



NEWS RELEASE

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Immediate Release

Study shows digestion may be valuable alternative for livestock producers

HUMBOLDT, SK – Researchers at the Prairie Agricultural Machinery Institute (PAMI) have shown that an alternative method of managing manure may benefit producers.

There are many challenges that livestock producers face, not the least of which is where to put the waste produced by their animals, and what to do with it. The standard of practice is to spread the manure on crop or pasture land. In some cases, the manure is composted prior to land application to help reduce the volume of material to be hauled and spread. But with this traditional manure management, manure is treated as a waste. Treating manure as a resource can help improve overall manure management, both economically and environmentally.

According to Dr. Joy Agnew of PAMI, producers must consider managing manure in a way that not only minimizes the effect on the environment, but is also cost-effective.

Agnew suggests that a new way of handling manure – solid-state anaerobic digestion (SSAD) may help recycle manure nutrients more effectively and generate renewable energy, which can make manure management more cost-effective.

Agnew and PAMI partnered up with the Saskatchewan Stock Growers Association to conduct an examination of SSAD as an alternative management method for solid manure that might alleviate certain negative side-effects of traditional methods.

SSAD is a biological process that converts agricultural residue and waste into energy through the natural process of digestion. Inside a digester, organic material like cattle manure is broken down by naturally-occurring microorganisms. The biogas produced by the process is captured, and the solid material leftover can be composted and applied to the land as a nutrient- and organic matter-rich fertilizer. Digestion can not only reduce greenhouse gas emissions associated with manure management, but it also cuts down on the odour emissions compared to traditional manure management.

Therefore, SSAD helps address some of the environmental impacts and social concerns which surround the handling of manure, especially at large-scale feedlots. But is it cost-effective?

Agnew and her team say yes.

The team considered many environmental factors to determine the value or cost associated with traditional manure handling practices and compared them to SSAD.

They came up with an environmental scoring system to rank manure management options and commercial fertilizer application based on their potential environmental impact. Then they assigned dollar values to three environmental factors: greenhouse gas emissions, nutrient content, and biogas production for each of four manure management options: stockpiled manure, composted manure, SSAD manure, a combination of SSAD and composted manure, and commercial fertilizer. Also considered were odour emissions and social or political perception, and an overall manure management cost for a 40,000 head feedlot.

What they found was that SSAD and composting seems to offer the maximum value and minimum net cost of all the options considered, as well as the highest environmental score, taking into account the social and political importance rating.

Based on the factors considered in the analysis, it is environmentally and possibly economically beneficial for beef producers to include digestion and composting as part of their manure management system in the long term.

There is a definite initial cost to digestion, Agnew cautions. The high capital cost of an anaerobic digester makes adopting the technology risky in the short term, but manageable over the long term, and perhaps even profitable.

“Over the 20-year life of the system, digestion will generate a net positive return,” said Agnew. “The value of biogas and the net value of digestion are likely to increase over the lifetime of the equipment, as fossil fuel prices increase and incentives for green energy production are adopted.”

PAMI researchers were able to use information and results from the operation of their pilot-scale Solid-State Anaerobic Digester (SSAD) as part of the study. They also reviewed literature to assign values to the environmental factors associated with manure handling practices like stockpiling, composting, solid-state anaerobic digestion,

However, Agnew noted that the numerical values placed on carbon offsets were based on the existence of a carbon offset program in Saskatchewan. Currently, there is no such system in place; the team took the values based on the program in Alberta. But even if carbon offsets are not considered in the calculation, SSAD was still associated with the highest net profit and environmental score as the biogas value was found to be the most significant factor in the overall value of manure.

For more information contact:

Dr. Joy Agnew
Project Manager
Prairie Agricultural Machinery Institute
Humboldt, SK
306-682-5033, ext. 280
jagnew@pami.ca

Heather Page
Communications
PAMI
204-239-5445, ext. 228
hpage@pami.ca