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Manure Matters (newsletter)

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## Manure Matters, Volume 7, Number 4

Raymond Ward  
*Ward Laboratories, Inc.*

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Contact:  
Chris Henry  
217 LW Chase Hall  
University of NE  
Lincoln, NE 68583  
(402) 472-6529  
chenry@unl.edu



## How to Read a Manure Sample Report

Raymond C. Ward  
Ward Laboratories, Inc.

Correctly sampling manure can be a challenge. Try to obtain a representative sample and get the sample to the lab as close as possible to the time when manure is going to be applied. It is preferable to obtain sample results before land application so that appropriate application rates can be determined.

Slurry samples should be taken at the time the slurry is being applied, so that you have a good mix of the manure storage. The amount of material is usually recorded in gallons per acre and once the analysis is received, the amount of nutrients can be calculated. If you want to take a slurry sample before application, the manure storage would have to be mixed very well. It is difficult to get a good representative sample from a manure storage by just reaching in and grabbing a sample.

The container, preferably plastic, of 1/2 to 1 pint size can be used for the sample. Fill the bottle completely full so there is no head space. Seal the lid

with tape to ensure the lid does not come off during shipment. The sample should be chilled and preferably be shipped on ice if possible. We prefer a cooled sample more than a frozen sample. For those individuals close to the laboratory, hand delivered is best. Samples are considered a slurry any time they are fluid. If the sample is non-fluid, then we would call it a manure sample. Slurry samples are analyzed on an as is basis, without drying.

Manure samples are handled differently in the laboratory, because they are dried and ground before an analysis is done. Manure samples can be taken in a random method across the feedyard. If sampling stockpiled manure, use a soil probe and take several random samples from the pile for a composite sample. Be sure to get into the pile past the dry outside layer before collecting the sample for analysis. Poultry manure could be sampled as it is delivered from the houses into a stockpile or to a spreader, depending on the

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operation. Again, hand grabbing several random samples to make a composite sample is the ideal way to collect these types of samples.

When taking a random sample, the preferred number of sub-samples is fifteen. Often we say take 10-15 sub-samples to make one composite sample. For manure samples, they should be sealed in zip-lock bags to retain moisture so that the moisture content can be determined to accurately calculate total nutrients applied.

In our laboratory, manure samples and slurry samples are analyzed the day after receipt. Ideally, it would be best to send the samples to the laboratory early in the week so that the samples do not sit over the weekend before analysis.

As mentioned above, figure on 1/2 to 1 pint of slurry for analysis, and the same could be said for the manure samples. About a pint of material is needed, but it is more important to get a good composite sample. The slurry analysis is reported on an as is basis, and the amount of the dry matter content is also reported in a report. The total amount of nutrients is reported in lbs/1000 gal and in lbs/acre inch. An estimated availability the first year is also reported. However, for someone that is using slurry on the same land year after year, they should calculate application based on the total nutrients in the slurry and not just what is available the first year. The first year calculations are important for the first year of slurry use, but in future years, the total should be used.

The manure samples are reported on a

dry basis, and then calculated to lbs/ton on an "as is" basis. The amount available the first year per ton is also shown on the report. Again, when manure is applied for the first time, you should use the amount available the first year. In future years, it is best to look at the total analysis to determine the actual amount of plant nutrients being applied so that the land does not become excessively high in nutrients.

Below is a description and explanation of what is shown in a manure and slurry sample report.

\* **Organic Nitrogen** is the total amount of nitrogen less ammonium and nitrate. The availability of organic nitrogen is less than 100% and dependent on many factors, but the organic nitrogen in slurries would be released at about 50% and about 25% from manures.

\* **Ammonium** is 100% available if incorporated within 2 days. Ammonium loss could be 90% if left on dry surfaces for more than 15 days.

**Nitrate** is 100% available.

**Total Nitrogen** is the sum of organic nitrogen, ammonium-N and nitrate-N.

**Phosphorus** Total phosphorus is reported as  $P_2O_5$ . Approximately 50% would be available the first year in slurries, and 35% in manures.

**Potassium** is reported as  $K_2O$ . All potassium is in the mineral form, so it is 100% available the first year.

**Sulfur** is usually in organic form and it would be about 50% available the

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first year in slurries and 25% available in manures.

**Calcium** is mainly in an organic form and would be available at about 50% in the first year.

**Magnesium** would be similar to calcium.

**Sodium** is a non-plant nutrient that can cause problems in soils. Sodium disperses the clays and slows water infiltration. The sodium content may become a problem when more than 500 lbs of sodium is applied.

**Zinc, Iron, Manganese & Copper** are available at about 50% the first year.

**Soluble Salts** is a reading that indicates the total amount of salts in the slurry or manure. Soluble salts are actually plant nutrients. When more than 5000 lbs of Soluble Salts are applied, a salinity condition could develop.

**pH** is acidity or alkalinity of the manure or slurry and is usually slightly alkaline.

**Dry Matter** is the amount of solid material in the slurry or manure.

\* More information on nutrient availability factors and their use can be found at:

<http://www.ianr.unl.edu/pubs/wastemgt/g1335.htm>

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