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# Sample Preparation for Manure

## 1. Application

A subsample of all manure samples received at the lab are thoroughly mixed, sub-sampled, weighed, dried, and ground prior to analysis. The mixing and sub-sampling operations help to ensure a homogeneous mixture for analysis.

## 2. Summary of Methods

## 3. Safety

Basic precautions regarding mechanical equipment and electric motors must be followed. All electrical equipment is properly grounded and installed and maintained by qualified electricians. Dust masks, safety glasses and ear protection plugs should be used when grinding forages.

## 4. Interferences

## 5. Sample Collection, Preservation, and Handling

Solid manure samples (>15% DM) typically are received in a fresh, aggregated state, unsuitable for most analysis without homogenization. The amount of sample needed for analysis is generally around 50 grams for solid manure and around 100 grams for liquid manure samples (<15% DM). Many samples are larger than this as received. Such samples must be sub-sampled properly to ensure that a representative sample is obtained for further analysis.

## 6. Apparatus and Materials

6.1 Cabinet-type, forced-air drying oven at 55 C, $\pm$ 3 C
6.2 Analytical electronic balance, accurate to 0.1 mg
6.3 Plastic hexagonal tray, approximately 10 cm diameter, 3 cm deep
6.4 Bucket or bin, if necessary, for mixing and sub-sampling
6.5 Wiley mill, 1 mm size
6.6 Sample tray rack accommodating five rows of ten sample cups
6.7 Sample cups with covers, plastic, 6 cm in diameter, 8 cm deep

## 7. Reagents

None.

## 8. Methods

8.1 Record tare weight of plastic tray.
8.2 Thoroughly mix the sample. Shake if liquid or use spatula or hands if solid.
8.3 Sub-sample around 50 grams of solid manure or around 100 grams of liquid manure. If liquid manure is very low in solids (approx. <2% DM) a slightly larger sample size may be required.
8.4 Record initial weight of sample plus tray.
8.5 Place the remaining sample in a refrigerator/freezer until all analyses are complete.
8.6 Place trays in drying oven for 24-48 hours.
8.7 Weigh trays back to record dry weight of sample plus tray.
8.8 Grind sample thru 1 mm Wiley mill and place in sample cup, cap and store in a sample tray.

## 9. Calculations

Percent Lab Dry Matter (% DM):
% Lab DM = {(Dry Weight of Sample and Tray – Tare Weight of Tray) / (Initial Weight of Sample and Tray – Tare Weight of Tray)} X 100

Percent Lab Moisture:
% Lab Moisture = 100 - % DM

## 10. Quality Control

## 11. Reporting

Results are reported as % Lab Dry Matter and % Lab Moisture on an as received basis.

## 12. References