Climate Smart Technologies and Practices Meet ICT Tools

EXPERIENCES OF INCLUDING MOBILE-PHONE BASED TOOLS IN RESEARCH
What do we mean by ICTs?

- Radio (local and amateur stations)
- Internet
- Mobile phones (Interactive Voice Response & voicemail)
- Social media (twitter, facebook, ...)
- Text messages SMS
- Mobile apps
- Crowdsourcing technologies (sensors)
- Community mapping (collaborative cartography)
- Social computing (collaborative online behavior)
... goals of this project were to combine highly relevant CSA research outputs with practical knowledge on the ground, use modern information and communication technology (ICT) to support the interaction between actors and to accelerate the delivery of information from experts to implementers, and feedback from implementers to scientific experts.

funded by the OPEC Fund for International Development OFID, a development finance institution of OPEC Member States

18 months / 100kUSD
CIAT linked projects and activities in East Africa

Transformative adaptation on benchmark sites

2012
- Land health & crop modeling
- Socio-economic modeling
- Participatory research & survey

2013
- Knowledge Sharing Training in data Analysis Participatory sessions
- Participants: Scientist from National Institutions, Farmers

2014
- RRA Northern Uganda
- Meta analysis of CSA practices
- Periodization workshops with Farmers/experts
- ICT tools testing
- Register actors for 5Q M&E

2015
- IFAD Demo plots (Uganda & Tanzania)
- Citizen Science (Honduras, India, Ethiopia)
- Survey tools in 5Q approach

http://dapa.ciat.cgiar.org/cca
http://dapa.ciat.cgiar.org/kubadilishana-maarifa-knowledge-sharing-in-tanzania/
http://dapa.ciat.cgiar.org/implementing-csa-the-last-mile/

http://dapa.ciat.cgiar.org/planting-the-seed-of-csa/
http://dapa.ciat.cgiar.org/fs-ea-fieldwork/
our team in East Africa
Using Science Knowledge and Expert Feedback to Accelerate Local Adoption

Climate Smart Technologies and Practices Meet ICT Tools

Objectives

- **Identify** most promising CSA practices for the northern Tanzania region using an existing database previously compiled in a collaborative project between CIAT and ICRAF as well as expert knowledge.

- **Develop** application domains using up-to-date soil and land health information to improve crop-soil-modeling for smallholder farmers.

- **Assess** modeled agronomic and environmental benefits of the CSA practices.

- **Validate** benefits with local agriculture experts through an interactive platform developed for use by national agricultural research systems in order to outscale efforts for improved agricultural productivity.


Project Final Report
The study and pilot site for testing Lushoto, Tanzania
Activities and outputs

Using Science Knowledge and Expert Feedback to Accelerate Local Adoption

Climate Smart Technologies and Practices Meet ICT Tools
Participatory workshops in June 2014

In a participatory workshop we grouped farmers into different groups, based on gender and agro-ecological zones.
Biophysical modeling

- LDSF soil samples
- DSSAT model
- 27 years of daily weather data from CCAFS (Princeton dataset)
Framework of ICT supported CSA implementation

Experts (project implementer)
- Track activities
- Respond questions
- Advices

Feedback loops
- Post questions
- Post answers

Demo plot implementer
- Final report of outcomes from demo plot
- Evaluation by experts

Local institutional support

On-the-ground monitoring

Participatory M&E

Technicians
- Register farmer from village on OFID app
- Doing the 5Q baseline

Demonstration plot activities
- Invite farmers to demonstrations
- Meet regularly on demonstration plot with farmer
- Geocode site
- Document progress (take pictures, write activities)
- Post questions on forum

Invite farmers

5Q monitoring

IFAD

Survey

5Q feedback

5Q survey

5Q feedback

5Q survey
Selian Agricultural Research Institute (SARI)

The feedback loop

Outside experts

Collecting GPS points

Start CSA demo site

CSA practices info

Provide answer

Ask questions

Reporting activities

Farmers surveys

Farmers database

Local experts
Live demo!!
Welcome Anton Eitzinger

- Register a new farmer
- View list of all registered farmers
- View list of CSA practices
- Go to map

Register a new CSA farmer

The purpose of this research project is to test climate smart agriculture practices CSA. This is a research project being conducted by the International Center for Tropical Agriculture CIAT and the Selian Agriculture Research Institute SARI and you are invited to participate in this research. Your participation in this research study is voluntary. You may choose not to participate. If you decide to participate in this research survey, you may withdraw at any time. If you decide not to participate in this study or if you withdraw from participating at any time, you will not be penalized. We will do our best to keep your information confidential. All data is stored in a password protected electronic format. The results of this study will be used for scholarly purposes only.

ELECTRONIC CONSENT: Please select your choice below.
Clicking on the AGREE button below indicates that:

- the above information have been read to you
- you voluntarily agree to participate
- you are at least 18 years of age

If you do not wish to participate in the research study, please decline participation by clicking on the DISAGREE button.

Agree  Disagree

NEXT
Register a new farmer

- Names *
- Surnames *
- Phone *
- Email

* Fields are mandatory

START REGISTER
Welcome Anton Eitzinger

- Register a new farmer
- View list of all registered farmers
- View list of CSA practices
- Go to map

List of registered farmers

- Name: Sharifa Kuzia
  Phone: 0719189209
  Pending questions

- Name: Zawadi Sheshe
  Phone: 0714088583
  1 points

- Name: Zainabu Sheshe
  Phone: 0685114137
  1 points

- Name: Sakina Mandia
  Phone: 0657544054
  1 points

Row(s) 65-68 of 998
Survey: IFAD/5Q farmer 1st
This is the first survey of 5Q for farmers
Farmer: Testname Testsurname

We are collecting information on agricultural practices. Please answer the following questions to reflect your opinions as accurately as possible. Your feedback will assist in the improvement of agriculture research for smallholder farmers in East Africa. Information received will be kept strictly confidential. Are you willing to participate?

- Yes
- No

Have you heard about manure compost?

- Yes
- No

Do you do manure compost?

- Yes
- No

Have you received information on compost manure?

- Yes
- No

Would you like to receive information about this?

- Yes
- No

SEND

Go to start page
Welcome Anton Eitzinger

- Register a new farmer
- View list of all registered farmers
- View list of CSA practices
- Go to map
Name: Mbuzii village demo plot
Started on: 2014-11-18
Responsible farmer: Test01 sia
Description: 60x60m with 10 farmers
Name: Mbuzii village demo plot
Started on: 2014-11-18
Responsible farmer: Test01 sia
Description: 60x60m with 10 farmers

Document demonstration plot progress

Mulching

Photo

Q&A

Prev

Next
Name: Mbuizi village demo plot
Started on: 2014-11-18
Responsible farmer: Test01 sia
Description: 60x60m with 10 farmers

Document demonstration plot progress

Mulching

You have 1 activities reports

Make a new report of activities

Date

Click to add a picture

How many farmers did participate?

Activity descriptions and observations

Send report

Cancel
Name: Mbuizi village demo plot  
Started on: 2014-11-18  
Responsible farmer: Test01 sia  
Description: 60x60m with 10 farmers

Document demonstration plot progress

Mulching

Photo  Q&A

Questions and Answers

You have 0 new answers

Select practices...

Ask your question

Click to add a picture

Send  Cancel
Web platform for experts, to see activity reports and answer questions made on demonstration plots

Hello Anton Eitzinger, please let us know your expertise on CSA practice

I am a: Geographer, Geospatial analyst

My institution: CIAT Colombia

I have expertise in the following fields:

- [ ] test no lushtot
- [x] Mulching
- [ ] Manure composting

Save

Send a invitation to another expert: type email here... Send
<table>
<thead>
<tr>
<th>Farm</th>
<th>Location</th>
<th>Started</th>
<th>Participation</th>
<th>CSA Implementation</th>
<th>Reports from this site</th>
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<tbody>
<tr>
<td>Peters farm</td>
<td>Lushoto</td>
<td>October 28, 2014</td>
<td>8 farmers</td>
<td>Manure composting</td>
<td>2 reports</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>participated</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>November 15, 2014</td>
<td>Another test</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>October 28, 2014</td>
<td>25 farmers</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>participated</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil preparation with Leigh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicholas farm</td>
<td>Lushoto</td>
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<td>Mulching</td>
<td>2 reports</td>
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<td></td>
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<td></td>
<td>November 15, 2014</td>
<td>Testing</td>
<td></td>
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<tr>
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<td></td>
<td>November 13, 2014</td>
<td>10 farmers</td>
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<td>participated</td>
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<tr>
<td></td>
<td></td>
<td>Collection of farm wastes for mulching</td>
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</table>
Lushoto, go to map

4 demo sites
CSA Practices: Manure composting, Mulching
Introduction

Installation

Create account

Main menu

Register farmers

Add farmers data

CSA practices

Map view

CSA demo plots

CSA Monitoring

CSA questions/answers

CSA Implementer
user manual mobile app v 1.0

Climate Smart Technologies and Practices: Using Science Knowledge and Expert Feedback to Accelerate Local Adoption
The CSA Implementer interactive platform is a crowd-sourcing tool for collaborative testing and learning of climate smart agriculture practices (CSA). It consists of a mobile application and this expert web-platform. The mobile application can be used to manage farmers data and surveys in a database and to monitor ongoing activities on a demonstration or farmers plot. The web platform is used for connecting experts to the ongoing activities on the demonstration sites and to stimulate a two-way feedback loop were local implementers can upload questions through the mobile app and experts can respond and provide their expert knowledge in a forum on the web platform which will be sent back to the implementers to the mobile app.

Correct citation:

Disclaimer:
This platform has been developed as part of the project “Using Science Knowledge and Expert Feedback to Accelerate Local Adoption: Climate Smart Technologies and Practices meet ICT tool” funded by the OPEC Fund for International Development DFID, a development finance institution of OPEC Member States established to provide financial support for socio-economic development, particularly in low-income countries, and by the Climate Change, Agriculture and Food Security program CCAFS. For the technological platform, researchers adapted an existing platform-framework for collaborative problem solving within the citizen’s spatial context, geociudadano.org (Resl et al. 2013, Atzmanstorfer et al. 2014). The framework is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.

References:

Farmers engagement in scientific process, ICT in action research, some research questions ...

- Can mobile applications help to make field data collection easier and more effective? (even as crowd sourcing)
- Can we improve the communication and feedback loop between scientists, CSA experts and local Implementers? (e.g. on a CSA demonstration site, Citizen Science)
- Can we get faster in monitoring a project implementation using technology as a low-cost option? (voice-surveys, text messages)
Aplicación móvil para trabajo en campo

CIAT Fieldwork app, v1, Enero 2014

Outscaling a citizen science approach to test climate adaptation technologies on farms:

Jacob Van Etten, Bioversity International

Farmers as Scientists!

1. A broad set of varieties is evaluated
2. Each farmer gets a different combination of varieties
3. Environmental data (GPS, sensors) to assess adaptation
4. Farmers test and report back by mobile phone
5. Farmers receive tailored variety recommendations and can order seeds
6. Detect demand for new varieties and traits
Objective of the 5Q approach

Five simple questions will be asked to farmers, project implementers, and donors to measure changes in knowledge, attitude, skills, access, and use of information.

Responses are collected using various tools, digital when possible, and will be automatically uploaded, analyzed, and disseminated through an online dashboard to visualize changes throughout the project cycle, establishing effective and efficient feedback loops.

Figure 1: Schematic visualization of the proposed feedback approach to be embedded throughout all project cycles.
5Q Farmer: 1st round of questions

We ask the farmer about “awareness”, ...

We ask the farmer about his “knowledge”

We identify “skills”

We identify “attitudes”

Compare different data collection methods

Mobile app

voice surveys
5Q Farmer: 1st round of questions

1. Have you heard about it?
   - Yes: 1.0
   - No: 2.1

2. Like to receive info?
   - Yes: 2.2
   - No: 3.1

3. Received info?
   - Yes: 3.2
   - No: 3.3
   - How receive?
     - 33 Text messages
     - 34 Local Radio
     - 35 Demonstrations or trainings

4. Are you able to do it?
   - Yes: 4.1
   - No: 4.2

5. Do you think it is benefitting for your farm?
   - Yes: 5.1
   - No: 5.2

CSA practice: manure composting: tablet surveys (CSA Implementer)
### Active Calls

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<th>Action</th>
<th>Status</th>
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<td>Today - 6:51pm</td>
<td>✗</td>
<td>4/10 Succeeded, 0 Failed.</td>
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### Completed Calls

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<td>1 Succeeded, 0 Failed</td>
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</tbody>
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### Content Channels

- Call Details

### Call Details

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<td>Karimu Shekilango</td>
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[Download Call Records Spreadsheet]
conclusions

• Technology is not a panacea for development
• ICT mechanisms should be designed to respond to a clearly defined goal
• Technology selection have to be context specific (think about internet coverage in rural areas, technology literacy)
• ICT tools can provide the unique value of:
  • Effectiveness (lower costs)
  • Timeliness
  • Directness
  • Inclusiveness (two-way communication)
  • Promote collaboration