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DM Determination of Forages and Silages Using a Microwave Oven

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The determination of DM or moisture of forages and silages can be done with the use of a microwave oven.

The items you'll need to determine a microwave DM on a silage sample include:

- 1) a microwave (preferably equipped with a rotating plate)
- 2) sample containers (e.g. a paper plate)
- 3) a digital gram scale
- 4) a cup of water

We have assumed that your sample of silage is representative of the sample in question.

Mix your sample well.

“Tare” or “zero” your scale with your empty sample container so that the scale reads “00.00” with your empty pan on it.

Place and spread out 50 g of sample into the pan. After removing your sample it is important that you do not rezero the scale until your next sample.

Place about 1/2 cup of water into the back of the microwave. This will help to keep your sample from burning.

Place your sample into the microwave and put on a high setting for 3 min.

Remove your sample and return to the scale...record the new weight. Mix the sample well.

Return your sample to the microwave and dry it for an additional 2 minutes. When it is done, remove the sample and return it to the scale and record the new weight. At this time, you can mix the sample again and check for dryness by breaking some stems....

In very wet samples, you may repeat this step 2 to 3 times.

Return your sample to the microwave and dry it for 1 minute. When it is done, remove the sample and return it to the scale and record the new weight. Depending on the initial moisture in your sample, repeat this process as needed until the weigh of your sample does not change more than a few tenths of a gram.

You will also have to use your nose, to make sure that you have not burnt your sample.

To calculate the DM of your sample,
Subtract the final wt of your sample from the original 50 g.
then, multiply that number by 2....this is you DM%.

Example:

Initial wt. was 50.0 g.

After 3 minutes the reading is 41.2 g.

After another 3 minutes the reading is 30.0 g.

After 2 minutes the reading is 21.5 g.

After 1 minute the reading is 20.5 g.

After 1 minute the reading is 19.8 g.

After 1 minute the reading is 19.7g.

After 1 minute the reading is 19.7 g.

The DM % is $19.7 \times 2 = 39.4\%$