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Root Yield Response of 12 Cassava Varieties to Leaf Harvest in DR Congo

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Abstract

Cassava leaves are a major source of protein for a large portion of poor people in DR Congo. No recent information exists on the root yield response of newly released cassava mosaic disease (CMD) resistant varieties, nor exist leaf production data. Eleven CMD resistant and one susceptible variety were planted in 6 locations, leaves were harvested 3 times (4, 8 and 11 months after planting (MAP)) before final root harvest (12 MAP). Edible leaf dry matter (DM) yields were affected by location and variety with a significant location \times variety interaction. Root DM yields were significantly affected by location, variety and leaf harvest with significant location \times variety interaction. Across varieties and locations, leaf harvest caused 15% root DM yield reduction. All locations except Mvuazi2 and Mampu1 produced significantly different root yields (in Mg ha^{-1} DM) in the order Kisangani: 9.25 (province Oriental, coarse sand soil), Kiyaka: 6.78 (Province Bandundu, coarse sand soil), Mvuazi1: 4.42 (Province Bas Congo, heavy clay soil), Mvuazi2: 3.40 (Province Bas Congo, degraded clay soil), Mampu1: 3.30 (Province Kinshasa, coarse poor sand soil) and Mampu2: 2.54 (Province Kinshasa, coarse poor sand soil) out-yielded all others. Across locations and leaf harvest variety TME419 produced highest root DM yields (7.55 Mg ha^{-1}). The susceptible variety produced the lowest edible leaf (209 kg ha^{-1}) and root (2.53 Mg ha^{-1}) DM yields in all locations. Root yield reductions due to leaf harvest ranged from 0–10% in varieties producing the lowest root yields and were insignificant. Higher yielding varieties suffered root yield reductions of 13–26%, equivalent to 1–1.6 Mg ha^{-1} DM. Root yield reductions across varieties were significant in all locations except Kiyaka. Significant reductions in all other locations ranged from 12–31% being equivalent to 0.8–1.2 Mg ha^{-1} DM. There was no significant correlation between edible leaf yield and root yield. Results indicate that maximising root and leaf yields requires location specific selection of varieties. Variety TME419 produced the highest average yield and highest yields in 3 of 6 locations. The best three leaf producing varieties were not among the best root producers indicating an incompatibility of the two production objectives.

Keywords: Cassava, DR Congo, leaf yield, root yield