Policy Engagement for Scaling SIMLESA

Experience from Ethiopia

Moti Jaleta, Kindie Tesfaye, Michael Misiko

SIMLESA End of Project External Review and Stakeholders’ Meeting

5-9 March 2018
Some issues

• “Labor abundant” agrarian population

• Increased importation of glyphosate and other selective weed killers (*Tamiru et al.*, 2016, IFPRI).

• Footprints of minimum tillage from the 1990s SG-2000 initiatives, with no government support

• Poor landlord and better-off tenant in land market (*Equity issue*)
The History

2012

Enhancing Total Farm Productivity in CA Based systems /IFAD

SIMLEZA

CASFESA/IFAD

Mechanization in CA FACASI/ACIAR

Adoption and Impact Pathways/ACIAR

CCAFS

SIMLESA
Demonstrate to scale out 
*(North-West Ethiopia)*

- Scaling out SIMLESA technologies/practices
  - Minimum tillage
  - M-L intercropping
  - Crop residue retention
  - Herbicide use in weed control

- Established demonstration plots in randomly selected villages with ‘farmer-researchers’

- By then, minimum tillage was not supported by the extension system
Policy lobbying

• On-farm demonstrations
  – Show that practices don’t have short term yield penalty but some relocation of resources
Policy lobbying

• On-farm demonstrations
  – Show that practices don’t have short term yield penalty but some relocation of resources
  – If not champions, get a number of farmer witnesses
  – Invite officials to farmers’ field days and review meetings
Policy lobbying

- Participation in CA Task Force/ raise the flag consistently

- Provide scientific evidence

- A bit of luck (and mind-set)
  - Re-structuring and open-minded officials coming-in
Scientific Evidence

Identifying Potential Recommendation Domains for Conservation Agriculture in Ethiopia, Kenya, and Malawi

Kindie Tesfaye · Moti Jaleta · Pradyot Jena · Munyaradzi Mutenje

Resource saving and productivity enhancing impacts of crop management innovation packages in Ethiopia

Moti Jaleta  
Menale Kassie  
Kindie Tesfaye  
Tilaye Teklewold  
Pradyot Ranjan Jena  
Paswel Marenya  
Olaf Erenstein

*International Maize and Wheat Improvement Center (CIMMYT), Addis Ababa, Ethiopia
1International Maize and Wheat Improvement Center (CIMMYT), Nairobi, Kenya
2International Center for Insect Physiology and Ecology (icipe), Nairobi, Kenya
3Amhara Regional Agricultural Research Institute (ARARI), Bahir Dar, Ethiopia
4National Institute of Technology Karnataka, Surathkal, India
5International Maize and Wheat Improvement Center (CIMMYT), El Batan, Mexico

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## Identifying Potential Recommendation Domains

<table>
<thead>
<tr>
<th>Socioeconomic potential (Human pop density, Livestock density, Market access)</th>
<th>Bio-physical potential (Rainfall, soil texture, slope)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>High</td>
<td>Moderate</td>
</tr>
</tbody>
</table>
Ground truthing (1km*1km)

- Physical observation at more than 100 points
Identifying Potential Recommendation Domains for CA (Ethiopia)

- Mapping the cultivated land by the different levels CA potentials

Identified potential recommendation domains

- In million ha, Total cultivated area, 17.8M ha

<table>
<thead>
<tr>
<th>Socioeconomic potential (Human pop density, Livestock density, Market access)</th>
<th>High</th>
<th>Moderate</th>
<th>Marginal</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>0.8 (4.6%)</td>
<td>0.6 (3.3%)</td>
<td>0.2 (0.9%)</td>
</tr>
<tr>
<td>Medium</td>
<td>3.8 (21.3%)</td>
<td>2.3 (13.2%)</td>
<td>0.7 (4.2%)</td>
</tr>
<tr>
<td>Low</td>
<td>5.8 (30.8%)</td>
<td>2.9 (16.2%)</td>
<td>1.0 (5.5%)</td>
</tr>
</tbody>
</table>

**High-High**: High human pop density, low livestock density, good market access, Rainfall intensity X erodibility of soil texture X slope
Footprints of SG-2000 CA intervention at South Achefer District

• 36% of the sample HHs (27% of the maize plots) in the SIMLESA/CASFESA baseline survey apply the practice.

• Though not applying all components, but still rational.

Minimum Tillage (one-pass) with no residue cover and mono-cropping
Grass weeds fill the feed shortage gaps during the wet season.
### Gross margin analysis in maize production by tillage

<table>
<thead>
<tr>
<th>Items</th>
<th>Total plots (N=590)</th>
<th>Min- tillage plots (N=158)</th>
<th>Conv. tillage plots (N=432)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Mean</td>
<td>Mean</td>
</tr>
<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue from maize production</td>
<td>8,833.22</td>
<td>10,739.93***</td>
<td>8,135.86</td>
</tr>
<tr>
<td>(Birr/ha)&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Variable costs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seed cost (Birr/ha)</td>
<td>487.89</td>
<td>648.84**</td>
<td>420.53</td>
</tr>
<tr>
<td>Fertilizer cost (Birr/ha)</td>
<td>3,811.11</td>
<td>4,619.12***</td>
<td>3,515.59</td>
</tr>
<tr>
<td>Herbicide cost (Birr/ha)</td>
<td>233.91</td>
<td>898.71***</td>
<td>0.00</td>
</tr>
<tr>
<td>Labor cost (Birr/ha)</td>
<td>1,467.16</td>
<td>1,145.10</td>
<td>1,584.95***</td>
</tr>
<tr>
<td>Oxen-days (Birr/ha)</td>
<td>705.84</td>
<td>278.32</td>
<td>860.47***</td>
</tr>
<tr>
<td>Total Variable costs (Birr/ha)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>6,571.94</td>
<td>7,370.25***</td>
<td>6,275.10</td>
</tr>
<tr>
<td><strong>Gross margin</strong> (Birr/ha)&lt;sup&gt;a-b&lt;/sup&gt;</td>
<td>2,216.73</td>
<td>3,229.74***</td>
<td>1,846.23</td>
</tr>
<tr>
<td>Gross return on investment (Birr/ha)&lt;sup&gt;a/b&lt;/sup&gt;</td>
<td>1.34</td>
<td>1.46</td>
<td>1.30</td>
</tr>
</tbody>
</table>

Note: Average maize grain price was 4.00Birr/kg; opportunity cost of labor and oxen-power was assumed as 20 Birr/AE/day and 50 Birr/pair of oxen/ha, respectively.

***, **, and * are significantly different from the other group mean at 1%, 5% and 10%, respectively.
# Impact of adopting Minimum Tillage Practices (MTP) in maize production, for adopters/users

<table>
<thead>
<tr>
<th>Outcome variables</th>
<th>MTP</th>
<th>Conventional Tillage</th>
<th>Adoption effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize productivity (t/ha)</td>
<td>3.0</td>
<td>2.6</td>
<td>0.4***</td>
</tr>
<tr>
<td>Total labor (person-day/ha)</td>
<td>59.7</td>
<td>82.3</td>
<td>-22.6***</td>
</tr>
<tr>
<td>Male labor (person-day/ha)</td>
<td>37.4</td>
<td>51.9</td>
<td>-14.4***</td>
</tr>
<tr>
<td>Female labor (person-day/ha)</td>
<td>22.3</td>
<td>30.4</td>
<td>-8.2***</td>
</tr>
<tr>
<td>Draft power (oxen-days/ha)</td>
<td>5.5</td>
<td>18.7</td>
<td>-13.2***</td>
</tr>
</tbody>
</table>

*Source: Jaleta et al. (2016), Agricultural Economics, 47:513-522.*
Policy brief

The practice is in favor of women headed households own land but renting (sharing) out due to lack of draft power and male labor for land preparation.

Rental market for draft power???
With all these efforts, we were able to sell GA (not CA) to Zonal/Regional decision makers

NO! to ‘Madager’ for better maize plant density

Legume intercropping
Experience from the on-going CARD/ECCAFS project

- Funded by NORAD through Development Fund of Norway
- Scaling out CA/CSA practices (min-till, intercrop, rotate) at Gimbi and Digga Districts (Ethiopia)
The Recent Policy Engagement Process

• **Start**
  – Presentation of research evidence on CA in different AEZs at the Soil Fertility and Natural Resource Directorate (MoANR)
  – More interest on potentials of CA across the country

• **Engagement**
  – Development of policy brief based on concrete evidence, coalition of stakeholders (Research, NGOs, MoANR), series of meetings and workshops
  – Presentation to high level policy makers and securing acceptance

• **Implementation/Scaling out of CA**
  – Development of detail CA guideline for extension system
  – Development of scaling-out strategy (*in progress*)
Policy Brief
Scaling CA-based SI in Ethiopia

Contents

1. Challenges of conventional tillage in Ethiopia
2. Opportunities for addressing the challenges
2.1. How does CA help in addressing the current challenges?
2.2. CA enhances integration of sustainable intensification practices
3. Scaling up and out CA in Ethiopia
3.1. Favorable conditions for CA scaling
3.2. Considerations for CA scaling
4. Expected challenges in the scaling up/out of CA
5. Conclusion

Contributors:
- International Maize and Wheat Improvement Center (CIMMYT)-lead
- Natural Resources Management Directorate, MoANR
- Africa Conservation Tillage Network
- Agricultural Transformation Agency
- Canadian Food Grains Bank

Policy Brief

Scaling conservation agriculture-based sustainable intensification systems in Ethiopia

Key Messages:

- Soil erosion, nutrient depletion and land degradation in the highlands and climate variability and chronic moisture stress in the semi-arid areas are challenging the sustainability of current excessive tillage crop production system in Ethiopia.
- Conservation agriculture, which has been tested in different parts of the country, has shown great potential to address problems associated with the current conventional production system.
- Research evidences suggest the need to incorporate conservation agriculture as one of the technology packages in the agricultural extension system of the country.
- Scaling up/out of conservation agriculture requires due consideration of local constraints and potentials which need to be supported by appropriate policies and community by-laws.
- A successful scaling of conservation agriculture requires developing detail guidelines and building the capacity of all actors in the extension system.
Way Forward
Ownership and Role
*(scaling out strategy)*

- Ministry of Agriculture and Natural Resources
- CA Task Force
- Research (National + International)
- Private sector + Cooperatives
- Farmers/ women farmers
- Youth?
Capacity building

- Training farmers, extension agents, experts at district agricultural offices
- Manuals, follow-ups
- More resource (staff time)
- Action research (scaling out)
Piece or package?

Short term benefit vs Sustainability
Demonstrate and Evaluate
(at FTCs)

Demonstrate

Evaluate
Give no room for failure

• Targeting
  – Target again
  – Crop specific targeting (maize, legume, …….)
Thank you for your interest!