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NF02-507 Manure Testing: What to Request?

Charles A. Shapiro  
*University of Nebraska-Lincoln, cshapiro1@unl.edu*

Charles S. Wortmann  
*University of Nebraska - Lincoln, cwortmann2@unl.edu*

Richard Deloughery  
*University of Nebraska - Lincoln*

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Manure Testing: What to Request?

By Charles Shapiro, Extension Soils Specialist; Charles Wortmann, Nutrient Management Specialist; and Richard Deloughery, Water Quality Extension Educator

Manure testing is necessary to make optimum use of manure while protecting water resources. This NebFact is a guide to providing information on a Manure Sample Submission Form for reliable interpretation of results.

Tests Desired

The tests most frequently needed to optimize nutrient management are total and ammonium nitrogen (N), phosphorus (P$_{2}$O$_{5}$), potassium (K$_{2}$O), pH, soluble salts, sodium, and dry matter content.

**Nitrogen.** Manure contains both organic and inorganic forms of nitrogen. Ammonium-N is the primary inorganic form in manure and is readily available to crops. Nitrate-N is usually too small to affect management decisions, unless the manure is composted.

Organic nitrogen is determined as the difference between total nitrogen and inorganic nitrogen. Organic nitrogen becomes available to plants as manure decomposes, with 20 percent to 50 percent of organic nitrogen available to the first crop after application. Much of the remaining organic nitrogen becomes available in subsequent years.

**Phosphorus.** Most manure phosphorus (about 75 percent) is in inorganic forms. Phosphorus analysis allows calculation of the most economical manure rates while avoiding over-application of phosphorus with severe consequences to surface waters.

**Other tests.** Tests for potassium, sulfur, zinc, and other nutrients may be useful. When manure is applied to meet nitrogen or phosphorus needs, other nutrients are generally adequate for soils in Nebraska. If liquid manure is applied to a crop through sprinkler irrigation, test for soluble salts or electrical conductivity to avoid leaf burning. Information on soluble salt content or electrical conductivity is useful in managing anaerobic lagoons as “purple lagoons” associated with EC values of less than 6 mmhos/cm. When the surface of a lagoon has a purple color, the microbial processes are functioning well and the odor is less.

Report Information

**Units.** Specify if the results should be reported in pounds of nutrient per ton (spreader), per 1,000 gallons (tanks or umbilical cord), or per acre-inch (irrigation). This depends on your application method. Phosphorus and potassium should be reported in the oxide form (P$_{2}$O$_{5}$ and K$_{2}$O) so their fertilizer value is easy to calculate.

**Moisture.** Reporting the results on an “as is” or “wet” basis allows a producer to determine the nutrient application rate without adjusting for water content.

**Nutrient availability.** Laboratories can estimate the amount of nutrients available in the first year, and the amount of manure nitrogen which will be available during following years. This is especially important for solid manures.

**Application basis.** Manure is often applied on a “nitrogen basis” to supply enough nitrogen to meet crop needs. When soil test phosphorus is excessive, manure may be applied on a “phosphorus basis”, that is at a rate sufficient to match phosphorus removal by the crop.

Estimation of Crop Available Nitrogen

The information requested is used to estimate the amount of nitrogen available to the crop from manure. Select the appropriate ammonium-N factor for the time of manure application and days until incorporation to enable an estimate of ammonium-N loss to the atmosphere. Indicate the type of manure and species as these affect organic-N availability. If manure applied in the past is similar to the current sample, give information on past year applications and the rate applied to estimate the amount of nitrogen available to this year’s crop from the previously applied manure.

Suggestions on how to interpret a manure analysis are given in the NebGuide G1335, Determining Crop Available Nutrients from Manure.
# Manure Sample Submission Form

## Client information:
- Name: _________________________
- Address: _______________________
- Phone: _________________________
- Account: _______________________
- E-mail: _________________________
- Fax: ___________________________

## Analysis results to be communicated to:
- Mail address
- Fax number
- e-mail address

## Tests Desired
- Nebraska Minimum (Total N, NH₃-N, Organic-N, P, K, moisture)
- Standard lab analysis
- pH, soluble salts, sodium
- ____________________________
- ____________________________

Contact your lab for its ‘options’.

## Sample names:

## Sample collection date:

## Send copy to:

## Report Information

### Units:
- lbs/ton
- lbs/1000 gallons
- lbs/acre inch
- ppm or %

### Moisture:
- As received or wet basis
- Dry matter basis

### Nutrient availability:
- 1st year availability only
- Additional years

### Estimate application rate on a:
- Nitrogen basis
- Phosphorus basis

### Application rate units:
- Tons/acre
- 1,000 gallons/acre
- Inches/acre

## For the Estimate of Crop Available Nitrogen

### Ammonium-N factors

#### Time of application
- Fall
- Winter
- Spring
- Summer

#### Manure incorporation
- Immediately
- One day later
- Two days later
- Three days later
- Four to seven days later
- Not incorporated

#### Sidedress application
- Incorporated as applied
- Sprinkler irrigated

### Organic-N factors

#### Type of manure
- Solid
- Solids with litter or bedding
- Composted solids
- Stored liquid
- Fresh, daily scrape

#### Species
- Dairy
- Beef
- Swine
- Poultry – layer
- Poultry – broiler
- Turkey
- Other: _______________________

### Past year applications
- Every year
- Every other year
- Every third year
- Every fourth year
- First time application

### Rate applied (if known):

### Notes:

This generic manure sample form is provided by University of Nebraska–Lincoln Extension.
Area Laboratories

Agvise Laboratories
902 13th St. N, P.O. Box 187
Benson, MN 56215
(320) 843-4109
agvise@willmar.com

A&L Heartland Labs, Inc.
111 Linn Street, P.O. Box 455
Atlantic, IA 50022
(712) 243-6933
sfrederiksen@al-labs.com

Midwest Laboratories
13611 “B” St.
Omaha, NE 68144
(402) 334-7770
jptl@midwestlabs.com

Olsen’s Agricultural Laboratory
21 E. 1st St., P.O. Box 370
McCook, NE 69001
(308) 345-3670
info@olsenlab.com

Platte Valley Laboratories
P.O. Box 807, 914 Hwy. 30
Gibbon, NE 68840
(308) 468-5975
pvl@nctc.net

Servi-Tech Laboratories
1602 Park Dr. West
Hastings, NE 68902
(402) 463-3522
brians@servi-techinc.com

University of Nebraska
Soil and Plant Analysis Lab
153 Keim Hall
P.O. Box 830916
Lincoln, NE 68583-0916
(402) 472-1595
ajackson1@unl.edu

Ward Laboratories
4007 Cherry, P.O. Box 788
Kearney, NE 68847
(308) 234-2418
rayward@wardlab.com

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