

Manure Sampling Procedures

John P. Chastain

A manure nutrient analysis is of little use if the sample is not representative of the manure that is land applied. A representative sample consists of a mixture of material collected from several locations. The sampling techniques vary with the moisture content of the manure.

Lagoon or Liquid Storage Surface Water

Irrigation of lagoon water to fertilize crop or pasture land is a common method used to control the liquid level (see chapter 4). A floating inlet is generally used to insure that only surface water is pumped. The inlet to the irrigation pump is typically 18 to 24 inches below the surface.

A plastic sampling cup with a 10 to 12 ft handle is a common device used to obtain a surface water sample. The procedures used to obtain a representative sample with a plastic cup on a pole are listed below.

- Collect about a pint of sample from several locations (6 to 8) around the perimeter of the lagoon.
- Collect each sample about 6 ft from the bank and between 12 and 24 inches below the surface.
- Avoid floating debris or scum.
- Pour each of the samples into a clean plastic bucket and mix well.
- Pour a well mixed, 16-ounce sample from the bucket into a clean plastic bottle.

A small plastic bucket tied to a long rope can also be used to obtain a representative sample from a lagoon or liquid storage.

- Throw the bucket out towards the middle of the lagoon while holding on to the rope.
- Begin pulling the bucket back to the bank quickly as soon as it strikes the water. A small plastic bucket can be pulled through the top 12 to 24 inches.
- Make sure that the bucket is raised above the water before it strikes the bank.
- Pour each sample into a large bucket.
- Repeat this procedure at 4 to 6 locations that are evenly spaced around the perimeter of the lagoon.
- Pour a well mixed, 16-ounce sample from the bucket into a clean plastic bottle.

Agitated Solids and Liquids

Removal of sludge from a lagoon or solids from a liquid storage requires thorough agitation of the solids and liquids (see chapter 4). The nutrient content of agitated manure is much greater than for surface water (see chapter 3). The same basic sampling techniques used for sampling surface water can be used for sampling manure during agitation. The required modifications to the sampling technique are listed below.

- Collect samples as far down into the agitated liquid column as possible. This can be easily done with a plastic bucket on a long rope.
- Collect 4 to 6 samples while the manure is being agitated and mix them in a large plastic bucket. Most agitation equipment is effective 75 to 100 feet away from the equipment.

Solid Manure

Solid manure piles easily and typically has a moisture content of 80% or less. Take 8 to 10 samples from different areas in the pile. A soil sampling probe or shovel can be used. Put each of the samples into a plastic bucket and mix. Place a well mixed sample in a 1 to 2 quart, plastic bag that can be sealed. Obtain the special sample bags from the County Extension office if the sample is sent to the Ag. Services Laboratory at Clemson University.

Sample Handling

Improper handling of manure samples can lead to ruptures in the plastic containers and an alteration in the nitrogen content. Guidelines for handling manure samples are listed below.

- Do not completely fill plastic sample bottles. Leave an air space of several inches in the bottle to allow for expansion due to the release of manure gases.
- Do not use a glass container to store or transport manure samples.
- Label sample bottles or bags indicating a description of the sample, the date the sample was taken, and farm name.
- Place the samples on ice in a cooler until the samples are mailed or transported to the laboratory. A well-cooled sample will reduce the biological activity and will reduce the amount of gases released. Freeze the sample prior to mailing if possible.
- Shipment of samples by overnight mail is preferred.