

# Understanding a Manure Report

Manure is a valuable resource that provides nutrients for crop production. Before spreading manure on fields, it is important to know the concentration of the nutrients it contains so that the right quantities can be applied. Meeting crop nutrient requirements without creating any potential problems is the best practice.

At a minimum, all manure samples should be analyzed for Nitrogen (N), Phosphorus (P), Potassium (K), Sulfur (S) and dry matter (DM) to determine its fertilizing value. These nutrients in the manure can be matched to the requirements of a specific crop. Then additional nutrient sources, such as fertilizer or compost, can be applied to balance what is lacking in the manure. Samples can also be analyzed for ammonium-N, nitrate-N, micronutrients, pH, Electrical Conductivity (EC), or ash content.

AgSource Laboratories' manure report provides test results on an 'as received' basis. This is also called a wet-basis, reflecting the way the manure is usually spread. The results are expressed as pounds of nutrient per 1000 gallons or per ton depending on the moisture content. The only exception are the minor elements which are always reported on a 'dry matter' basis.

Manure nutrients are not 100 percent available the first year. AgSource Laboratories uses university research to estimate the available nutrient credits for nitrogen, phosphorus, potassium, and sulfur in the first, second and third year after application.

*Note: Manure nutrient content and availability varies for different animal species and manure management practices, so it is wise to test each manure source on your farm.*

**1) Dry Matter – DM - (%)** Dry matter indicates the dry weight of the manure after the water has been removed. The lab reports dry matter as the percentage total fresh weight, which determines if it is liquid, semi-solid or solid.

**Moisture (%)** Indicates the amount of water in the sample. (100 – DM% = moisture percent)

**2) Nitrogen – N reported as total nitrogen (lbs/1,000 gal or lbs/ton).** This measure of nitrogen includes both the immediately available inorganic ammonium – nitrogen (NH<sub>4</sub> + ) and the slowly released organic-N. The amount of each type of N can vary dramatically (20 to 80 percent) depending upon manure type and storage conditions. The N availability estimates are also given for the different methods of incorporating the manure in the application year, and for the following two years.

Submitted By:		Submitted For:		Laboratory Sample #	
106 North Cecil Street		Example Report		CC47004	
Bonduel, WI 54107					
Date Received:		Date Reported:	Date Sampled:	Information Sheet #	
14-Jul-2021		16-Jul-2021	7/8/2021	TEST_20200923	
Sample ID:	Test16	Livestock Type:	Dairy	Manure Type: Solid	
Dry Matter:	33.34 %	Estimated Available Nutrient Credits			
Moisture:	66.66 %	Total Nutrients lbs/Ton	In 1st Year of Application lbs/Ton	In 2nd Year of Application lbs/Ton	In 3rd Year of Application lbs/Ton
Nitrogen: (method-TKN)	> 72h or Not Inc	12.70	3.18	1.27	0.64
	Inc in 1 to 72h		3.81	1.27	0.64
	Inc within 1h or Inj		4.45	1.27	0.64
Phosphorus as P <sub>2</sub> O <sub>5</sub>		6.57	5.25	0.00	0.00
Potassium as K <sub>2</sub> O		5.68	4.54	0.00	0.00
Sulfur		3.20	1.76	0.32	0.16
Estimated Value of Available Nutrients		\$6.14	\$0.56	\$0.28	
<b>Other Manure Tests:</b>					
NH4-N: 1.74 lbs/Ton				Wet Basis	Dry Basis
NO3-N: 0.03 lbs/Ton					
				%N:	0.64 %
<b>Comments:</b>					
** Applications of manure on the same field for 2 consecutive years increases the availability of N and S by 10%, and for 3 or more consecutive years by 15%. There is zero availability on P and K for 2 or more consecutive years. Availability of N changes depending on the application technique. Injection or incorporation within 3 days of application results in higher N availability.					
*2 Value based on commercial fertilizer costs as of 01/08/2018. (N/Urea) \$0.364 / lb, P2O5(Diammonium Phosphate(DAP)) \$0.522 / lb, K2O(Potash) \$0.274 / lb, S(Elemental Sulfur) \$0.304 / lb.					
*3 If minor elements are requested, they are reported on a 'dry matter' basis. If ammonia, nitrate or pH are requested, they are reported on an 'as is' basis.					
** References: Nutrient application guidelines for field, vegetable, and fruit crops in Wisconsin (A2809), Table 9.1					
<small>DISCLAIMER: Data and information in this report are intended solely for the individual(s) for whom samples were submitted. Reproduction of this report must be in its entirety. Levels listed are guidelines only. Data was reported based on standard laboratory procedures and deviations.</small>					
<small>106 North Cecil Street, PO Box 7 • Bonduel, WI 54107 • P: 715.758.2178 • bonduel@agsource.com</small>					

### 3) Phosphorus as P<sub>2</sub>O<sub>5</sub> (lbs/1,000 gal or lbs/ton)

Phosphorus in the manure is reported as phosphate (P<sub>2</sub>O<sub>5</sub>) to determine the fertilizer-equivalent P content. About 90 percent of P is found in the solid portion of manure. But little as 40 percent of the applied P<sub>2</sub>O<sub>5</sub> may be available in the first year after applying manure if the soil receiving the manure has a Very Low or Low soil test P level.

### 4) Potassium as K<sub>2</sub>O (lbs/1,000 gal or lbs/ton)

Potassium is reported as potash (K<sub>2</sub>O) to determine the fertilizer-equivalent K content. About 75 percent of the potassium is found in the liquid portion of manure.

### 5) Sulfur as S (lbs/1,000 gal or lbs/ton)

The level of available sulfur, in both organic and inorganic forms, is expressed as elemental sulfur. The availability of sulfur in the first year is estimated at 55 percent and declines to ten percent in the second year, and five percent in the third year.

# Manure Analysis



Submitted By: **BN88888**

Submitted For:

**106 North Cecil Street  
PO BOX 7  
Bonduel, WI 54107**

**Example Report**

Laboratory Sample #  
**CC47004**

Date Received  
**14-Jul-2021**

Date Reported  
**16-Jul-2021**

Date Sampled  
**7/6/2021**

Information Sheet #  
**TEST\_20200923**

**Sample Id: Test16**

**Livestock Type: Dairy**

**Manure Type: Solid**

**Dry Matter: 33.34 %**

**Moisture: 66.66 %**

**Nitrogen:** > 72h or Not Inc  
(method-TKN)

Inc in 1 to 72h

Inc within 1h or Inj

**Phosphorus as P<sub>2</sub>O<sub>5</sub>**

**Potassium as K<sub>2</sub>O**

**Sulfur**

### Estimated Available Nutrient Credits

Total Nutrients lbs/Ton	In 1st Year of Application lbs/Ton	In 2nd Year of Application lbs/Ton	In 3rd Year of Application lbs/Ton
<b>12.70</b>	<b>3.18</b>	<b>1.27</b>	<b>0.64</b>
	<b>3.81</b>	<b>1.27</b>	<b>0.64</b>
	<b>4.45</b>	<b>1.27</b>	<b>0.64</b>
<b>6.57</b>	<b>5.25</b>	<b>0.00</b>	<b>0.00</b>
<b>5.68</b>	<b>4.54</b>	<b>0.00</b>	<b>0.00</b>
<b>3.20</b>	<b>1.76</b>	<b>0.32</b>	<b>0.16</b>
<b>Estimated Value of Available Nutrients</b>	<b>\$6.14</b>	<b>\$0.56</b>	<b>\$0.28</b>

### Other Manure Tests:

	Wet Basis	Dry Basis
<b>NH4-N: 1.74 lbs/Ton</b>		
<b>NO3-N: 0.03 lbs/Ton</b>		
	<b>%N: 0.64 %</b>	

### Comments:

**\*\*1** Applications of manure on the same field for 2 consecutive years increases the availability of N and S by 10%, and for 3 or more consecutive years by 15%. There is zero availability on P and K for 2 or more consecutive years. Availability of N changes depending on the application technique. Injection or incorporation within 3 days of application results in higher N availability.

**\*2** Value based on commercial fertilizer costs as of 01/08/2018.

N(Urea) \$0.364 / lb, P2O5(Diammonium Phosphate(DAP)) \$0.522 / lb, K2O(Potash) \$0.274 / lb, S(Elemental Sulfur) \$0.304 / lb.

**\*3** If minor elements are requested, they are reported on a 'dry matter' basis.

If ammonia, nitrate or pH are requested, they are reported on an 'as is' basis.

**\*\*** References: Nutrient application guidelines for field, vegetable, and fruit crops in Wisconsin (A2809), Table 9.1

**DISCLAIMER:** Data and information in this report are intended solely for the individual(s) for whom samples were submitted. Reproduction of this report must be in its entirety. Levels listed are guidelines only. Data was reported based on standard laboratory procedures and deviations.

## Minor Elements (expressed on a dry matter basis)

### 6) Calcium – Ca (%)

This is the level of total calcium in the manure.

### Magnesium – Mg (%)

This is the level of total magnesium in the manure.

### Sodium – Na (%)

This is the level of total sodium in the manure.

### Iron – Fe (ppm)

This is the level of available iron found in the manure.

### Manganese – Mn (ppm)

This is the level of available manganese found in the manure.

### Copper – Cu (ppm)

This is the level of available copper found in the manure. Some animal manures have high levels of copper from copper foot baths. Toxic effects from applying too much copper can last for years in soil.

### Zinc – Zn (ppm)

This is the level of available zinc found in the manure. It can be tied up and made unavailable to the crop when soil levels of phosphorus are high.

## Other Manure Tests

### 7) Ammonium – NH<sub>4</sub>-N (lbs/1,000 gal or lbs/ton)

This form of nitrogen is immediately available to crops after land application and is considered a quick-release N source, but it can easily be released as a gas (volatilized) and lost into the environment if it is surface applied. Approximately 75 percent of the ammonium nitrogen is retained if the manure is mixed into the soil immediately after surface application. Good practice for fall application is to wait until the average soil temperature is below 50°F before applying manure that is high in ammonium.

### Nitrate – NO<sub>3</sub>-N (lbs/1,000 gal or lbs/ton)

This form of nitrogen is immediately available to plants when applied to the soil. Nitrate nitrogen is typically very low in manure and is not included in the Total N availability estimates. It is helpful to test for nitrate in manure that is stored under aerobic conditions (stockpiles or aerated lagoons).

### pH

If manure is to be surface applied, knowing the pH can be beneficial because high pH can increase the proportion of ammonium-N and therefore result in increased volatilization during or after application. Manure is typically between pH 8 and 12. Do not expect the manure pH to affect soil pH levels.

### Electrical Conductivity – EC (mmhos/cm)

This test provides an indication of the soluble salt content in manure liquids. A measure of EC may be important when using

liquid manure or effluent to irrigate standing crops. Too much salt can result in 'leaf burn' damage to the plants.

### Carbon to Nitrogen Ratio – C:N Ratio

This value is the ratio of the total C and total N analyzed in the sample and is primarily measured in compost or manure containing large amounts of bedding. The C:N ratio indicates whether the manure will be an immediate source of plant available N, or if microbial decomposition of the manure will immobilize or make N unavailable after manure application. Values above the desired range of 20 to 25 indicate greater immobilization of nitrogen.

## Additional Information

### A) Submitted By

This is the customer name and address provided to the lab on the submittal form. The first time you submit samples to AgSource Laboratories you will be assigned an account number. Please reference this number when submitting additional samples.

### B) Submitted For

This is the name and address of the client for whom the sample was collected if it is different from the Submitted By information.

### C) Laboratory Sample # and Information Sheet #

These numbers are assigned by AgSource Laboratories to an individual sample for tracking and recordkeeping at the lab.

### D) Date Received

The date the sample arrived at the lab.

### E) Date Reported

This is the date AgSource Laboratories analyzed the sample and produced the report.

### F) Date Sampled

This is the date that the sample was taken on the farm. To assist you with record-keeping the date is transferred to the report from the manure sample submission form.

### G) Sample ID

This is the identification assigned to the sample by client and is often a name or number.

### H) Livestock Type

This identifies the animal species of the manure submitted.

### I) Manure Type

This is client provided information on the type of manure (Liquid, Slurry, Semi-Solid, or Solid).