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The Irony of Overwatering

Interveinal chlorosis of the upper foliage can develop based on a number of conditions. Excessive irrigation can limit iron uptake and be the primary factor of inducing deficiency symptoms.

In greenhouse production interveinal chlorosis of the upper foliage is commonly associated with insufficient iron (Fe) being available to a plant (Fig. 1). The most common situation is an Fe deficiency and is initially observed as a light green coloration of the new upper foliage, progressing to a more pronounced interveinal chlorosis



Figure 1. Interveinal chlorosis (yellowing) occurs when iron (Fe) uptake is inadequate for the plant's needs. There are a multitude of reasons why this can occur, and determining the reason is key to managing the situation. (Photo: Brian Whipker)

and finally, in severe cases, total yellowing and bleaching of the foliage (Fig. 2). While these symptoms are commonly observed, determining the cause of the disorder requires additional investigation due to the many causes of Fe deficiency. Iron deficiency can be caused by a wide variety of problems ranging from insufficient Fe fertility, high substrate pH, root rot or overwatering (see alert 8.24 for additional information on determining Fe deficiency causes).

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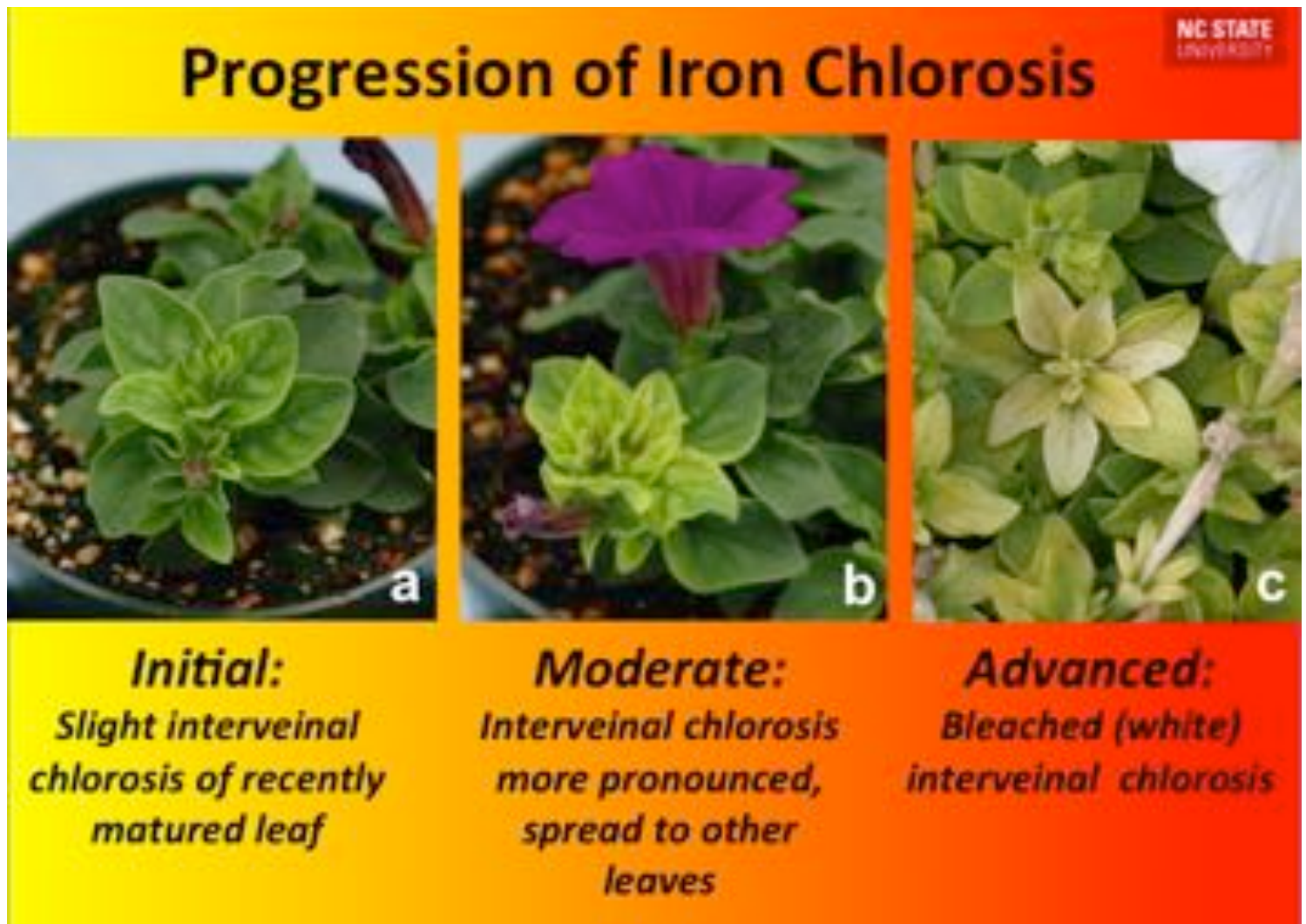


Figure 2. The progression of insufficient levels of iron (Fe)-induced interveinal chlorosis (yellowing) on petunia plants. (Photo: Brian Whipker)

Recently we came across a group of butterfly bush (*Buddleja davidii*) plants in a greenhouse displaying interveinal chlorosis of the upper foliage (Fig. 3). After a warm summer and the start of lower fall temperatures, the irrigation frequency on this group of plants had not been reduced. This led to the plants being overwatered and having highly saturated substrates. After seasonal shifts in the weather, growers should closely monitor irrigation schedules and make changes as needed to prevent constantly saturated substrates that can lead to Fe deficiency and other problems such as root rot. Substrate composition plays a large role in water retention, if substrate saturation is a continuous problem growers may

consider a substrate with a greater aggregate incorporation rate to help facilitate drainage.

Ways to correct Fe deficiency once irrigation has been reduced:

Iron Drench If the levels are excessively high, then an Fe chelate application can be made to the substrate. Below are the options. Iron Chelate Drench (options):

- Iron-EDDHA: mix 5 ounces in 100 gallons of water
- Iron-DTPA: mix 5 ounces in 100 gallons of water
- Iron sulfate: mix 4-8 ounces in 100 gallons of water



Figure 3. Butterfly bush exhibiting iron deficiency caused by overwatering (Photo: Brian Whipker)

Tips

- Apply as a substrate drench with sufficient volume to leach the pot.
- Rinse foliage immediately.

Summary:

Iron chlorosis can be a challenge for growers due to the wide array of causes. Monitoring automated irrigation is crucial to preventing a wide array of problems including iron chlorosis. Ensuring that automated irrigation is decreased as season weather shifts from the warm

summer months to cooler fall temperatures is a crucial step in preventing overwatering. Additionally, for plants that are prone to Fe deficiency due to overwatering, switching to a substrate with better drainage can help prevent oversaturation for extended periods of time.

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