

Procedure for determining the dry matter content of forages using a microwave

Accurately assessing the dry matter (DM) content of a forage is important as small changes in dry matter content can affect the nutrient profile of a forage based ration.

Materials

- A digital scale capable of measuring units of 1g.
- A microwave safe container (preferably glass) or paper plate
- A three-quarter full small cup of water
- Forage sample (cut into 3 - 4 cm lengths)
- Oven gloves or other suitable protection for handling hot containers.

Method

1. Tare the scale for the microwave safe container or paper plate.
2. Weigh approximately 100g of the forage into the microwave safe container and spread this out evenly.
3. Record the weight of the sample as **initial wet weight**.
4. Place the sample in the microwave. Place the three-quarter full cup of water alongside the microwave safe container holding the forage sample. This will help prevent overheating.
5. Dry the forage on the highest setting for 5 - 8 minutes (depending on initial moisture content).
6. Carefully remove the sample from the microwave and weigh.
7. Stir the sample and return to microwave.
Refill the cup of water if the level drops or replace it if it has started to steam or boil.
8. Repeat steps 5 and 6, till the sample starts to feel dry. Reduce drying time to 2 minutes.
9. Continue to weigh and dry the sample (stirring after each drying) until the weight of the sample remains constant. Record this as the **final dry weight**.
If the sample burns or chars record the previous weight as the final dry weight.
10. Repeating the procedure with more than one sample will improve the accuracy of the dry matter assessment.

Calculation of dry matter

Dry matter content is calculated as follows:

$$\text{Dry matter (\%)} = \frac{\text{Final dry weight (g)}}{\text{Initial wet weight (g)}} \times 100$$

Recording sheet for dry matter content of forages measured using a microwave

Date	Sample Reference	Initial wet weight (g)	Interim weights (g)								Final dry weight (g)	Dry matter (%)	
	Example	100										12	$\frac{12}{100} \times 100 = 12\%$

