

A joint initiative of



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**Department of Agriculture,
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Reducing Emissions from Livestock Research Program

Reducing methane emissions by supplementing feed with dietary lipids

Many lipid containing feed materials are known to reduce methane generation and are attractive as nutritional supplements due to the high proportion of concentrated energy and/or protein that they contain. Coconut oil has been shown to significantly suppress methane production. Studies have shown that on average, methane suppression could be equated to an increase in capture of ingested energy of up to 27%.

Recent studies on the effects of coconut and cottonseed oil in the diet of *Bos indicus*-cross heifers in northern Australia have shown promise in the potential for lipids to reduce methane emissions and increase productivity. This project is evaluating a wider range of lipid-based products that may have potential for use as feed additives to reduce methane emissions per animal.

Preliminary data from *in vitro* fermentor runs indicated that the freshwater algae, spirulina, did not affect methane emissions. Experiments were conducted to test the effectiveness of the marine algal product Algamac 3050, to deliver three, five and seven per cent oil content to the diet.



The Fermentor © The State of Queensland (DEEDI), 2011

The program

The Reducing Emissions from Livestock Research Program is a national collaborative program focused on developing practical on-farm options for significantly reducing emissions from livestock while simultaneously increasing productivity. The research will develop more accurate data on emissions from sheep and cattle and the levels of mitigation achieved using a range of strategies.

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Level 1, 165 Walker Street, North Sydney, NSW 2060
Ph: +61 2 9463 9333 Fax: +61 2 9463 9393
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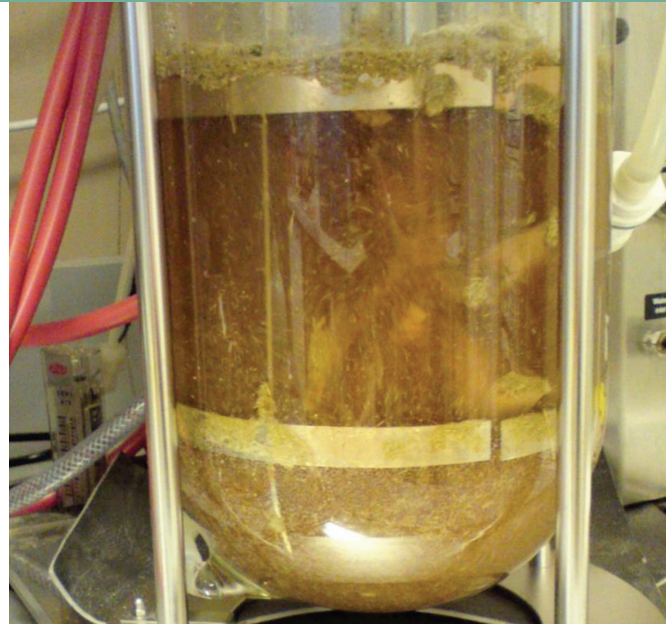
Project objective

To evaluate a wider range of lipid-based products which may have potential for use as feed additives by northern Australian producers to reduce methane emissions per animal.

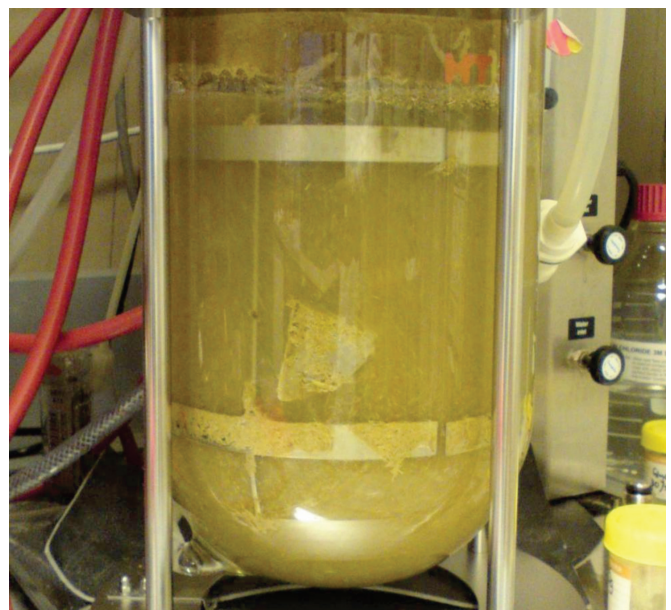
Progress

The results showed that in the control fermentation methane was being produced at a substantial level by the second day. Methane production peaked on day seven with methane production increasing after feeding and then decreasing over the remainder of the day. By comparison, in the seven per cent Algamac 3050 fermentation, increase in methane production was delayed until day three. Thereafter, methane production increased to expected levels. It was observed that after the treatment had been added on day five, methane production decreased each day until approximately 3am and then rose until the next feeding, the opposite of the pattern of methane production seen in the control fermentation.

Overall the Algamac 3050 treatment showed a decrease in methane production of approximately 50% compared to the control. Experiments with canola oil have also taken place but results have shown it has little overall impact on emissions.



The fermentor on day one of the experiment. The treatment was added on day five. © The State of Queensland (DEEDI), 2011.



The fermentor on day 11. © The State of Queensland (DEEDI), 2011

For more information contact:
Assoc. Prof. Athol Klieve,
University of Queensland
Email: a.klieve@uq.edu.au

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