Participatory development of locally adapted technologies together with organic farmers in Kenya: Identification of the most beneficial use of biomass (BB trials)


BACKGROUND
As an additional component to the long-term farming systems comparison trials in Kenya, participatory development of locally adapted technologies for organic farmers was started in January 2009 to identify and address problems encountered by organic farmers.

Introduction to Best Use of Biomass
Organic carbon plays an essential role in soil fertility conservation. Increased organic matter content in soil increases soil water holding capacity, creates beneficial soil structure that fosters plant growth, stimulates soil microbial activity, and acts as a nutrient reservoir. Inherent soil fertility, and thus organic matter in the soil, is particularly important in organic agriculture.

Sources of organic carbon that farmers can use are crop residues and biomass from wild plants. They can either be applied as mulch or composted together with farmyard manure before application. As competition for different uses (livestock feed, fuel, soil fertility management) of biomass is high in the project area, the scarce material should be used in the most beneficial way.

Objectives
The present trial aims to quantify the beneficial effects of:
(a) biomass used as mulch; and
(b) biomass used in composting.

RESULTS

Best use of biomass on-site

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Trt 1</th>
<th>Trt 2</th>
<th>Trt 3</th>
<th>Trt 4</th>
<th>Trt 5</th>
<th>Trt 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yields kg/ha</td>
<td>Climbing beans</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig 4: Bean yields under different treatments during long rains season in 2012.

Best use of biomass on-site

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Trt 1</th>
<th>Trt 2</th>
<th>Trt 3</th>
<th>Trt 4</th>
<th>Trt 5</th>
<th>Trt 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yields kg/ha</td>
<td>Carrots</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig 5: Carrot yields under different treatments during short rains season in 2012.

CONCLUSIONS
- Boma composted for 63 days is still superior to Boma alone and Boma manure + biomass manure composted for 14 days.
- Masai manure performed better when used alone while Boma manure composted for 63 days worked better.