Status of cassava processing technology across selected countries

The use of appropriate technology in terms of grating and dewatering are pivotal to addressing drying constraints of cassava.

Grating

- Reduction of particle size- facilitate drying, milling
- Food safety- liberization of CN
- Grating efficiency- affecting dewatering and uniform drying

Grating of cassava roots, Nigeria
Pressing

**Why efficient pressing is important**
Drying is identified as perhaps one of the most important constraints to processing and preservation of cassava especially in Africa. However, some basic conditions (efficient grating and pressing) have to be met for any drying technology to be effective.

Implications of pressing efficiency

- Typically 40-50% moisture content
• Rural sun-drying – increase speed/throughput of dried product
• Artificial drying- An extra 4% reduction in moisture in a run can reduce diesel required for drying 1t dry product by 5.6 litres
Nigeria-Malawi Technology transfer on processing

Main objectives:

- Training of Malawian, Tanzanian and Ugandan technical staff on fabrication, assemblage and installation of grating and processing machines in Malawi.
- Training on Malawians, Tanzanian and Ugandan staff on operational techniques for use of the grater and press.
- Training of Malawian factory operators (and others) on operational principles and maintenance.
Nigeria Technology transfer on processing-Analysis of the Training Appraisal

<table>
<thead>
<tr>
<th>Country</th>
<th>No of respondents</th>
<th>Country Appraisal %</th>
<th>Overall av. Appraisal%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malawi</td>
<td>6</td>
<td>85%</td>
<td></td>
</tr>
<tr>
<td>Tanzania</td>
<td>2</td>
<td>45%</td>
<td>74.4%</td>
</tr>
<tr>
<td>Uganda</td>
<td>1</td>
<td>70%</td>
<td></td>
</tr>
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Observations/summary
- Cost of fabrication materials is exorbitant in Malawi.
- Training was purely practical.
- Some participants were non-fabricators especially those from outside Malawi.
- Participants that are fabricators were more active and supportive during the training.
- While it is true that the participants had inadequate knowledge on grating and dewatering technology, expectations were more on drying technology transfer (using the flash drying).
- Private and field fabricators appreciated the training more than “theoretical fabricators” compare the appraisal given the training by Tanzanian participants with others. No single private sector fabricator was in the Tanzanian team.
Procurement of cassava processing equipment from donors

Malawi

- TLC funded by FAO:
  The project was called "Enhancing Rural Livelihoods in Cassava Based Farming Systems in Malawi and Zambia" from 2008 – 2009

  **Equipment distributed:** 5 graters, 5 chippers, 5 presses, 5 hammer mills from Intermec, Tanzania
  Cost: US$30,000

  **Issues with equipment:** presses broke down completely and frequent breakdowns of other equipment
  Delivery period: 12 weeks

  **Value for money:** Intermec were three times cheaper that C to C who were then the only other suppliers of such equipment in Malawi

  *The project is the one that established the Nkhotakota group but had no capacity to take the processors to the next level of actually producing HQCF.*

- MEDI using funding from Kellogg Foundation.
  Supplied 6 hammer mills, 6 graters, 3 heavy duty graters for starch processing and 3 mixers.
  All equipment were supplied by C to C Engineering apart from hammer mills. **Serious delays** were reported in delivering of equipment and all the 6 graters **did not work.**
• **IITA/SARRNET** using funding from **USAID**. Provided 8 graters, 2 **screw presses**, 2 chippers, 2 heavy duty graters, starch extractor and a hammer mill. The cost was in excess of $50,000. The machines came from a mix of fabricators including **C to C engineering, Tanroy, Tonnet and Intermec**.

• **WORLD VISION** Supplied 3 chippers from C to C Engineering. All **equipment did not work properly**

• **FAO** latest equipment from Intermec. There were 3 graters, 5 **small presses** and one commercial press. **Delivery delayed for over 3 months**

**Uganda**

TCIP- have 3 graters, 3 presses and a mill. All the equipment (presses, graters & presses) were manufactured by **Tonnet**.

ASDA procured their graters from India. Equipment and shipment costs **were Ushs 6,500,00 per piece**.
Subsequent models fabricated/procured through C: AVA

Press cage, Tonnet, Uganda
Grater (new model), Intermech, Tanzania
Lessons learnt

1. Importance of follow-up, quality control, back-stopping

2. Technology transfer must be targeted to particular individuals

3. Awareness of potential lead times for delivery and seasonality in processing

4. Shortfalls exist in communication of current best practice (donors, technologists, potential investors)

   • Lack of information for investors- inappropriate models (not fit for purpose) bought
• Quality of equipment- increasing unit cost of product through repairs etc (including unit cost of production), loss of reliability in delivery, discouragement of processors (example 18 sets in Tanzania, Press cages in Uganda). However correct training in new types of equipment essential (for trainer/technologists and trainees)

**OPPORTUNITIES**

Opportunities for capacity building of fabricators across selected countries- introduction of quality control

Opportunity for NRI-C: AVA to take a lead in spreading best practice (increased collaboration with School of engineering, newsletters, websites, (e.g. NRI or C:AVA or ISTRC), publication)- including flash dryers?

Review of procurement procedures- incentives other than money for fabricators

Our Technologists keeping abreast of emerging technology- AND STICK TO WHAT YOU KNOW!