

How to Maximize Manure Value

By Bob Koehler & Bill Lazarus

The value of livestock manure is directly related to the cost of commercial fertilizer that it is replacing. Since the prices for nitrogen, P₂O₅, and K₂O in commercial fertilizers have increased very dramatically in the past year the potential value of manure has also increased. In addition to the commercial fertilizer cost that is being replaced by manure, other management factors related to manure application can also have an important influence in determining how many dollars manure is actually contributing to the cash flow of a livestock operation, or how much it is worth in a transfer or sales situation.

Maximizing the value of manure first requires understanding how economic value is gained from manure. In most cases the greatest contribution to manure worth comes from the value of commercial fertilizer that it would replace in the crop year after the time of application. A second fertilizer replacement opportunity can come from second year credits which are possible in some situations, particularly with low fertility fields. Increased crop yield is another possible source of value creation from manure application. Where it is realized, that value has increased in the past year with higher crop prices. Finally, net value can be maximized by avoiding over-application. Overapplication that provides nutrients beyond what the crop needs, or beyond what the crop producer would have purchased as commercial fertilizer, will usually increase application cost per acre without gaining additional income.

Management strategies to increase manure value can be looked at in the same way as the value is determined.

First, for the *Value of Year 1 Fertilizer & Application Costs Replaced* (the replacement of nutrients that would have been purchased) use the following management practices:

- Apply for a nitrogen requiring crop.
- Apply to crops & fields that need P₂O₅ & K₂O (Low soil test level fields).
- Incorporate manure at application time (this reduces N volatilization losses).
- Use manure with a high nutrient concentration. High density manure requires fewer gallons or tons to haul to meet crop need. Therefore less application cost is experienced. Avoid unnecessary dilution in liquid manures from factors such as drinker wastage.
- Consider lower rates (P₂O₅ & K₂O level) with supplemental commercial N. This practice can potentially increase efficiency of nutrient use, spread yield benefits of manure over more acres, and avoid over-application of these nutrients. However, be sure that the application equipment used can apply the lower rate uniformly.
- Develop a multiyear set of manure tests for each barn to better estimate nutrient levels in manure.

To gain ***Residual Value***, apply manure to low soil testing fields (P₂O₅ & K₂O) that need increased fertility. Value is gained for this manure application by replacing fertilizer application that would be purchased for the next year.

To gain ***Yield Response*** apply to fields that do not have a recent manure history. If possible select fields with lower organic matter.

To limit ***Manure Application Costs*** use application equipment that has a range of application levels and that can be calibrated so that application accuracy is achieved. Avoid over-application which wastes nutrients and increases application costs per acre.

A three year on-farm study looking at Minnesota swine finishing farms found that the most common impediments to achieving high manure value were: 1) no P₂O₅ and/or K₂O needed on applied fields (thus wasting P & K), 2) low nutrient manure (less than 30 pounds of N per 1000 gallons) resulting in more gallons required and thus higher application cost to provide adequate nutrients, 3) under applied N rate which could contribute to loss of crop yield, and 4) over-application resulting in wasted N and higher per acre application costs.

A spreadsheet that considers these factors will calculate the value of manure for interested producers, consultants and others. It's available at http://www.apec.umn.edu/faculty/wlazarus/interests_manureworth.html.

A new version of the spreadsheet that will include additional user-friendly features is under development and will be available later this fall.

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