

Determining Dry Matter with a Microwave Oven

Equipment Needed

- Microwave Oven.
- Scale - capable of weighing at least 100g (3 oz.).
- Microwave safe container (paper or plastic dish).
- 8 oz. (~250ml) glass of water about 75% full.

Procedure

1. Weigh the container to the nearest gram. Record as value A.
2. Place a representative sample of about 100 grams of forage into the container and weigh (this weight includes both the container and sample weight). Record as weight B.
3. Place the 8 oz. glass of water and sample in microwave and heat on high for three minutes.
4. Remove the sample and weigh. Place sample back in microwave and heat for another minute. Weigh. If this weight is equal to the first dry weight, the sample is dry. Record as weight C. If the weight has changed, dry again for another 30 seconds. Check and compare weight. Repeat drying at 30 second intervals until the weight stops changing. The weight stops changing when all of the water is out of the sample. Record the final dry weight as weight C.
5. Calculate the percent dry matter as follows:

$$\text{Dry Matter, \%} = (C - A)/(B - A) \times 100$$

For example:

Paper plate wt. = 7 grams (wt. A)

Paper plate+sample wt. = 107 grams (wt. B)

Paper plate+dry sample weight = 55 grams (wt. C)

$$\begin{aligned}\text{Dry Matter, \%} &= (55 - 7)/(107 - 7) \times 100 \\ &= 48/100 \times 100 \\ &= 48 \%\end{aligned}$$

Additional Hints

1. **Monitor the sample closely as it is drying. If it begins to smoke, discontinue heating immediately to prevent the sample from bursting into flame.** Douse the sample with water and discard. Begin again with a new sample.

2. As you become comfortable with the procedure, you can alter the drying times to lessen the amount of times that you have to repeatedly heat the sample. For example, if you are checking the dry matter of pastures (typically wet at 20% dry matter), the initial drying time may need to be increased to 4 or 5 minutes.
3. Microwaves vary in their power. This procedure is only a guideline. Practice and experience with your oven will dictate drying times.