Farmer’s management of crop diversity in coastal agrosystems of Hue region, Vietnam

Research contributors: T.V.Tuyen, J.L.Pham, M.Bellon, T.V.Minh, L.D.Huong, N.T.Cach, D.T.Son

Sponsors: SDC, IRRI, IDRC, IPGRI, & Hue Univ. of Agri & Forestry.
Study sites in the coastal ecosystem in Huế region

- Coastal isolated
- Coastal integrated

Tam Giang lagoon
Residence, garden and rice fields are integrated
A rice farmer household
A rice farmer woman in her garden taking care of her sesame
### No. of Winter-Spring rice cultivars: Accumulation level & Change over time

<table>
<thead>
<tr>
<th>Category</th>
<th>1996</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal Landscape</td>
<td>31</td>
<td>25</td>
</tr>
<tr>
<td>Sub-agrosystems (Isolated)</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>Sub-agrosystems (Integrated)</td>
<td>23</td>
<td>29</td>
</tr>
<tr>
<td>Village (Ave. of 3)</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Household</td>
<td>3.0</td>
<td>2.2</td>
</tr>
<tr>
<td>Plot level</td>
<td>≈ 1</td>
<td>≈ 1</td>
</tr>
</tbody>
</table>
Distribution of Winter-S. rice cultivars in 1996 (% hhs)

68% varieties

Distribution of Winter-S. rice cultivars in 2000 (% hhs)

83% varieties
Factor explaining changes in rice diversity:

(1) The catastrophic flood in 1999
Usual rainfall distribution & special in 1999 in Hue region
Impact of catastrophic flood (Nov. 99) on farmers’ seeds & varieties

<table>
<thead>
<tr>
<th></th>
<th>Isolated (N=41)</th>
<th>Integrated (N=39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seeds lost</td>
<td>68.3</td>
<td>100</td>
</tr>
<tr>
<td>Variety lost</td>
<td>24.4</td>
<td>33.3</td>
</tr>
<tr>
<td>Adopted new-MV</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Legend:
- Seeds lost
- Variety lost
- Adopted new-MV
The catastrophic flood (Nov. 99) reduced rice area (TVs) at household level because of moving sands.
Factor explaining changes in rice & crop diversity:

- (2) The farm diversification
The diversification: Directions of main flows among farm sub-systems

Farmer’s interest and external factors

TV rice

MV rice

Other crops

Others

Animal
Change in importance of income sources & crop diversity

<table>
<thead>
<tr>
<th></th>
<th>Integrated</th>
<th>Isolated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>Animal husbandary</td>
<td>+</td>
<td>=</td>
</tr>
<tr>
<td>Other crops</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Trees</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Others</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td># Traditional rice</td>
<td>--</td>
<td>-</td>
</tr>
<tr>
<td>varieties</td>
<td></td>
<td></td>
</tr>
<tr>
<td># Taro landraces</td>
<td>++</td>
<td>=</td>
</tr>
</tbody>
</table>
The diversification favors loosing rice traditional varieties, but helps maintain inter-crop diversity

Ex. - No relation b/w No. of rice cultivars & No. of crops per HH
- Pig husbandry at HHs helps conserve taro landraces as feed
No of rice cultivars, taro landraces & crops at HH level in an integrated village
Taro landraces & their distribution in an integrated village (% hhs)
Implication:
Targeted ecosites & populations for on-farm conservation

• Abundant landraces (e.g. rice TVs & Taro) are season, agroecology and community specific

• Rare populations, long-term adaptation & evolution cultivars are HHs specific but across sites/communities
Implication: Targeted working levels for on-farm conservation

- Cultivars & their abundance at HH are subjects of farmers, but support systems, e.g. seeds, play influential roles.
- Cultivar variation among HHs is fundamental for diversity at larger scale of agrosystem. This is subject of community arrangement.
Response: Examples, Participatory Research on building awareness of diversity & agro-supports for:

- Sustaining rice diversity over catastrophic events, such as flood
- Increase assess to genetic resource (e.g. preferred varieties)
48.8% hhs at isolated villages & 20.5% at the integrated wanted to re-use some of the lost varieties

• Improve seed infrastructure at HH & community level,

• Include traditional varieties into the formal seed & agro-support systems, for example:
  – build awareness of diversity & farmer’s preference;
  – Conduct analyses of local policy on agro-supports
A community Loudspeaker at the village headman’s house
Rice farmer participants in a community crop diversity contest
Rice seed & crop samples displayed at the community crop diversity contest
Thank you