

Mineral composition and distribution within 'Rocha' pear in relation to internal storage disorders

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Abstract

Pear fruit storability and the occurrence of storage disorders are related to mineral composition. This study investigated the distribution of the concentrations of macronutrients (nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), sulfur (S)) and the micronutrients (manganese (Mn), zinc (Zn), copper (Cu), iron (Fe), boron (B)) in 'Rocha' pear fruit to investigate the possible relationships of these minerals to the occurrence of internal storage disorders. N, Ca, Mg, Fe, Mn, Zn, Cu and B had radial decreasing concentrations from the fruit skin to the inner flesh tissues, while P and K concentrations were higher in the fruit center and lower in the skin. Ca concentrations were lower in the distal region of the flesh, while those of Mg increased toward the fruit calyx zone. Fe concentrations decreased, while those of Mn increased, in the skin tissues from the proximal to the distal region. B concentrations were lower in flesh tissues of the distal region. Generally, fruit has decreasing radial Ca and B concentrations from the skin tissues toward the fruit center, but no marked changes axially were detected. At the end of storage period, fruit with disorders had lower Ca concentration in three of four orchards, and K/Ca and (K + Mg)/Ca ratios were higher in these fruit, than fruit without disorders. Fruit with disorders had these lowest B concentrations in two of four orchards. Fruit from two orchards that had higher concentrations of B, and from three orchards with higher Ca concentrations did not develop internal storage disorders.