

Implementing Risk Management Decisions that Optimize Nutrient Value of Dairy Manure while Minimizing Related Risk

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Summary and Implications

Nutrients present in manure are increasingly receiving attention for environmental, production, and financial reasons. Dairy producers continue to strive for better ways and educational opportunities to improve profits by evaluating fertilizer and value of manure to their operation and to protect the environment. These farming decisions which help producers stay economically viable also support and stimulate their local economy, which promotes a more vital rural community. Utilizing 22 dairy nutrient management surveys, 14 on-farm workshops, 10 small group on-farm assessment workshops, one video, and individual producer visits, producers were able to make informed decisions using tools and knowledge gained to control risks associated with manure nutrients during handling, storage, and application.

Introduction

With the Iowa Department of Natural Resources increasing the number of farm inspections of all sizes of operations in the next few years due to environmental concerns from manure nutrients, it is becoming imperative that producers understand how to control risks from an environmental liability aspect.

The 2012 Iowa Dairy Survey showed 46% of producers planned to upgrade nutrient storage, with ½ of these doing it within 5 years. After recent DNR-EPA inspection announcements, discussions have shown many producers were seeking proactive on-farm assessment tools and strategies. The ISU Dairy Team embarked on a long term educational project to assist dairy producers better assess manure management options for handling, storing, and applying dairy manure.

Programmatic Response

The ISU Extension and Outreach Team, aided by a grant, reached every dairy producer in the state of Iowa, and many outside the state with educational newsletters, factsheets, and promotional materials to help increase knowledge to make more profitable decision on their future manure management system. Twenty-two dairy producers filled out the survey of manure management practices and

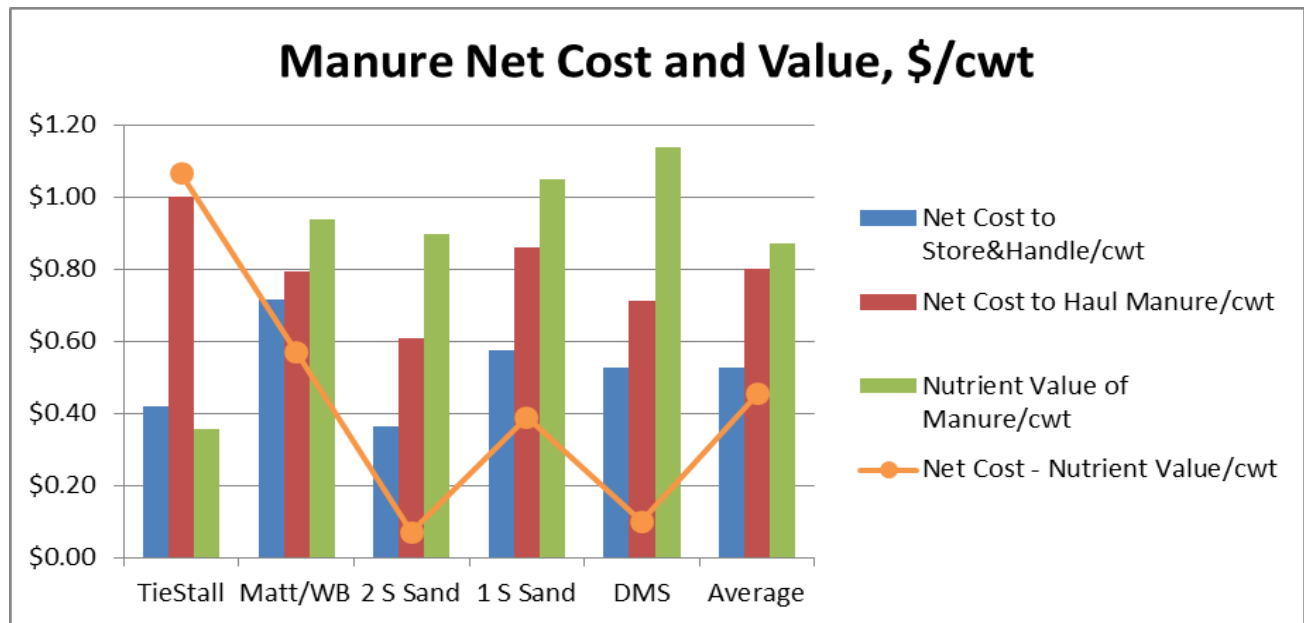
used the “Economics of Manure Management” spreadsheet tool to determine their cost of handling, storing and applying manure, less the cost of the nutrients gained in the manure. This information was presented to 210 dairy producers and industry personnel at 14 field day events in NE and NW Iowa. Approximately 200 producers who attended Iowa Dairy Days in 2015 were also presented with the information. Thirty dairy producers were presented the information at a Swiss Valley Young Cooperators Meeting. ISUEO worked jointly with 4 local dairy producers to create a short video demonstrating manure management practices and environmental concerns. Five on-farm environmental assessment workshops were held to assist producers with regulations and give first-hand experience of an on-farm walk through to address manure management and environmental issues. ISU Extension Agronomist, Brian Lang and Joel DeJong, hosted 10 sites in Iowa to assist producers in interpreting a soil test and manure test. By making better decisions about how and where fertilizer is applied, Iowa dairy producers will prioritize manure nutrient applications based on their soil tests results and crop removal rates, not only improving their profitability but also the environment.

Result and Discussion

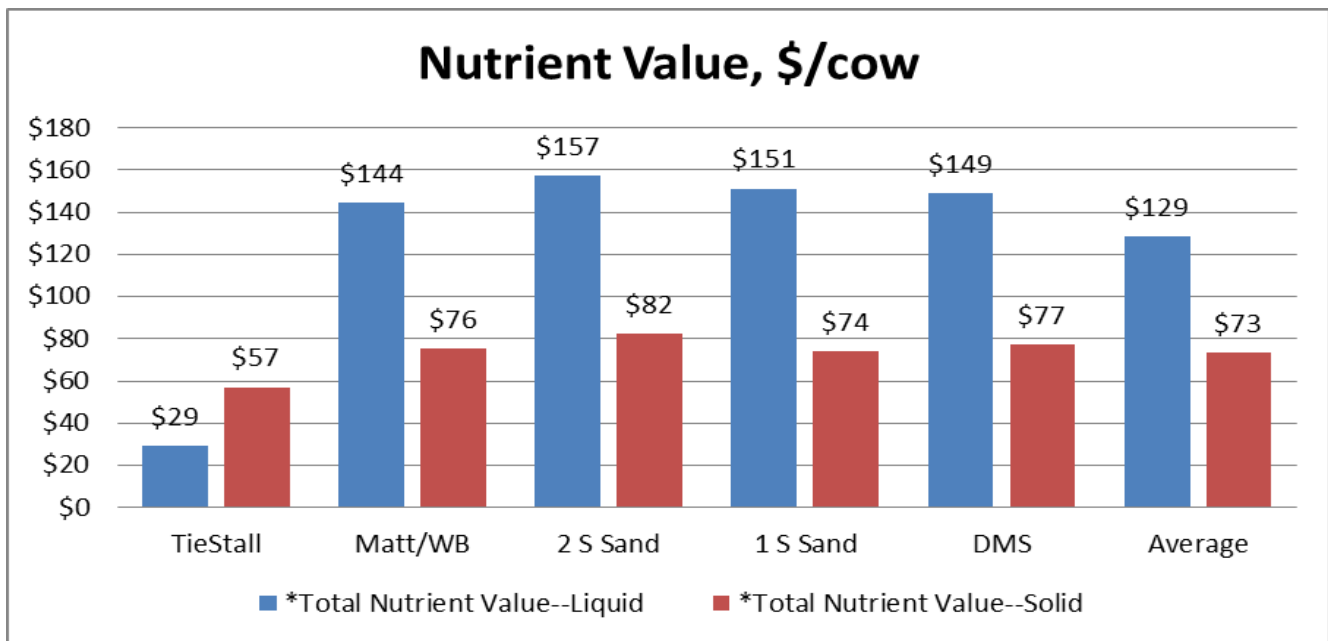
Producers at Iowa Dairy Days rated their increased knowledge gain in manure management and the economics of manure management, using a post-pre instrument. On average, producers had a 48% knowledge gain. An evaluation was also done during the on-farm field days showed: 100% increased their understanding of manure regulations, know how to calculate animal units for their operation, and have a better understanding of environmental risk as it pertains to clean water diversion, cow yard runoff, and feed storage/effluent runoff. Participants were also asked to complete an evaluation during the soil and manure interpretation workshops. Their confidence level to interpret a soil test increased 54%, interpret a manure test increased 73%, determine crop fertility rates/requirements increased 47%, and ways to utilize manure nutrients to meet crop needs increased 55%. Many responded they will do a better job of manure sampling or will start taking a manure sample to better utilize nutrients. They also now have a better understanding of fertilizer dealer recommendations and resulting purchases. Manure net cost and value (\$/cwt) for different systems and nutrient value/ cow are on page 2.

Acknowledgements

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| | TieStall | Matt/WB | 2 S Sand | 1 S Sand | DMS | Average |
|---|----------|---------|----------|----------|--------|---------|
| Herd Size, no. cows | 94 | 225 | 220 | 168 | 265 | 188 |
| Annual Milk Production, pounds/cow | 23,688 | 23,520 | 26,572 | 22,252 | 20,000 | 23,578 |



Matt/ WB = mattresses and waterbeds; 2S and 1S sand are 2 stage and 1 stage manure storage; DMS = dried manure solids