

## Organic Matter Analysis

### 1. Scope:

This procedure is to be used for the analysis of organic matter in fertilizer. This method is applicable to peat, plant tissue, potting mixes, manure, and various materials of organic origin.

### 2. Principle:

The moisture content of the sample is determined then the sample is ashed at high temperature to remove organic materials. Samples are prepared as described in RA-SP-SMPL-PREP.

### 3. Safety:

Care should be taken when removing hot items from ovens.

### 4. Equipment, Reagents, and Supplies (equivalents are acceptable):

- 4.1 Drying Ovens 105°C
- 4.2 Vacuum oven 550 – 600°C
- 4.3 Analytical balance capable of weighing to 0.1 mg
- 4.4 Vycor beaker
- 4.5 Desiccator

### 5. Sample Analysis

- 5.1 Weigh an empty, labeled vycor beaker and record the weight.
- 5.2 To determine the moisture content, weigh ~1.0-10.0g of solid sample or up to 25.0g of liquid sample into the beaker and record the weight. For solid samples with guarantees > 50%, weigh 5.0g of sample. For solid samples with guarantees <50% weigh, 10.0g of sample. For very light-colored liquid samples, weigh 1.0g. For very dark-colored samples, weigh up to 25.0g. Sample weight used may need to be adjusted based on initial results.
- 5.3 Dry overnight at 105°C, cool in desiccator, and reweigh and record the weight and oven temperature.
- 5.4 Place the beaker in a cold furnace and gradually raise the temperature 550 – 600°C. Maintain this temperature for  $\geq 2$  hours.

5.5 Cool in a desiccator and reweigh, recording the weight.

**6. Calculations:**

6.1 For samples not dried prior to organic matter analysis:

$$\% \text{ Ash} = \frac{(A - B) * 100}{(S - B)}$$

$$\% \text{ Moisture} = \frac{(S - D) * 100}{(S - B)}$$

$$\% \text{ Organic Matter} = 100 - \% \text{ Ash} - \% \text{ Moisture}$$

6.2 For samples pre-dried prior to organic matter analysis:

$$\% \text{ Organic Matter} = \frac{(100 - P) * (\% \text{ Organic matter determined in step 6.1})}{100}$$

Where:

A – Weight of sample and beaker in grams after ashing (step 5.5)

B – Weight of the beaker in grams (step 5.1)

S – Weight of sample and beaker in grams (step 5.2)

D – Weight of sample and beaker in grams after drying (step 5.3)

P = Pre-dry% (sample pre-dried prior to analysis)

**7. References:**

Official Methods of Analysis of AOAC, 16<sup>th</sup> ed., Method 942.04

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