



Mercator Research Program | Call 4

Organic management of soil fertility for nutrition security in sweet potato systems

Background

In Mozambique, 7 in 10 children under five suffer from severe malnutrition linked to vitamin A deficiency, which inhibits their normal growth. The introduction of orange-fleshed sweet potato (OFSP) as a staple food in Mozambican communities can reduce malnutrition, as it is rich in important micronutrients and especially in B carotene, the precursor to vitamin A. However, OFSP cultivation is hindered by high nutrient requirements, and continuous cultivation without nutrient replenishment results in a decline in soil fertility. Better strategies for sustainable management of OFSP that assures continued soil nutrient supply while increasing productivity, nutritional value and profitability are needed. The investigation of organic farming techniques applied to OFSP cultivation with the use of organic fertilizer sources and intercropping will support the selection of the agricultural practices that will best promote soil health and be affordable for smallholder farmers.

Objective

The project aims to investigate the impacts of organic fertilizer sources on the maximization of productivity and nutritional value of the crop, promoting soil health associated with an affordable agricultural production system for the small farmer.

Research Approach

To assess the performance of organic amendments in the soil, we will establish field trials in Maputo and estimate improvements in soil fertility, plant productivity and nutritional value of OFSP. Trials will compare a range of

locally available organic resources such as composted animal manure and green manure crops, in addition to intercropping arrangements with leguminous plants.

Relevance and Expected Outcomes

The project explores the potential of managing soil fertility using organic amendments to ensure sustainable production of OFSP with improved yield and nutritional benefits. Based on locally sourced organic fertilizers, this research will (1) promote the development of affordable and suitable production systems targeting smallholder farmers, (2) improve local OFSP production while improving food and nutrition security in Mozambique, and (3) serve as a model for other countries to address nutritional constraints.

Food System Challenges Addressed

Organic production systems, soil health, nutrition security.

www.worldfoodsystem.ethz.ch/research/MRP →

Principal Investigator Prof. Johan Six,
Sustainable Agroecosystems

Co-Investigators Dr. Maria Andrade,
International Potato Center, Dr. Engil Pereira,
ETH Zurich

PhD Student Rafaela Conz

Partners Stellenbosch University

Project Duration 2015-2018

Project Cost 234'000 CHF

Funding WFSC Mercator Research Program