



Value of Manure from Beef Cattle Feedyards

TCFA©
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This worksheet can estimate the value for manure based on current commercial nitrogen and phosphorus prices and compare the costs of "Commercial Fertilizer Only" vs. "Manure + Commercial Fertilizer."

**EXAMPLE: CORN
GRAIN -- CONTINUOUS**

Current Cost of Commercial Fertilizers

(ENTER at least ONE value for nitrogen source and ONE value for phosphorus source)

Nitrogen Source			Phosphorus Source		
	\$/ton	cents/lb		\$/ton	cents/lb
Anhydrous Ammonia (82-0-0)	1,000	\$0.61	Mono-Ammonium Phos. (11-52-0)	1,300	\$1.03
Urea (46-0-0)		\$0.00	Liquid Ammonium Phos. (10-34-0)		\$0.00
UAN Liquid (32-0-0)		\$0.00			
UAN+Sulfur (28-0-0-5)		\$0.00			

Manure Analysis, Nutrient Value, Cost of Manure and Crop Plans

Manure Analysis	lb/wet ton	Nutrient Value of ONE TON of Manure (based on commercial fertilizer prices above)									Total Value of N and P ₂ O ₅ in three years
		1 st year			2 nd year			3 rd year			
		% avail.	lb/ton	\$/ton	% avail.	lb/ton	\$/ton	% avail.	lb/ton	\$/ton	
N	26.3	N 45	12	7.22	N 25	7	4.01	N 15	4	2.41	\$ 13.63 /ton
P ₂ O ₅	27.7	P ₂ O ₅ 70	19	20.01	P ₂ O ₅ 20	6	5.72	P ₂ O ₅ 5	1	1.43	\$ 27.15 /ton
K ₂ O*	24.6	Total =		27.22			9.73			3.83	
Total 3-Year Nutrient Value =											\$ 40.78 /ton

*(Assume no K₂O value--most soils have excess)

Cost of Manure			Crop plans				
			Year	Crop(s)	Yield goal(s)	Nitrogen required (lb/acre)	P ₂ O ₅ required (lb/acre)
Feedyard charge =	\$	2.00 /ton	1	Corn (grain)	220 bu / ac	250	100
Loading & spreading =	\$	3.50 /ton	2	Corn (grain)	220 bu / ac	250	100
Hauling charge =	\$	0.25 /ton/mile	3	Corn (grain)	220 bu / ac	250	100
Distance to be hauled =		20 miles	4	Corn (grain)	220 bu / ac	250	100
Total cost per ton =	\$	10.50 /ton					

Comparison of "Commercial Fertilizer Only" vs. "Manure + Commercial Fertilizer"

Commercial Fertilizer Only:

Year	Commercial Fertilizer				Cost per Year (\$/acre)
	Nitrogen Needed (lb/acre)	P ₂ O ₅ Needed (lb/acre)	Nitrogen (\$/acre)	P ₂ O ₅ (\$/acre)	
1	250	100	152.44	103.18	255.61
2	250	100	152.44	103.18	255.61
3	250	100	152.44	103.18	255.61
4	250	100	152.44	103.18	255.61
Total =			\$609.76	\$412.70	\$1,022.46

Manure + Commercial Fertilizer:

Year	Manure				Commercial Fertilizer				Cost per Year (\$/acre)
	Manure tons/acre	Manure Nitrogen (lb/acre)	Manure P ₂ O ₅ (lb/acre)	Manure Cost (\$/acre)	Nitrogen Needed (lb/acre)	P ₂ O ₅ Needed (lb/acre)	Commercial Nitrogen (\$/acre)	Commercial P ₂ O ₅ (\$/acre)	
1	20	236.7	387.8	210.00	13.3	-287.8	8.11	0.00	218.11
2		131.5	110.8	0.00	118.5	-298.6	72.26	0.00	72.26
3	20	315.6	415.5	210.00	-65.6	-614.1	0.00	0.00	210.00
4		131.5	110.8	0.00	52.9	-624.9	32.26	0.00	32.26
Total =				\$420.00			\$112.62	\$0.00	\$532.62



All GREEN HIGHLIGHTED BOXES in the on-line version of the calculator can be modified by the user.

1. Current Cost of Commercial Fertilizers

Nitrogen Source: At least one value must be entered for any one of the four potential commercial nitrogen sources. This will be used to set the basis of comparison for the cost of commercial nitrogen.

Phosphorus Source: At least one value must be entered for either of the two potential commercial phosphorus sources. This will be used to set the basis of comparison for the cost of commercial phosphorus.

2. Manure Analysis, Nutrient Value, Cost of Manure and Crop Plans.

Manure Analysis: This can be obtained from laboratory analysis of the manure being applied, or can be based on industry average. In 2007, TCFA staff collected more than 100 manure samples from feedyards throughout the three state area of Texas, Oklahoma and New Mexico. The average values are indicated below:

	Average (%)	Standard Deviation	lbs. per dry ton	lbs. per wet ton	
Nitrogen	1.9	+/- 0.53	38.5	26.3	NOTE: "lbs. per wet ton" represents the pounds of nutrients contained in one ton of typical manure "as-applied" to the land.
Phosphorus (P₂O₅)	2.0	+/- 0.62	40.8	27.7	
Potassium (K₂O)	1.8	+/- 0.67	36.1	24.6	
Zinc	0.03	+/- 0.01	0.5	0.4	
Iron	0.46	+/- 0.17	9.2	6.3	
Moisture Content	31.7	+/- 9.70	-----	-----	

Nutrient Value: To determine the amount of nitrogen and phosphorus that will be plant available over a three year period of time, an estimate of the availability of the nutrients must be made. Manure is a natural, organic fertilizer that contains some readily available plant nutrients and nutrients that will become available after decomposition of the organic matter. No nutrient value has been assigned to potassium, since most soils in this region have excess. Estimates of manure nutrient availability in the TCFA area are:

	1st Year	2nd Year	3rd Year	
Nitrogen	45%	25%	15%	(Assumes 15% nitrogen loss)
Phosphorus (P₂O₅)	70%	20%	5%	(Assumes 5% phosphorus loss)

Cost of Manure: These values are determined by obtaining a current quote from a feedyard and/or a custom manure hauler. Averages from a 2008 manure survey were: \$3.50/ton for loading & spreading, \$0.25/ton/mile. Prices paid to feedyards is variable.

Crop Plans: Cells are available to enter four crop years. For double-cropping, simply enter the data and abbreviate as needed (i.e., Corn silage followed by wheat for grazing could be listed "Corn sil/Wheat grz"). The same would be true for the yield goal(s) (i.e., "30 T/ac & Grz"). Enter numbers only for Nitrogen and P₂O₅ requirements.

3. Comparison of "Commercial Fertilizer Only" vs. "Manure + Commercial Fertilizer"

Manure application plans: The user of the calculator can evaluate several options for applying manure every year, every other year or every third year. In many cases, the costs associated with applying manure are comparable to the cost of commercial fertilizer even in the first year. The advantages of using manure are further demonstrated by the carryover of nutrients from year-to-year, which reduces the amount of supplemental commercial nitrogen and phosphorus that must be purchased.