LEAF ANALYSIS GUIDE FOR DIAGNOSING NUTRIENT STATUS OF MATURE VALENCIA AND NAVEL ORANGE TREES*

Element	Unit (Dry Matter Basis)	Ranges†				
		Deficient	Low	Optimum	High	Excess
N	%	<2.2	2.2 to 2.3	2.4 to 2.6	2.7 to 2.8	>2.8
P	%	<0.09	0.09 to 0.11	0.12 to 0.16	0.17 to 0.29	>0.30
K‡	%	<0.40	0.40 to 0.69	0.70 to 1.09	1.10 to 2.00	>2.30?
Ca	%	<1.6?	1.6 to 2.9	3.0 to 5.5	5.6 to 6.9	>7.0?
Mg	%	<0.16	0.16 to 0.25	0.26 to 0.6	0.7 to 1.1	>1.2?
S	%	<0.14	0.14 to 0.19	0.2 to 0.3	0.4 to 0.5	>0.6
B	ppm	< 21	21 to 30	31 to 100	101 to 260	>260
Fe§	ppm	< 36	36 to 59	60 to 120	130 to 200?	>250?
Mn§	ppm	< 16	16 to 24	25 to 200	300 to 500?	>1000?
Zn§	ppm	< 16	16 to 24	25 to 100	110 to 200	>300
Cu§	ppm	<3.6	3.6 to 4.9	5 to 16	17 to 22?	>22?
Mo‖	ppm	<0.06	0.06 to 0.09	0.10 to 3.0	4.0 to 100	>100?
Cl	%	?	?	<0.3	0.4 to 0.6	>0.7
Na	%	?	?	<0.16	0.17 to 0.24	>0.25
Li	ppm	#	....	<3	3 to 35?	>35?
As	ppm	#	....	<1	1 to 5	>5?
F‖	ppm	#	....	<1 to 20	25 to 100	>100

* With the exception of nitrogen values this guide can be applied for grapefruit, lemon, and probably other commercial citrus varieties.

† Based on concentration of elements in five- to seven-month-old, spring-cycle leaves from nonfruiting terminals. Leaves selected for analysis should be free of obvious tipburn, insect or disease injury, mechanical damage, etc., and from trees that are not visibly affected by disease or other injury.

‡ Potassium ranges are for number of fruit per tree.

§ These values are not applicable for leaves that have been sprayed or dusted with the particular element in question. Leaves that have been sprayed or dusted with Fe, Mn, Zn or Cu may analyze high or excessive in these respective elements, but in the case of Fe, Mn or Zn the next growth cycle that appears may have values in the deficient range.

‖ From fruiting terminals (Chapman, 1960).

These elements are not known to be essential for growth of citrus.