Cabrera, JC, RE Raudales. 2018. Testing New Batches of Growing Media. UConn Extension Greenhouse Tales from the Field Newsletter. 12 January 2018

Testing New Batches of Growing Media: Monitor, Monitor, Monitor!

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Last season we were reminded the importance of monitoring the pH of the growing media!

Growing media companies make a strong effort to provide consistent quality of their products. However, they rely on a supply chain for their raw materials, and sometimes the quality of their product is not consistent.

Our power lies on developing internal quality control procedures to prevent problems from happening. Preventing problems will cost much less than reacting to problems.

Take Home Message #1: Don't assume that the quality of the products you purchase is the same from batch to batch.

Media pH

The pH of the growing media affects nutrient availability. **Low pH** results in increased availability of micronutrients. Plants species that are efficient at taking up iron and manganese develop phytotoxicity damage when the pH is below 6.0. In 2017, we saw pH drifting down to 4.0. Geraniums and New Guinea impatiens were the most affected last year (Fig 1.)

Figure 1. Geranium and Sunpatiens plants with Mn/Fe phytotoxicity symptoms caused by low pH (~4.0) in the growing media.

Plants like petunias and pansies behave in the opposite way, they are inefficient taking up iron/manganese and they easily run in deficiency problems when the pH is higher than 5.8.

Your internal quality control should monitor the pH and EC of the growing media before using it and after transplant. New batches of growing media should be tested at least 21 days before its intended use. After transplant, monitor the growing media each week. Write down your results and keep records.

Test the Media: Step by step

1. Shake the bag really well and then collect the sample from the middle of the bag. Collect a combined sample from 2 or 3 bags from the same batch.

2. Label the samples and mark the bags to keep track where the samples came from.
3. Test the media in-house over a period of time. We recommend that you do either the saturated media extract (SME) or the 1:2 method. Be consistent in the method you choose. Ideally, the same person should conduct the test every time. See the methods below.
4. Maintain your sample saturated with irrigation water (avoid leaching) and measure the pH over time to see if there are any changes. Measure the pH every day for at least 21 days.
5. The pH of fresh media will increase 0.3 to 0.5 units after 24-48 hours. If the media pH increases significantly more than that or decreases contact your growing media representative.
6. Avoid using growing media that has dramatic pH swings or high EC.

Keep track of the pH in the container

Once you start your crop, monitor the pH of the growing media in the containers weekly.

In few instances one method is better than the other, however choose the method that fits best in your operation based on experience of the personnel and references. Two specific instances when one method is preferred over others is when using sub-irrigation or controlled-release fertilizers (CRF).

Sub-irrigation. Saturated media extract (SME), 1:2 and squeeze methods are recommended over pour-thru when sub-irrigating. With sub-irrigating, salts accumulate on the top surface of the container, where salts are typically not available for plants. The pour-thru method may displace the salts to the bottom of the containear and leach to the sample, providing inaccurate results.

CRF. Pour-thru is recommended over all the other methods when the growing media contains CRFs. The fertilizer prills in the samples can result in a higher EC measurement and can also change pH of the growing media.

The SME method is preferred over the 1:2 method because it is not affected by moisture variability or exact volume of the sample.

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Saturated Media Extract

The Saturated Media Extract (SME) is the method used by the laboratory to determine nutrient content in the growing media. Grab media from each new batch of growing media.

1. Place about 300 mL of sample in a cup. Remove control release fertilizers from the media before doing this method.
2. Slowly add distilled or deionized water while mixing constantly with a spatula.
3. Add water and stir until the sample behaves like a paste, the media is wet but there is no free-floating water on the surface.
4. Wait for 60 minutes.
5. Measure pH directly in the paste.
6. Squeeze and filter the solution.
7. Measure EC in the filtered solution.

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1:2 Method

1. Collect media. Collect a combined sample from multiple bags from the same batch.
2. Combine and homogenize the subsamples.
3. Measure 60 to 120 mL (2 to 4 oz) in a clean container. Make sure that the growing-media is slightly compressed to have an accurate volume measurement.
4. Add two-parts of distilled water for every part of growing-media. For example, add 4 oz. of distilled water to 2 oz. of growing media.
5. Wait 30 to 60 minutes.
6. Measure pH and EC directly on the slurry.

Pour-thru Method

1. Irrigate the crop ensuring that the media is thoroughly wet.
2. Wait 30 to 60 minutes until the pots or flats have drained.
3. Place the container on a saucer.
4. Add enough distilled water to obtain 50 mL (2 oz.) from the bottom of the pot.
5. Measure pH and EC directly on the leachate.

The EC reading will depend on the method used. Compare your numbers to the right method or the equivalent of another method.

EC values associated by media test method			
1:2	**SME**	**Pour Thru**	**Interpretation**
0 to 0.03	0 to 0.8	0 to 1.0	Very low
0.3 to 0.8	0.8 to 2.0	1.0 to 2.6	Low
0.8 to 1.3	2.0 to 3.5	2.6 to 4.6	Normal
1.3 to 1.8	3.5 to 5.0	4.6 to 6.5	High
1.8 to 2.3	5.0 to 6.0	6.6 to 7.8	Very High
>2.3	>6.0	>7.8	Extreme