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Ecology 3

**Soil Analysis- Percent Organic Matter**

**Objective:**

To determine the amount nutrients in the soil sample.

**Materials:**

Soil sample

Pencil / recording sheet

Porcelain crucible

Ring stand, iron ring and pipe-stem triangle

Bunsen burner and fume hood

**Procedure:**

1. Record the mass of the clean porcelain crucible
2. Fill the crucible about ¾ full of the soil sample
3. In a fume hood, place the crucible on a ring stand using an iron ring and pipe-stem triangle
4. Heat gently for a few minutes
5. Heat it as hot as you can for 30 minutes
6. Shut off the burner and allow the crucible to cool
7. Record the new mass of the crucible and soil

**Safety Concerns:**

Sharp objects- Porcelain can break

Flame- burning soil

Wear Goggle at all times

**Data Table and Observations:**

|  |  |
| --- | --- |
| **Mass of empty crucible**  22.65g | **Mass of crucible+ dry soil**  25.94g |
| **Mass of crucible + soil after heating**  25.26g | **Percent organics in sample**  20.6% |

**Calculations:**

Mass of crucible + dry soil- mass of crucible = mass of soil

25.94g - 22.65g= 3.29g

Mass of crucible + soil after heating - mass of crucible = mass of soil after heating

25.26g - 22.65g= 2.61g

Mass of soil before heating – mass of soil after heating= mass of leftover soil

3.29g - 2.61g= 0.68g

Mass of soil after heating / mass of soil before heating x 100 = percent organics in sample

.68/3.29= 0.2066 x 100 =20.6%

**Data Analysis/ Results:**

The percent organics left in the soil after heating was 20.6%.

**Discussion:**

The objective of this test was to find the percent organics in the soil sample. I found that the percent organics in my soil sample was 20.6%. I learned that the organic matter in the soil can only be found when the soil is burned. Also that organic matter is very important in the soil because it provides the nutrients required for the soil to be healthy. An experimental error in this test was the soil wasn’t burned for the whole half hour, it was taken off the burner a few minutes early. The percent organic matter test told us how the nutrient supply and productivity was in the soil. Depending on the soils’ percentage, key elements like how much hydrogen, nitrogen, carbon and oxygen depended on the organic material. These nutrients also affect the soils water capacity and the overall productivity of the soil. These test results supported the soil texture test, because the percent organics are influenced by different soil foaming factors and in this case a silty clay loam texture. The percent organic matter also supported the dry percolation rate because somewhat poorly and poorly drained soils have higher percent of organic matter than well drained soil. The percent organics is extremely important because it determines the productivity and sustainability of the soil. If the organic material is necessary for nutrients, how important is the amount of organic material in the overall health of the soil? What is the soil in Wisconsin’s average percent of organic material? Is it higher or lower than in most states?