

BCRC BEEF SCIENCE CLUSTER

RESEARCH

Facts

IN PROGRESS

Effect of feeding DDGS on nutrient value of beef manure FDE.04.09

Project Title: Rate of Nitrogen and Phosphorus Release in Soil Amended with Manure Derived from Animals Fed Ethanol By-products

Researchers: Dr. Xiyang Hao, AAFC Lethbridge, Jeff Schoenau, University of Saskatchewan, Tim McAllister, AAFC Lethbridge and John McKinnon, University of Saskatchewan

Background: DDGS contains relatively high levels of phosphorus and nitrogen which can result in elevated P and N levels in the manure. Data is needed regarding the impact of using DDGS in feedlot diets on N and P accumulation and release rates in soil. This will provide feedlot producers with information needed to adjust the land base and/or manure handling practices to ensure appropriate nutrient management.

Objective: To assess (a) the changes in available N and P during composting of manure from cattle fed with traditional vs. DDGS diet, and (b) the availability and rate of N and P release in soil receiving DDGS manure or compost in contrast to manure from a traditional feedlot diet.

These researchers will conduct a composting experiment using manure from an ongoing feeding trial in Lethbridge as well as a laboratory study to examine the rate of N and P release from different types of DDGS manure and compost in soil.

Composting experiment: Manure collected from a traditional (no DDGS) and a DDGS-containing diet will be composted for 100 days and cured for another 100 days. Nutrient losses and changes in N and P levels and availability over the composting and curing stages will be measured, and fertilizer values of mature compost will be assessed.

Nutrient release (laboratory) study: Composted and non-composted feedlot manure from cattle fed no DDGS, corn DDGS, wheat DDGS or triticale DDGS will be applied to sandy and clay soils at rates equivalent to 0, 60, 120, 180 and 240 tonnes per hectare. Changes in soil properties, along with N and P nutrient release patterns and availability will be determined over the course of a year.

Implications: This research will generate information on the fertilizer value of manure and compost from cattle fed DDGS, and identify the potential impact of increased DDGS feeding on N and P availability and accumulation in soil.

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