Iron Hunger in Carnations Should Be Rare

by

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Carnations are not sensitive to different levels of iron in the nutrient solution. Neither yield nor grade of flowers was affected by three levels of iron in the solutions fed carnations over a 14-month period. The plants which received no additional iron produced slightly more split calyxes but this is thought to be caused by position of the plants on the bench. Messing (1) observed a slightly higher incidence of splitting when iron was omitted from the nutrient solution, but later concluded that splitting was due to individual plants rather than to iron deficiency. He stated that the omission of iron had no influence on calyx splitting when stock was obtained from a single clon, however some slight reduction in yield was observed when iron was omitted from the nutrient solution. His experiments were conducted over a period of two years.

In order to ascertain the liklihood of iron deficiency in Colorado, rooted cuttings of Pink Sim carnation were planted in 10-inch pots of volcanic scoria and supplied with 3 levels of iron from October 15, 1958, to December 15, 1959. There were 3 pots of 3 plants in each of 3 treatments. The treatments were: minus iron, 3 ppm iron, and 6 ppm iron. All plants were irrigated with a solution containing the following nutrients per 50 gallons of water:

Calcium nitrate	180 grams
Potassium chloride	50 "
Magnesium sulfate	50 "
Phosphoric acid	28 ml
Boric acid	0.32 grams
Zinc sulfate	0.03 "
Copper sulfate	0.03 "
Manganese sulfate	0.13 "

The weight of flower and stem and the length in inches was recorded for all flowers harvested. All abnormal flowers were noted. Yield, mean weight, mean length, and a weight to length ratio are included in table 1. A carnation of good grade should have a minimum weight-length ratio of 1.00.

Table 1.--The effects of 3 levels of iron on yield, weight, length, and calyx splitting of Pink Sim carnation.

Iron applied in nutrient soln.	Yield	Mean weight in grams	Mean length in inches	Weight to length ratio	Number of splits
none	131	25.6	29.3	1.145	19
3ppm	131	26.3	29.9	1.138	5
6ppm	136	25.4	29.6	1.166	8

Iron should rarely become a limiting factor in the culture of carnations. Insolubility rather than lack of iron is the most common cause of iron hunger. As soil acidity increases iron becomes more soluble and carnations are usually grown in neutral or slightly acid soils. Heavy liming decreases iron solubility, but even in heavily limed soils iron is often available to the plants because of the close contact between the root surface and the soil particles. Iron is often obtained in small quantities as impurities in commercial fertilizers. Although iron is absolutely essential for normal plant growth, the amount of iron in plant tissue is quite small. Tap water or well water which has been conducted through iron pipes may contain enough iron to support carnations without extra additions of this element.

Literature cited

1. Messing, J. The visual symptoms of some mineral deficiencies on perpetual flowering carnations. Carnation Craft 32. July-August 1955.

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