



Research Article (7)

Title:	Role of calcium and magnesium on dramatic physiological and anatomical responses in tomato plants.
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English Abstract

Background

Minerals are the fundamental source of nutrients for plant functions such as photosynthesis, ATP currency, cellular respiration, metabolic activities, defense mechanisms, and tolerance to biotic and abiotic stressors. Minerals are the most significant component of plant nutrition and applying these minerals supplements can increase fruit output. The study's main aim was to make agricultural farming easier by foliar applying newly created nutrients like Lebosol-calcium and Magnesium.

Results

The four treatments: T0 (Control), T1 (Lebosol-Mg-Plus, 3 ml/L), T2 (Lebosol-Ca-Forte, 3 ml/L), and T3 (Lebosol-Mg-Plus and Lebosol-Ca-Forte, 3 ml/L) was applied as foliar spray to the seedlings of tomato. It was found that T3 substantially enhanced tomato's morphological features and yield. The treatment T3 significantly increased total soluble protein, chlorophyll content, and antioxidant enzyme activity. Furthermore, the foliar application of T3 considerably improved phenolic and ascorbic acid contents. The general anatomical features of the leaf, stem, and roots of tomato were qualitatively affected by the treatments. Application of Lebosol-Ca provided the highest total thickness of lamina, number of vessel elements, total phloem area, chlorenchyma layer, total area of vessel elements, xylem ratio, and increased palisade layer thickness, vessel diameter. Furthermore, T3 treatment showed a diverse impact on the internal structure of tomato organs, with palisade and spongy parenchyma growing to maximum values and vessel diameters expanding. T3 had also posed remarkable alterations in morpho-physiological, biochemical, and anatomical aspects in tested plants.

Conclusions

T3 had also posed remarkable alterations in morpho-physiological, biochemical, and anatomical aspects in tested plants.