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Effect of seedbed depth on ginger (*Zingiber officinale*) yields in Uganda

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Abstract

Ginger (*Zingiber officinale*) is a popular herbaceous perennial used in spicing food and beverages in Uganda. However, population pressure is constraining available farmland for its cultivation. We hypothesised that enhanced seedbed depth could be a pathway for increasing ginger yields amidst competing land uses. An experiment was undertaken to assess the effect of seedbed depth on ginger yields. The experiment was set up in a Randomised Complete Block Design in three replications with treatments as seedbeds made of pits of depth; 1.8 m, 1.3 m, 0.8 m plus a control (0 metres). Pits were filled with maize cobs and a 30 cm soil+compost layer as planting media. Ginger rhizomes were planted at 25 cm × 25 cm intervals between and within rows with a plant population of 16. Ginger was harvested from each of the plots after 8 months to determine yield. Fresh weight was determined with a weighing balance and sub samples of rhizomes and shoots were oven dried for dry weight determination at 70 oC for 48 hours. Analysis of variance was used to assess the effect of treatments with Tukey's test used for post-hoc analysis. Highest ginger rhizome yield was from seedbeds of 1.3 M depth and lowest was from the Control, with yields of 6.02 t ha^{-1}, and 2.31 t ha^{-1}, respectively. Ginger yields with greatest seedbed depth (1.8 M) were 2.63 t ha^{-1}. Statistically significant differences ($p < 0.05$) were observed between yields for seedbed with 1.3 M depth compared with seedbeds of 1.8M depth and the Control but not the seedbed with 0.8M depth. Shoot yields followed a similar statistical trend of the order 1.3 M> 0.8 M> 1.8 M> Control with yields of 1.44 t ha^{-1}, 1.13 t ha^{-1}, 0.69 t ha^{-1}, and 0.2 t ha^{-1}, respectively. Results suggest an influence of seedbed depth on ginger yields with an optimal depth being 1.3 M. Nonetheless, a multiseason trial will be essential for validation of the results.

Keywords: Ginger yields, land use, seedbed depth, Uganda

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