Australian Government
Australian Centre for International Agricultural Research

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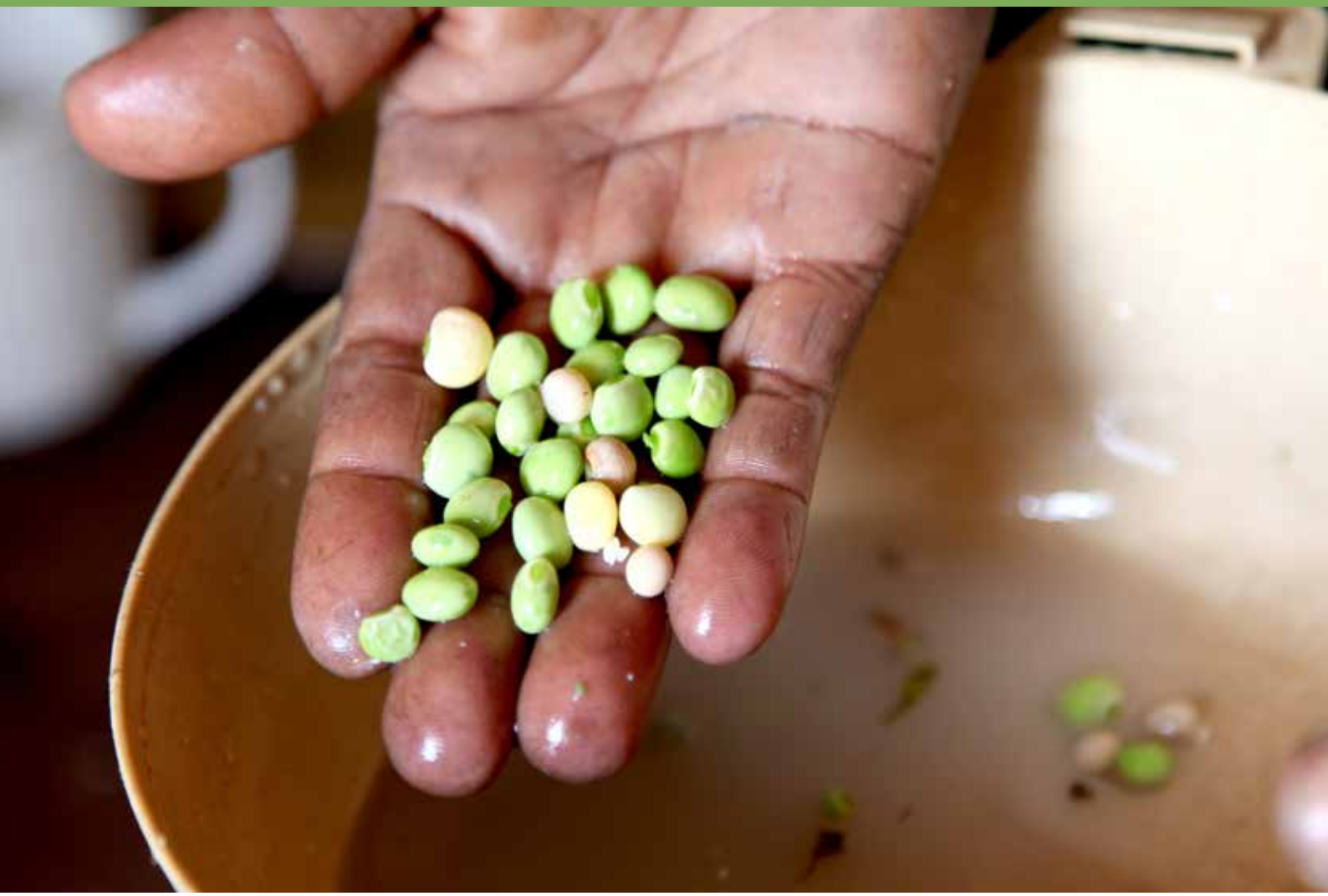
SIMLESA program overview Highlights 2015

Improving food security in east and southern Africa through more productive maize-legume cropping systems



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Program overview

The Sustainable Intensification of Maize-Legume cropping systems for food security in Eastern and Southern Africa (SIMLESA) program was established in 2010 with a budget of $20 million. It aims to create more productive, resilient, profitable and sustainable maize-legume farming systems that overcome food insecurity and help reverse soil fertility decline, particularly in the context of climate risk and change.

After successful implementation of the first phase (2010-2013), the program was extended for a further five years (2014-2018) with an additional $20 million and an increased focus on upscaling sustainable intensification technologies which were initiated and tested in the first phase.

The SIMLESA program has five main objectives.

1. Evaluate current maize-legume production systems and value chains to identify broad constraints and areas for intervention.

2. Test more productive, resilient and conservation-agriculture based smallholder maize-legume production systems that can be upscaled.

3. Increase the range of maize, legume and fodder/forage varieties available to smallholder farmers.

4. Support the development of regional and local agricultural innovation systems and scaling-out platforms.

5. Develop capacity to increase the efficiency of agricultural research today and in the future.

The program is funded by the Australian Centre for International Agricultural Research (ACIAR) and managed by the International Maize and Wheat Improvement Center (CIMMYT). Partners include international and regional research centres and associations, and national agricultural research systems (NARS) and private seed companies from each of the five partner countries: Ethiopia, Kenya, Malawi, Mozambique and Tanzania. Lessons learned in these countries are also implemented in the spillover countries of Botswana, Rwanda and Uganda.

Photos: Sally Ingleton

Background

In east and southern Africa, food security remains a major concern. While maize is the main staple consumed in the region, legumes provide an important source of dietary protein for the poor and are also a significant source of income, especially for women. Declining soil fertility is a significant issue in the region, leading to poor crop performance, and legumes have the ability to improve soil fertility through biological nitrogen fixation. Major legume crops include cowpea, field bean, soybean, pigeon pea and groundnut.

Legumes are widely used as an intercrop in maize systems in east and southern Africa, however many factors hamper their production, including low adoption of new and more productive varieties, lack of market access for smallholders, environmental degradation and the effects of climate change.

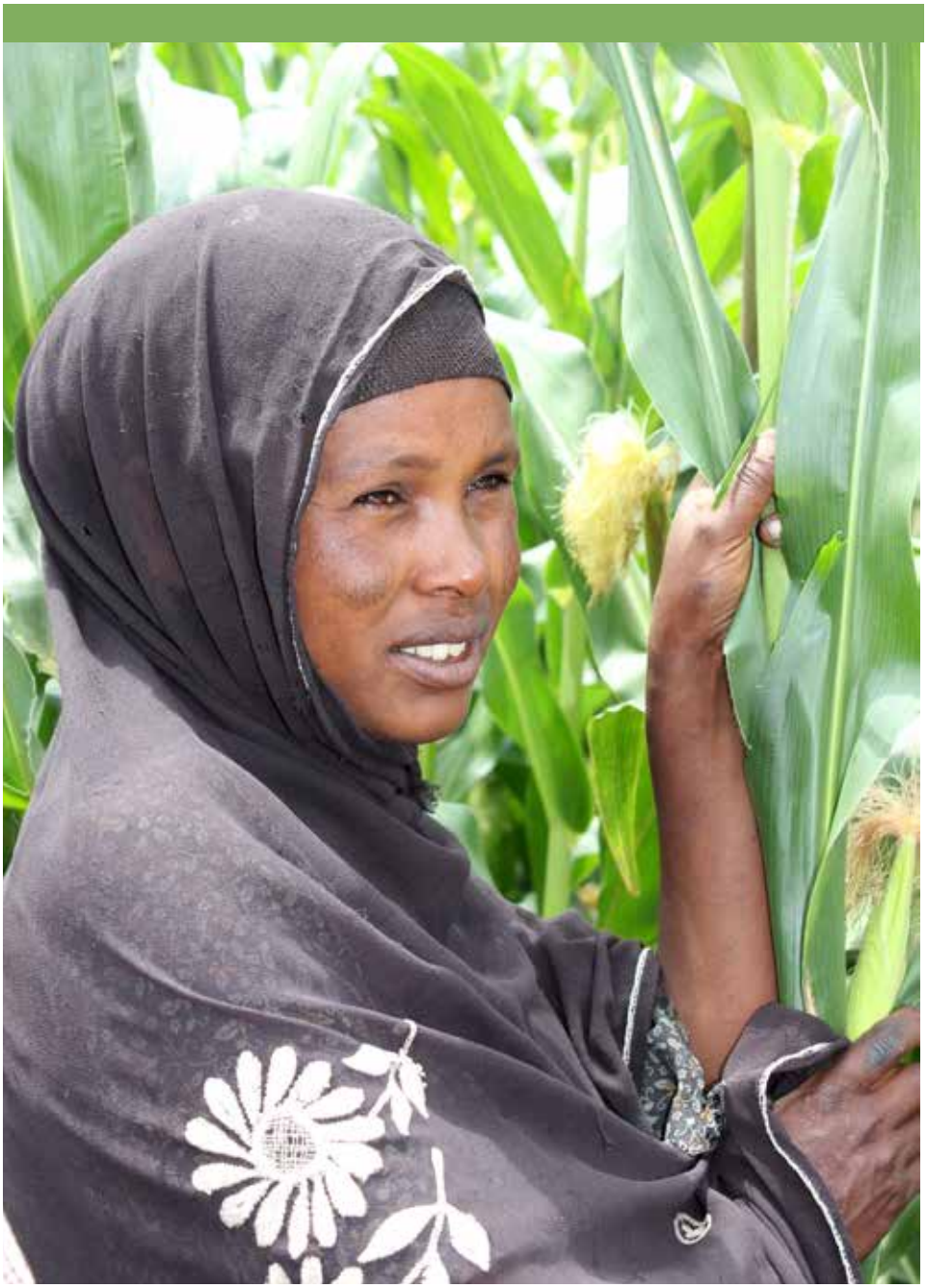

Photo: Sally Ingleton

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SIMLESA - improving productivity, resilience and sustainability

Demand for maize and legumes is projected to increase substantially over the next 10 years. The SIMLESA program aims to sustainably intensify rainfed maize-legume cropping systems in east and southern Africa while reducing yield variability. Underpinning this is a focus on conservation agriculture technologies that can boost yields, make efficient use of inputs and reduce risk, such as, seasonable variability in production.

The goal of SIMLESA is to improve maize and legume productivity by 30% and to reduce the expected downside yield risk by 30% on approximately 650,000 farms by 2023, in Ethiopia, Kenya, Tanzania, Malawi and Mozambique.

At the farm level, SIMLESA promotes the use of adapted maize-legume varieties together with comprehensive adaptable conservation agriculture packages, including improved seeds, fertilisers and herbicides, and best practices, such as water harvesting, soil conservation and intercropping.

SIMLESA takes an integrated approach to farming including consideration of: market access, business partnerships and local trade aspects. This is necessary to ensure the scaling-out of technological innovations is supported by a functioning supply of necessary inputs, effective knowledge dissemination and produce marketing.

Comparable activities are conducted by SIMLESA in each of the five partner countries. These combine participatory research and follow-on development with farmers, extension agencies, NGOs, universities and agribusiness right across value chains. NARS and other existing networks have an important role in fostering spillovers of improved crop systems management practices, knowledge and germplasm to other countries in the east, central and southern Africa regions.

Highlights from five years of SIMLESA

1. Better understanding of current maize-legume production systems and value chains

- Baseline surveys of maize-pigeon pea, maize-beans, maize-groundnuts, and maize-soybean cropping systems of 4,600 randomly selected households from 580 villages in 38 districts, in two agro-ecological zones in each of the five partner country
- Community-level data has been collected to provide a broader socioeconomic context in the 15 integrated research sites
- Analysis of seed supply systems in each country, and the development of seed road maps with private sector
- Draft farm typologies developed for Tanzania and Kenya.

2. More productive, resilient and sustainable maize-legume systems that can be upscaled

- A total of 230 on-farm trials, or 50 each year, and 22 on-station trials in the five countries. These involve farmers, extension agents, NGOs, universities and agribusinesses in trialling new technologies
- Drought-tolerant maize hybrids are yielding 30-40% more under drought conditions and 20-25% more under optimum conditions
- 43 hybrids and open-pollinated varieties (OPVs) identified for various SIMLESA integrated research sites across the five countries
- Farmer-to-farmer exchange of ideas and community awareness building through 19 field days, attended by 5,948 participants
- 56 innovation platforms established in five countries to help farmer groups and partners exchange experiences and share knowledge, as local for farmers, extension, research and local businesses
- SIMLESA meetings attended by all stakeholders, ACIAR commissioners and participants from spillover countries.

3. Better access by smallholders to maize and legume varieties

- Majority of farmers in the target areas now using 'best bet' maize, legume and forage varieties
- Strong stakeholder involvement in on-farm and on-station participatory varietal selection (PVS) trials, including private seed companies, fertiliser companies, input dealers, local authorities and extension officers
- Forage PVS trials conducted in Ethiopia and a number of varieties evaluated
- Seed road maps developed for each partner country with the active participation of local private and public partners.

- Numerous seed growers effectively implementing seed road maps for varieties selected by SIMLESA and delivering improved seed to farmers
- 50 sets of regional trials and mother baby trials (MBT) established in collaboration with 10 active partner institutions
- Supply by ICRISAT of 104 medium-, 245 long-, and 37 short-duration pigeon pea varieties to Kenya, Malawi, Tanzania and Mozambique.

4. Supporting regional and local innovation and upscaling

- More than 42 seed companies involved in scaling up identified products, most of which are small to medium enterprises
- Technology inventory, knowledge transfers and spillover-enabling conditions study completed
- Ministerial policy statement from 5 Ministers in the region supporting SIMLESA and the scalability of its technologies.

5. Capacity development

- Hundreds of NARS researchers participated in capacity building activities related to biometry, conservation agriculture principles, soil science and innovation platforms includinf:
    - 23 NARS scientists participated in training on monitoring and evaluation framework development
    - 16 SIMLESA researchers participated in the APSIM modelling training work shop
    - Gender mainstreaming training in Tanzania
    - Six PhD candidates awarded AusAID and ACIAR scholarships, 30 candidates enrolled for MSc and three for PhD in local universities under SIMLESA
    - Five NARS and two ASARECA scientists attended a SIMLESA/ACIAR monitoring and evaluation and impact assessment workshop.

Photos: John Dixson

Partners

Collaborators:

International Livestock Research Institute (ILRI); Ethiopian Institute of Agricultural Research (EIAR); Kenya Agricultural Research Institute (KARI); Agricultural Research and Technical Services (DARTS), Ministry of Agriculture and Food Security, Malawi; Instituto de Investigacao Agraria de Mozambique (IIAM), Mozambique; and Ministry of Agriculture and Food Security (ARS), Tanzania.

Additional partners:

International Center for Research for the Semi-Arid Tropics (ICRISAT); International Center for Tropical Agriculture (CIAT); Agricultural Research Council of South Africa (ARC RSA); Department of Employment, Economic Development and Innovation, Queensland; and Murdoch University, Western Australia; Association for Strengthening Agricultural Research in East and Central Africa (ASARECA).

Photo: Anne Wangalachi-CIMMYT

Photo: Sally Ingleton

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