Agricultural Productivity Program for Southern Africa (APPSA)

CASSAVA COMMODITY

(3rd Cycle- 2017)

Jamisse Amisse
Importance of Cassava in the world

• 20th most produced food

• 6th most consumed in the world (Africa, Asia and Latin America).

• consumed as root an important carbohydrate and leaf as vitamin and protein source.
• transformation from the subsistence to cash crop due to the emergence of industries that use cassava derivate as a raw material.

• Cassava has the potential to increase farm incomes, reduce rural and urban poverty and help close the food gap.
In Mozambique

- In Mozambique: 2nd most important staple food after maize,
- Mozambique ranks among the top five cassava producers in Africa and
- the 10th in the world, with 6149897 ton per year (FAO, 2000; FAO, 2004).
• Approximately 2.5 million farmers

• almost 12 million people (≈50%) use cassava for consumption (MIC, 2005 and FAO, 2007).

• Cassava is used not only for consumption but also as source of income (farmers’ association supply beer factory)
Without question, cassava holds great promise for feeding Africa’s growing population with more emphasis in Mozambique.

However
Gaps/Research area and objective

- Despite its importance, cassava production in Mozambique is limited by several pest/diseases. Epidemiology study in order to determine the disease occurrence and associated pathogens, its extent and severity and identify higher risk cultivation areas, is of high importance as strategy to control the disease (CV-P01-2016)
Cassava is tolerant to stress hydric, however the yield could be affected when the plant is under stress (more than 3 months). Climatic events, such as extended drought has been observed in the country (Southern Mozambique). Identification of drought tolerant cassava genotypes suitable for utilization by farmers living in drought zones (CV-P04-2016)
• Due the transformation of cassava for different uses, it is important to map out the various physical and chemical properties of existing and most used cassava cultivars as well the new released cassava varieties and test them for selected types of final utilization (INDUSTRIES, CONSUMPTION) - (CV-P05-2016)
<table>
<thead>
<tr>
<th>Project Code</th>
<th>Technology Generated/Disseminated</th>
<th>Descriptions</th>
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</thead>
<tbody>
<tr>
<td>CV-P01-2016</td>
<td>Three cassava varieties selected by the farmers based on the disease resistance/tolerance, yield and adaptability. Under farmer’s field multiplication (5 districts)</td>
<td>Disease resistance/tolerance (CBSD/CMD), Yield (20-23 ton/ha), Dry matter and adaptability</td>
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<tr>
<td></td>
<td>Main disease (most occurrence) recorded</td>
<td>Cassava disease and pest identified at least in two province surveyed</td>
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<tr>
<td></td>
<td>• 2 protocols (RNA; DNA extraction) optimized</td>
<td>Two (2) protocols optimized are been used in the lab (routine test of the diseases)</td>
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<td>• 1 primer set designed to detect the presence of viruses</td>
<td></td>
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<tr>
<td>ZAMBIA</td>
<td>17 of 77 accessions selected and included in the cross block for CASSAVA breeding program</td>
<td>- Selection of 17 Landraces were based on the morphological and agronomic performance. Currently included in the cross block for breeding activities</td>
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<td>Selected 4 cassava clones based on the performance (GxE)</td>
<td>Four varieties selected based on the adaptability of southern Mozambique environment conditions.</td>
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<td></td>
<td>Identified two varieties (for utilization and processing for industries)</td>
<td>Two (Phora and Chinhembwe) cassava landraces were selected based on the root quality (low cianete and Fiber content)</td>
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<td></td>
<td>20 cassava genotypes evaluated for resistance to CBSD with results showing varying response levels</td>
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Zambia

Protocol validation
• One modified protocol validated and used in detection of DNA and RNA pathogens

Survey
• Survey and sample collection from seven provinces of Zambia completed. CBB, CLS, CBSD and CMD mapped

Characterization of cassava pathogens
• CBB and CLS causal pathogens PCR detected
• One CBSD virus fully sequenced and a complete genome deposited in the GenBank

Evaluation of cassava genotypes
• 20 cassava genotypes evaluated for resistance to CBSD with results showing varying response levels
<table>
<thead>
<tr>
<th>Variety</th>
<th>Orera</th>
<th>Eyope</th>
<th>Colicanana</th>
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<tbody>
<tr>
<td>CBSD</td>
<td>Resistant</td>
<td>Resistant</td>
<td>Tolerant</td>
</tr>
<tr>
<td>Mosaic</td>
<td>Tolerant</td>
<td>Resistant</td>
<td>Tolerant</td>
</tr>
<tr>
<td>Yield</td>
<td>23.0</td>
<td>20.0</td>
<td>20.0</td>
</tr>
<tr>
<td>DM</td>
<td>30-36</td>
<td>28-36</td>
<td>26-37</td>
</tr>
<tr>
<td>Cycle</td>
<td>12.0</td>
<td>12.0</td>
<td>12.0</td>
</tr>
<tr>
<td>Use</td>
<td>Flour</td>
<td>Fresh/Flour</td>
<td>Fresh/Flour</td>
</tr>
</tbody>
</table>
OTHER ACHIEVEMENTS - Mozambique
210 farmers & 28 extension agents trained (Cassava Disease identification, management and control)
• **Human capacity:** 5 laboratory technicians trained on DNA/RNA extraction and disease diagnostic using molecular tools
CASSAVA CUTTINGS DISTRIBUTION (BEST 3 SELECTED VARIETIES)

FIVE DISTRICTS / 245 FARMERS BENEFITED
Other Achievement-ZAMBIA

- One paper published
- A paper presented at the ICPP, Aug-2018 in Boston, USA
Key Lessons

• Worked: Involvement/participation of the farmers from the first establishment of the fields was crucial for their own decision on which cassava varieties was best based on their traits preferences and performance on disease resistance.

• Knowledge on disease identification transmitted was fundamental, because most of the members of farmers association were able to identify the main disease in their field and report to research.
Did not work:
The interruption of the projects before pre-established time, has affected most activities, thus some objectives were not reached.
Way forward

In order to increase accessibility, availability, of technologies is necessary

• Source of funds to continue with activities of the program,

• Find alternative funds to follow up with activities
Thank you