PigGas Report 15 – 370 sow, farrow to finish, conventional and deep litter piggery, NSW.

December 2013

Production details

This is a family owned 370 sow farrow to finish piggery. Lactating sows, gilts and finisher and presale pigs are housed in four older-style flushed and hosed conventional sheds. The dry sows, weaner pigs and grower pigs are housed in ten tunnel style deep litter sheds with barley straw and rice hulls used as bedding. Pigs are sold at an average weight of 98 kg live weight through a local abattoir for the fresh pork market.

Feed consumption

All feedstuffs are stored, milled and mixed on-site. About one third of the cereals used in the pig diets, mainly wheat and peas, are grown on-site with the remainder of the diets purchased off-site. Total feed consumed is 2,094 t/yr.

Sales/Tranfers

This is a closed herd with no pigs transported onto the site. Artificial insemination of sows is conducted and catch boars are housed with sows in dry sow sheds. A total of 6,310 pigs/yr are sold with a total dressed weight of 490 t/yr. External contractors transport the pigs to the abattoir.

Waste management systems

Effluent from the four flushed and hosed sheds is collected in a long narrow anaerobic pond. This pond was built to enable regular desludging of all solids using an excavator. Overflow from this pond flows into a series of two evaporation ponds. No effluent is irrigated.

A front-end loader is used to remove spent litter from ten deep litter sheds and stockpiled.

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Manure reuse systems

Stockpiled deep litter solids and excavated pond sludge are spread as fertiliser on cropping paddocks with a broadcast spreader two to three times per year. Total cropping area available for reuse is 280 ha.

On-Farm Baseline Emissions

The current baseline emissions for this piggery total **1,456 tonnes CO_2-e/yr** with an emissions intensity of only **2.99 kg CO_2-e/kg HSCW**. This figure is relatively low because deep litter sheds produce substantially lower overall emissions than flushed sheds with treatment ponds.

On-Farm Emissions Reduction Scenario

Three combined options are modelled for this farm. The first option modelled is the on-site electricity use reduction (approx. 20%) and an offset due to exporting electricity to the grid from the recent on-site installation of a 22 kW bank of solar panels.

The second option modelled is the planned construction of a new deep litter shed for the finisher pigs, removing them from the flushed shed/anaerobic pond treatment system.

The third option modelled is to daily spreading 50% of effluent to cropping land using a newly purchased vacuum tanker spreader with injection tines. This reduces the effluent going through the anaerobic pond system by 50%.

This combined scenario (see table below) reduced on-farm emissions **from 1,456 t/yr to 991 t/yr** and reduced kg CO_2-e/kg HSCW **from 2.99 to 2.02 (32% 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	523,622	523,622
Milling & delivery		
Pig freight		
Straw & bedding	10,111	12,611
Total Pre-farm	***533,733***	***536,233***
On-farm		
Fuels & energy		
Purchased electricity	107,604	85,845
Fuel - stationary	48,496	48,496
Fuel - transport	238	238
Enteric CH_4	75,670	75,670
Manure management		
MMS CH_4	824,598	354,530
MMS – direct N_2O	225,509	244,603
MMS – Atmos. deposition N_2O	74,752	63,283
Waste applied to soil		
Soil – direct N_2O	96,176	107,454
Soil – leaching & runoff N_2O	12,082	13,499
Offsets		-2,942
Total On-farm	***1,456,124***	***990,676***
Post-farm		
Pig freight	9,449	9,449
Meat processing	195,820	195,820
Exported manure		
Total Post-farm	***205,269***	***205,269***
Dressed weight sold - HSCW (kg/yr)	**489,551**	**489,551**
Carbon footprint	**(kg CO_2-e / kg HSCW)**	**(kg CO_2-e / kg HSCW)**
Pre-farm	1.09	1.10
On-farm	**2.99**	**2.02**
Post-farm	0.42	0.42
Total	**4.50**	**3.54**

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