

# It is Time for Wider Use of Foliar Analysis

Foliar analysis offers the tools for comprehensive monitoring and diagnosis of the health of greenhouse plants. Much of the knowledge needed for maximum use of foliar testing is still to be realized but we have progressed to a point where it should be incorporated into the greenhouse growing.

The present uses that we know about are clear. One tissue sample taken quarterly should help us to modify, if need be, the nutrient solution being applied. Imbalance between the nutrient ions being taken in by the plants will show up in tissue analysis. High or low levels of ions, and especially of those not commonly applied will be detected. For instance, several tissue tests taken from Colorado greenhouses indicate low copper levels. If this is a Colorado problem, we need to know. Other tests indicate rather low sulfur levels where city water supplies are used for irrigation. Either of these are easily corrected before they cost a grower in reduced growth.

Finally, tissue analysis should help us to assess how well your plants are able to grow by combining the nutrients you supply with the light, temperatures, CO<sub>2</sub> and water available in your particular situation. This information comes from the total organic acids (C-A) level in your samples (CFGA Bulletins 210, 211, 212). In other words, how are your plants growing in relation to what they should be able to do if certain factors were modified?

We have developed a rather elaborate flow chart for diagnosing the nutritional status of a carnation plant from tissue analysis. While it is not complete, it is highly usable. As Green's experiments are extended and worked out in detail for various ion combinations, we will be able to define maximum and minimum levels more exactly for individual ions. Some of this work by Hartman will appear in the next bulletin.