

the weather. Follow the same procedures when collecting samples.

■ **Composted waste.** Use the same storage and sampling procedures recommended for stockpiled litter. Although nutrients are somewhat stabilized in these materials, leaching of mobile nutrients can occur during rains. Therefore, sample unprotected compost periodically to monitor changes.

Submitting the sample

Submit samples, the appropriate fee and a completed *Waste Sample Information* form (form AD-9). Information forms are available online at www.ncagr.gov/agronomi/forms.htm.

Use permanent ink to fill out the form. For the most reliable estimate of nutrient availability, provide all the information requested, and select the correct waste identification code and application method from the choices listed. If the codes do not seem to apply to your material, then add a statement describing the waste in the **SAMPLE DESCRIPTION / COMMENTS** section.

It is best to ship samples via a private carrier to the division's physical address. Personal delivery is also acceptable. Do not ship waste samples via U.S. Mail. Do not put fees or information forms inside plastic bags containing waste material.

Obtaining the report

Select the **Find Your Report (PALS)** link on the [Agronomic Division home page](#) to access the report-search utility. Reports remain accessible online for about three fiscal years.

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*For more information on
sampling, interpreting agronomic reports or
implementing recommendations,
contact the regional agronomist
assigned to your county.*

www.ncagr.gov/agronomi/rahome.htm

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Sampling for Waste Analysis



The Agronomic Division analyzes agricultural, municipal and industrial wastes for plant nutrient concentrations and chemical properties pertinent to their agronomic use. Agricultural wastes include animal manures, crop residues, and composted materials. Waste is often land applied to provide essential nutrients for crop production and to improve soil physical properties. At agronomic rates, these applications are both agriculturally beneficial and environmentally safe.

Growers who store waste products and use them as fertilizer must follow the nutrient-management regulations issued by the N.C. Department of Environment and Natural Resources. Environmental impact is most likely to occur when wastes are applied 1) at excessive rates, 2) at times when crop demand is low or 3) on slopes vulnerable to excess surface movement of water. Nutrients taken up by plants or retained in the soil do not pose a threat to water resources.

Waste analysis provides data on fertilizer value, potential hazards, pH and lime equivalency, if applicable. This information enables farmers to 1) save money by reducing use of commercial fertilizer and liming materials, 2) use agronomic application rates that minimize movement of nutrients into surface and ground water and 3) prevent buildup of toxic levels of heavy metals in the soil.

How and when to collect samples

The value of waste analysis depends on the quality and timing of the sample. Ideally,

samples should be taken as close to the time of application as possible.

In most cases, guidelines for sampling major sources of waste are clearly established. However, when information on sampling is insufficient, use a common-sense approach. In all cases, the sample must truly represent the bulk of the waste material for test results to provide valid recommendations for use.

Sampling liquid wastes

Always place liquid-waste samples in plastic containers. If using a recycled container, remove the original product label. It is best to use a one-pint container, filled about three-fourths full, and securely capped. Label the container with your name and the identifier that you assigned to the sample when you entered it on the [Waste Sample Information](#) form. Refrigerate samples if they are held for more than a day before shipping.

■ **Lagoon liquid.** Premixing the lagoon is ideal but not essential. If the lagoon is a two-stage system, draw samples from the lagoon that will be pumped. Do not include floating debris and scum in the samples.

Take subsamples from 10 to 12 sites around the lagoon. A 10-foot rod with a 1-pint container attached to the end serves as a good sampling device. Collect samples at least 6 feet from the edge of the lagoon to a depth of about 1 foot. Shallower samples from an anaerobic lagoon are not acceptable because oxygen transfer near the surface can alter the chemistry of the solution. After collecting subsamples, mix them thoroughly in a plastic container (such as a bucket) and submit 3/4 pint of the mixture to the laboratory.

■ **Liquid slurry.** Premixing the slurry in a pit or storage basin prior to sampling is ideal. Collect subsamples from 10 to 12 areas of the pit and from different depths. Mix the subsamples thoroughly in a plastic container.

An 8- to 10-foot section of 1/2- to 3/4-inch PVC pipe can be used to collect samples. Insert the pipe into the pit, and press a thumb over the end to create an air lock. Remove the pipe from the pit/basin, place it over the sampling container and release the air lock. Mix as for lagoon liquid, and submit 3/4 pint.

Do not rinse the sample into the container because this will dilute the results. However, if you plan to add water to the waste prior to application, then adding the proportionate amount of water to the sample is appropriate.

Sampling solid wastes

Solid waste analysis includes an assessment of moisture content, which makes it possible for nutrient concentrations to be converted to a wet basis after samples have been dried for analysis. As a result, it is very important that the sample submitted be well sealed so it retains the same moisture content as at collection.

Use a shovel or a specially designed pipe to take slices or cores to a uniform depth. Put a 1-pint sample in a plastic container, such as a heavy-duty, tightly sealable, plastic bag. Refrigerate samples that will not be shipped immediately.

Combine all subsamples in a plastic container, and mix thoroughly. Submit 1 pint of this mixture as your sample.

■ **In-house solid waste.** The concentration of nutrients in poultry litter varies widely—both from house to house and within each

house. Often, waste from a single house will be collected for application. In such cases, sample the waste from each house separately.

Collect waste cores or slices from 10 to 12 locations in each house. Cores or slices should extend from the top to the bottom of the accumulated waste. Take samples around waterers, feeders and brooders in proportion to the space these areas occupy in the house.

■ **Below-house solid waste.** In a high-rise system, manure accumulates below the cage area. Under a properly managed system, the manure is fairly uniform in moisture and appearance. However, if some areas of manure differ in appearance, take samples in proportion to the size and number of these areas. For example, if 10 percent of the manure differs from the bulk of the pile, then take 10 percent of the total sample from those areas. Otherwise, sample randomly throughout the entire waste accumulation area.

■ **Stockpiled litter.** Always collect 10 to 12 subsamples to a depth of at least 18 inches. Ideally, stored litter has an impervious surface beneath it and a cover over it. Uncovered waste develops a weathered exterior that will not accurately represent the majority of the material because rainfall moves water-soluble nutrients through the pile. If the litter is unprotected and used over an extended period, take new samples before each application.

■ **Surface-scraped manure.** Surface-scraped and piled materials are similar to stockpiled litter. They need protection from