Manure Sampling

CAFO Workshops 2025

Overview

- What are the sampling requirements?
- What are the record keeping requirements?
- When do we need to see these?
- Why does this need to be done?

Permit and Code Citation



S. NR 243.19(1)(c), Wis. Admin. Code

Lays out the parameters that need manure or process wastewater needs to be analyzed for

- Nitrogen
- Phosphorus
- Percent Solids

Laboratory certified under s. ATCP 50.50

Analyzed using applicable methods specified in ch. NR 219, Wis. Admin. Code

The department can specify the density of sampling required



Permit Section 1.6.2 – Sampling Requirements

"The permittee shall collect and analyze representative samples of land applied manure and process wastewater for the parameters outlined in the monitoring requirements for each sample point.."

References s. NR 243.19(1)(c)

Sampling Densities



Liquid Manure and Process Wastewater

Minimum of two samples are required per calendar month, per liquid manure source (WSF), when spreading



Solid Manure

Minimum of one sample per solid manure source taken quarterly when spreading



*Increased sampling frequency is encouraged if consistency of material or technology changes

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Permit Specifics

• Liquids

Monitoring Requirements and Limitations								
Parameter	Limit Type	Limits and Units	Sample Frequency	Sample Type	Notes			
Nitrogen, Total		lb/1000gal	2/Month	Grab				
Nitrogen, Available		1b/1000ga1	2/Month	Calculated				
Phosphorus, Total		lb/1000gal	2/Month	Grab				
Phosphorus, Available		lb/1000gal	2/Month	Calculated				
Solids, Total	J	Percent	2/Month	Grab				

Solids

Monitoring Requirements and Limitations									
Parameter	Limit Type	Limits and Units	Sample Frequency	Sample Type	Notes				
Nitrogen, Total		lbs/ton	Quarterly	Grab					
Nitrogen, Available		lbs/ton	Quarterly	Calculated					
Phosphorus, Total		lbs/ton	Quarterly	Grab					
Phosphorus, Available		lbs/ton	Quarterly	Calculated					
Solids, Total	/	Percent	Quarterly	Grab					

Sampling Scenario

- A farm is applying manure from a single pit over the course of 5 to 6 days. Assume the pit was properly agitated.
 - How many liquid samples should be taken?
 - Answer: Two samples to meet permit requirements
- A farm is applying manure from a single pit. Started applying manure on July 29th and completed applications on August 3rd.
 - How many liquid samples should be taken?
 - Answer: Four samples to meet permit requirements

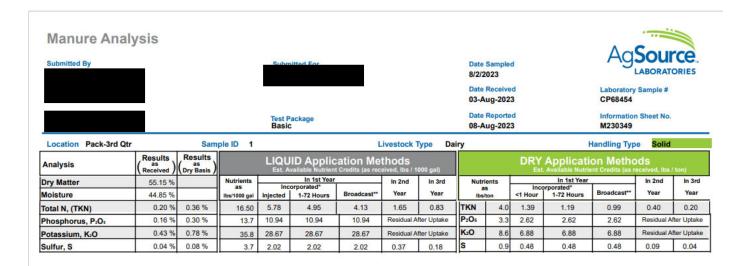
*Additional samples can be useful to better meet your farm's agronomic needs

Record Keeping Requirements

s. NR 243.19(2)(c)

- For each sample taken, the permittee shall record the following
 - Date, place, method, and time of sampling
 - Individual or lab that performed the sampling
 - Analysis date
 - Who performed the analysis
 - Analytical method used
 - Results of analysis

Submitted with the annual nutrient management update



Estimated Value of Available Nutrients:

1st Year - \$5.88

2nd Year - \$0.30

d Year - \$0.15

Value based on commercial ferilizer costs as of 07/28/2023.

N(Urea) \$0.61 / lb, P2O5(Diammonium Phosphate(DAP)) \$0.76 / lb, K2O(Potash) \$0.4 / lb, S(Elemental Sulfur) \$0.61 / lb.

*Surface applied liquid or solid manure incorporated within 1-72 hours after application.

**Liquid or solid manure left on the surface 4 or more days without incorporation. Wind and high temperature will result in greater loss of available nitrogen.

The Total N (TKN) values are the sum of Ammonium and Organic N. Avaialbility estimates are corrected for ammonia volatilization loss due to each application method .

Application of this manure on the same field for 2 consecutive years increases the availability of N and S by 10%, and for 3 or more years by 15%.

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

Liquid manure applied as irrigation will lose more nitrogen from volatilization. An additional 15% of the Liquid TKN value should be subtracted off the Liquid Broadcast TKN Range.

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.

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Reasons to Sample?



HELP GROWERS MEET NUTRIENT NEEDS OF A CROP



RESULTS DIRECTLY SUPPORT FUTURE NMP RECOMMENDATIONS



NUTRIENT VALUES CAN DIFFER BASED ON ANIMAL DIETS AND TECHNOLOGY USED AT THE FARM



HELPS MAKE BETTER DECISIONS ON COMMERCIAL FERTILIZER USAGE (\$\$\$)



DEMONSTRATE COMPLIANCE WITH CAFO PERMIT REQUIREMENTS

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"WILD WISCONSIN: OFF THE RECORD"