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Petunia: Chlorotic Spots and Necrosis

Interveinal chlorosis of the new growth usually denotes an iron (Fe) deficiency. Ethephon spray phytotoxicity can appear as a mimic of iron deficiency on young leaves with similar interveinal yellow spots and necrosis.

During a recent greenhouse visit, the owner wanted me to look at his petunia hanging baskets. He had noticed an odd interveinal spotting (Figs. 1 to 3), varying degrees of necrosis (Figs. 4 to 6), and tip death (Fig. 7) problem on his young plants. After last year when he had Tobacco Mosaic Virus (TMV) (Fig. 8), he was concerned about a repeat situation.

At first glance, I quickly discounted TMV for the pattern was uniform. TMV usually results in a random pattern of mottling, which is why the term mosaic appears in its name. (Most state plant disease diag-

nostic clinics offer TMV testing if needed.)

The symptoms more closely resembled iron deficiency. Many times though, when



Figure 1. Initial signs of interveinal chlorotic spots on the upper leaves of a petunia.

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an iron deficiency initially appears on a leaf, it begins over the entire leaf (Fig. 9). (A quick substrate pH test and finding out if the values are between 5.5 and 6.0 would eliminate high substrate pH induced iron chlorosis as a possible cause.) Also for actively growing plants, iron deficiency symptoms usually, but not always, appear on scattered plants. For this particular problem, the symptoms appeared more toward the base of the leaf or other areas where a solution could accumulate. Finally, necrotic spotting can also occur with iron chlorosis, but it only happens after the leaves have become entirely yellow or white, and sunburning develops. For the plants in this greenhouse, they lacked entire yellow or white coloration.

With young petunias, ethephon foliar sprays are commonly used to promote lateral branching. So I asked if Florel or Collate had been applied. He confirmed it had.

So with the almost complete occurrence of the problem over the entire

crop, the damage being a pattern near the leaf base, and necrosis appearing where the leaves were small and cupped which allowed accumulation of the spray solution, all pointed to a chemical phytotoxicity.

When used correctly, ethephon applications will result in enhanced plant growth. Because ethylene produced by Florel and Collate is a stress enhancer, it is important to have the plants actively growing and not under suboptimal conditions (heat, drought, environmental or disease stress). Lower leaf yellowing typically occurs when ethephon is applied to water stressed plants. If too much volume of solution is applied, the solution pools on the tissue, or environmental conditions allow very slow drying (high humidity and overcast conditions), leaf discoloration, as observed with these petunias, can occur.

Management

Provide environmental conditions that allow ethephon foliar sprays to remain wet on the leaves for around 4 hours. Longer periods can

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increase the incidence of phytotoxicity. Phytotoxicity symptoms can vary by cultivar, so denote differences and apply less volume of the spray solution to susceptible cultivars. (Dose per plant can be lowered by decreasing the volume of water sprayed per pot. This is easier than mixing up a separate solution at a lower concentration for susceptible cultivars.)

fertilize the plats to encourage new growth. The new leaves will cover up the symptoms. In severe cases where the growing tip dies (Fig. 7), the plants may stall until new growth resumes. Manage the water to avoid over-irrigation that can lead to root rot problems.

If phytotoxicity occurs,



Figure 2. Ethephon foliar sprays can cause yellow spotting on the upper leaves.



Figure 3. More extensive case of interveinal yellowing on the upper leaves.



Figure 4. Mild case of necrotic spotting on the upper leaves.



Figure 5. More extensive case of necrotic spotting on the upper leaves.



Figure 6. A severe case of necrotic spotting on the upper leaves.



Figure 7. A severe case of necrotic spotting and death of the growing tip.



Figure 8. Leaf mottling due to a tobacco mosaic virus (TMV) infection.



Figure 9. The initial signs of an elevate substrate induced iron deficiency.