Tropentag, September 14-16, 2010, Zurich

"World Food System —
A Contribution from Europe"

Consequences of Sequential Leaf Harvest on Root Yield and N Export of two Cassava Cultivars in South-central Cameroon

Jelle Willem Duindam[1], Stefan Hauser[2]

[1] *International Institute of Tropical Agriculture (IITA), Agronomy, Cameroon*
[2] *International Institute of Tropical Agriculture (IITA), Congo, The Democratic Republic*

Abstract

Cassava leaves are widely consumed in central African countries as a leafy green vegetable rich in protein and vitamins. In Cameroon, leaves are harvested sequentially at high frequencies throughout the year by breaking the shoot where the youngest mature leaf is inserted.

In a researcher-managed factorial harvest frequency × variety trial, effects on root yield and N export were studied. The CMD resistant variety 'TMS 92/0326' produced 32 t ha^{-1} fresh roots when shoot tips were not removed (control), 29 t ha^{-1} when shoot tips were removed at 3 month intervals (low frequency) and 17 t ha^{-1} when shoot tips were removed at monthly intervals (high frequency). The local, CMD susceptible variety 'Automatique' produced 21 t ha^{-1} in the control, 13 t ha^{-1} at low frequency and 10 t ha^{-1} at high frequency. Cumulative fresh shoot tip yields of TMS 92/0326 were 6.1 and 16.1 t ha^{-1} at low and high frequency, respectively. 'Automatique' produced 2.4 t ha^{-1} and 6.8 t ha^{-1} at low and high frequency, respectively, representing 39 % and 42 % of the yields attained by TMS 92/0326. 'Automatique' had a stronger negative response in storage root production to shoot tip removal (-8.9 t ha^{-1} per t removed shoot tips) than TMS 92/0326 (-6.8 t ha^{-1} per t removed shot tips).

Nitrogen export through biomass removal (leaves, roots and planting sticks) by TMS 92/0326 was 172 % higher ($p < 0.1$) than by 'Automatique' and related to higher biomass removal, not to differences in N concentration. With the leaves of TMS 92/0326 15, 89 and 197 kg ha^{-1} of N were exported, in the control, low and high frequency treatment respectively.

Although leaf harvesting reduces root yield, it strongly increases N exports. In cassava dominated cropping systems using improved varieties and frequent leaf harvesting regimes, methods to replenish N should be given strong attention. The introduction of improved varieties should thus be accompanied by technologies supporting soil N buildup. Research on cassava - green legume rotations is underway at IITA Cameroon.

Keywords: Agronomy, cassava, exports, leaf harvest, Nitrogen

Contact Address: Jelle Willem Duindam, International Institute of Tropical Agriculture (IITA), Agronomy private address: Abt Ludolfweg 162, 3732 AT De Bilt, The Netherlands, e-mail: jelleduindam@hotmail.com