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MANURE MATTERS

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How much can you pay to have manure applied to your land?

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Livestock feeders often need more land for manure application to avoid excessive buildup of soil phosphorus. In some cases, they request payment to reduce transport costs. When is manure a good buy for crop production?

Manure supplies the full complement of nutrients needed by crops and often helps to improve soil biological and physical properties such as the rate of water infiltration. Because of these soil improvements, crop yield is often more with manure application than with fertilizers.

One way of estimating the value of manure is to use results from trials and determine the value of the fertilizer replaced and the increase in productivity. Several trials have been conducted with farmers under the Nebraska Soybean & Feed Grains Profitability Project (<http://on-farmresearch.unl.edu/>).

In one trial conducted over three years and where 25 tons of beef slurry (10% dry matter) was applied, the manure replaced \$42.23 worth of fertilizer, resulted in 22.50

worth of added corn production, and supplied additional nutrients valued at 64.02 for a total value of \$128.85 over three years, or about \$5.15 per ton.

In a second trial conducted for one year, 27 tons of beef slurry replaced fertilizer worth \$38.41, resulted in \$10 additional corn production, and supplied additional nutrients valued at \$69.14 for a total value of \$108 or \$4 per ton gained in one year.

Richard Deloughery, Extension Water Quality Education Coordinator, calculated nutrient values of common manures and found "For example, one ton of beef feedlot manure can contain over \$6.00 worth of nitrogen and phosphorus (using current fertilizer prices), plus value from the organic matter and other nutrients. If it is applied at 25 tons an acre, that is over \$150.00 per acre of fertilizer value. Slurry swine manure from a pit under a confinement building will have nitrogen and phosphorus worth about \$7.00 per 1000 gallons. If applied at 5,000 gallons an acre, it would be worth about \$35.00 per acre."

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If your soil is already high in nutrients and has a sufficient infiltration rate that water loss to runoff is not a problem, you will not gain the full benefit of the manure in the short term. Manure is much more valuable when there is a need to build up the levels of phosphorus and other nutrients. The value of phosphorus alone in manure typically ranges from \$1.90 / ton for feedlot manure to \$14.70 for broiler litter. Additional value can be gained when there is a need to improve the water infiltration rate as well as the nutrient supply. To maximize profit, manure generally should be applied where soil P is low or very low, and the crop is to be corn or another cereal.

There are problems associated with manure use.

- The nutrient content of manure is not uniform and the rate of application of manure nutrients may vary across the field. Rates of slurry application may differ as well, often with lower rates as the tank approaches empty. Monitoring of nitrogen may be needed during the season following the first time application of manure to determine if in-season N application may be needed. Manure continues to supply nitrogen for several years and subsequent manure applications tend to even out the N supply.
- Solid feedlot manure may be unevenly applied, for example in large frozen lumps that later may cause planter skips.
- Manure from feedlots may contain debris, such as pieces of concrete pads.
- Weed seed may occasionally be a problem.

Crop producers generally find that the benefits of manure outweigh the problems when it is applied to responsive fields.

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