e-GRO Alert


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Young Plant Nutrition Tips

Dialing plant nutrition begins well before transplant day, monitoring environmental factors including moisture and temperature, fertilizer type, and fertilizer rate.

Utilizing proper fertility strategies is essential in young plants for establishing strong roots and healthy shoots. Proper plant nutrition begins well before transplant day, monitoring environmental factors including moisture and temperature, fertilizer type, and fertilizer rate. By considering these factors growers can avoid common problems that result in uneven growth, plant stall, and crop loss.

Figure 1. Uneven growth, leaf discoloration, and necrotic growing tips can result with excessive misting. (Photo: Brian Whipker)

Environmental Factors:

Nutrient uptake can be impacted by a variety of factors including temperature and moisture. Two common factors to monitor are humidity and moisture. Calcium (Ca) critical in cell wall formation is taken up through mass flow which requires transpiration. If the vapor pressure deficit (VPD) is too low which is commonly associated with high humidity, Ca will not be taken up into the new growth and tip abortion can occur (Fig. 1). Additionally, plants that lose the apical growing point will often have poor rooting too.

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Continually saturated substrates can also result in iron (Fe) deficiency observed as interveinal chlorosis of the new foliage (Fig. 2). This problem occurs more frequently after the cuttings are rooted and the plants are over-irrigated. Dialing back the amount of water applied to the plants will help avoid this situation. The application of a complete fertilizer containing chelated iron will also help correct this situation.

Temperature can also impact nutrient uptake, if plants are being grown in a cooler environment and with an overly saturated substrate, then phosphorus (P) deficiency can also occur. Lower leaf purpling and plant stall are a common symptom of P deficiency in young transplants when held in cool moist environments (Fig. 3).

Fertilizer Type:

Fertilizer selection can have a large impact on young plant growth. Examining your nitrogen type and nutrient ratios is important when selecting a fertilizer for young plant production. Fertilizers that contain greater amounts of ammoniacal nitrogen (NH_4+) (such as 20-10-20) will promote an increase in plant stretch and lush growth and would be considered an acidic fertilizer. In contrast, fertilizers that contain a greater percentage of nitrate nitrogen (NO_3-) (such as 17-5-17 or 13-2-13) will create more compact transplants and would be considered a basic fertilizer. To determine if a fertilizer is acidic or basic, examine the guaranteed analysis for a potential acidity of basicity rating (Fig. 4). Additionally, in some species like pansy, in cold climates ammonium toxicity can be observed with high rates of ammoniacal fertilizer.

Figure 2. Iron chlorosis can result if the plugs are irrigated too much or the substrate is kept too wet. (Photo: Patrick Veazie)

Figure 3. Lower leaf purpling and plant stall as a result of phosphorus deficiency can occur in cool wet conditions (Photo: Brian Whipker).

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Total nitrogen (N)	20%
3.83% ammoniacal nitrogen	
6.07% nitrate nitrogen	
10.10% urea nitrogen	
Available phosphate (P_2O_5)	20%
Soluble potash (K_2O)	20%
Magnesium (Mg), total	0.0500%
0.0500% water soluble magnesium	
Boron (B)	0.0068%
Copper (Cu)	0.0036%
0.0036% chelated copper	
Iron (Fe)	0.0500%
0.0500% chelated iron	
Manganese (Mn)	0.0250%
0.0250% chelated manganese	
Molybdenum (Mo)	0.0009%
Zinc (Zn)	0.0025%
0.0025% chelated zinc	

Derived from: urea, ammonium phosphate, potassium nitrate, magnesium sulfate, boric acid, iron EDTA, manganese EDTA, zinc EDTA, copper EDTA, ammonium molybdate

Potential Acidity: 555 lbs. Calcium carbonate equivalent per ton. Information regarding the contents and levels of metals in this product is available on the internet at: http://www.aapfco.org/metals.html

Figure 4. Potential acidity or basicity ratings can be found on most guaranteed analysis on water soluble fertilizer bags.

Fertilizer Rate:

During propagation, once roots are developed and shoot growth is initiated it is important to start fertilizing transplants. Beginning with a low rate of fertility (50-100 ppm N) to promote growth is important to prevent plant stall. As transplants develop it is important to increase your fertility rate (100-150 ppm N) to meet the growth requirements and promote active growth at transplant. If plants receive inadequate fertility overall chlorosis, slow rooting, and limited shoot development may occur (Fig. 5). However, in contrast if plants are over fertilized, plant stretch resulting in weak cuttings may develop (Fig. 6). If you are receiving rooted liners or plugs, providing a boost in fertility can be helpful to help promote active shoot growth at transplant.

Conclusion:

Utilizing proper fertility strategies is crucial for producing high-quality young plants with strong roots and healthy shoots. By carefully managing environmental factors such as moisture, temperature, and humidity, growers can optimize nutrient uptake and prevent common deficiencies like calcium-related tip abortion or phosphorus-induced plant stall. Selecting the appropriate fertilizer type, whether acidic or basic, helps control plant stretch and overall growth, ensuring transplants develop with the desired structure and strength. Additionally, maintaining proper fertilizer rates throughout propagation supports steady development, avoiding issues related to over- or under-fertilization. Regular monitoring of plant response, substrate conditions, and environmental influences is essential for adjusting fertility programs to meet plant needs. By implementing these best practices, growers can produce uniform, vigorous transplants that establish quickly and promote growth after transplanting.

Figure 5. Inadequate fertilization applications during propagation can result in nutrient deficiencies due to low electrical conductivity. (Photo: Patrick Veazie)

Figure 6. High fertility rates can result in increased internode stretch and weak cuttings.

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