



## Citrus Bloom

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Spring flush has arrived, and the Tulare County Agricultural Commissioner's office has announced officially the beginning of the citrus bloom period for citrus growing in District 1 beginning at 1:00 a.m., Sunday morning, April 4, 2021.

Foliar nutrient applications are not a new concept to the citrus industry. For more than five decades, foliar nutrient applications on citrus have been recommended to correct zinc, manganese, boron, copper, and magnesium deficiencies. Foliar nutrient applications are more efficient than traditional soil applications because of better, faster nutrient uptake and reduced losses. Field research has shown that supplemental foliar nutrient applications can increase yield by 10 to 25 percent compared with conventional soil fertilization alone. Zinc, manganese, calcium, and boron are four especially important micronutrients for citrus.

Zinc (Zn) is critical during the early growth stages as it is essential for numerous metabolic reactions. Having adequate zinc levels throughout the growing season is critical to prevent premature leaf fall and improve bud development, flowering, and fruit set. Deficiencies in zinc cause small leaves and chlorosis which significantly reduces shoot growth and yield potential. Low zinc levels reduce fruit number per tree.

Manganese (Mn) plays a strong role in photosynthesis, chlorophyll formation, and nitrate reduction. It helps plants use N more efficiently. Manganese is a common deficiency in Central Valley citrus. Symptoms start on young, fully developed, and medium-sized leaves. Yellow/green discoloration and yellow blotches appear (leaf mottling) in between veins that eventually extend over the interveinal areas. Necrotic spots develop with severe deficiency. Manganese deficiency is often associated with zinc and iron deficiencies. These are also common on Central Valley citrus. In practice, a combined foliar application of Zn and Mn is often more effective in alleviating the respective deficiency symptoms, than single sprays on their own.

Calcium (Ca) is a key component of cell walls and has a direct influence on the regulation of enzyme systems, phytohormone activities and nutrient uptake. Calcium also influences pollen tube elongation. Persistent applications of calcium produce high yields. Regular use of soluble forms of calcium are beneficial on high calcareous soils. After seven years of regular use, calcium boosted orange yields in USA trials by up to 56%. Calcium also has a significant effect on reducing many fruit disorders. Foliar calcium nutrient applications, reduce splitting, creasing and pitting diseases of oranges and mandarins.



Boron (B) is involved in various enzyme systems and in carbohydrate metabolism and translocation. Boron will minimize fruit drop, prevent fruit deformities or storage problems from peel breakdown. Boron, like calcium also has an important role in cell structure and cell wall integrity. Citrus is extremely sensitive to low boron levels and has shown significant yield responses in the field. Yield increases result from a higher fruit number per tree, minimizing fruit drop, boosting fruit weight and preventing fruit deformities or storage problems from peel breakdown.