Cassava as a Subsistence and Commercial Crop in Eastern Indonesia

University of Brawijaya Team

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Research collaboration between University of Brawijaya, Balitkabi (ILETRI), ACIAR, CIAT, University of Queensland
INTRODUCTION

• Cassava is a root crop commonly used as a food and a source of starch for various industries

• Indonesia is third largest cassava producer but also a large importer of starch

• A major problem is high cost of transportation considering Indonesia is a large archipelago with 16,056 islands
INDONESIA
INTRODUCTION

• Indonesia is a tropical country with regional differences in land conditions and environments

• In the west (e.g., North Sumatra) climate is equatorial with higher rainfall

• In the east (e.g., Nusa Tenggara Timur = NTT) climate is monsoonal with wet and dry seasons
OBJECTIVE

• The objective was to analyze the role of cassava as a subsistence and commercial crop on the island of Flores in eastern Indonesia
RESEARCH METHODS

• The study was conducted in Sikka Regency, Flores, NTT, selected to represent areas where cassava is a major staple food

• There were 2 surveys:
  – Value Chain Survey, interviewing groups of farmers in three villages, traders, and small-scale processors in 2016
  – Household Survey, interviewing 114 cassava farmers selected by simple random sampling and field observation in 2017
## Number of survey respondents

<table>
<thead>
<tr>
<th>Sub-District</th>
<th>Village</th>
<th>No.</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitta</td>
<td>Tebuk</td>
<td>26</td>
<td>38</td>
<td>33.3</td>
</tr>
<tr>
<td></td>
<td>Bloro</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lusitada</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kangae</td>
<td>Habi</td>
<td>18</td>
<td>60</td>
<td>52.6</td>
</tr>
<tr>
<td></td>
<td>Tanaduen</td>
<td>19</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Namangkewa</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>Langir</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Koting</td>
<td>Koting A</td>
<td>16</td>
<td>16</td>
<td>14.0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>114</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
Respondents by age group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-33</td>
<td>5</td>
<td>4.4</td>
</tr>
<tr>
<td>34-40</td>
<td>14</td>
<td>12.3</td>
</tr>
<tr>
<td><strong>41-47</strong></td>
<td><strong>28</strong></td>
<td><strong>24.6</strong></td>
</tr>
<tr>
<td>48-54</td>
<td>20</td>
<td>17.6</td>
</tr>
<tr>
<td>55-61</td>
<td>15</td>
<td>13.2</td>
</tr>
<tr>
<td>62-68</td>
<td>10</td>
<td>8.8</td>
</tr>
<tr>
<td>69-75</td>
<td>5</td>
<td>4.4</td>
</tr>
<tr>
<td>76-82</td>
<td>3</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>114</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
Number of Respondents (based on gender)
### Number of respondents based on gender

<table>
<thead>
<tr>
<th>Status</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>41</td>
<td>36%</td>
</tr>
<tr>
<td>Female</td>
<td>73</td>
<td>64%</td>
</tr>
<tr>
<td>Total</td>
<td>114</td>
<td>100%</td>
</tr>
</tbody>
</table>
RESULTS AND DISCUSSION

• Farms size is small: average 0.9 ha
• Cassava is one of the main crops in Sikka
• At higher elevations cassava is cultivated within an agroforestry cropping pattern
• At lower elevations cassava is intercropped with maize and beans
• Farmers cultivate cassava for subsistence consumption, to sell as a food crop, and for livestock feed
## Cropping Patterns

<table>
<thead>
<tr>
<th>Zone</th>
<th>Cropping pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher elevation, inland</td>
<td>Cassava in agroforestry system with coconut, cacao, cashew, tamarind, banana,</td>
</tr>
<tr>
<td></td>
<td>lontar palm, candlenut (<em>kemiri</em>), pepper, nutmeg (<em>pala</em>), mango, avocado, maize</td>
</tr>
<tr>
<td>Lower elevation, coastal</td>
<td>Cassava intercropped with maize and beans</td>
</tr>
</tbody>
</table>
Cassava in agroforestry system
Cassava in coastal intercropping system with maize and pigeon pea
Intercropping trials in coastal zone
Cassava Production

- The inputs used in cassava production:
  - Stakes (from previous year’s cultivation)
  - Labour
    - household labour
    - mutual cooperation with other farmers
    - hired labour
  - Fertilizer
    - Most farmers did not use fertilizer
    - Some used subsidised fertilizer for maize
Cassava production

- Main pest is cassava mealybug - increasing
Cassava Utilisation

- Cassava mainly used as food, whether consumed by farm-household or traded in local markets.
- Utilisation of cassava:
  - 30% for home consumption, including food and livestock feed.
  - 20% sold directly to local market.
  - 50% sold to traders.
- Farmers sell cassava gradually in small quantities (about 10-20 bundles, 1 bundle = 5-10 kg).
- There is no starch factory in Sikka Regency.
Household Preference for Income

- Cassava
- Maize
- Coconut
- Mung Beans
- Other Fabric
- Livestock
- Cacao
- Chesew
- Peanut
- Thamarind
- Enau
- Banana
- Copra
- Pumpkin
- Mango

The diagram shows the relative preferences for different commodities by households for income.
Local Textile (Tenun)
Conclusion

• Cassava farming has an important role in food consumption and trade within Sikka
• Farmers use cassava for home consumption, livestock feed, and trade
• Can improve productivity of cassava as food crop
  – improved intercropping in low-elevation coastal zone
  – new, high-yielding sweet varieties for local consumption
  – pest and disease monitoring and control (mealybug)
  – investigation of possible processing industries (e.g., MOCAF ?, livestock feed ?)
  – Large-scale starch processing unlikely to be profitable
Here’s to a prosperous future