Capturing biogas benefits

THIS CASE STUDY IS ONE IN A SERIES DEVELOPED TO SHOWCASE OUTSTANDING EXAMPLES OF COLLABORATIVE ACTIVITY WITHIN THE AREA OF CLIMATE CHANGE RESEARCH, DEVELOPMENT AND EXTENSION IN THE AUSTRALIAN PRIMARY INDUSTRIES SECTOR.

BY CCRSPI PARTNER, AUSTRALIAN PORK LIMITED

Approximately 70% of emissions from the Australian pork supply chain come from the manure management system on farm. A newly endorsed and approved methodology for capturing the methane emissions produced by manure is now providing the pork industry with a significant opportunity to reduce their overall emissions.

The 'Destruction of methane generated from manure in piggeries' methodology was developed by the Department of Climate Change and Energy Efficiency in partnership with the pork industry. The development of the new approach followed the pork industry's extensive work and research into low cost biogas systems (covered ponds), industry feasibility studies and operating trial sites.

Waste management in conventional piggeries involves the collection and storage of manure in uncovered lagoons. Methane is produced by the anaerobic decomposition of organic matter in the waste and, in the absence of any abatement, is emitted to the atmosphere. The new methodology enables the capture and combustion of methane which would otherwise be released into the atmosphere.

The methodology involves:

1. covering lagoons to prevent release of biogas (containing methane) into the atmosphere;
2. collecting the emitted gas; and
3. combusting the methane component in the gas to convert it to carbon dioxide (CO_2) and its release into the atmosphere.

This abatement activity converts methane with a global warming potential (GWP) of 21, to carbon dioxide with a GWP of 1 through the process of oxidation during the combustion process.

The methodology requires the installation and operation of covers, gas capture and combustion equipment to existing uncovered treatment lagoons, or the replacement of conventional lagoons with covered lagoon systems. The methane component of the biogas is combusted using flares, and/or an electricity generation system, and/or a gas boiler, effectively converting the methane to carbon dioxide which is released to the atmosphere. Covers, gas capture and combustion equipment can be retrofitted to existing lagoons within existing piggeries, or installed on new lagoons within existing piggeries or new piggeries. Abatement is calculated as the amount of methane captured and destroyed.

The captured methane gas can also be used to generate heat and electricity, providing a 'win win' for the producer and the environment. Overall, the new methodology encourages smaller producers to cover and flare their greenhouse gases, whilst also providing an incentive for the larger producers to install infrastructure to use the methane for heat or energy generation via LPG, diesel replacement or combined heat/power.

Through the Australian Government's voluntary Carbon Farming Initiative, those pork producers that implement the new approach and approved methodology will be able to generate tradeable carbon credits. Based on industry life cycle assessment data and current brokerage information, credits could potentially be worth approximately $2.40–$3.45 per finished pig (75 kg hot standard carcase weight).

The Australian pork industry was the first industry to have such a methodology endorsed and approved by the Carbon Farming Initiative.

FOR MORE INFORMATION

Dr Darryl D'Souza, General Manager, Research and Innovation,
Australian Pork Limited
Email: darryl.dsouza@australianpork.com.au
www.australianpork.com.au
www.climatechange.gov.au/government/initiatives/carbon-farming-initiative/

CCRSPI is a collaborative response to the opportunities and challenges posed by climate change for Australian agriculture, fisheries and forestry. It is a joint initiative of the rural research and development corporations; the state and territory governments; the Australian Government Department of Agriculture, Fisheries and Forestry; and the CSIRO.