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Lecture title: Determination of Moisture in feedstuffs

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Summary:

Moisture is defined as the free amount of water present in any feedstuff. Moisture can be avoided in any feedstuffs sample by putting the sample in **oven**. The remaining quantity which remains after this process is called **"Dry Matter"**.

The most important causes for determination of moisture:

1. To prepare of feed sample for different chemical analysis in case of green plant feeds , because high moisture lead to growth of fungi , rapid deterioration of the feed, and autolysis of feedstuffs.

2. To record feed components according to dry matter basis .

Procedure of the experiment:-

1. Empty, labeled, clean moisture can is placed in oven (150 ° C) for half an hour. **The aim of this process is for cleaning and sterilization.**

(The cans)

2. The can is transferred from oven into desiccator for cooling.

(Oven)

3.The can is weighed by digital electrical scale with recording the weight **(weight of empty can)** .

4.Weigh (1-2 gm.) of the sample inside the can **(weight before drying)**.

5. Moisture can with feed sample is put in the oven **at (150 °C) for half an hour.**

6. At the end of drying period, the can is transferred into desiccator **for five minutes for cooling .**

7. After drying, the can is weighed by digital scale**(weight after drying).**

Calculations : -

1. Moisture can is weighed when it's empty **(weight of empty can).**

2. Weight of moisture can with the sample **(weight before drying).**

3. Weight of the sample =

weight before drying – weight of empty can

4. Weight of moisture can with the sample **(weight after drying).**

5. Weight of moisture =

weight before drying – weight after drying .

6. The percentage of moisture in the sample =

$$\frac{\boldsymbol{weight\ of\ moisture}}{\boldsymbol{weight\ of\ sample}} * \mathbf{100}$$

$$\frac{\textbf{weight before drying – weight after drying}}{\textbf{weight before drying– weight of empty can}} * \mathbf{100}$$

7. The percentage of dry matter of the sample =

= 100 - moisture percentage (%) .

Example(1) :-

The weight of empty moisture can is (13.5 gm.) . the weight of the can with the barley sample is (15 gm.) **(weight before drying)**. The barley sample is put in oven at (150 °C) for half an hour . the weight is became after drying is (14.9 gm.) **(weight after drying)** .Estimate the moisture and dry matter percentages of this sample**.**

Solution :-

Weight of the sample = weight before drying – weight of empty can

= 15 – 13.5

= 1.5 gm.

Weight of moisture = the weight before drying – weight after drying

= 15 – 14.9

= 0.1 gm.

The percentage of moisture in the sample =

$$\frac{weight\ of\ moisture}{weight\ of\ sample} * 100$$

$$\frac{0.1}{1.5} * 100 = 6.6\ \%$$

The percentage of dry matter =

= 100 - moisture percentage.

= 100 – 6.6

= 93.4 %

Example (2) : -

The weight of empty moisture can is (17.1gm.). (19 gm.) is the weight the can and the corn sample added to can. The sample is put in oven at (150 °C) for half an hour. The sample was transferred from the oven and was weight. The weight is became after drying (18.9 gm.). Estimate dry matter percentage of this sample.

Solution :-

Weight of the sample =

weight before drying – weight of empty can

= 19 – 17.1

= 1.9 gm.

Weight of moisture =

weight before drying – weight after drying

= 19 – 18.9

= 0.1 gm.

The percentage of moisture in this sample =

$$\frac{weight\ of\ moisture}{weight\ of\ sample} * 100$$

$$\frac{0.1}{1.9} * 100 = 5.2\ \%$$

The percentage of dry matter = 100 - moisture percentage (%)

= 100 – 5.2

= 94.8 %