PigGas Report 51 – 350 sow, breeder only, conventional and deep litter piggery, WA.

February 2015

Production details

This is a smaller family owned piggery of 350 sows producing weaned piglets which are transferred to a grower piggery at a remote site operated by the same business. Half of the dry sow herd is housed in conventional naturally ventilated sheds, with the other half of the dry sows housed in naturally ventilated straw-based deep litter sheds. The lactating sows are housed in climate controlled conventional sheds.

Feed consumption

Feed is currently purchased off-site from a commercial feed mill. Normal piggery cereal and lupin based feedstuffs are fed in a pelleted form. Total feed consumed is 397 t/yr.

Sales/Tranfers

6,196 pigs/yr are sold or transferred with a net dressed weight of 53 t/yr.

Waste management systems

Manure is flushed from the conventional dry sow/mating and farrowing sheds from underfloor pull-plug drains to a collection sump. From there, effluent gravitates to an anaerobic lagoon. After primary treatment the effluent drains to a storage pond from which all effluent is evaporated.

The deep litter dry sows sheds utilise local cereal straw as the bedding material which absorbs all manure. This spent litter is regularly removed from the sheds and stockpiled.

Manure reuse systems

All effluent that is drained to the final pond is evaporated. The stockpiled spent litter solids from the straw-based sheds is spread as a fertilizer in local cropping activities.

On-Farm Baseline Emissions

The current baseline emissions for this piggery total **473 tonnes CO_2-e/yr** with an emissions intensity of **8.95 kg CO_2-e/kg HSCW**.

On-Farm Emissions Reduction Scenario

Like most conventional piggeries with anaerobic ponds, the majority of emissions on this piggery come from pond methane. Through the use of straw-based deep litter housing for 50% of the gestating sows, overall emissions have been significantly reduced compared with housing all pigs being in conventional flushed sheds and using anaerobic pond treatment (27% reduction).

A number of possible scenarios were considered to further reduce emissions. This breeder only piggery already has good feed conversions and relatively low feed wastage resulting in comparatively low baseline emissions. It is unlikely that emissions could be reduced further by improving production efficiency. Also, the piggery is too small to justify the expense of covering the pond to capture and burn methane.

Therefore, the reduction scenario modelled for this piggery was to convert a further 30% of the conventional dry sow housing to straw-based deep litter housing.

This scenario (see table below) reduced on-farm emissions from **473 to 374 tonnes CO_2-e/yr** and reduced emissions intensity from **8.95 to 7.08 kg CO_2-e/kg HSCW (21% 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	99,135	99,135
Milling & delivery	19,034	19,034
Pig freight	2,806	2,806
Straw & bedding	5,405	10,455
Total Pre-farm	***126,308***	***131,430***
On-farm		
Fuels & energy		
Purchased electricity	73,017	73,017
Fuel - stationary	4,321	4,321
Fuel - transport		
Enteric CH_4	13,894	13,894
Manure management		
MMS CH_4	314,946	200,937
MMS – direct N_2O	29,884	45,024
MMS – Atmos. deposition N_2O	13,736	14,135
Waste applied to soil		
Soil – direct N_2O	18,554	18,004
Soil – leaching & runoff N_2O	4,648	4,510
Offsets		
Total On-farm	***473,001***	***373,842***
Post-farm		
Pig freight	78,386	78,386
Meat processing	29,801	29,801
Exported manure		
Total Post-farm	***108,187***	***108,187***
Dressed weight sold - HSCW (kg/yr)	**52,824**	**52,824**
Carbon footprint	**(kg CO_2-e / kg HSCW)**	**(kg CO_2-e / kg HSCW)**
Pre-farm	2.39	2.49
On-farm	**8.95**	**7.08**
Post-farm	2.05	2.05
Total	**13.39**	**11.61**