



Citrus deficiencies

UC DAVIS
COLLEGE OF AGRICULTURAL
& ENVIRONMENTAL SCIENCES



Nitrogen: Grapefruit leaves with high (left), low (middle) and deficient (right) nitrogen concentrations. From T.W. Embleton.



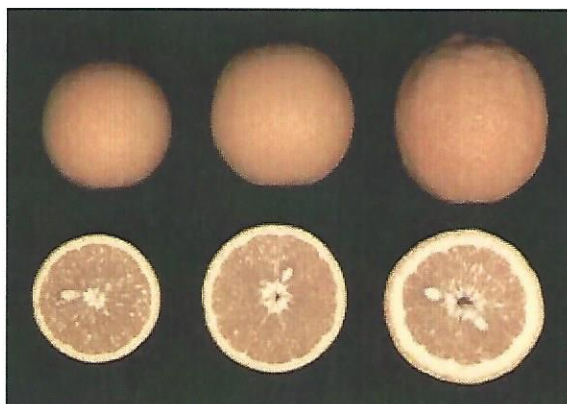
Nitrogen: Nitrogen deficient leaves from 25-year-old 'Marsh' grapefruit in Corona, Calif. From W.P. Bitters.



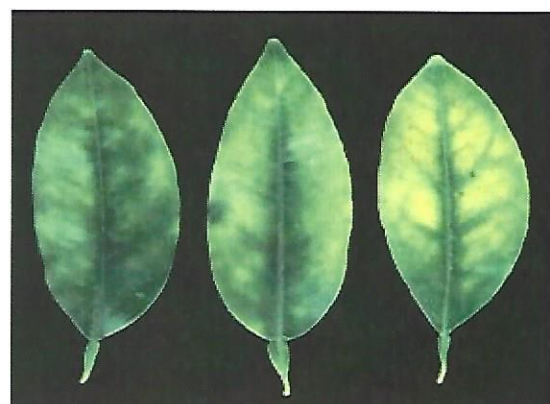
Nitrogen: Nitrogen sufficient (left) and deficient lemon leaves (right). From T.W. Embleton.



Phosphorus: Phosphorus deficient lemon leaves. From T.W. Embleton.



Phosphorus: 'Valencia' fruit from trees having leaf phosphorus concentrations that are in excess (0.18% P), normal (0.13%-0.14% P), and deficient (0.11%-0.12% P, note rough peel). From T.W. Embleton.



Potassium: Potassium deficient grapefruit leaves. From T.W. Embleton.

Prepared by Louise Ferguson, November 5, 2007

For more information visit: International Programs www.aes.ucdavis.edu/IntProg/Default.htm

Copyright © UC Regents Davis campus, 2007. All Rights Reserved.



Citrus deficiencies (continued)



Potassium: Potassium deficient lemon leaves. From T.W. Embleton.



Potassium: Potassium deficient lemon leaves and fruit. From T.W. Embleton.



Magnesium: Magnesium deficient navel orange leaves. From T.W. Embleton.



Magnesium: Magnesium deficient lemon leaves (0.03%-0.15% Mg). From T.W. Embleton.



Magnesium: Magnesium deficient leaves from lemon on 'Macrophylla' rootstock. From W.P. Bitters.



Iron: Iron deficient orange leaves. From T.W. Embleton.

Prepared by Louise Ferguson, November 5, 2007

For more information visit: International Programs www.aes.ucdavis.edu/IntProg/Default.htm

Copyright © UC Regents Davis campus, 2007. All Rights Reserved.



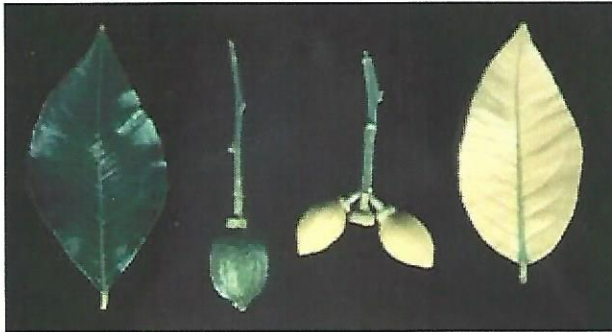
Citrus deficiencies (continued)



Iron: Iron deficient grapefruit leaves. From T.W. Embleton.



Iron: Iron deficient lemon leaves. From T.W. Embleton.



Iron: Comparison of iron sufficient (left) and deficient (right) lemon leaves and fruit. From T.W. Embleton.



Boron Boron deficient leaves (5 ppm B) of navel orange on trifoliate orange rootstock. From T.W. Embleton.



Boron: The corky vein symptom of boron deficient navel orange leaves (5 ppm B). From T.W. Embleton.



Boron: Boron deficient leaves from 10-year-old lemon trees. From C.J. Lovatt.

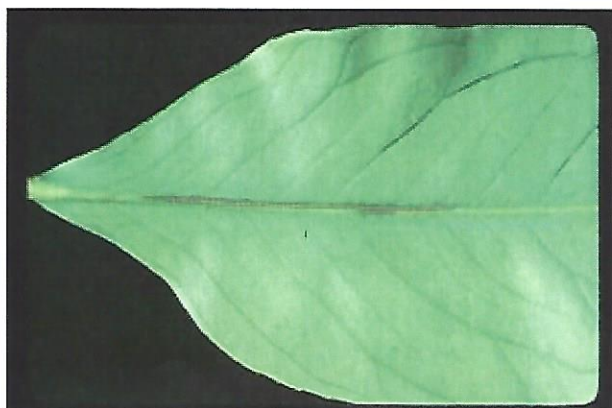
Prepared by Louise Ferguson, November 5, 2007

For more information visit: International Programs www.aes.ucdavis.edu/IntProg/Default.htm

Copyright © UC Regents Davis campus, 2007. All Rights Reserved.



Citrus deficiencies (continued)



Boron: A boron deficient lemon leaf with corking of the veins typical of boron deficiency. From C.J. Lovatt.



Boron: Symptoms of boron excess in grapefruit leaves (760-1150 ppm B). From T.W. Embleton.



Boron: Symptoms of boron excess in leaves of navel orange. From T.W. Embleton.



Boron: Symptoms of boron excess in lemon leaves. From W.P. Bitters.



Boron: Symptoms of boron excess in leaves of 'Bears' lime. From T.W. Embleton



Zinc: Zinc deficient navel orange leaves. From T.W. Embleton.

Prepared by Louise Ferguson, November 5, 2007

For more information visit: International Programs www.aes.ucdavis.edu/IntProg/Default.htm

Copyright © UC Regents Davis campus, 2007. All Rights Reserved.



Citrus deficiencies (continued)



Zinc: Zinc deficient lemon foliage. From T.W. Embleton.



Copper: Copper deficient fruit of navel orange on 'Troyer' citrange rootstock. From T.W. Embleton.



Copper: Copper deficient 'Valencia' orange fruit. From W.P. Bitters.



Copper: Gum pockets in fruit caused by copper deficiency of 'Valencia' orange. From W.P. Bitters.



Copper Copper deficiency of lemon. From T.W. Embleton.



Copper. Copper deficient lemon fruit. From T.W. Embleton.

Prepared by Louise Ferguson, November 5, 2007

For more information visit: International Programs www.aes.ucdavis.edu/IntProg/Default.htm

Copyright © UC Regents Davis campus, 2007. All Rights Reserved.



Citrus deficiencies (continued)



Copper. Gum pockets in shoots of copper deficient lemon From T.W. Embleton.



Copper. Copper damage to 'Valencia' fruit and leaves caused by a copper spray. From T.W. Embleton.



Copper. Copper damage to a lemon leaf and fruit resulting from a copper spray. From T.W. Embleton.



Copper. Copper damage to a lemon fruit caused by a copper spray. From T.W. Embleton.

Reference: UC Davis IPM Program, Agriculture and Natural Resources, University of California

<http://www.ipm.ucdavis.edu/>

Prepared by Louise Ferguson, November 5, 2007

For more information visit: International Programs www.aes.ucdavis.edu/IntProg/Default.htm

Copyright © UC Regents Davis campus, 2007. All Rights Reserved.