

For information or assistance with *management options*, contact your local:

- Conservation District,
- Cooperative Extension Service or
- Natural Resources Conservation Service.

South Dakota Association of Conservation Districts
P.O. Box 275
Pierre, SD 57501-0275
(800) 729-4099
Fax: (605) 895-9424
www.sdconservation.org
info@sdconservation.org

USDA Natural Resources Conservation Service
Federal Building
200 Fourth Street SW Huron, SD 57501
(605) 352-1200
Fax: 605-352-1270
www.sd.nrcs.usda.gov
publicaffairs@sd.usda.gov

South Dakota Department of Agriculture
Office of the Secretary
Foss Building, 523 E. Capitol, Pierre, SD 57501
(800) 228-5254 • (605) 773-3375 • Fax: (605) 773-4003
www.state.sd.us/doa

For information or assistance with *regulatory requirements*:

South Dakota Department of Environment and Natural Resources
Surface Water Quality Program
Foss Building, 523 E., Capitol Avenue
Pierre, SD 57501-3182
(800) GET-DENR • (605) 773-3351 • Fax: (605) 773-5286
www.state.sd.us/denr/DES/surfacewater/feedlot.htm

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Sampling Manure for Nutrient Management



Photo courtesy USDA NRCS SD

Sampling Manure for Nutrient Management

Nutrients needed for crop production can be supplied by manure, commercial fertilizer, or a combination of the two.

Regardless of the source, nutrients must be applied in the right amount to meet crop production needs and prevent surface and ground water pollution.

By knowing the nutrient content of the manure applied, producers can adjust the amount of commercial fertilizer needed to meet crop requirements.

Producers have two options for determining

the nutrient content of manure produced on their farm:

1. Estimate using published values (see table below) or
2. Use the results of a laboratory analysis.

An analysis estimates the nutrients in manure from a specific operation. Nutrient values listed in publications are averages from samples tested over a period of several years.

A laboratory analysis is the preferred and most accurate of the two methods. All permitted facilities are required to use a lab analysis.

The nutrient content of manure varies with the type, age, and weight of livestock; feed program; and manure handling system.

At minimum, manure should be tested for total nitrogen, inorganic nitrogen, total phosphorus and total potassium. An analysis for these nutrients provides the information needed to develop a nutrient management plan.

Estimated Nutrient Content of Selected Types of Manure¹

	Nitrogen Content	Phosphorus Content	Potassium Content
Solid Manure (Lbs/ton)			
Beef or Dairy Cattle	5	5	5
Broilers or Turkeys	25	40	30
Liquid Manure (Lb/1,000 gallons)			
Dairy	15	10	20
Swine Finishers	40	35	30

¹Adopted from Fertilizer Recommendations Guide (EC750), South Dakota State University Cooperative Extension Service. For additional estimated nutrient content of manure values see Midwest Plan Service Publication MWPS-18.

This publication describes how to collect, handle, and ship manure samples. For information about how to interpret manure test results, refer to “Using Results from a Manure Analysis” (SD-NRCS-FS-38). For information about land application, refer to

“Calibrating Manure Spreader Application Rates” (SD-NRCS-FS-43). Brochures are available online at SD DENR’s website. Visit: <http://www.state.sd.us/denr/DFTA/WatershedProtection/WQInfo.htm>.

How to Sample Manure

The accuracy of a laboratory analysis depends on the quality of the manure sample received. A solid manure sample collected as close to the time of land application as possible provides the best information about its fertilizer value. It is important, however, to allow the laboratory time

to complete the analysis and return the results. Usually three weeks is sufficient. Liquid manure must be agitated before sampling and is usually land applied after the sample is taken. Therefore, it is suggested that producers handling liquid manure use the average of several years

of nutrient test results to estimate the nutrient level in the manure. When information from past years is not available, cooperative extension and conservation district professionals can provide publications that list the estimated nutrient levels commonly found in liquid manure.

SAMPLING SOLID MANURE



Photo courtesy USDA NRCS SD

An accurate lab analysis of solid manure hinges on collecting a representative sample.

1. Collect manure from at least 10 different locations in the barnyard or feedlot. The locations selected should be similar in moisture, feed, hay and bedding content. Avoid areas near waterers, drains, and feedbunks where materials other than manure often accumulate. If sampling stock-piled manure, collect manure from several depths. Avoid the exposed outer layer of the pile.
2. Dump the manure collected on a hard, flat surface. Use a shovel or pitchfork to mix the manure until the pile looks uniform.
3. Take several small samples from the mixture until about a gallon has been collected.
4. Place the mixture in a heavy weight plastic freezer bag. Squeeze the bag to remove the air. Place the bag in a second freezer bag to prevent leakage.
5. Freeze or store the sample in a cool place until ready to ship. See information at right for sample identification and shipping instructions.

SAMPLING LIQUID MANURE



Photo courtesy USDA NRCS SD

Sampling from a loading pipe or tank spreader is the preferred method of collecting a liquid manure sample.

1. Agitate the manure in the storage facility thoroughly before loading the tank spreader. If this step is omitted, the sample will not accurately estimate the nutrient value of the manure in the storage pit.
2. Collect one quart samples from at least five different tank spreader loads using a clean plastic container.
3. Pour the samples into a clean, large plastic pail.
4. Thoroughly stir the contents of the pail. Use a long handled dipper to transfer several cups of the swirling mixture to a clean, one quart **plastic** bottle until the liquid is about two inches from the top of the bottle. **DO NOT FILL TO THE TOP!**
5. Place the bottle in a heavy weight resealable plastic freezer bag to prevent leakage.
6. Freeze or store the sample in a cool place until ready to ship. See information at right for sample identification and shipping instructions.

SAMPLE IDENTIFICATION AND SHIPPING

1. Attach a label to the bag or bottle of manure. List:
 - Name
 - Mailing address
 - Telephone number
 - Sample site (feedlot, pit, pond)
 - Type of manure (beef, dairy, swine, chicken, turkey)
 - Date the sample was collected.
2. Complete a laboratory information sheet. If possible, use an information sheet from the lab that will complete the test. Visit the county Cooperative Extension or conservation district office for assistance in obtaining forms.*
3. Place the frozen or refrigerated sample and laboratory information sheet in a styrofoam or similar insulated container. Add cold packs and packing materials to protect the sample during shipment.
4. Deliver the sample to the lab or ship by overnight mail or courier. If using regular mail, ship the sample early in the week so that it arrives at the lab by Thursday. Samples that arrive on the weekend may warm up and start to decompose. The nitrogen test for these samples will be inaccurate.

Ship samples to:

Analytical Services
Olson Biochemistry Labs, ASC 133
South Dakota State University
Box 2170
Brookings, SD 57007-1217
Phone: (605) 688-6171
Fax: (605) 688-6295

*A form for submitting manure samples to the lab at SDSU is available online. Visit: <http://anserv.sdstate.edu/> and click on "Submission Form" to download the file. Fees are listed.