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Factors Influencing Performance of Seedplot Technique in Seed Potato Quality Improvement among Small Scale Farmers

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Abstract

Potato seedborne diseases majorly causes continuous low yields in potato production in East and Central Africa. A small seedplot technology (SSPT) has been developed as a step towards effective management of the seedborne diseases. This was successfully promoted and adapted to varying farming conditions, as a self-sustaining technology for on-farm seed potato production, where disease-free seed is planted at high-density in plots that are apparently free from bacterial wilt. The objectives of the study were to establish the influence of spacing and fertiliser nutrient composition on the performance of small seedplot, and to determine the influence of fertiliser levels on the performance of small seedplot. Trials with 5 potato varieties were conducted in seven locations for three seasons. Different fertiliser types (DAP and NPK) and rates (0, 45, 90 kg N ha⁻¹) were used at a spacing of 20×20 cm and 30×30 cm, to optimise management for SSPT. In most locations, tuber numbers were higher with NPK application compared with DAP. When planting in common spacing of 75×30 cm the varieties used in the trials produce about 25 tubers m⁻¹, whereas the SSPT spacings of 20×20 cm and 30×30 cm produced 67 and 54 tubers m⁻², respectively. Data was collected on tuber number, size and weight. The results indicated that the spacing of 20×20 cm produced higher tuber number per m² (51, 71 and 80 at 0, 45 and 90 kg N ha⁻¹, respectively) than with a spacing of 30×30 cm (45, 55 and 61 at 0, 45 and 90 kg N ha⁻¹, respectively). However, double starter seed is required and handling in planting is more difficult. Moreover, the multiplication rate per tuber was about 20% higher at a spacing of 30×30 cm compared with the spacing of 20×20 cm. Hence, in general if clean land is extremely limited the spacing of 20×20 cm should be chosen to make best use of this part, whereas if clean land is relatively sufficient a spacing of 30×30 cm seems to be more practicable and economically viable.

Keywords: Fertiliser, seedplot, quality seed potato