Non-CO$_2$ Greenhouse Gases: Methane

Source/Sectors: Agriculture/Enteric Fermentation

Technology: Improved feed conversion efficiency (A.3.1.2)

Description of the Technology:
Several methods can be used to improve feed conversion efficiency and, consequently, reduce methane emissions:

- Improved level of feed intake – An increase in level of feed intake can change the volatile fatty acid (VFA) content in the rumen and less acetate and more propionate is formed resulted in lower methane production and emissions (de Jager et al., 2001).

- Replacing roughage with concentrates – Roughage contains a high level of structural carbohydrates (fibers). Replacing part of the roughage in the animal diet with concentrates can improve propionate generation and reduce methane production and emissions (Cole et al., 1996; Cole et al., 1997; de Jager et al., 2001).

- Changing composition of concentrates – Adding unsaturated fatty acid and/or lipids (high fat diet) to the animal diet can increase the formation of propionate and reduce methane production and emissions (de Jager et al., 2001; Bates, 2001).

- Alkali/ammonia/urea treatment of low quality roughage – The digestibility of low quality roughages such as straw can be improved by treatment using chemicals such as sodium hydroxide, ammonium hydroxide, and urea. Substantial methane reduction is feasible in combination with livestock reduction (de Jager et al., 2001; Bates, 2001).

- Chopping of low quality crop by-products – Physical modifications of straws and other crop-by-product by chopping and milling can also improve feed intake and animal performance and result in less methane production and emissions (Cole et al., 1996; Cole et al., 1997; de Jager et al., 2001).

- Wrapping and preserving rice straw – By wrapping freshly-cut and urea-treated straw in bales, its nutritive value can be better retained and spoilage is prevented (de Jager et al., 2001; Bates, 2001).

Effectiveness: Good

Implementability: Fair

Reliability: Fair

Maturity: Fair

Environmental Benefits: Methane emission reduction

Cost Effectiveness: None reported.

Industry Acceptance Level: Fair

Limitations: None reported.

Sources of the information:


