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Short communication

Evaluation of tomato growth and soil properties under methods of seedling bed preparation in an alfisol in the rainforest zone of Southwest Nigeria

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Abstract

Tillage is expected to influence growth, yield and nutrient status of tomato (*Lycopersicon esculentum*, Mill.) plant, but there is scarcity of research to investigate the relationship between tillage and performance parameters of tomato. Hence the variation in soil physical and chemical properties, tomato growth, plant nutrient contents and fruit yield in response to different tillage methods and seedling bed types and positions, were investigated on an alfisol (Ferric Luvisol) at Akure in the rainforest zone of Nigeria. Different bed types for transplanted tomato seedlings were created using herbicide-based zero tillage, manual clearing (a form of zero tillage), top, side and base positions of ridges and mounds for planting seedlings of early and late season tomato crops. The soil at the top, side and base positions of ridges and mounds had lower bulk densities that was associated with greater root length, plant height, number of stems, branches and number of leaves and weight of tomato fruits, and leaf nutrient contents compared with zero tillage and manually cleared soils. Planting on ridge or mound positions increased the number of fruits and fruit weight by 200 and 100%, respectively, compared with planting on untilled soils. Soil bulk density was negatively correlated with root growth and leaf nutrient content. Tomato requires tillage for optimum productivity. © 2002 Elsevier Science B.V. All rights reserved.

Keywords: Tillage; Soil properties; Tomato; Nutrients; Nigeria
