Soil degradation and conservation farming (Quick soil survey in Madagascar)

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Introduction
There are so many organizations to work on the environment issues now in Madagascar. But, organization which focuses on soil conservation is relatively few. So it is difficult for local people to understand the soil condition and how to conserve the soil. Therefore I made quick soil survey by using simple survey (Weight, EC, PH, Hardiness, potential of erosion).

Methodology
Sampling areas

This is the simple erosion test that just mix soil and water in the plastic bottle. This experiment show the risk of erosion.

Result 1
The result focused on EC and Weight

- When I focus on EC and compare it, I confirmed that a value is high in order of Slash and burn, Agroforestry, Secondary forest, Natural forest.
- When I focus on Weight and compare it, I confirmed that a value is also high in order of Slash and burn, Agroforestry, Secondary forest, Natural forest.

Comparison of the characteristic of each soil

<table>
<thead>
<tr>
<th>Method</th>
<th>Slash and Burn Non tillage</th>
<th>Slash and Burn Tillage</th>
<th>Terrace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefit</td>
<td>• Low Erosion</td>
<td>• Soft surface</td>
<td>• Production (short-term )</td>
</tr>
<tr>
<td></td>
<td>• Nutrient (short-term)</td>
<td></td>
<td>• Diversity</td>
</tr>
<tr>
<td></td>
<td>• Low Labor</td>
<td></td>
<td>• Low Erosion</td>
</tr>
<tr>
<td>Weakness</td>
<td>• Recovery takes long time (20~30yaers)</td>
<td>• Erosion</td>
<td>• Outflow of nutrient</td>
</tr>
<tr>
<td></td>
<td>• Increasing soil carbon loss</td>
<td>• Labor</td>
<td>• Hard labor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Recovery takes long time (20~30yaers)</td>
<td>• Fertilization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Increasing soil carbon loss</td>
<td></td>
</tr>
</tbody>
</table>

These method have both of the benefit and weakness. But, each benefits can continue only short time.

Result 2
Simple erosion test

- When I focus on the potential of erosion, the result shows that Terrace, Agroforestry, Slash and burn tillage are easy to dissolve in water, so outflow of the soil easily happens.

This indicates that the soil condition clearly reflected land use.

Suggestion as conclusion

"Soil " Conservation farming is effective for the management of the slope
- It’s simple method that require only cut the glass regularly. (Easy to accept to local people)
- It’s can keep organic matter richness (litter, root, exudates)
  • Keeping nourishment of the soil continuously
  • Preventing soil erosion.

Difficulties to introduce “Soil “ Conservation farming in Madagascar.
The lack of information
- To give the local people opportunity to access the information at first.
- To keep training as long as possible.