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Suggested Protocols for Drying Samples to Constant Weight

Plant tissues, Soil Samples, Compost Samples, etc.

For quantitative work, it is often necessary to dry samples to constant weight. This is required, for example, when expressing nitrate content as a percentage of the weight of the sample. Constant weight is obtained by removing the water from the sample - that is, by drying it. Here are two procedures for drying samples to constant weight.

Once the samples are dry, use one gram of the dry sample and extract for nitrate using your standard protocol, or use a protocol provided by NECi.

I. Standard drying method

1. Take a sufficient amount of each sample to be sure to have more than 1 gram of dry weight. Exact weight is not important at this stage. Be **sure** to record this weight.
2. Place samples in an oven at approximately 60°C. Weigh at 24 & 48 hours. Samples are dry when the weight is constant for two consecutive readings. The time required will vary with the water content of the sample.
3. Once a constant weight value is obtained, the samples are ready for analysis.

Note: If a vacuum oven is available, the drying time can be shortened considerably.

II. Microwave drying method

1. Weigh samples to be dried.
2. Spread the weighed samples onto microwave-safe containers. Glass or many plastics are fine. If using a paper plate or paper bag, be **sure** to include water in the microwave oven as described in Step 3. Spread the samples as a thin layer to aid the drying process, and place them in the microwave oven.
3. Place an 8oz glass (or 250 ml beaker or flask) three-quarters full of water in the oven. This should prevent the samples or paper plates from igniting in the microwave oven.
4. Heat at 80 per cent of maximum power (or use a medium high setting) for 4 minutes.
5. Remove the sample, stir and weigh it.
6. Continue to reheat for 2 minute intervals, re-weighing each time. To prevent burning, use lower heat and 30 second time intervals as samples approach dryness.
7. When the weight of the sample does not change after two drying intervals, it is dry. A slightly charred sample will not affect accuracy of the nitrate assay, but if the sample burns, the drying procedure should be repeated.
8. Once a constant weight is obtained, the samples are ready for analysis.