



Calcium: Physiological Function, Deficiency and Absorption

¹El Habbasha S.F. and ²Faten M. Ibrahim

¹Field Crops Research, National Research Center, 33 El Bohouth Street,
P.O. Box 12622, Dokki, Giza, Egypt

²Medicinal and Aromatic Plants Department, Pharmaceutical and Drug Industries
Division National Research Centre, 33 El Bohouth Street, P.O. Box 12622,
Dokki, Giza, Egypt

Abstract: Nutrition is a key factor for growth and development of plants. Among the main nutrients is calcium (Ca). Calcium, uptaken as Ca^{2+} , is essential element for the growth of the plants and fruit development, and it is important in the resistance of the plants to diseases due to with base in the protection of the cell wall. Ca plays important biochemical functions and supports many metabolic processes, in addition to activating several enzymatic systems, thus contributing to the proper development of plants. Ca fundamental role in the stability of the membrane and cell integrity. Among all organs, the leaves contain the highest concentration, Ca abundant in the leaves may be due to the formation of calcium pectate in the middle lamella of cells. As calcium is not mobile in the phloem, it cannot be retranslocated from old shoot tissues to young tissues, and its xylem transport into organs that do not have a high transpiration rate is low, Calcium is an element associated with the transport of N and interaction with potassium (K) and phosphorus (P). Abiotic stress often leads to an increase of free calcium in the cytoplasm of cells, which leads to gene expression which activates biochemical responses that allow the plant to adapt to adverse conditions of various kinds. Thus, the Ca is involved in the regulatory mechanisms that will enable the plant to make adjustments under adverse conditions such as high temperature, chilling, water stress and salinity.

Key words: Calcium ions, absorption, concentration.