Crops species differ in
- Sensitivity to low pH micronutrient toxicity or high pH deficiency
- Tendency to make pH drift down (acidic) or up (basic) over time

Objectives:
- Understand why and how crops influence root zone pH
- Is crop sensitivity to low or high pH micronutrient problems related to their ability to change pH?

Approach:
- Quantified pH effects for floriculture and edible crops in substrate and hydroponics
- Evaluated effects of nitrogen form (ammonium or nitrate) and nutrient uptake on pH

Tendency to raise pH with no ammonium (all nitrate)
Least Basic: Cucumber, Basil, Lettuce
Intermediate: Tomato, Oregano, Eggplant
Most Basic: Spinach, Pepper, Arugula

How you can use this information
- Match the fertilizer ammonium/nitrate ratio to your crop and water quality to prevent pH drift and micronutrient problems at BackPocketGrower.org
- For crops with problem “pH personalities”, adjust the fertilizer program or use them as indicators of high or low pH

Characterizing “pH personality” for different crops

<table>
<thead>
<tr>
<th>Tend to lower pH</th>
<th>Sensitive to low pH (iron toxicity)</th>
<th>Tolerant of wider pH range (iron intermediate)</th>
<th>Sensitive to high pH (iron deficiency)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geranium</td>
<td>Coleus</td>
<td>Dusty Miller Impatiens Salvia</td>
<td>Snapdragon</td>
</tr>
<tr>
<td>New Guinea Imp. Verbena</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Acknowledgements:
We thank our industry partners in the Floriculture Research Alliance (FloricultureAlliance.org) for their support as well as the USDA Floriculture and Nursery Research Initiative and the Gene and Barbara Batson Scholarship. We also thank the University of New Hampshire Agri. Expt. Station and Cooperative Extension.