

## The Relationship of Leaf Iron to Chlorosis of *Tolmiea menziesii*

Morris W. Smith

Agricultural Research Service, U.S. Department of Agriculture, Tifton, GA 31793

*Tolmiea menziesii* plants are recognized as being Fe inefficient plants. Under intense production practices, Fe related chlorosis develops rapidly resulting in a loss of production. Tissue levels of Fe have not been determined for chlorotic or nonchlorotic plants. A study was undertaken to determine leaf Fe concentration of chlorotic and nonchlorotic *Tolmiea menziesii* plants and to establish a tentative minimum critical foliar Fe level.

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Unfertilized and unpruned 6-week rooted cuttings (from one stock plant) of *Tolmiea* were planted in an acid washed sand culture apparatus. There was one cutting per 3.8-liter (19.1 cm diameter  $\times$  17.5 cm deep) container, 4 plants per replicate, and 4 replicates per treatment. Treatments of Fe (FeNa2EDTA) were 0 and 5 ppm with other nutrients supplied via one-half strength Hoagland's solution. Nutrient solutions were prepared and replaced weekly when the sand was leached with one liter of demineralized, reverse-osmosis water. The plants were sub-irrigated with recycled nutrient solution 3 times daily. The plants were grown unpruned for 42 days (1 Apr. to 12 May) in a glasshouse. Ten of the most recently mature leaves per plant were collected at harvest,

washed, and analyzed for Fe. Chlorosis was well-developed in the control plants by day 33; however, the experiment was continued for 9 more days to ensure the authenticity of the chlorosis. Plants irrigated with 5 ppm Fe solution were dark green and were considered marketable, whereas the chlorotic plants were considered unmarketable. The chlorotic plants had an average leaf Fe of  $71 \pm 7$  ppm, whereas the green plants had an average leaf Fe of  $130 \pm 11$  ppm. Therefore, the minimum average leaf Fe for green *Tolmiea menziesii* plants is between 78 and 119 ppm. Plants containing more leaf Fe than 78 ppm and less than 119 ppm might be considered marginally deficient. *Tolmiea* plants should be supplied with 5 ppm Fe at each irrigation to prevent chlorosis.

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