e-GRO Alert

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Micronutrient deficiency-induced Interveinal chlorosis on schizanthus

Late in production, this schizanthus crop developed interveinal chlorosis. It didn't just require a quick diagnosis- it also needed a quick fix.

Schizanthus (*Schizanthus x wisetonensis*) is an excellent cool-season crop. Sometimes called a "poor-person's orchid", it is a seed-propagated potted plant that is great for the post-Christmas and pre-bedding plant season. It is relatively easy to produce. With respect to growing environment, it grows well with cool air temperatures and flowers faster under long days or night interruption. For plant culture, schizanthus best with general pH and moderate electrical conductivities (EC).

Figure 1. Interveinal chlorosis started to develop

I was contacted by a commercial producer who was producing a smaller- but nonetheless important- crop of 4-inch containerized schizanthus this spring. Although the crop had been growing well, it had started to develop interveinal chlorosis just as it was starting to flower, nearly ready to be marketed and sold. Our goal was to diagnose what was causing the symptoms we were observing and try to identify an expedient solution.

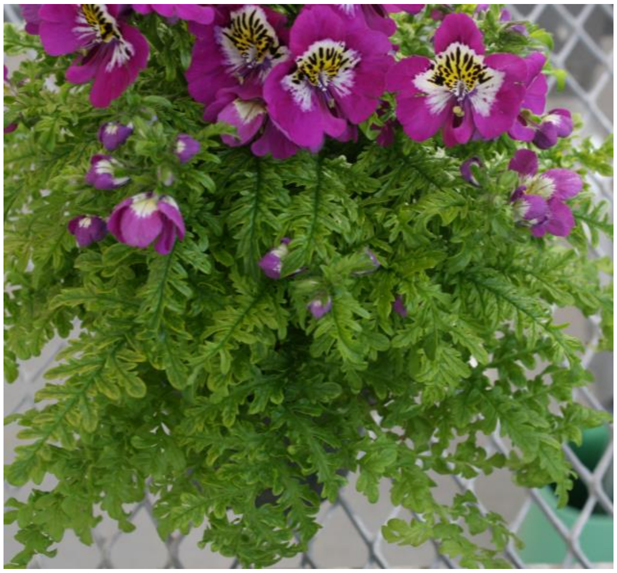

Figure 2. Although interveinal chlorosis resulting from insufficient micronutrients isn't a good thing, it is easier than dealing with a toxicity from excess. We can "green-up" interveinal chlorosis relatively quickly, whereas toxicity symptoms require new growth to cover affected foliage.

Figure 3. A Pour Thru substrate test is a quick and easy way to determining root-zone electrical conductivity (EC) and ph. We can see the pH for this schizanthus crop is slightly higher than we want (5.8 to 6.2).

Diagnosing the cause

The symptoms were uniform across the crop, so it was a biotic or living causal agent. Interveinal chlorosis is the first- and primary- symptom of micronutrient deficiency. But what caused the deficiency? The root system appeared healthy, so damaged roots likely weren't inhibiting nutrient uptake. Our Pour Thru substrate testing of a half-dozen containers gave us an average rootzone EC of 2.3 mS/cm and pH between 6.3 and 6.4. The EC, while not measuring micronutrients specifically, indicated there was sufficient fertilizer in the rootzone. The pH was slightly above the recommended upper range for schizanthus (5.8 to 6.2), so there could have been some restriction of availability for some micronutrients. Its also important to remember that schizanthus are grown cool, and under those air temperatures it can be harder to dry crops down and they can stay more wet for a longer period of time, which can inhibit micronutrient and specifically, iron, uptake. Although a plant tissue test would have been the most precise diagnostic approach, time didn't allow for it.

Moving forward

Correcting cultural practices to allow available iron to be taken up was out of the question due to the late stage that this crops was in. Growing drier and trying to bring the pH down could certainly improve iron availability for uptake, but any greening up you could promote wouldn't salvage this crop. Instead, the best approach was to make a nutrient application that would be readily available for uptake. While a blend of micronutrients such as STEM or MOST could have been applied, we felt confident about applying a chelated iron product to the crop as a drench to green them up in short order. It should be noted, any time chelated iron solutions are applied to crops, be sure to rinse foliage (especially for sensitive species like begonias) to avoid unwanted phytoxocity that can follow application.

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