University of Mosul
Lecture No.: 5

College of Veterinary Medicine

Date: 2024 - 2025

Unit of Scientific Affairs

Website: https://uomosul.edu.iq/veterinarymedicine/

Lecture title: Determination of moisture in green feedstuff samples

Lecturer Affiliation: : University of Mosul, Ali Abdalwahab .M.Alkahla, BSc, MSc, PhD. https://orcid.org/0000-0001-8320-0558

Summary:

Determination of moisture in green feedstuffs samples should be dried in two stages.

In the first stage, 100 gm. of green feedstuff is dried after it's chopping. Drying of feedstuffs should be put at (70 °C) in oven for 16 hours for the purpose of determination of primary moisture.

In the second stage ,the dried sample is ground finely and(1-2) gm. of the sample is put in oven at (150°C) for 1/2 hour for the purpose of determination of secondary moisture.

The purpose of drying green feedstuffs following two stages is to prevent the occurrence the case of hardness which prevent leakage of moisture from the lower layers of the sample. Hence, little fraction of the moisture may remain in the sample leading to false results.

Total moisture of the green feedstuffs is estimated following the equation:-

Total percentage% =

primary moisture (%) + $\frac{\text{secondary moisture (\%)*(100-primary moisture \%)}}{100}$

Dry matter (%) = 100 - Total moisture percentage.

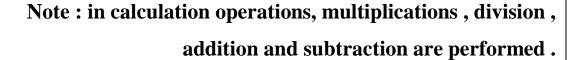
University of Mosul Lecture No.: 5

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in the case of brackets, the calculation is performed between the brackets and then outside the brackets.

Example (1):-

Two hundred grams (200gm.) of green alfalfa feed sample was dried primarily at (70 °C) for 16 hours. After drying, the weight became (40gm). 2 gm. of the primarily dried sample was taken and was further dried at (150 °C) for half an hour to became (1.6 gm.).

Estimate primary, secondary and total percentage of moisture in sample.

Solution:-

Primary moisture
$$\% = \frac{weight \ of \ moisture}{weight \ of \ sample} * 100$$

 $= \frac{\textit{weight of sample before drying-weight of sample after drying}}{\textit{weight of sample before drying}} * 100$

$$=\frac{200-40}{200}*100=80\%$$

Secondary moisture (%) =

 $\frac{\textit{weight of sample before drying-weight of sample after drying}}{\textit{weight of sample before drying}}*\mathbf{1}00$

$$=\frac{2-1.6}{2}*100=20\%$$

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primary moisture (%) +
$$\frac{secondary\ moisture\ (\%)*(100-primary\ moisture\ \%)}{100}$$

$$=80 + \frac{20 * (100 - 80)}{100}$$

$$=80+\frac{400}{100}$$

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If you know that the percentage of primary moisture content of the green fodder(alfalfa) was (70%) and the secondary moisture was (5%) .Calculate the Total moisture and Dry matter percentage of this fodder?

Solution:-

Total moisture percentage (%) =

primary moisture (%) + $\frac{secondary\ moisture\ (\%)*(100-primary\ moisture\ \%)}{100}$

$$=70+\frac{5*(100-70)}{100}$$

$$=70+\frac{5*30}{100}$$

$$=70+\frac{150}{100}$$

$$=70 + 1.5$$

Dry matter = 100 - Total moisture (%)

$$= 100 - 71.5$$