



Rosa E. Raudales
rosa@uconn.edu

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I tested my growing media, now what?

The number one advice I give to growers is:
Monitor the pH and EC of the growing media.

This recommendation applies to new batches of media or the media in the containers.

Last year we saw many problems with low pH in the growing media. In CT, many small growers reported severe iron & manganese phytotoxicity in geraniums, New Guinea Impatiens, and Bounce Impatiens (Fig. 1). This year growers listened, they proactively sent growing media samples to test for pH and nutrient content.

Now that the results are in, do they know how the pH of the media will react in the container?



Figure 1. Geranium (photo: R. Raudales) and Bounce Impatiens (photo: L. Pundt) with iron and manganese toxicity caused by low pH in the growing media.

In this e-Gro Alert we will discuss how to monitor the pH of new batches of growing media. This discussion applies to peat-based growing mixes.

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Peat

Peat is inherently acidic, so it has a high limestone requirement.

Peat sourced from different bogs or extracted at different maturity stages, may differ in limestone requirement.

Take-Home Message #1: When getting a new batch of media or a new brand, growers should monitor the pH of the mix.

Limestone

Reactive limestone is the fraction of lime that reacts with the growing media within 5-10 days after the media has been irrigated.

Residual limestone is the fraction of limestone that remains unreacted and will react over time.

Growing media companies aim to provide enough reactive and residual limestone to maintain a pH between 5.5 and 6.0 during the growing period.

Take-Home Message #2: To assess pH of the growing media, we need to measure the reaction over time to get a sense of how the reactive and residual limestone will buffer the acidity of the specific peat source. We cannot infer how the pH of the growing media will react over the production cycle, by just measuring pH at one point in time.

A complete nutrient analysis of fresh batches of growing media is a good indicator for total concentration of salts or specific elements, but they do not tell us much about how the pH will react during production.

To know what to expect of media pH over production, we have to measure pH over time as follows:

1. Put growing media in 3-5 pots (~1L containers).
2. Irrigate to container capacity with clear distilled water*, avoid leaching. Limestone will activate when it comes in contact with water.
3. Collect sample from the bottom two thirds of the container.
4. Measure the pH of the substrate using the saturated media extract (SME) or 1:2 method.
5. Repeat measurement on days 3, 7, 14 and 21.

*This can be done with the irrigation water or nutrient solution and it will reveal the reaction of your solution with the mix, not the mix alone.

Ideally the pH of growing media after 7 days (up to 21d) should be between 5.5 - 6.0. If the pH is outside of this range, you should contact your media supplier.

These results will indicate the initial pH of the growing media in the container at transplant and after a few weeks.

The pH of the growing media will drop rapidly once the residual limestone has reacted. That is why **monitoring pH is an ongoing process** in container production.

Take-Home Message #3: Growers should continue to monitor the pH and EC in the media during production.

Other Factors

If pH drifts either up or down in the container, we should try to identify the cause and evaluate all the factors that affect pH in container (not just soilless-media components). For example:

- Water alkalinity
- Fertilizer choice
- Crop
- Acid injection
- Lime application
- Injector malfunction

For corrective measures check the e-Gro Alert: https://e-gro.org/pdf/2018_702.pdf

Take-Home Message #4: Limestone and peat are only two of the many factors that affect pH over time.

Final Take-Home Message:
 You tested your growing media
 in a commercial lab,
now continue to monitor in-house.
 Growers who test regularly have fewer
 problems because they correct issues early.

The e-Gro team has developed a series of articles and videos to help you prevent nutrient-related problems in containers.

Videos: <https://www.youtube.com/channel/UCh-u0VBGulYyVsqYyz3Drxg>
 e-Gro Alerts on Nutrient Management:
<https://e-gro.org/alerts17.php>

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CONTRIBUTORS

Dr. Nora Catlin
Floriculture Specialist
Cornell Cooperative Extension
Suffolk County
nora.catlin@cornell.edu

Dr. Chris Currey
Assistant Professor of Floriculture
Iowa State University
ccurrey@iastate.edu

Dr. Ryan Dickson
Extension Specialist for Greenhouse
Management & Technologies
University of New Hampshire
ryan.dickson@unh.edu

Thomas Ford
Commercial Horticulture Educator
Penn State Extension
tgf2@psu.edu

Dan Gilrein
Entomology Specialist
Cornell Cooperative Extension
Suffolk County
dog1@cornell.edu

Dr. Joyce Latimer
Floriculture Extension & Research
Virginia Tech
jlatime@vt.edu

Heidi Lindberg
Floriculture Extension Educator
Michigan State University
wolleage@anr.msu.edu

Dr. Roberto Lopez
Floriculture Extension & Research
Michigan State University
rglopez@msu.edu

Dr. Neil Mattson
Greenhouse Research & Extension
Cornell University
neil.mattson@cornell.edu

Dr. W. Garrett Owen
Floriculture Outreach Specialist
Michigan State University
wgowen@msu.edu

Dr. Rosa E. Raudales
Greenhouse Extension Specialist
University of Connecticut
rosa.raudales@uconn.edu

Dr. Beth Scheckelhoff
Extension Educator - Greenhouse Systems
The Ohio State University
scheckelhoff.11@osu.edu

Lee Stivers
Extension Educator - Horticulture
Penn State Extension
Washington County
ljs32@psu.edu

Dr. Paul Thomas
Floriculture Extension & Research
University of Georgia
palthomas@uga.edu

Dr. Ariana Torres-Bravo
Horticulture / Ag. Economics
Purdue University
torres2@purdue.edu

Dr. Brian Whipker
Floriculture Extension & Research
NC State University
bwhipker@ncsu.edu

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