



Tropentag, September 16-18, 2026, hybrid conference

“Towards multi-functional agro-ecosystems
promoting climate resilient futures”

Storage root and stem yield of improved cassava varieties introduced to Liberia

STEFAN HAUSER, DANS JOHNSON, RANA FAKHOURY

United Nations Industrial Development Organization (UNIDO), Switzerland

Abstract

Next to rice, cassava is the most important food crop in Liberia. However, the local varieties are highly susceptible to cassava mosaic virus (CMV) and develop frequently severe symptoms of the disease. Further, planting methods are designed to furnish a high number of small storage roots, harvested sequentially from plants without uprooting them (milking). Two to three planting stakes are horizontally buried, causing delayed sprouting and strong internal competition, aggravating CMV, causing low root yields around 5 to 7 Mg ha⁻¹ fresh roots. The UNIDO GROW2 project introduced TME419, an improved cassava variety to Liberia and conducted on-farm trials to evaluate yield response to fertiliser and lime application and the crop age at harvest in Margibi, Bong and Nimba counties. Planting material yield as stem length (m ha⁻¹) and fresh storage root yield (Mg ha⁻¹) were determined.

Cassava was planted in mid-November 2024. Single planting stakes were vertically inserted to 2/3 of their length. The local cassava varieties produced 3.896 Mg ha⁻¹ fresh storage roots. Fertiliser application (60–28–48 kg ha⁻¹ NPK) increased yield marginally to 3.921 Mg ha⁻¹. Variety TME419 produced 19.800 Mg ha⁻¹ without inputs, 20.116 Mg ha⁻¹, with fertiliser and 24.016 Mg ha⁻¹ with 1 or 2 Mg ha⁻¹ lime as Ca(OH)₂.

Local varieties produced 17,353 m ha⁻¹ stem without fertiliser and 19,101 m ha⁻¹ with fertiliser. TME419 produced 23,754 m ha⁻¹ without inputs, 21,604 m ha⁻¹ with fertiliser and 28,817 m ha⁻¹ with lime. Yield gains were attained when the harvest was delayed by 2 months from 9 months after planting (MAP) to 11 MAP. TME419 produced 5.227 Mg ha⁻¹ more without inputs, 5.873 Mg ha⁻¹ more with fertiliser and 5.455 Mg ha⁻¹ more with lime. Stem production increased by 4,825, 2,176 and 6,483 m ha⁻¹ in TME419 control, fertilised and limed, respectively. The local varieties experienced root yield losses of 0.721 Mg ha⁻¹ without inputs and gains of 0.200 Mg ha⁻¹ when fertilised. Stem growth gains were larger than in TME419 with 8,694 m ha⁻¹ without inputs and 9,908 m ha⁻¹ with fertiliser.

Average root yield gains of 5.518 Mg ha⁻¹ and stem length gains close to 4,500 m ha⁻¹ indicate that the additional 2 months of growth are beneficial. Later harvests did not result in similar root yield gains.

Keywords: Cassava, fertiliser, liberia, lime, root yield, stem yield, varieties