AGRONOMIC TRAITS OF FOUR CASSAVA ACCESSIONS COMPARED TO THE COLOMBIAN VARIETY CM6740-7

M. Callebaut
agricult@celos.sr.org

BACKGROUND

The development of the cassava root production and processing chain will benefit from an appropriate choice of genetic material adapted to specific production environments, the mechanized cultivation system and specified processing demands

OBJECTIVE

Identification and further characterization of cassava genebank accessions with valuable agronomic traits for the mechanized production of roots to support the development of the cassava agribusiness chain in Suriname

MATERIAL AND METHODS

Based on preliminary gathered data, 3 Commewijne accessions (rn015, rn018, rn028) and 1 from Para (rn145) have been selected and will be compared to a Colombian variety CM6740-7 during one growing cycle starting August '14 and lasting 10, 12 and 14 months

All chosen accessions and the Colombian variety are characterized by white root parenchyma, tall first and / or secondary stems and a 12 month growing season

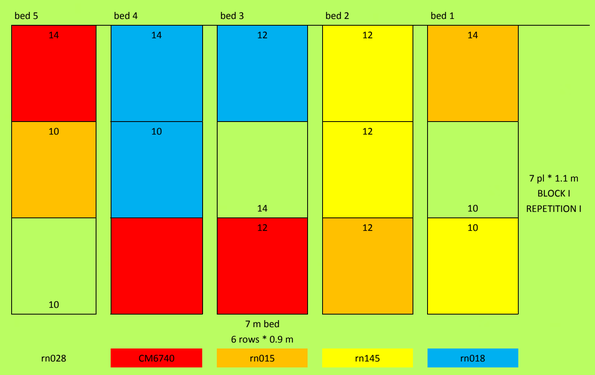
Primary and secondary stems from healthy, vigorously growing and 1 year old parental plants have been selected in the CELOS cassava field genebank and experimental fields in Saramacca

Those stems were cut by saw blade in stalks with 5 nodes, treated with a bactericide/ fungicide and planted horizontally at a density of 10,000 plants ha^{-1}, 1.1 m within x 0.9 m between rows, 7 plants per row x 6 rows => 20 central observation plants per plot

The experimental site has been tilled in well drained cambered beds (7m) consisting of loamy, fine textured sand, characteristic for the sandy soil sites cultivated by farmers of the young coastal area

The experimental field lay out consists of a completely randomized block design with:

- 2 independent variables: number of accessions (4 local and 1 variety) and length of growing season (10, 12, 14 months) => 15 plots per repetition
- 3 repetitions



Traits influencing the feasibility of mechanized cultivation will be measured: number of stems, number of nodes in primary and secondary stems, 1st and 2nd branching height, plant height, depth and position of storage root system, form and length of roots, length of peduncle, resistance to diseases / pests

Decision making traits for processing will be measured and analyzed: root yield, harvest index, commercial roots, dry matter content, specific gravity, cyanide and starch content, ratio amylose amylopectin, post harvest deterioration

EXPECTED RESULTS

Traits regarding root production

Number and average length of stems and stalks, volume of stalks produced per ha are estimates for the multiplication rate and determine specific planting machine dimensions

The vulnerability to occurring stress (soil water logging, drought, diseases, competition from weeds and other pests) are being assessed

Storage roots and root system data determine harvesting machine capacity and power requirements

Traits regarding processing

The calculated linear relationship between measured dry matter content (oven dry method) and specific gravity (balance method) offers farmers and processors a handy tool to determine the value of the fresh root yield for flour production and the need for on-farm post harvest activities (slicing and drying)

The composition of roots supports the potential use of the accessions as a feedstock for specific industrial processing purposes

Sustainability data

Operational and investment costs and benefits can be calculated and estimated for production of roots and post harvest processing

The most beneficial growing season length for each accession and adaptability to different cultivation calendars can be evaluated

Promising local accessions for conventional and modern breeding purposes can be assessed

Storage roots represent a CO_2 GHG sink

Centre for Agricultural Research in Suriname Prof. Dr. Ir. J. Ruinardlaan Tel. 490789 / 490889 / 490128 E-mail: secretariat@celos.sr.org www.celos.sr.org