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PUMP up the iron to prevent chlorosis

Iron supplementation can help overcome some new plant varieties inefficiency at absorbing iron.

By Joe Lara

Iron deficiency symptoms most commonly appear as interveinal chlorosis like on this ivy geranium. Affected plants have light-green to yellow leaves and the veins remain green.

Iron is essential for the formation of chlorophyll, yet the nutrient has extremely low plant mobility. New growth in iron-deficient plants often shows symptoms of iron deficiency.

Some new plant varieties are naturally inefficient at absorbing iron. Combining this with highly alkaline water that occurs in some parts of the country, have created an increased need for iron supplementation.

Iron chelates are a solution growers have turned to for years to help plants overcome a lack of iron. Chelated iron improves the nutrient's ability to be absorbed by plants, enhancing their overall appearance and health. Iron chelate can be applied either as a foliar spray or soil drench.

Some growers who have used chelated iron to treat iron-deficient plants are looking at new ways to use the products. They are beginning to take a more proactive approach to not only prevent problems but to consistently produce healthier, more attractive plants.

The cause of iron deficiency

Iron deficiency symptoms are most commonly seen as interveinal chlorosis.

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Affected plants have light-green to yellow leaves and the veins remain green. In severe cases, the leaves turn white and the plants may die.

Plants suffering from iron deficiency are typically victims of improper fertilization practices. Facing pressure to turn crops quickly, especially new varieties, growers often "push" the plants. With production cycles as short as four weeks, growers risk pushing nitrogen, phosphate and other nutrients on new plant varieties without the benefit of an established learning curve. Because some newer plant varieties require different, and sometimes delicate, nutrient ratios, rushing production can result in lower quality or even damaged plants.

Treatment with chelated iron can be useful in these situations. When treating bedding plants in 4- or 6-cell packs, growers can typically apply a chelate product as a drench within three days of shipping and be confident a deficiency problem will be corrected. Larger plants or hanging baskets may be slower to

This pansy suffers from iron deficiency. Don't confuse iron and nitrogen deficiencies, which exhibit some similar symptoms. Iron deficiencies appear more specifically as interveinal chlorosis along the leaf.

respond. If you're trying a new crop, it's a good idea to consult with the breeding company, a local extension agent or the product distributor on the proper timing and application of an iron chelate treatment.

Identifying the cause of chlorosis

Iron and nitrogen deficiencies exhibit some similar symptoms. Nitrogen deficiency tends to appear as an overall yellowing or slightly off-color greening of the plant. Iron deficiencies appear more specifically as interveinal chlorosis along the leaf. It is essential that the correct problem is identified before considering a course of treatment.

While it is rare, iron supplementation can cause iron toxicity, a problem which will show up as very dark or blackened leaves. The affected plant may even lose flowers. Growers are encouraged to be cautious when making supplemental iron applications to blooming plants.

Differences in iron chelate products

Iron chelates are produced using one of several different chelating agents. The difference is in the quality of the chelating agent. A higher quality chelating agent generally assures more iron availability for plant use over a longer period of time. However, not every situation calls for the highest level of chelation. Growing media pH and the method of chelate application determine which product is best for each production situation.

The highest quality iron chelate, EDDHA, works in soils of all pH levels. The next highest formulation, DTPA, performs best in soils with pH levels below 7.5.

Higher-quality iron chelates allow for both foliar and drench applications. When making drench applications, the iron in the solution generally remains available to the plants for up to 30 days.

Lower-level chelated iron products, which are available as citric and EDTA formulations are designed for foliar spray applications. These applications are directed at and absorbed by the leaves.

Taking a more proactive approach

While some growers use iron to green-up plants, they may miss the benefits of regularly applying a chelated iron product. Mark Kelley, head grower at Grower Direct Farms in Somers, Conn., has recently started injecting Sprint 138 EDDHA iron chelate at every irrigation. The company sells to large chain stores including Wal-Mart and Home Depot.

Kelley said the proactive use of chelated iron has been particularly important as many of today's plant varieties are iron inefficient. With the continuous feed, Kelley and his staff are seeing less iron deficiency issues even on plants prone to problems, such as vegetative petunias and calibrachoa.

Rick Yates, technical services manager at Griffin Greenhouse & Nursery Supplies, has seen an increase in reports of iron deficiency and attributes this to the surge

Levels of iron chelation

Level 1

Citric: The lowest chelation available. Best for soils with very low pH. Must be applied directly to plant leaves.

Level 2

EDTA: Best for soils with pH below 6.5. Must be applied directly to plant leaves.

Level 3

DTPA: Best for soils with pH below 7.5. Foliar and drench applications possible.

Level 4

EDDHA: The highest quality chelation available. Works in soils of all pH levels. Foliar and drench applications possible.

in popularity of new vegetatively produced crops with lower soil pH requirements.

In addition to petunias and calibrachoa, Yates said the rising popularity of scaevola, bacopa, bidens and osteospermum varieties is another reason for the need of iron supplements.

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Yates also said the quality of irrigation water in certain regions of the country is playing a role in the increased need for iron supplements. Unchecked, high alkalinity water exerts upward pressure on soil pH, creating less mobility for iron, and thus more need for chelated iron products. While there hasn't been an increase in the alkalinity of water, naturally alkaline water is creating more of an issue with the increase in plants requiring soil with lower pH.

"Most growers are still on a see-and-treat basis when it comes to the use of iron," Yates said. "But we are starting to see a shift toward preventative treatment of crops with a history of iron-induced chlorosis."

Yates warns that not all plants benefit from additional iron. "New Guinea impatiens and geraniums don't want extra iron," he said. "Growers engaging in proactive use of iron must keep that in mind."

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