**Tropentag, September 17-19, 2018, Ghent**

"Global food security and food safety:
The role of universities"

# Canopy Dynamics of two Climate-SmartCassava Varieties under Drought in SW Nigeria

Samuel Oluwafemi Ojo[1], Stefan Hauser[2], Rebecca Enesi[3], Lindsey Norgrove[1]

[1] *Bern University of Applied Sciences, MSc in Life Sciences - Agricultural and Forest Sciences, Switzerland*
[2] *International Institute of Tropical Agriculture (IITA), Nigeria*
[3] *ETH Zürich, Dept. of Environmental Systems Science, Switzerland*

**Abstract**

Cassava (*Manihot esculenta*) is a major staple in Nigeria and elsewhere in sub-Saharan Africa where it is grown without irrigation. However, the estimated yield gaps between those obtained on farmers' fields (12 Mg ha$^{-1}$) and on research stations (up to 60 Mg ha) remain high. There is also little information about yield determinants and the impacts of the dry season on growth, leaf area development, senescence, and biomass partitioning of the cassava plant and how these impacts vary between variety and with fertiliser application. Given projected changes in rainfall, we conducted a study to understand better the development of the crop as well as the growth response to water deficiency during the dry season. This was part of the "African Cassava Agronomy Initiative" sponsored by the Bill & Melinda Gates Foundation. The factorial experiment compared the responses of two drought-tolerant varieties of cassava (TMEB 419, IITA-TMS-IBA980581), to four different potassium fertiliser treatments (nil fertiliser, 75 kg N ha$^{-1}$ and 20 kg P ha$^{-1}$ with 90, 135 or 180 kg K ha$^{-1}$ elemental application rates) and two different planting dates, replicated in four blocks and at two sites in South West Nigeria. Measurements over the dry season (October 2017 – February 2018) included biomass partitioning, light intensity and canopy interception with the aid of a ceptometer, leaf senescence and leaf area estimates. Preliminary observations show TMEB 419 with a taller stem and less dense canopy than IITA-TMS-IBA980581. Relationships between dry season response and yield in 2018 will be established allowing to optimise the planting time and fertiliser regime for each variety.

**Keywords:** Cassava, climate-smart agriculture, manioc, sub-Saharan Africa, sustainable intensification

**Contact Address:** Lindsey Norgrove, Bern University of Applied Sciences, School of Agricultural, Forest and Food Sciences, Länggasse 85, 3052 Zollikofen, Switzerland, e-mail: lindsey.norgrove@bfh.ch