Cassava production and sustainable livelihoods of smallholders in Son La: Preliminary Results of a Household Survey

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Outline

• Survey Characteristics
• Value Chain for Cassava
• Contribution of Cassava to smallholder livelihoods
• Key Agronomic Characteristics
• Implications for project interventions
Survey Locations
2 Districts
4 Communes
8 Villages
258 Households
Complex, well developed value chain for starch and chips

Many intermediate layers between farmers and final processors

Price differential between producers and processors indicates well-functioning value chain
360,000 tons fresh cassava roots
40,000 tons fresh roots processed into starch in Son La
12,000 tons fresh roots processed into chips by farmers
308,000 tons fresh roots processed into dry chips by small-medium scale processors

Chips to animal feed processing
Starch mainly to China
Son La Cassava Production and Area by Year

Year of first production in surveyed communes
Livelihoods of smallholder cassava farmers

- Almost all households have either lowland or upland rice fields
- Maize is a significant upland crop in Bo Muoi and Chieng Chan, while coffee is cultivated by a majority of households in Na Ot and Pung Tra
- Livestock – especially large livestock is an important contributor to livelihoods
- Off-Farm incomes are important contributor to livelihoods
Livelihoods of smallholder cassava farmers
# Cash Incomes of smallholder cassava farmers

## Annual Cash Income by Source by Income Quartile

<table>
<thead>
<tr>
<th>Income Quartile</th>
<th>Total Cassava Income</th>
<th>Non-Cassava Cropping Income</th>
<th>Total Livestock Income</th>
<th>Off-farm Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
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<tr>
<td>Q2</td>
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<td>Q3</td>
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<tr>
<td>Q4</td>
<td></td>
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</tr>
</tbody>
</table>

- Total Cassava Income
- Non-Cassava Cropping Income
- Total Livestock Income
- Off-farm Income
Grown on Steep Slopes
Important for Poor Households
Household Labour Person-Days per hectare, by gender

- Other Post Harvest
- Chipping and Drying
- Transporting
- Harvesting
- Third weeding
- Second Weeding
- First Weeding
- Fertiliser
- Planting
- Preparing Planting materials
- Land Preparation
- Field Establishment

- Female
- Male

Even distribution of labour by gender

- Harvesting
- Weeding
- Establishing and preparing fields
<table>
<thead>
<tr>
<th>Activity</th>
<th>Household</th>
<th>Non-household</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Post Harvest</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Chipping and Drying</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Transporting</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Harvesting</td>
<td>50</td>
<td>0</td>
</tr>
<tr>
<td>Third weeding</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Second Weeding</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>First Weeding</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>Fertiliser</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Planting</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Preparing Planting materials</td>
<td>29</td>
<td>0</td>
</tr>
<tr>
<td>Land Preparation</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Field Establishment</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

Mainly using household labour
Harvesting using some outside labour
Land preparation techniques

Tractor - 2%  Buffalo/Cattle - 22%  Manual - 76%
Varieties of Cassava planted by farmers

<table>
<thead>
<tr>
<th>Variety Name</th>
<th>Proportion of total varieties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cao San</td>
<td>55.3%</td>
</tr>
<tr>
<td>La Tre</td>
<td>27.5%</td>
</tr>
<tr>
<td>San Den</td>
<td>12.1%</td>
</tr>
<tr>
<td>San Xanh</td>
<td>1.9%</td>
</tr>
<tr>
<td>San Tau</td>
<td>0.6%</td>
</tr>
<tr>
<td>Giong Nghe An</td>
<td>0.6%</td>
</tr>
<tr>
<td>KM94</td>
<td>0.3%</td>
</tr>
<tr>
<td>Giong Cao Bang</td>
<td>0.3%</td>
</tr>
<tr>
<td>San lau nam</td>
<td>0.3%</td>
</tr>
<tr>
<td>san Moc Chau</td>
<td>0.3%</td>
</tr>
<tr>
<td>San Mot Than</td>
<td>0.3%</td>
</tr>
<tr>
<td>San nguoi kinh</td>
<td>0.3%</td>
</tr>
</tbody>
</table>
95% of farmers think that weeds are a problem and limit productivity

Only 27% use herbicides to control weeds

98.8% of farmers conduct manual weeding to control weeds
Adoption of fertiliser

High rate of adoption of chemical fertiliser – 74 percent of farmers use NPK

BUT Quantities used are relatively small - **** kg per hectare

Lack of understanding – only 11% of farmers know what NPK means

Most common fertiliser formulation
– 60% of fertiliser users

Inappropriate fertiliser formulations used

Second most common fertiliser formulation
– 40% of fertiliser users – “không biết”
Soil Erosion

90% of farmers think that Soil Erosion is a problem
59% think that the problem is serious or very serious

74% think that yields are declining

45% of farmers are aware of erosion control measures
Only 7% have had any training on erosion control

90% are interested in participating in erosion control trials
Do you think you will still be growing cassava in 5 years?

<table>
<thead>
<tr>
<th></th>
<th>Income quartile 1</th>
<th>Income quartile 2</th>
<th>Income quartile 3</th>
<th>Income quartile 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>76.6%</td>
<td>81.5%</td>
<td>73.4%</td>
<td>73.4%</td>
</tr>
<tr>
<td>No</td>
<td>12.5%</td>
<td>7.7%</td>
<td>7.8%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Unsure</td>
<td>10.9%</td>
<td>10.8%</td>
<td>18.8%</td>
<td>21.9%</td>
</tr>
</tbody>
</table>

Significant uncertainty about the future.
Implications for Project Interventions

- **Mechanised land preparation** could save labour costs but land is generally too steep.
- **Increased herbicide use** for weed control could reduce labour costs but it is difficult to carry liquid herbicide up steep slopes.
- **Higher yields** could be gained through more appropriate fertiliser formulation and moderate increases in application rates.
- **Higher yielding varieties** are likely to have the most potential for increasing yields and improving farmer livelihoods and present the least challenges for adoption.
- **Declining yields** and cassava prices, and the fact that cassava only accounts for a small proportion of farmer livelihoods means that benefits of new technologies must be very significant in order to encourage any widespread adoption.
Partners for disseminating innovations

• Fertiliser companies have an incentive to develop more appropriate fertiliser formulations for cassava production and disseminate these formulations through networks of input supply shops.

• The Mai Son Starch factory has an incentive to support the dissemination of higher yielding varieties of cassava in order to potentially increase throughput of their factory. However, the starch factory has few direct links to smallholder farmers.

• Traders and collectors have more direct links to farmers but only have an incentive to disseminate improved varieties of cassava if (a) they are able to profitably sell planting material; and (b) they are able to collect increased quantities of cassava roots or chips from farmers using improved varieties.
Thank You
Cảm ơn