e-GRO Alert


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The Highs and Lows of Pansy Nutritional Problems

Fall pansy production is a staple for many growers. While pansies are a quick crop, several nutritional problems can occur that you should watch out for to have the most success possible.

Figure 1. Pansy high pH induced iron deficiency resulting in interveinal chlorosis of the upper foliage. (Photo: Brian Whipker)

High pH. One of the most common problems with fall pansy production is iron (Fe) deficiency (Fig. 1). This is observed as interveinal chlorosis of the new foliage. There are a variety of causes for Fe deficiency including overwatering and high substrate pH. Growers should closely monitor these root zone conditions and target a root zone pH of 5.5-6.2 to prevent high pH-induced iron chlorosis and maintain a substrate moisture level of 2-4 on a 1-5 scale. Alert 12.34 provides additional resources about pansy pH problems.

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Low pH. Due to the frequency of high substrate pH induced iron deficiency, pansies are generally grown on the acidic side of the pH scale. A root zone pH of 5.5-6.2 is the recommended range. What happens if the substrate is too low? Symptoms include lower leaf purple-black discoloration (Fig. 2). With fall pansy production, the quick growing period usually means that there is little time for these symptoms to manifest. During normal active growth, observation of low pH problems is infrequent, and occurrence increases with slower winter-grown crops. Confirm the substrate pH values with a PourThru test. Low phosphorus concentrations coupled with cool growing can result in lower leaf purpling which can appear to be similar.

Low Fertility. Pansy crop production is generally very quick and as a result, maintaining adequate electrical conductivity (EC) is important to promoting plant growth. When EC levels are below optimal, lower leaf chlorosis and stunted growth are common symptoms (Fig. 3). This can often occur if pansies are being grown outdoors and heavy rain displaces fertilizer out of the pot. To prevent low EC problems from occurring following a heavy rain, immediately irrigating with fertilizer solution to displace the low EC rainwater is important. Additionally, conducting routine pH and EC analysis in-house will allow you to make corrections before visual symptoms occur.

High EC. Generally, pansies are grown on the leaner side to avoid excessive growth and stretch. High fertilization rates of miscalculations can result in lower leaf scorch due to excessive EC (Fig. 4). Confirming the EC readings with a PourThru test will help confirm your situation. Symptoms are similar to

Figure 2. Low substrate pH conditions result in purplish-black discoloration of the lower leaves. (Photo: Brian Whipker)

Figure 3. Lower leaf chlorosis of pansies as a result of low fertility (low EC). (Photo: Brian Whipker)

Figure 4. Excessive fertility results in lower leaf scorch. Conduct a PourThru EC test to confirm. (Photo: Brian Whipker)

excessive boron (B) overdose conditions. Leaching the substrate with clear water irrigations will help lower the EC to within more acceptable levels.

Boron Deficiency. Distortion and curling of the new growth are typical symptoms of a B deficiency (Fig. 5). Many times the situation begins during the plug stage when excessive moisture inhibits B uptake via transpiration by the actively growing plug. This can result in a temporary deficiency that lingers into the finishing stages of growth. Minor deficiency symptoms are usually overcome by the plant, but plants with severe symptoms many times will never recover and they fail to bloom.

Boron Toxicity. Due to the concern about B deficiencies, B applications are frequently made to pansies. The dosage band among low, optimal, and excessive is fairly narrow, thus overdoses can occur. Lower leaves develop necrotic spotting along the leaf margins and with the initial symptoms they occur at the hydathodes along the leaf margin (Fig. 6). This is because B is transported within the plant via the water-conducting cells and is readily moved to the edge of the leaf where transpiration is elevated. Diagnosing this disorder requires observing leaves with initial symptoms, because if excessive B continues to be taken up by the plant then the entire leaf margin also becomes necrotic. Symptoms are similar to an excessive fertilizer application. Conduct a PourThru test to confirm your diagnosis.

Pansies are a common crop for fall production, however, growers can often run into problems for a variety of reasons. Keeping a close eye on the crop to avoid common problems will promote a successful crop.

Figure 5. Boron deficiency results in distorted growing tips, leaf curling, and lack of flowering. (Photo: Brian Whipker)

Figure 6. Excessive boron application rates result in lower leaf marginal scorch. (Photo: Brian Whipker)

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A quick guide for identifying the most common nutritional problems in pansies.
If in doubt, sent it out to confirm your diagnosis.

Low		High
	pH	
	EC	
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