# pH METER CALIBRATION AND SAMPLE PREPARATION FOR IN-HOUSE TESTING

In the previous 'Tip', we addressed the different types of pH meters and identified which ones are ideal for greenhouse use. If you have a pH meter, how often should it be used? How do you use a pH meter? Calibrating the meter, preparing the sample and taking the measurement takes some time, but knowing the pH of the growing medium can help avoid crop problems. First let's look at how to calibrate it.

**Calibration:** The best pH meters have two-point, pH calibration. Most meters have preset calibrations for pH 4 and 7, but there are some that also offer a pH 10 calibration. Since most pH readings for greenhouse applications fall between pH 4 and 7, it makes sense to calibrate a pH meter at pH 4 and 7. The meter is calibrated by inserting the electrode into calibration solutions (standards) that are manufactured to have a buffered pH of 4 or 7. Make sure you have these pH calibration solution standards available.

Calibrating a pH meter varies by manufacturer's design, but the basic method is as follows. First clean off glass bulb on the end of the electrode by inserting it into distilled or deionized water, swirl it to remove storage solution of growing medium particles, then remove the electrode and let it dry it. Next, turn on your meter and set it to the calibration mode. With most meters, the screen will often flash a number, like 4.0. This means that the glass bulb needs to be inserted into a small cup of the 4.0 calibration solution. Pour some pH 4 calibration solution into a small cup and insert the electrode. Once the meter is calibrated with the 4.0 solution, it will flash 7.0. Rinse the probe with distilled water, dry it and insert it into a cup of 7.0 calibration solution. Once it stops flashing, it is calibrated and ready for use. Discard the used calibration solutions; do not pour it back into the original bottle. Calibration should occur each day that the meter is used.

**Preparing media samples:** There are multiple ways to prepare a growing media sample for pH testing. The most common is to collect in-use growing media from several pots, mix it together, place it in a container and add deionized water. Most labs use the Saturated Media Extract method (SME), which means the medium sample should be saturated with deionized water until the surface of the sample glistens. There is also the 2:1 in which one volume of growing medium is added to two volumes of deionized water. In either case, allow the sample to sit for 30-45 minutes and then insert the pH probe directly into the 'mud'. Record the reading.

Some growers prefer to use the pour thru method which is a non-destructive method in which a certain measure of distilled water is poured over the medium surface of a plant container and the leachate is collected and used for pH testing. This method is easy and does not require collecting growing medium from pots. However, pH results obtained from this test method often do not correlate to lab results and the leachate quantity must be a specific amount. If too much or too little runs out the bottom of the container, it can affect the pH reading.

**Normal pH ranges:** The normal pH range for most crops is between pH 5.5 – 6.2. Crops such as petunias, calibrachoa, pansies, dianthus, snapdragon, scaveola, vinca, etc. have a difficulty acquiring iron, therefore prefer a lower growing medium pH to easily access micronutrients. These crops ideally require either a higher application rate of iron (as well as other micronutrients to avoid nutrient imbalances) or a lower pH range from 5.2-5.8. In comparison, geraniums, marigolds, pentas, New Guinea impatiens, etc. prefer either lower application rates of micronutrients (particularly iron and manganese) or a higher pH range to lock-up micronutrients. Their ideal range is pH 5.7-6.5.

If you have any questions about growing in PRO-MIX, pH meters or need assistance, contact your PTH - Grower Services representative at:

1-800-424-2554 US / Mexico / W. Canada or 1-800-667-5366 for E. Canada (Quebec/Maritimes)

GS Tips No 2-8