

# SIMLESA

Sustainable Intensification of  
Maize-Legume Systems for Food Security  
in Eastern and Southern Africa

## Building Productive, Resilient & Sustainable Maize- Legume Cropping Systems in Africa : Achievements, challenges and opportunities and looking forward

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CIMMYT-Southern Africa Regional Office

Harare , Zimbabwe

ACIAR Seminar 29-430 November 2016

Canberra, Australia



Ethiopia



Kenya



Malawi



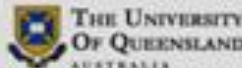
Mozambique



Tanzania



Australia



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PASARECA



ARC - LNR



ILRI



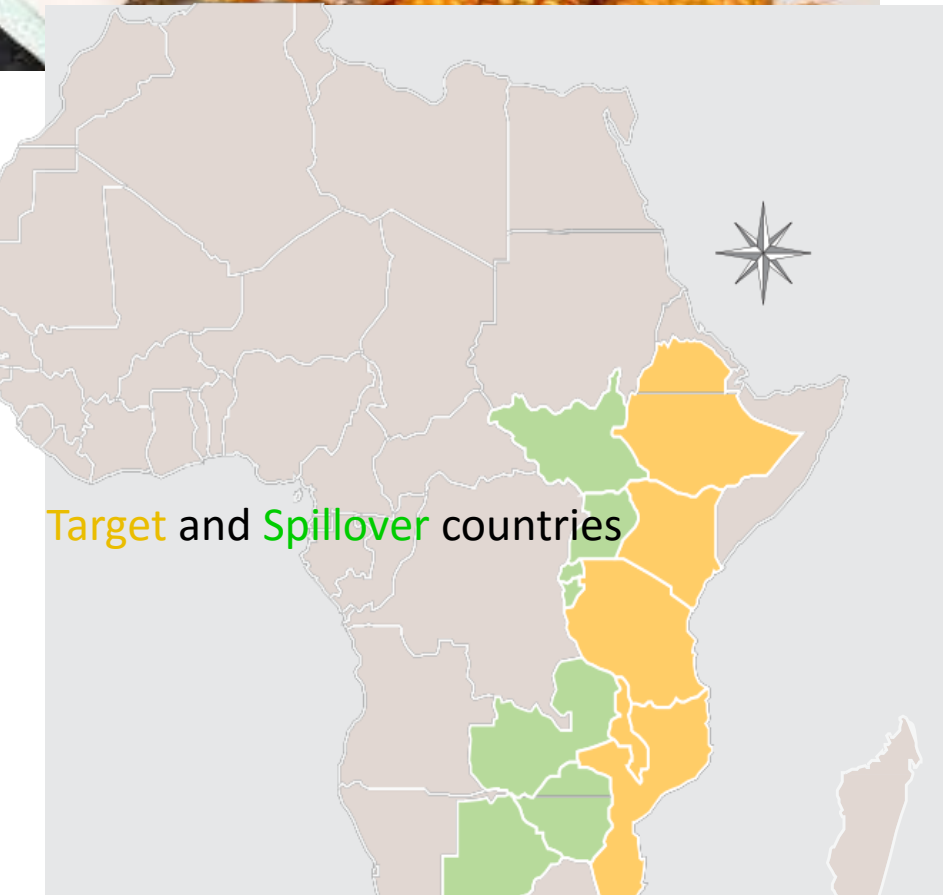
CIAT



- Executed by CIMMYT with financial Grant from ACIAR
  - Phase 1-2010-2013
  - SIMLESA2 2014-2018

## PARTNERS-NARS

- EIAR, KARI, DRD,DARS , IIAM, spill over NARO,RAB, DAR
- **Regional/International**
- **QAAFI, ARC, ASARECA, ILRI ,CIAT**
- **- CCARDESA(phase2),**



## Approaches

## Vision of Success

**3+3- Is**  
**INTEGRATION**  
**(SYSTEMS)**  
**INNOVATION**  
**PLATFORMS**  
**IMPACT**  
**ORIENTATION**  
 Information  
 Inputs  
 Institutions/policy  
 Complimentary  
 projects: DTMA,  
 TL-II  
 ACIAR/AIFSC- AP,  
 ZIMCLF, FACASI,  
 TF-ICRAF

To increase maize and legume yields by 30% while sustaining the environment through:

- Conservation agriculture practices
- Improved maize and legume varieties
- Development of markets and value chains, from input supplies to output markets.

To reduce downside yield risks by 30%

To benefit 650,000 farm households within 10 years.



Ethiopia



Kenya



Malawi



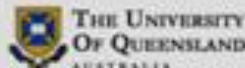
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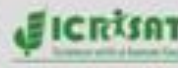
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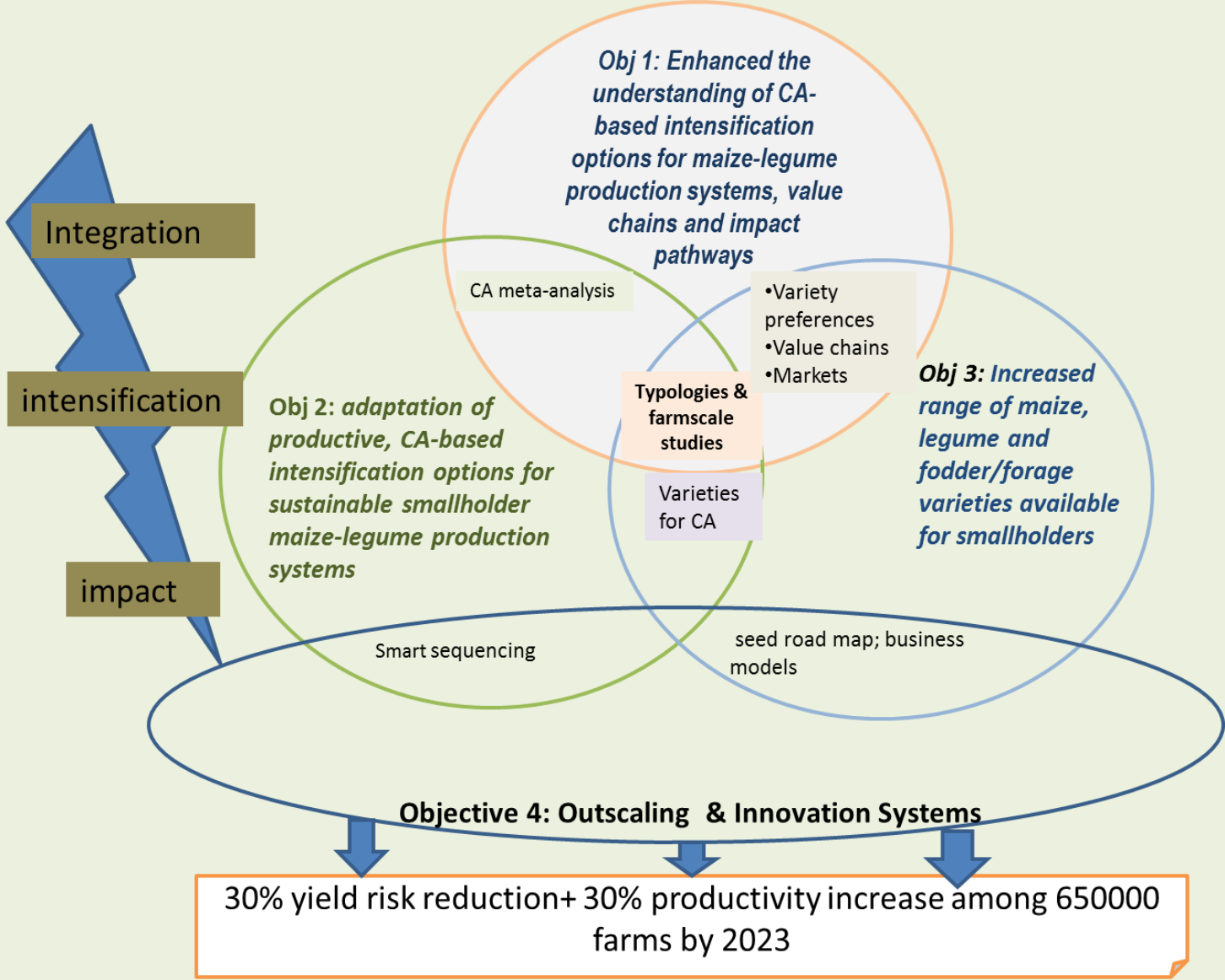


ILRI



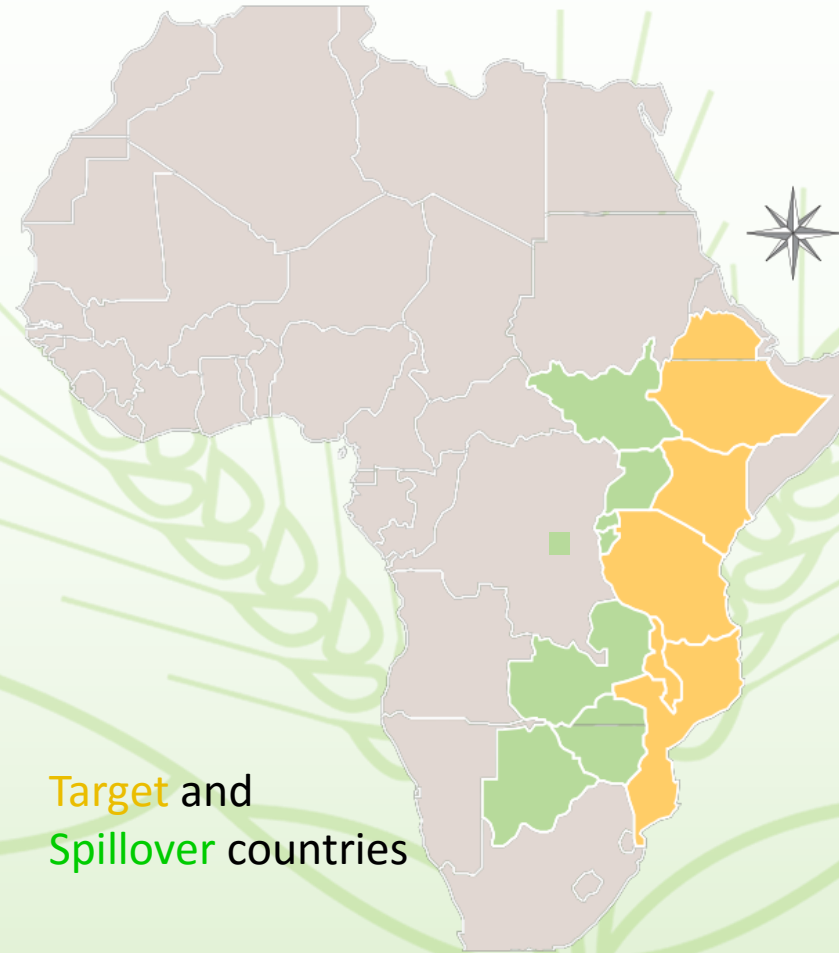
CIAT

## Focus on CA-based sustainable intensification, (cop-livestock) integration, scaling and impact



# SIMLESA - Achievements

- characterized the maize-legume production and value chain systems in the study sites
- tested promising smallholder maize-legume cropping systems;
- Attempted to increase the range of maize and legume varieties available for smallholders;
- Piloted scaling out by developing and employing local innovations platforms and now launched CGS
- Facilitated a strong capacity building of agricultural research partners.



# Yield impacts

- Across ESA, results clearly demonstrate yield benefits from the use of rotations in CA based SI systems
  - with maize yield increases averaging 1.5t/ha
    - With yield increase for legumes average 0.8t/ha
  - Reduction of down size yield risk by 45%



# Germplasm for climate smart farming systems

## Stress tolerant maize and legumes

More than 50 new drought  
tolerant maize varieties have  
been released.

Stress varieties of cow pea,  
pigeon pea, beans..



# Gender Integration in R4D activities

## What was achieved:

- Leadership and coordination skills for GFP strengthened
- Identification of core activities for gender integration
- Development of M&E Indicators
- Gender capacity strengthening strategy developed by ARC
- Gender in Communication

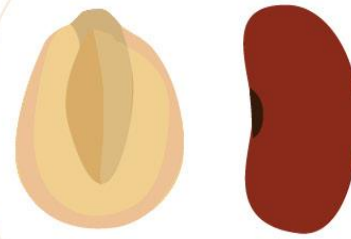




# A brief snapshot: some key research from SIMLESA

## Is there a value proposition in CA for famers?

The productivity (yield) advantages of CA compared to farmer practices has been demonstrated in research done the SIMLESA project. For example,



3-21%

19%

8-40%

20%

5-18%

### Malawi

- The range of Increase in maize yield in the mid-altitude agro-ecology.
- Increase in maize yield in lowland agro-ecology.

### Mozambique

- Increase in maize yield while planting in basins relative to the conventional flat seeding on tilled seed bed.
- Increase in maize yield in Gorongosa under direct seeding.

### Ethiopia

- The average increase in grain maize yield under CA options compared with farmers' practice.

## 2016 Adoption Monitoring technologies/practices

Country	Target	Male	Female	Total	Achievement
Ethiopia	33,870	28,449	5,421	33,871	100.00%
Kenya	28,878	17,379	26,684	44,063	152.60%
Tanzania	28,878	21,756	10,135	31,891	111.00%
Malawi	25,991	18,454	19,185	37,639	145.50%
Mozambique	25,991	18,770	7,299	26,069	100.30%
<b>Total</b>	<b>143,607</b>	<b>104,808</b>	<b>68,724</b>	<b>173,533</b>	<b>121.00%</b>

On track to achieve 650,00 households by 2023  
 Expected to create awareness of 5 million farm households

# Some Empirical Lessons 1: *Adoption*



## Group Membership including Innovation platforms

Those farmers belonging to groups had higher chance to adopt:

- In **Ethiopia**: Crop diversification and minimum tillage
- In **Kenya**: Improved varieties and fertilizer
- In **Malawi**: Soil and Water Conservation

## Proximity to Markets

When close to markets farmers had a higher chance to adopt:

- In **Ethiopia**: Crop diversification and manure use
- In **Malawi**: Improved varieties
- In **Tanzania**: Crop diversification and minimum tillage

## Household Assets

With more assets in the household farmers had a higher chance to adopt :

- In **Ethiopia**: Soil and Water Conservation
- In **Kenya** and **Tanzania**: Manure

## Some Empirical Lessons 2: *Returns and impact*

### 1. Adopting individual practice benefit farmers but suites of technologies :

Led to highest income

Reduced fertilizer use, without yield penalty

Lowered cost of risk (downside risk)

### 2. Adoption of improved varieties of maize and legumes

Improves food and nutrition security

### 3. For conservation agriculture to succeed (crop livestock production systems)

alternative feed sources are needed-new forage crops  
being promoted

Crop residue is a valuable multi-use resource



Ethiopia



Kenya



Malawi



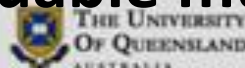
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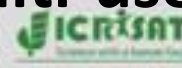
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ICRISAT  
International Crops Research  
Institute for Semi-Arid Tropics



SASARECA  
Sustainable Agriculture  
Systems for Arid and Semi-Arid  
Regions of Central and Eastern  
Africa



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ILRI  
International Livestock  
Research Institute



CIF

# The SIMLESA Outputs

## Technical

- Farmers realized increased from 2.5 to 4 tons/ha maize (1.5t/ha) and increase of 0.8 tons/ha legumes yields through drought tolerant crops from practicing CA based SI practices compared to conventional farming practices.
- Selected hybrids yielded 30-40% more under drought and 20-25% under optimum conditions compared to commercial varieties across the 5 countries
- Farmers saved labour by 50% for other use in other economic activities through adopting zero tillage in Tanzania and Malawi
- **Strong Science outputs (122 publications 52 posters 15 policy briefs and various communication products including national level media coverages ,national ,regional and international conference, participation by partners , SIMLESA Website**

# LOOKING FORWARD

- **FINALIZE ONGOING RESEARCH ACTIVITIES**
- **Document and publish lessons and insights**
- **Fast track recently launched scaling out under the Competitive Grant Scheme ( 20 scaling partners –Seed companies, Media ,NGOs and University)**
- **2017- Organize Africa Sustainable Intensification conference in collaboration with other development partners (USAID, BMGF, AfDB...)**
- **2018 SIMLESA- ACIAR BOOK**

**Acknowledgment;  
SIMLESA Partners  
SIMLES HOST FARMERS AND  
COMMUNITIES rs  
ACIAR AND CIMMYT**

