat will be collection from the engine (hot water) to heat weaner pigs, replacing all LPG used on-site. Total annual use of electricity on site is currently 323,189 kWh/y and LPG use is 13,200 L/y .

This scenario (see table below) reduced on-farm emissions **from 3,889 t/yr to 995 t/yr** and reduced kg CO_2-e/kg HSCW **from 4.18 to 1.07 (74% 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	997,890	997,890
Milling & delivery	191,595	191,595
Pig freight	581	581
Straw & bedding		
Total Pre-farm	***1,190,066***	***1,190,066***
On-farm		
Fuels & energy		
Purchased electricity	391,059	
Fuel - stationary	49,408	29,088
Fuel - transport		
Enteric CH_4	116,726	116,726
Manure management		
MMS CH_4	2,924,739	382,319
MMS – direct N_2O	32,001	33,685
MMS – Atmos. deposition N_2O	128,003	
Waste applied to soil		
Soil – direct N_2O	191,685	336,513
Soil – leaching & runoff N_2O	55,205	96,916
Offsets		
Total On-farm	***3,888,825***	***995,246***
Post-farm		
Pig freight	17,229	17,229
Meat processing	373,448	373,448
Exported manure	61,364	
Total Post-farm	***452,111***	***390,747***
Dressed weight sold - HSCW (kg/yr)	**930.945**	**930,945**
Carbon footprint	**(kg CO_2-e / kg HSCW)**	**(kg CO_2-e / kg HSCW)**
Pre-farm	1.28	1.28
On-farm	**4.18**	**1.07**
Post-farm	0.49	0.42
Total	**5.94**	**2.77**

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