Agronomic Trials and Demonstrations in Lao PDR: preliminary result and discussion

Mid-Term review
Vientiane, Laos
15-19 January, 2018
Introduction

• Location of trials
• Current trials and purpose
• Preliminary discussion – trials not harvested yet
• Constraints and opportunities
• Plans for 2018
Trial sites

- Two province: (Xayaburi and Bolikhamxay)
- Four sites:
  - Bolikhamxay: (1) Bolikhan and (2) Viengthong
  - Xayabulri: (3) Paklay and (4) Kheanthao
What we did and why

• Variety assessment – 7 varieties (4 locations)
  • Farmers have little knowledge of varieties they are growing
  • Performance varies in different location
  • Develop models for dissemination well adapted varieties

• Nutrient management – 6 treatments (4 locations)
  • No farmers currently using fertiliser.
  • Demonstrate the economic returns of fertiliser treatments,
  • Risk analysis
  • Work with Government and industry to promote robust recommendation
  • Promote the development of easy to use fertiliser blends (or import from Thailand)

• Intercropping – 4 intercropping systems (1 location)
  • Diversify income sources
  • Control erosion
What varieties were used

<table>
<thead>
<tr>
<th>7 Varieties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Kasetsart 50 (KU 50)</td>
</tr>
<tr>
<td>2  Rayong 9 (R9)</td>
</tr>
<tr>
<td>3  Rayong 11 (R11)</td>
</tr>
<tr>
<td>4  Rayong 72 (R72)</td>
</tr>
<tr>
<td>5  KM 140</td>
</tr>
<tr>
<td>6  KM 21-12</td>
</tr>
<tr>
<td>7  Current planting variety by local farmers</td>
</tr>
</tbody>
</table>

[KU 50] [R11]
# Fertiliser treatments

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Actual fertilizer application (kg ha⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urea (46-0-0)</td>
</tr>
<tr>
<td>Control (00N-00P-00K)</td>
<td>-</td>
</tr>
<tr>
<td>NP low rate without K (40N-10P-0K)</td>
<td>87.00</td>
</tr>
<tr>
<td>Balanced NPK low rate (40N-10P-40K)</td>
<td>87.00</td>
</tr>
<tr>
<td>Balanced NPK low rate (40N-10P-40K)+Manure (5 t/ha)</td>
<td>87.00</td>
</tr>
<tr>
<td>Available fertilizer in local market (15-15-15) at 40N-40P₂O₅-40K₂O</td>
<td>266.65</td>
</tr>
<tr>
<td>Balanced NPK high rate (80 N-20P-80K)</td>
<td>173.90</td>
</tr>
</tbody>
</table>

Commonly used on rice and available in markets

Difficult to obtain in local markets
Intercropping

• We conducted one site at the farmer field in Paklay site (no.3)

Cassava: Rayong 72
Experimental design: RCBD
Replication: 3 reps.
Spacing:
- Cassava: 1.2m x 0.8m
- Associated crops: 0.3m x 0.3 m (planted at the middle of rows of cassava)
- Plot size: 5m x 6m=30 m²

<table>
<thead>
<tr>
<th>Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cassava monoculture</td>
</tr>
<tr>
<td>2 Cassava + mungbean</td>
</tr>
<tr>
<td>3 Cassava + peanut</td>
</tr>
<tr>
<td>4 Cassava + yard long bean</td>
</tr>
</tbody>
</table>
Preliminary observation and discussion
Intercropping

• ACIAR LARF activity
  • Cassava intercropping conducted in 2016-17.
  • Linked with ACIAR project with project support
  • Trial site in Kheanthao

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Legumes t ha⁻¹</th>
<th>Cassava yield t ha⁻¹</th>
<th>Total yield t ha⁻¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cassava only</td>
<td>-</td>
<td>19.8</td>
<td>19.8</td>
</tr>
<tr>
<td>Cassava + Mung bean</td>
<td>0.83</td>
<td>21.3</td>
<td>22.13</td>
</tr>
<tr>
<td>Cassava + Peanut</td>
<td>0.71</td>
<td>25.5</td>
<td>26.21</td>
</tr>
<tr>
<td>Cassava + Soy bean</td>
<td>0</td>
<td>24.7</td>
<td>24.7</td>
</tr>
</tbody>
</table>

• ACIAR value chain project
  • Did not get data of legumes due to crop failure
  • Low germination of legumes due to high rainfall
  • Pest injection during flowering stage
  • Farmer need to try again in 2018 as the remains some interest
Preliminary assessment of genetic impact

- Witches broom (CWB)
- Bacteria bright (CBB)
- KU 50 showed more symptom than other
- Infected planted in farmer fields were observation
Preliminary assessment of soil management

- Trials established on land with low fertility after several years of production
- Symptoms more evident in low and zero treatments
- Plan to monitor incidence and severity during harvest
Monitoring witches broom

**Symptom variation of cassava witches’ broom disease**

**Mild**
- Not very stunted
- Leaf is grown and expanded

**Severe**
- Many small leaves with short internodes
- Leaf proliferation from the middle of stem
- Dwarf plant
- Leaf growth is inhibited, with dead leaves
Challenges and constraints

• Disease – cassava witches broom
• Interest from private sector and previous relationship with farmers
  • Own farmers money, not trusted by farmers
• Availability of fertiliser in Districts or Province markets
  • Need to purchase from Thailand
• Soil fertility declining
• Lack of cleaned planting material
• Farmers lack of knowledge: Soil fertility management, pest-diseases management and suitable variety.
Opportunities and new ideas

• Demonstration on soil fertility management and enhance access to suitable fertiliser
  • Link with MOIC and private sector
• Evaluation of new clones at ARC
  • Assess promising lines with farmers later in the project after initial screening
• Demonstration of disease management
  • More systematic evaluation and demonstrations established.
• Developing systems and markets for accessing clean planting material
  • Need for clean source as current material in trials in high risk
• Developing extension material in conjunction with trader brochures
Plans for linking with value chain actors

• **Who are the stakeholders**
  • Starch factories, Chip factories, traders, DAFO, MOIC

• **Current activities and partnerships**
  • Limited formal arrangements with private sector with plans to involve them in upcoming field days
  • Factories and traders have acted as key informants, show interest, but not commit resources yet.

• **Plans for 2018**
  • Field day during harvest of existing trials
  • Meeting with DAFO, MOIC, Factories, Farmer leaders at District/Province level
  • Central policy dialogue in 2018 and include non project province stakeholders
  • Identify key traders with interest to establish trials and multiplication sites
  • Primary clonal selection of 39 accessions.
  • Study tour to Thailand
  • Distribute handbook and posters for farmers
Thank you