

## You Can't Afford *Not* to Haul Manure

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A traditional argument against hauling livestock manure is that the nutrients don't justify the cost of handling it. A better argument might be, "If you don't haul livestock manure, what are you going to do with it?"

When debating the economics of hauling manure, you have to take into account that something must be done with animal wastes. The manure can either be disposed of, or operators can put in a little extra time and effort to use manure as the good fertilizer that it is.

When comparing hauling costs with nutrient values, operators often charge the entire cost of hauling against the manure's nutrient value. When viewed in this manner, most comparisons show that manure cannot be hauled much more than a mile or so before hauling costs exceed fertilizer value of the manure.

The fallacy in this analysis is the assumption that crop utilization should pay the entire cost of manure hauling. If manure is simply disposed of on fields closest to livestock buildings, there is still an equipment and labor cost for hauling the manure. In this

situation, little or no value is gained from manure when excess levels of nutrients are applied. In fact, there is an environmental cost when excess nitrogen is applied that, in the form of nitrates, can contaminate groundwater. Extremely high levels of phosphorous also can lead to surface water pollution. These situations may not be immediate cash costs for the producer; however, they could come back as additional costs if stricter laws limit manure or fertilizer application.

There will always be a cost associated with manure disposal, regardless of how manure is handled. This cost could be regarded as part of the expense of raising livestock. Any additional expense needed to better use the manure as fertilizer should be offset by the value of the nutrients in the manure.

The table on the back of this page illustrates the cost-benefit analysis of properly using livestock manure. Let's assume several things about the situation:

- This is a farrow-to-finish swine operation that produces 1,500 head each year.

- For each hog marketed, 300 gallons of manure are produced, or 450,000 gallons per year.
- The nutrient analysis of the manure is 50-25-20 per 1,000 gallons, with 50 percent of the nitrogen available for crop use. The value of these nutrients is approximately \$12 per 1,000 gallons, for a total fertilizer value of \$5,400.
- The cost of a 3,000-gallon tank wagon and chopper pump is \$20,000. Assume an 18 percent annual cost to pay for depreciation, interest, insurance, and housing, for an annual fixed cost of \$3,600.
- Hauling time includes 12 minutes to load, 8 minutes to unload, plus travel time between buildings and field at about 8 minutes per mile.
- The variable cost is \$8 per hour for labor and \$12 per hour for fuel, oil, and repairs, for a total of \$20 per hour.
- Commercial hauling charges are \$0.01 per gallon plus a charge of \$0.0013/gallon/mile for distances over 1 mile.

## Hauling costs

Distance (miles)	Time/load (minutes)	Total (hours)	Variable cost	Total cost	Custom cost
.25	24	60	\$1,200	\$4,800	\$4,500
.5	28	70	\$1,400	\$5,000	\$4,500
1.0	36	90	\$1,800	\$5,400	\$4,500
2.0	52	130	\$2,600	\$6,200	\$5,085
3.0	68	170	\$3,400	\$7,000	\$5,670
4.0	84	210	\$4,200	\$7,800	\$6,255

If the total cost of hauling the manure is charged against the fertilizer value of \$5,400, one would draw the conclusion that a producer cannot afford to haul much more than 1 mile. If we recognize that the manure will have to be hauled at least 0.25 miles, even if no value is gained from the manure, then the extra cost to the farmer to haul the manure up to 1 mile is only \$600. Even hauling the manure 4 miles can be justified with an extra cost of only \$3,000, which is more than offset by the \$5,400 value of the manure.

It must be pointed out that taking 210 hours to haul the manure may not be acceptable from a field timeliness standpoint. This hauling time is for one year and might be split between several haulings during the year.

This example is not intended to predict actual costs for an individual producer. Neither is it intended to be a thorough comparison of custom hauling versus hauling by the producer. It does illustrate, however, that the cost of hauling manure longer distances can be justified by the better use of the manure.

Additional resources  
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*Choosing Fans for Livestock and Poultry Ventilation*, Pm-1587

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*Concrete Specifications for Agriculture*, Pm-1589

*Design and Management of Anaerobic Lagoons in Iowa for Animal Manure Storage and Treatment*, Pm-1590

*Manure Plumbing Venting for Livestock Buildings*, Pm-1600

*Pit Recharge Manure Management System*, Pm-1601

*Selecting Manure Management Systems for Swine Operations*, Pm-1602

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File: Engineering 1-1

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