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

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

Richard Deloughery

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UNL's Livestock Environmental Issues Committee
Includes representation from UNL, Nebraska Department of Environmental Quality, Natural Resources Conservation Service, Natural Resources Districts, Center for Rural Affairs, Nebraska Cattlemen, USDA Ag Research Services, and Nebraska Pork Producers Association.

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

Manure testing: what to request?

Charles Shapiro, Charles Wortmann and Richard Deloughery

Manure testing is necessary to make optimum use of manure while protecting water resources. The ***Manure Sample Submission Form*** requests information required for reliable interpretation of the results.

Tests desired

The tests most frequently needed to optimize nutrient management are total and ammonium nitrogen (N), phosphorus (P_2O_5), potassium(K_2O), 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 N is determined as the difference between total N and inorganic N. Organic N becomes plant available as manure decomposes, with 20 to 50% of organic N available to the first crop after application. Much of the remaining organic N becomes available in subsequent years.

Phosphorus. Most, about 75%, manure P (about 75%) is in inorganic forms. P analysis allows calculation of the most economical manure rates while avoiding over-application of P 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 N or P 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. Electrical conductivity is useful in managing anaerobic lagoons.

Report information

Units. Specify if the results should be reported in pounds of nutrient per ton (spreader), per 1000 gallons (tanks or umbilical cord), or per acre-inch (irrigation). This depends on your method of application. Phosphorus and potassium K should be reported in the oxide form (P_2O_5 and K_2O) so its 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 use the results without adjusting for water

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content additional moisture calculation.

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

Application basis. Manure is often applied on a "nitrogen basis", to supply enough N to meet crop needs. When soil test P is excessive, manure may be applied a producer may want to apply manure on a "P basis", that is at a rate sufficient to match P removal by the crop.

Estimation of crop available N
The information requested is used to estimate **crop available N** from manure. Select the appropriate **ammonium-N loss 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 are major determinants of 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 organic N available to this year's crop from the previously applied manure.

Suggestions on how to interpret a manure analysis are given in the NebGuide G97 –1335-A Determining Crop Available Nutrients from Manure (http://www.ianr.unl.edu/pubs/wastemgt/g1335.htm).

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
jpt1@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
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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Manure Sample Submission Form

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Client information:
Name:_____
Address:_____
_____
_____
_____
Phone:_____
Account:_____

E-mail: _____
Fax: _____

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

If sent to e-mail address, would you like a:
- Q pdf file
- Q txt file
- Q wks file

Sample names:
_____
_____
_____

Sample collection date:
_____

Send copy to: _____
_____
_____

Tests Desired
- Q Nebraska Minimum (Total N, NH_4-N, Organic-N, P, K, moisture)
- Q Standard lab analysis
- Q pH, salts, sodium
- Q _____
- Q _____
- Q _____

Contact your lab for their 'options'.

Report Information

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

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

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

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

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

For the Estimate of Crop Available Nitrogen

Ammonium-N factors

Time of Application
- Q Fall
- Q Winter
- Q Spring
- Q Summer

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

Sidedress application
- Q Incorporated as applied
- Q Sprinkler irrigated

Organic-N factors

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

Species
- Q Dairy
- Q Beef
- Q Swine
- Q Poultry – layer
- Q Poultry – broiler
- Q Turkey
- Q Other:_____

Past Year Applications
- Q Every year
- Q Every other year
- Q Every third year
- Q Every fourth year
- Q First time application

Rate applied (if known):
_____

Notes: _____
_____
_____
_____
_____
_____

This generic manure sample form is provided by UNL Cooperative Extension.