Scaling up technologies on sustainable agriculture and natural resource management

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Feed the Future Innovation Lab for Sustainable Agriculture and Natural Resource Management (SANREM)
SANREM’s project locations

Bolivia, Ecuador, Haiti, Ghana, Kenya, Lesotho, Mali, Mozambique, Uganda, Cambodia, India, Nepal and the Philippines
Conservation agriculture

- Minimize soil disturbance from tillage
- Maintain a year-round soil cover
- Use crop rotations or mixtures

Maize – lablab intercropping

Field preparation on residues in Uganda
Resilient sustainable intensification

**TRANSFORM THE SYSTEMS**

- Increased production, income, resilience, social capital; improved value chains, empowered women, natural resources management

**Goal**

**Domain**

**Biophysical**
- Conservation agriculture
- Perennial agriculture
- Water harvesting
- Low-scale irrigation
- Agroforestry
- ISFM/BNF
- Farming practices
- IPM
- Organic agriculture

**Socioeconomic**
- Microfinance
- Crop storage
- Market analysis and development
- Farmer aggregation
- Women empowerment
- Value chain improvement
- Public-private partnerships

**Genetic**
- Improved seeds
- New varieties
- GMOs
- Biotechnology
- Germplasm conservation
- Promotion of neglected crops

**Practice**

**Output/Indicator**

- > Crop yield
- Zero net land degradation
- > SOC
- Healthy crops

- > Farm income
- < Input costs
- Better market access
- Lower risk
- > Crop prices

- > Crop yield
- Multiple crops per year
- < Pest and diseases
- Climate change adaptation/mitigation
Scaling up conservation agriculture at SANREM closing phase

• Document and share successful technologies
• Examine opportunities for scaling-up
• Identify priority actions for moving the process forward
• Interact with agriculture sector participants which can follow up with successful technologies

✓ Belmont Forum and ITDA (India)
✓ McKnight Foundation (Bolivia)
Selected cropping systems

- The Philippines (Mindanao)
  - Maize (Two crops per year) + *Arachis pintoi*
  - Maize + cowpea relayed with upland rice and cowpea (1/2 population density), no till, herbicide, fertilization

Upland rice-cowpea intercropping

Adlai variety trial
• West Africa (Northern Ghana and Mali)

✓ Maize-soybean rotation, minimum till, tied ridges, herbicide, P fertilization (Ghana)

✓ Maize-peanut/Sorghum-cowpea/Millet-cowpea intercropping, minimum till, ACN, fertilization, herbicide (Mali)

Amenagement en courbes de niveau

Maize–soybean intercropping
Andes (Central Ecuador)

✓ Medium elevation watersheds: Maize-oat vetch – bush bean rotation, no till, residues, fertilization (maize), herbicide

✓ High elevation watersheds: Potato- oat vetch – barley –beans, minimum till, residues, fertilization (potato, barley), herbicide
Northwestern Cambodia

- Biannual rotations:
  - Soybean + sorghum + pigeon pea/Maize + pigeon pea
  - Maize + pigeon pea/cassava + pigeon pea + cowpea

No-till (chiseling for cassava), fertilizer, herbicide
Farming implements in SE Asia

Imports from Brazil
Implements built in Thailand
### Farming equipment for Sub-Saharan Africa

<table>
<thead>
<tr>
<th>Region</th>
<th>Land preparation type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Manual</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>65</td>
</tr>
<tr>
<td>Other developing regions</td>
<td>25</td>
</tr>
</tbody>
</table>

- **Crop ridges in Malawi**: Ox-plough
- **Mid-size tractor**
Mapped network of agricultural information flows and beliefs

Tillage causes land degradation
- Strongly agree
- Agree
- Uncertain/neutral
- Disagree
- Strongly disagree
- Not interviewed
Conclusions

• Technology transfer strategies and funding for scaling-up should be included since inception

• New knowledge and information should be documented and shared during the program closing phase

• Multi-agent technology networks instead of linear extension pathways are needed
Thank you