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Best Planting Practices for Cassava – An Approach to Develop a Decision Support Tool

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Abstract

Cassava is a main staple in southern Nigeria. Due to policy changes cassava cultivation has become a major income generating activity. However, land preparation and tillage are cost intensive and there are no recommendations on the best suited and required tillage regime for the different soil conditions. Within the BMGF funded "African Cassava Agronomy Initiative" (ACAI), farmer organisations identified the lack of recommendations for appropriate soil preparation as a major impediment to intensification. In 2016 and 2017 on-farm trials were conducted to determine the effects on cassava root yields of three levels of a basic tillage operation: zero, single and double ploughing combined with following ridging versus retaining the soil surface flat. Cassava was planted at 10 000 and 12 500 plants ha^{-1} and received 75:18:90 kg ha^{-1} N, P and K versus nil. Of 1024 plots established 568 were suitable for analysis. Cassava growth was not different between single and double ploughed plots irrespective of the following ridging. Zero plough without ridging had the shortest plants with fewest leaves. The number of main stems was not affected by tillage, plant density and fertiliser. Without fertiliser, root yields were 9.15 Mg ha^{-1} in double plough, 9.70 Mg ha^{-1} in single plough and 7.83 Mgha^{-1} in zero plough. After double ploughing, ridging and plant density had no consistent effect on root yields. Fertiliser had a positive effect on root yields, increasing from 8.89 to 13.28 Mg ha^{-1}, with largest yield gains in the single and zero plough plots of 5.79 and 5.05 Mg ha^{-1}, respectively. In single and zero ploughed plots ridging increased yields from 8.04 to 11.00 Mg ha^{-1} and from 5.79 to 9.87 Mg ha^{-1}, respectively, when no fertiliser was applied. The positive effect of ridging increased in both tillage treatments by another 0.5 Mg ha^{-1} when fertiliser was applied. Lowest root yields were attained in the zero plough no ridging treatments with 5.79 Mg ha^{-1} fresh roots. The interactions between ploughing, ridging and fertiliser application show the complexity involved in creating decision support tools (DST). A first version of a DST is being tested in farmers' fields.

Keywords: Cassava, decision support tool, fertiliser, Nigeria, tillage

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