



Advanced Nutrient Management: Relationship between pH and EC

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What is media pH and EC?

- Media pH is a measurement of acidity or basicity in the root zone, which influences the solubility and availability of fertilizer nutrients for plant uptake. Nutrients are adequately soluble for most plant species between pH 5.6 and 6.2.
- Media electrical conductivity, or EC, is a measurement of the level of nutrients in the root zone. Fertilizing more increases media EC whereas fertilizing less and heavy leaching decreases EC.
- For more info on conducting in-house soil tests, interpreting and managing pH and EC, visit www.backpocketgrower.com



Figure 1. Stunted and chlorotic petunia resulting from high media pH (>6.2) and low fertilizer.

Example of a common crop problem

- The petunia in Figure 1 started healthy, but now have stunted growth and yellow leaves. An in-house soil test shows media pH has risen too high (around 7) and media EC is very low.
- High pH can cause micronutrient deficiency, and low EC indicates insufficient fertility, which both cause stunting and chlorosis (leaf yellowing). In addition, roots are stressed at high pH and are more susceptible to root diseases like *Thielaviopsis*.

Fertilizer nutrients interact with the media and influence pH

- Increasing media EC tends to drop pH, because fertilizer nutrients such as calcium and magnesium chemically react with the media to produce acid (lowers pH).
- Decreasing media EC tends to increase pH, because fertilizer nutrients chemically react to produce base (raises pH). High pH caused by low EC can occur because of excessive leaching of nutrients, as in Figure 2, or too little fertilizer for plant growth. For more detailed information, check out <http://magazine.greenhousemag.com/article/june-2017/high-ph-is-often-caused-by-excess-leaching.aspx>

What can we do about the yellow petunia?

- If pH is high and EC is low, the first step is to apply more fertilizer to increase EC! This will drop pH and supply nutrients to help green up the plants.
- If pH is high and EC is adequate or high, applying more fertilizer will have little effect and may even burn roots. To correct this problem, you may consider using acid reaction chemicals or fertilizers to drop pH, or injecting acid into the irrigation water. Visit www.backpocketgrower.com for more strategies and information on correcting pH problems.

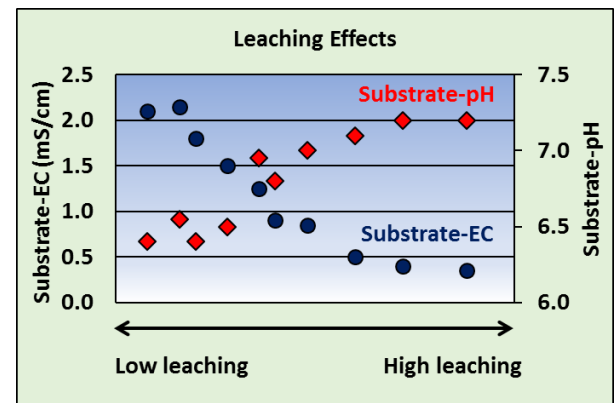


Figure 2. Effects of leaching on media (substrate) pH and EC. High leaching washes fertilizer nutrients from the container, dropping media EC and raising pH.