Challenges of farming systems design in the drylands of Africa and Asia

Cases of CLCA (IFAD) and PROSOL (GIZ) projects in Tunisia/Algeria

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CL-CA (Crop livestock integration under conservation agriculture)

Crop-Livestock Systems *Transformation* for more Sustainable Resources Use

**Funded by:** IFAD (implemented by ICARDA, CIMMYT and their partners)

**Countries:** Mexico, Bolivia, Algeria, Tunisia
CLCA Project (R4D and scaling project)

OBJECTIVE
To develop local adaptable soil conservation and water use efficiency technologies as well as forage crops and biomass management practices for different CLCA systems in the drylands using agro-ecological principles and participatory action research approaches.

GOAL
To sustainably increase production and enhance climate resilience of small farmers’ communities and their crop-livestock production systems in drylands.

Target numbers
The direct target group will be an estimated 3,000 (at least 50% women and 30% youth (below 35 years)) small crop-livestock farmers in drylands in LAC and NA participating in trials, action research, training and extension for the development and adoption of local adapted technologies and practices for CLCA systems;

Through the IFAD investment projects and project partners it is estimated that the training and adoption of technologies and practices for CLCA systems will reach an additional 10,000 small crop-livestock farmers;

In North Africa and over the four years, the grant will aim to target directly and indirectly 2,000 mixed cereal-sheep farmers whose farming practices stretch to over 50,000 – 60,000 ha.

Project Outcomes

Outcome 1)
2,100 (70% of beneficiaries) farmers have adopted CLCA farming systems with increased production and improved cost-benefits compared to conventional systems;

Outcome 2)
Locally adapted guidelines for CLCA technologies and practices are used by at least 8 participating NARES and IFAD investment project partners in their advisory services or promoted in their outreach to private input and service providers;

Outcome 3)
At least 4 effective agricultural innovation systems - 1 in each implementation area of the 4 target countries - are coalesced in order to foster broad uptake of conservation agriculture practices within integrated semi-arid crop-livestock production systems.
CLCA Socio-Technical Package for Agroecological System Transformation

NA Countries
Clustering Crop-Livestock Integration (CLI) Options Based on the Scale of Implementation (On-Farm, Landscape) and Resource-Orientations.

CLCA Options

No-till on Residues + Forage Diversification + Livestock Management Interventions

Minimum Tillage + Forage Diversification + Alternative Feed Options + Livestock Management Interventions

Conventional Till + Forage Diversification + Forage Crops Seed Production + Small-Scale Mechanization of feed production

Minimum Tillage + Forage Diversification + Alternative Feed Options

Cereal-Food Legumes Rotation + No-till on residues + Stubble Grazing Management

Phase-I: Adaptative Research & Options under Piloting

Phase-II: Scaling-Up Full CLCA Packages

Forage Diversification to Address Feeding Gap
Minimizing Soil Disturbance

Forage Diversification to Address Feeding Gap
Minimizing soil Disturbance and Improving Herd Management

Conventional forage cropping for biomass and seeds and community-based mechanization for feed production

Forage Diversification to Address Feeding Gap
Minimizing Soil Disturbance

CA in Cereal-Legume Based Systems

LAC Countries
Landscape-Piloting Stage

Mexico
- Living Barriers
- Controlled Grazing of Stubble and Forage Mixtures
- Relay Cropping with Fodders Species

Bolivia
- Improved Fallow
- Improved Pastures
- Windbreak with Quality Species

https://meli.cgiar.org/projects/clca2
Complement the innovations with KM and partnership approaches.
Engage Effective Partnership & Deliver at Scale

1,200
Dissemination of the Integrated Improved Crop-Livestock Management Packages to 5,600 Mixed, Smallholder Farmers in NA and LAC Countries

5,600

Gender Based-Interventions for Innovative Solutions in NA reaching out 1,200 women farmers

125$
A cost per beneficiary ratio of US$125 compared to the average of US$246 in IFAD’s 2016-2018 portfolio.

20,000
Farmers are indirectly reached through broader CLCA initiatives

5,000
Hectares were implemented under CLCA Farming Systems in NA and LAC Countries

6,000
Knowledge Provision & Capacity Lifting to more than 5,000 Farmers, National and Local Extension Agents, Students, Young Scientists, and Policy Makers – in NA and LAC Countries

02
Private Public Partnerships

- ITGC – PMAT-CLCA in Algeria to locally produce Zero-till Seeders and Expand areas Under CA
- INRAT-Cotugrain-CLCA to scale forage crops and forage mixtures in Tunisia

05
Knowledge Hubs for Leveraging the democratization of knowledge and Communities Empowerment of Contextualized CLCA Systems (CA, Forage, Livestock) in Algeria and Tunisia
PROSOL
Soil Protection and Rehabilitation of Degraded Soil for Food Security

Co-funded by: European Union (EU), Bill & Melinda Gates Foundation (BMGF)

Country: Supraregional: Benin, Burkina Faso, Ethiopia, India, Kenya, Madagascar, Tunisia
**Project Innovation:**

SWC@Scale project members designed an Integrated Soil-Friendly Sociotechnical Package well suited for mixed crop-livestock systems and implemented/scaled through local knowledge hubs to improve soil fertility in diverse farming agroecosystems in North (Cereal-based farming system) and Central West (Olive-livestock based farming system) Tunisia.

Implementing two local Knowledge Hubs for Self-Sustained Scaling of Soil Conservation and Fertility Restoration at Farm & Landscape Levels

**Expected Outputs**

- **750 farmers & 100 extension agents (public and private) are directly reached through project activities until the end of the project.**
- **10,000 farmers are reached indirectly.**
- **30% of the reached farmers have adopted the technology until the end of the project.**
- **35% of beneficiaries are women and youth**
- **100 engineers and private leader farmers successfully followed the ICARDA/ProSol e-learning modules and get their online certificates.**
- **1,500 ha of degraded land will be restored.**
Development of contract farming

Increase of collective investments

Increased trend towards commercial activities

Increased awareness about environmental and soil health

Increased exchange of information across communities

Increase of women engagement and leadership

Development of three packaging criteria:

- Motivation and engagement of private farmers to the suggested innovations: this suggests that our practices and innovations need to be flexible, affordable, and feasible from farmers/stakeholders’ perspective;

- The need for the suggested practices (to be bundled), to have positive (short or long term) environmental impacts;

- Innovations suggested as relevant for both entry points have to be meaningful and complementary once packaged together” (complement each other).

Achievement of all project outputs 18 months &
Early system transformation observed in sites

- Development of contract farming
- Increase of collective investments
- Increased trend towards commercial activities
- Increased awareness about environmental and soil health
- Increased exchange of information across communities
- Increase of women engagement and leadership
Conclusions

- Started by promoting single pillars of “CA” when and if relevant to farmers,
- Focus on knowledge management approach and how to properly integrate them into R4D projects, (these are a very good support for scaling)
- Importance of packaging for systems transformation with PROSOL,
- And next, importance of packaging with an agroecological lens (do the same, but ensure that the resulting packages are aligned with “few or more” agroecological principles,