Reduction of green house gas emissions in pig production

Country: United States

VetEffecT has been awarded the project "Review of best practices in climate smart pork production" for IFC (Worldbank) (2017).

Successful companies and farmers of the future will need to produce with high efficiency ("sustainable intensification") , use minimal energy, water, nutrients and other resources, cause a minimal carbon footprint, and causing minimal GHG (Green House Gasses) emissions, minimal waste and effluents. Respecting animal welfare, wildlife and the environment are other key conditions.

IFC has a growing portfolio of clients in the animal protein sector and pork production in particular. Most of IFC clients are looking to be cutting edge both on production efficiency and sustainability. While this is the norm the set of practices employed by clients suggests that there are different routes to achieve this goal depending on production systems and economic environment. IFC advisory services are looking for a systemic review of best practice in the sector that can help new clients better navigate the options.

The study:

- provides a conceptual review of major production systems in pork production in the world and the best practice established (in terms of technologies and management practices) that reduces environmental and climate impact of the industry, focusing on industrial systems i.e. the systems that produce the bulk of product that reaches formal market typically in larger commercial farms, and all proposed GHG reducing technologies or management practices should make economic sense on a free market basis;

- provides an expert opinion on the use of these technologies and solutions in mainstream production in developing countries, with special attention to Eastern Europe, East Asia, and parts of Africa.

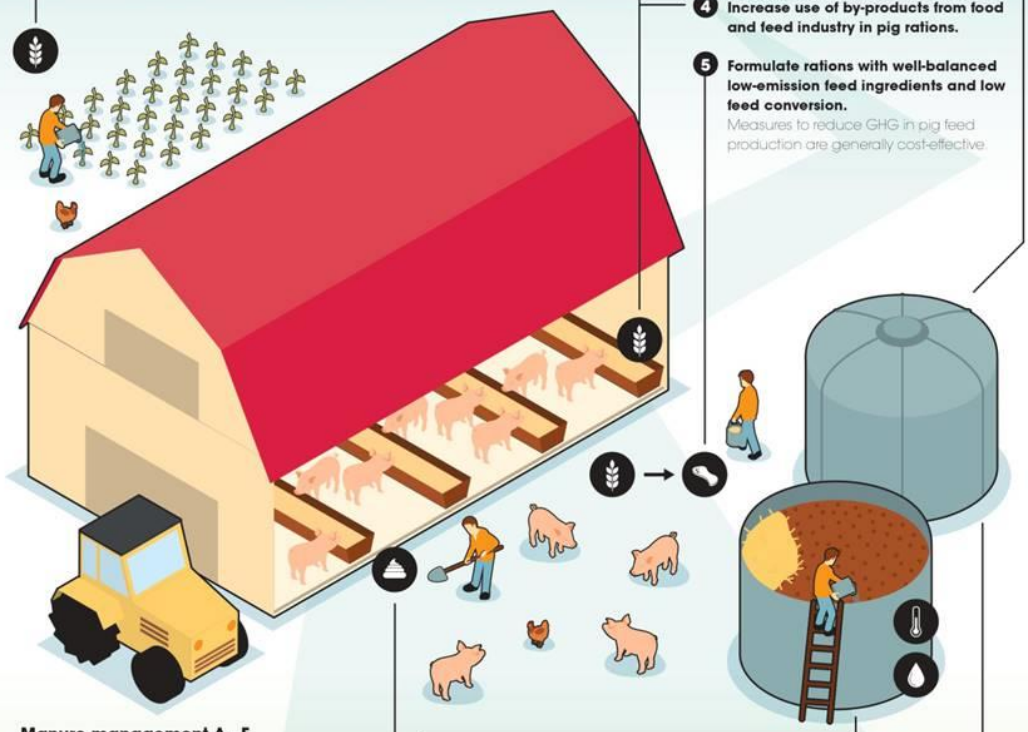
Reduction of Green House Gas emissions in pig production

Pig production accounts for 1.3 % of global greenhouse gas (GHG) emissions from human activity. The main sources are pig feed production and manure management. What will reduce the emission of GHG?

Feed 1 - 5

1. **Increase use of locally produced feed.**
2. **Replace synthetic fertilizers with pig manure.**
3. **Purchase feeds produced with low GHG emission production processes.**
4. **Increase use of by-products from food and feed industry in pig rations.**
5. **Formulate rations with well-balanced low-emission feed ingredients and low feed conversion.**

Measures to reduce GHG in pig feed production are generally cost-effective.



Manure management A - F

- **A** **Frequent removal and spreading of manure (to match with crop requirements).**
- **B** **Cooling slurry and using heat exchangers.**
- **C** **Covering slurry stores with straw reduces GHG emissions and odours.**
- **D** **Separating slurry followed by composting (and selling) or incineration is high-cost but can be appropriate in intensive situations where land is scarce.**
- **E** **Acidification of manure reduces ammonia and GHG (methane) emissions although it is high cost.**
- **F** **Using manure to produce biogas requires costly capital investment and is most likely best suited to large-scale units in warm climates where energy costs are high.**

Apart from frequent removal and spreading of manure, measures to reduce GHG in manure management are likely to be cost-effective only in certain circumstances. However, there are often important other associated benefits, such as:

- soil amelioration
- fossil fuel substitution
- meeting regulatory requirements
- effective means of manure disposal and selling where land is scarce
- reducing odours and nuisance

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