

Delaware Nutrient Management
Program

DELAWARE CONSERVATION
PRACTICE STANDARD

MANURE SAMPLING AND
ANALYSIS

(Reported by representative Animal
Units)

DEFINITION

Practice of sampling and testing manure to determine its nutrient and moisture content.

PURPOSES

This practice may be applied for one or more of the following purposes:

1. Obtain the average nutrient content of manure.
2. Calculate manure application rates.
3. Check efficiency of digestion of nutrients.
4. Change livestock diets.

**CONDITIONS WHERE PRACTICE
APPLIES**

This practice applies where:

1. A producer plans to land apply manure and will utilize this information to calculate manure application rates.
2. Producer aims to test and create a diet with more digestible nutrients.

3. Producers must assess nutrient concentrations in manures to calculate manure and fertilizer application rates to crop fields.
4. There is a need to assess nutrient concentrations in manures based on new livestock diets.

CONSIDERATIONS

It is important to collect manure samples properly to ensure that the nutrient content of the whole mass is represented. Technique, timing, and storage should all be considered when collecting manure samples. Ideally, samples should be collected for analysis just prior to field application. Samples of solid manure can be collected while loading, during spreading, from a daily haul, from within a poultry house, or from a stockpile. Samples of liquid manure can be collected from storage or during application. To ensure accurate values for manure in a plan, samples should be analyzed multiple times in a three year period. In all cases, composite samples should be mixed before taking a representative subsample for analysis. Samples should be frozen until delivered to a laboratory.

CRITERIA

Proficiency Testing. Manure samples should be tested only by labs that have enrolled as participants of a proficiency assessment program (such as Manure Analysis Proficiency (MAP) Program) each year. This ensures that the labs remain qualified for the program and proficient in their testing. The lab at the Delaware Department of Agriculture provides free manure analysis to Delaware farmers. Basic Dry Analysis includes results for total nitrogen (N), total phosphate (P2O5), soluble potash (K2O), Total Moisture & Dry Matter. Basic Liquid Analysis includes results for total nitrogen (N), total phosphate (P2O5), soluble potash (K2O), and total solids. Additional nutrients can be included in your analysis if desired.

Materials. Manure samples shall be collected and stored in nonmetallic containers, such as plastic buckets or freezer bags.

For liquid manure, ½ inch nonmetallic conduits (open on both ends) should be used to extract the manure. If the manure is in a lagoon, the manure samples should be collected in a small bottle at the end of a 10'-15' pole.

Protection. The nutrient content of manure can change during storage. It is important that sampling and analysis of the manure should be performed as close to the time of its application as possible to protect the sample from experiencing too great a loss of nutrients. Possible causes of changes in nutrient content are dilution, settling of solids and denser liquids, and gaseous loss.

REFERENCES

Guidelines for collection of samples and a description of sample analysis procedures can be viewed at:

Chapter 9

<https://s3.amazonaws.com/udextension/ag/files/2013/06/The-Mid-Atlantic-Nutrient-Management-Handbook-2006.pdf>

https://extension.umd.edu/sites/default/files/_images/programs/anmp/NM-6.pdf