GROWERTALKS

Growers Talk Production

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The Fallacy of Wishful Thinking

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In high school, they tried to teach us about logical fallacies, although the effort was likely drowned out by the noise of other teenage preoccupations. It's a pity because logical fallacies are rather common errors in reasoning. Our thinking develops short circuits and we arrive at false conclusions with potentially dire consequences. Logical fallacies cause us to cling to easy answers, which we defend as solutions to complex problems. When we select our response to problems based on the convenience of the answers rather than rigorous examination of inconvenient details, we tend to repeat the same mistakes again and again.

Pictured: Both petunia baskets were fertilized with a rotation of 20-8-20 and 14-0-14. The plant on the left was treated twice weekly with additional iron chelate, but no sulfur. The plant on the right received no iron chelate, but additional sulfur as a drench. These plants came from a six-week nutrition trial that we ran back in 1998.

Take nutrient deficiencies, for example. Modern fertilizer blends and growing media are tuned to be universally applicable to a broad variety of crops and growing systems. If we use these tools properly and follow readily available "recipes," we may not arrive at perfectly targeted nutrition for every purpose and every crop, but it should be nearly impossible to encounter deficiencies in the nutrients that these products supply. I would even argue that root zone pH no longer has the outsized significance that many growers assign to it.

Yet, as soon as we see any discolored foliage, we immediately short circuit to the omnipresent lists of deficiency symptoms and to the very famous chart of nutrient uptake in relation to substrate pH. We follow our reflex and find a diagnosis that matches readily available remedies. Depending on our personal preference, we may treat for "iron deficiency" or "magnesium deficiency"—not because we understand the nature of our problem, but because it prevents us from having to explore the complex nature of plant nutrition. If we're honest, most of the time our simple remedies don't produce the expected result.

Yes, I've seen plenty of nutrient-deficient plants in my career. However, in almost every case the reason for the deficiency had nothing to do with the supply of nutrients. More typically, it was the inability of the plant to uptake, transport or process the nutrients. A few exceptions to this rule turned out to be errors in the manufacture of the fertilizer materials, but for the rest we were dealing with the floral version of severe indigestion. This has important consequences for the remedy that we apply. Think about it: When your infant child is sick and evacuates on both

ends whatever baby food you feed it, would you continue to stuff it with more of the same because “the baby is hungry” or would you investigate why the digestive system cannot process the formula, which had been developed with perfect baby nutrition in mind?

Nutrient uptake in plants requires three distinct components to function properly—namely the root system, the vascular transport system and the metabolic processes for storage and use of nutrients. If any of these components fail, plants will develop symptoms of malnutrition independent of the food that we apply. If the roots aren’t functional, they cannot uptake any nutrients. When the vascular transport system isn’t functional (i.e. if water cannot move from the roots up the stem and out of the foliage via transpiration) then the nutrients cannot get to where they’re needed. And if canopy tissue isn’t functional because it lacks light or because it’s too warm or too cold or because it’s damaged by other factors, the plant suffers from the floral equivalent of metabolic disease.

A typical example of such a horticultural fallacy: In the distant past, our industry routinely applied iron sulfate to petunias when they needed “greening up.” What everybody took away is the perception that petunias are iron deficient whenever they aren’t dark green. Consequently, we manipulate the pH of the substrate and we supplement modern chelates to force more iron into our plants, whether they need it or not. None of this will do much to “green them up” unless true iron deficiency was the culprit. Among other details, we forget that iron sulfate is made up of two elements. We ignore sulfur because it’s not on our horizon as a nutrient. It’s the forgotten essential nutrient that isn’t a focus of most substrate mixes and fertilizer regimes. Incidentally, the recommended rates for iron sulfate drenches apply sulfur in adequate concentrations to remedy a general deficiency. **GT**

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