Lessons from CASFESA Project on the adoption of CA practices through demonstrations and institutional/market arrangements

Moti Jaleta, Pradyot Jena, Belinda Weya, James Njeru, Alemu Tolemariam, Alfred Micheni, Kellen Kagendo,  
(CIMMYT and KALRO-Embu)

Project Closing Workshop  
5th March 2015, Embu, Kenya.
Survey Data

• Adoption monitoring survey conducted in December 2014 in randomly selected treatment and control villages at Embu (Kenya)

• Four groups of sample Households:
  o **142** randomly selected households from 8 treatment villages (randomly selected from the total 15 treatment villages)
  o **41** randomly selected farmers from 4 control villages (randomly selected from 8 of the 15 control villages surveyed during baseline)
  o **26** demo-hosting farmers in 15 treatment villages
  o **47** follower farmers adopted the introduced CA practices (purposively selected using a snowball approach)
Main reasons for those who liked the specific CA practices

- Better yield
- Easy to use
- Less expensive than conventional method
- Saves labor
- Conserves moisture
- Reduce insect and disease infestation
- Other reasons
- Total HHs in favor

Most farmers liked intercropping and furrows and ridges.
Awareness, use and adoption of CA practices

**Treatment (N=142)**

**Control (N=41)**

**Followers (N=47)**

**Host (N=26)**
Awareness, use and adoption of CA practices (2)

- In all the four sample groups, maize-legume (mainly beans) intercropping is the most known practice and most farmers are still using it.

- CA practices introduced under CASFESA project are not new to the intervention area. This is confirmed where farmers in control villages are aware of these practices and using them in their maize production.
For those who tried CA practices, whether they tried before or after CASFESA intervention.
For those who tried CA practices, whether tried before or after CASFESA intervention (2)

• Most farmers in the treatment villages (*including those randomly selected and non-randomly selected host farmers and followers*), started using zero tillage and furrows and ridges after the intervention of demo-plots under CASFESA Project.

• Intercropping is relatively the most common practice before CASFESA project intervention.
## Expansion of CA practices by Demo-hosting farmers *(maize area in acre)*

<table>
<thead>
<tr>
<th>CA practices</th>
<th>Percent of host farmers expanded <em>(out of the 26 HHs surveyed)</em></th>
<th>2012 (Before intervention)</th>
<th>2014 (After Intervention)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean (Std. Dev.)</td>
<td>Mean (Std. Dev.)</td>
</tr>
<tr>
<td>Zero-tillage</td>
<td>54.5</td>
<td>0.167 (0.079)</td>
<td><strong>0.506</strong> (0.192)</td>
</tr>
<tr>
<td>Furrows and ridges</td>
<td>60.9</td>
<td>0.129 (0.062)</td>
<td><strong>0.390</strong> (0.160)</td>
</tr>
<tr>
<td>Maize-beans intercropping</td>
<td>69.2</td>
<td>0.335 (0.103)</td>
<td><strong>0.537</strong> (0.126)</td>
</tr>
<tr>
<td>Residue retention</td>
<td>45.8</td>
<td>0.136 (0.091)</td>
<td><strong>0.304</strong> (0.136)</td>
</tr>
</tbody>
</table>

Note: *** and ** are significantly higher than the other mean at 1% and 5% respectively.
Reasons for not expanding area under CA practices
(for demo-hosting farmers)

- Lack of seed
- Lack of labour
- Lack of equipment
- Lack of herbicides
- Lack of cash
- Livestock feed shortage
- Not yet convinced
- Other reasons

Chart showing:
- Zero Tillage
- Furrows and ridges
- ML Intercropping
- Residue retention
Main reasons for not adopting CA practices

(though aware of these technologies _whole sample_)

- Lack of skill to use the technology
- Lack of cash
- Lack of labor
- Livestock feed shortage
- Others

Diagram shows the distribution of reasons for not adopting CA practices.
Main reasons reported for not adopting/expanding CA-based practices

• Lack of the necessary skill in technology use
  - Zero tillage

• Lack of cash
  - Zero tillage (herbicide use in weed control)
  - Furrows and ridges (first year and seasonal maintenance)

• Lack of Labor
  - Furrows and ridges (first year and seasonal maintenance)

• Livestock feed shortage
  - Residue retention
Area allocated to CA-based Practices  
(for those who are aware of the specific practices)

<table>
<thead>
<tr>
<th>Household type</th>
<th>CA Practice</th>
<th>Obs.</th>
<th>Season 1</th>
<th>Season 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>March-July 2014</td>
<td>Oct. 14-Feb. 15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mean(Std.Err)</td>
<td>Mean(Std. Err)</td>
</tr>
<tr>
<td>Random from Treatment villages</td>
<td>Zero tillage</td>
<td>40</td>
<td>0.78(0.16)</td>
<td>0.80(0.27)</td>
</tr>
<tr>
<td></td>
<td>Furrows and ridges</td>
<td>59</td>
<td><strong>0.30(0.04)</strong>*</td>
<td>0.26(0.04)</td>
</tr>
<tr>
<td></td>
<td>ML Intercropping</td>
<td>100</td>
<td>0.87(0.25)</td>
<td>0.58(0.06)</td>
</tr>
<tr>
<td></td>
<td>Residue retention</td>
<td>36</td>
<td>1.26(0.69)</td>
<td>0.54(0.10)</td>
</tr>
<tr>
<td>Random from Control villages</td>
<td>Zero tillage</td>
<td>11</td>
<td><strong>0.30(0.08)</strong>*</td>
<td>0.14(0.06)</td>
</tr>
<tr>
<td></td>
<td>Furrows and ridges</td>
<td>17</td>
<td>0.46(0.16)</td>
<td>0.40(0.17)</td>
</tr>
<tr>
<td></td>
<td>ML Intercropping</td>
<td>33</td>
<td>0.64(0.11)</td>
<td>0.60(0.09)</td>
</tr>
<tr>
<td></td>
<td>Residue retention</td>
<td>13</td>
<td>0.68(0.15)</td>
<td>0.63(0.16)</td>
</tr>
<tr>
<td>Host farmers</td>
<td>Zero tillage</td>
<td>20</td>
<td>0.47(0.17)</td>
<td>0.48(0.18)</td>
</tr>
<tr>
<td></td>
<td>Furrows and ridges</td>
<td>22</td>
<td>0.36(0.15)</td>
<td>0.33(0.14)</td>
</tr>
<tr>
<td></td>
<td>ML Intercropping</td>
<td>23</td>
<td>0.44(0.10)</td>
<td><strong>0.55(0.11)</strong>*</td>
</tr>
<tr>
<td></td>
<td>Residue retention</td>
<td>19</td>
<td>0.23(0.11)</td>
<td>0.27(0.12)</td>
</tr>
<tr>
<td>Followers (not random)</td>
<td>Zero tillage</td>
<td>15</td>
<td><strong>0.68(0.13)</strong>*</td>
<td>0.50(0.11)</td>
</tr>
<tr>
<td></td>
<td>Furrows and ridges</td>
<td>28</td>
<td>0.65(0.13)</td>
<td><strong>0.71(0.14)</strong>***</td>
</tr>
<tr>
<td></td>
<td>ML Intercropping</td>
<td>34</td>
<td>0.58(0.10)</td>
<td>**0.69(0.12)****</td>
</tr>
<tr>
<td></td>
<td>Residue retention</td>
<td>14</td>
<td>0.42(0.07)</td>
<td>0.42(0.10)</td>
</tr>
<tr>
<td>ALL</td>
<td>Zero tillage</td>
<td>86</td>
<td>0.63(0.09)</td>
<td>0.59(0.14)</td>
</tr>
<tr>
<td></td>
<td>Furrows and ridges</td>
<td>126</td>
<td>0.41(0.05)</td>
<td>0.39(0.05)</td>
</tr>
<tr>
<td></td>
<td>ML Intercropping</td>
<td>190</td>
<td>0.73(0.14)</td>
<td>0.60(0.04)</td>
</tr>
<tr>
<td></td>
<td>Residue retention</td>
<td>82</td>
<td>0.79(0.31)</td>
<td>0.47(0.06)</td>
</tr>
</tbody>
</table>

Note: ***, ** and * are significantly different from the other season mean at 1%, 5% and 10%, respectively.

For those adopted different CA practices, seasons have less effect on the continuation.
Components of CA Practices adopted

- Most farmers adopted either one or two of CA components.
- Only less than 7% adopted the four combinations (zero tillage, Furrows and ridges, intercropping and residue retention.)
Summary

• Encouraging adoption trend
• Continuous efforts in promoting CA-based practices
• Encourage farmers to go for packages of CA practices than components
• Facilitating access to CA-based technologies (improved seed, fertilizer, herbicides, equipment, etc.)
Thanks!