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Utilizing soilless media and axillary stem cuttings for sustainable tomato (*Solanum lycopersicum*) production

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Abstract

Utilizing Soilless Media and Axillary Stem Cuttings for Sustainable Tomato Production.

Tomato is one of the most important cultivated vegetables in Ghana and it contributes greatly in livelihood improvement. In spite of the wide cultivation area for tomato production, there is production deficit causing high importation of tomato fresh fruits and processed tomato products. Unavailability of high-yielding improved cultivars, as well as the high cost of procuring seeds of available hybrid cultivars, are among the major challenges hampering tomato production. However, the recent introduction of greenhouse tomato cultivation offers an alternative approach of regenerating vigorous seedlings via vegetative propagation using axillary stem cuttings that are pruned and discarded. Also, the increase in improper disposal of agricultural waste is gradually becoming a threat to agroecology. Therefore, this study was conducted to identify suitable soilless medium for regenerating tomato seedlings from axillary stem cuttings and to assess the agronomic performance of the regenerated seedlings under greenhouse condition. To raise tomato seedlings from axillary stem cuttings, 100 % rice husk biochar, 100 % rice husk, 100 % cocopeat, 50 % biochar and 50 % cocopeat, 50 % cocopeat and 50 % rice husk were used. Again, a 2 × 2 factorial experiment arranged in a Completely Randomised Design (CRD) with four (4) replications was used. Treatments consisted of two factors; two tomato hybrid varieties (Lebombo and Anna) and planting materials (cuttings and seeds). Results from the study showed that 100 % rice husk biochar induced prominent root development in axillary stem cutting of tomato suggesting that it is suitable soilless medium for developing healthy and strong tomato seedlings from axillary stem cuttings. In addition, there were no significant differences in yield and fruit quality of fruits obtained from plants raised from seeds and axillary stem cuttings. Hence, vegetative propagation via axillary stem cuttings could be used as an alternative method of raising tomato seedlings to ensure sustainable tomato production in Ghana.

Keywords: Axillary stem cuttings, cocopeat, greenhouse. , rice husk, rice husk biochar, sustainable production, tomato