Measuring Seed Moisture with a Hygrometer

Drying is one of the most important factors in maximising seed longevity. But how do we know if the seed is dry? Traditionally the technique was called gravimetric moisture content, where you took a sample of seeds you weighed it. Placed your sample in an oven at an elevated temperature left it overnight and then in the morning reweighed it and the difference between the two weights was the moisture lost. This is obviously a destructive technique and takes a long time to do. An alternative method is to use equilibrium relative humidity ('eRH'). Relative humidity is the amount of moisture held in air. Equilibrium relative humidity is the amount of moisture in the air above a sample. So, in this case you see you have a container of seeds, and these seeds will either lose or gain moisture until they are in equilibrium with that air. If you then measure the relative humidity of that air, you then have the equilibrium relative humidity of your seed sample. The advantage of equilibrium relative humidity testing is that it's very fast, typically 15 to 20 minutes and it's non-destructive, which is particularly important for small valuable seed collections and threatened species.

To ensure an accurate reading using the eRH technique, you need at least 20% of your volume full of your seed sample. So, the way we measure the relative humidity is to use a hygrometer. This particular model has a small probe here, there is a sensor in the end for both temperature and humidity. Place your seed sample in a small container like this one. And gently insert the probe into the container. Having sealed the sensor in with your seed sample making sure there's a tight fit and avoiding holding the sample container because it will warm up in your hand. You can now leave this for 15 minutes or so or until the reading stops changing and you get an equilibrium relative humidity reading.

Because the term relative humidity is as it says 'relative' to a particular temperature. It is always important when you record an equilibrium relative humidity level you also record the temperature at which that level has occurred. This type of hygrometer not only can be used for measuring seeds as we see with the sample container, but also can be taken into the field to actually measure the air and the ambient conditions. This hygrometer also has the ability to data log readings. You can programme this to take readings every minute, every hour or every day. Set this up and then place this in your collecting bag of seeds. Close this up and put that in your dry environment and this will actually monitor the drying rate of that collection of seeds.

This is an alternative set of hygrometers attached to a laptop. The laptop records the readings and represents it as a graph. By equilibration we mean when the actual reading stops changing, so here you get a level line.

So now you know how to measure the eRH or the moisture status of your seeds. And this is important for every 10% you can reduce the relative humidity you can double the seeds life.

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