

Nutrient Deficiency Effects on the Biometric Characteristics of Tobacco Seedlings in Float Tray Systems

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Abstract

Tobacco seedling plant biomass responses to growing media nutrient regimes at transplanting are fundamental yield determinants of the leaf crop in the field. A study was carried out to determine the effect of nutrient deficiencies on tobacco seedling leaf counts, stem height, and girth grown in potted sand media under greenhouse conditions. Thirty clay pots were filled with sand media subjected to nine different nutrient deficient and one complete stock solution treatments in a complete randomized block. Results show that a complete content of vital nutrients supported the tallest stems of 64.3 cm while potassium deficiency stunted stems the most (9.3 cm). Deficiency of nitrogen (N), calcium (Ca), and phosphorus (P) reduced stem heights by 77–79%. Copper (Cu), N, potassium (K), and P nutrient deficiency induced the thinnest stems, which were 2.23–2.70 mm or 43.8–53% thinner than those in the control media. When compared with stem heights in the complete nutrient combination, the smallest reductions of 1.0 mm in stem girths were recorded in manganese (Mn) and zinc (Zn) deficient variants. The largest reduction in leaf emergence was recorded in sand media subjected to P and K deficiencies where a 64% reduction in leaf count was recorded. The functional group nutrient deficiencies effect on tobacco seedling biomass responses is reported in this study where any member of distinct functional groups of nutrients: (Mn and Zn); [Ca, magnesium (Mg), and iron (Fe)]; (Cu, N, K, and P) classified by similar general functions in cell metabolism, induced similar nutrient deficiency effects to those of the group on seedling biomass parameters.