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## Avoiding Geranium pH Drop

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Zonal geraniums are a popular spring crop in the U. S. with over \$108 million of plants grown in 1998. A major problem with geraniums is micronutrient toxicities, especially iron and/or manganese, which occur when the substrate pH drops below 5.8. It is a common problem in North Carolina and fortunately it is easy to prevent.

Symptoms of micronutrient toxicity begins as lower leaf yellowing, advancing to necrotic spots or margins on the lower to mid-level leaves (*visit the NCSU website to view color photos of symptoms (<http://floricultureinfo.com>)*). Plants can develop severe leaf symptoms in as little as 72 hours. The onset of symptoms seems to be more common if the plants have been subjected to water or nutritional stress.

Micronutrient toxicities easily occur in areas which have little alkalinity in the irrigation water to buffer the pH drop caused by acidic fertilizers (i.e. 20-10-20). In addition, geraniums can naturally acidify the root medium (substrate), much to their detriment.

What to do? 1. Start with a root medium pH between 6.0 to 6.5 at potting. (Irrigate the medium thoroughly and allow the limestone to react for 3 days before testing new root medium for pH.) 2. Use a basic fertilizer with geraniums. All fertilizer bags list the

potential basicity or potential acidity, expressed in pounds of calcium carbonate equivalents. For geraniums use a fertilizer with at least 300 lbs of basicity. 3. Monitor the pH of your geraniums with



in-house testing (*see HIL 590a, PourThru Guidelines for Geraniums (<http://pourthurinfo.com>) for details about setting up an in-house PourThru testing program*) or send the samples to a commercial lab. The optimal pH for zonal geraniums is 6.0 to 6.5. If it strays below this range, immediately take corrective actions of applying hydrated lime or liquid lime (*see HIL 590, PourThru Monitoring for rates*).