



Pulses in Systems: SIMLESA

Sustainable intensification of maize-legume systems for Food Security in eastern and southern Africa



A major farming systems project for Africa funded by ACIAR (2009-2018)

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Presentation adapted from slides kindly made available by Dr Mulugetta Mekuria, CIMMYT, Harare

Where are the target countries ?

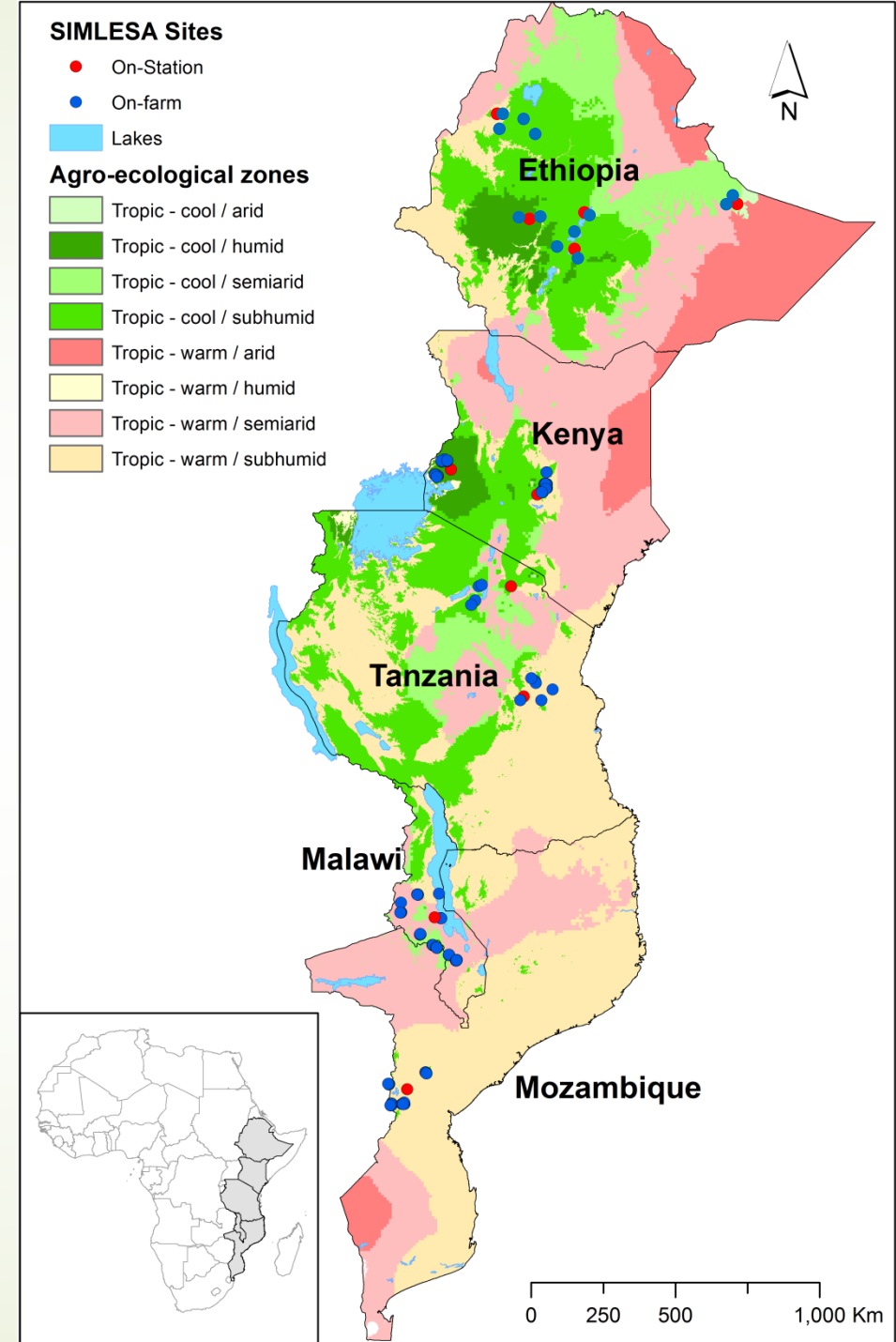
Major maize growing agro-ecologies across 5 core countries:

- Ethiopia
- Kenya
- Tanzania
- Malawi
- Mozambique

Plus lean activities in 3 spillover countries

- Botswana
- Rwanda
- Uganda

Partners include the NARs and the CGIAR (CIMMYT, ILRI, CIAT)
QAAFI is the main Australian partner agency. Project is coordinated by CIMMYT.



Sustainable Intensification

Intensification

- **Increased yield** or **outputs per unit area/inputs** (Enhance productivity)
- **Diversification** from maize for diet diversification and improved incomes
- **Integration** of crops & livestock
- **Improved resilience** to market shocks and climate risks
- **Improved efficiency** per unit input eg water, labour, capital, inputs

Sustainability

- **Conserve the natural resource base** (Godfray et al., 2010; Pretty et al., 2011; Tilman et al., 2011)
- **Ecologically and technically sound** eg soil quality degradation through erosion, fertility decline
- **Socially and Culturally acceptable** (Do the technologies fit local farming systems?)
- **Economically viable** (does it make economic sense?)

Improved food security and livelihoods

System integration: Diversification through Cereal (Maize)-Legume and livestock integration

- Increase **soil fertility**
- Improved **nutrition**
- Supply **cash**

Cereal (Maize)

- Increased productivity
 - Ensured food security
 - Income security

- Increase productivity
- Increase profitability
- Reduce down side risk

PULSES

- Increase **soil fertility**
- Improved **nutrition**
- Supply **cash**

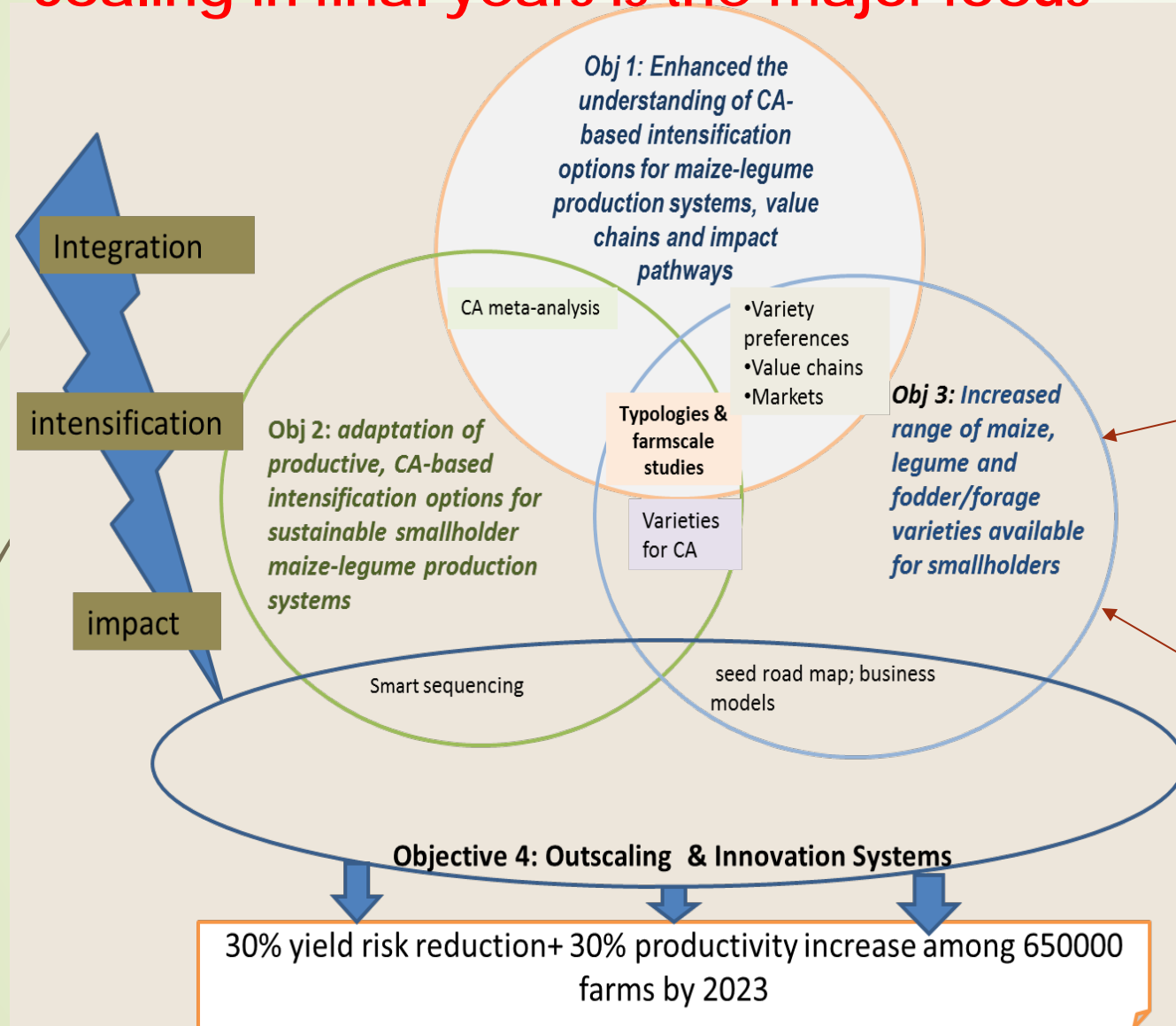
Forage

- Alternative of cattle feeding (residue management)
- Improved animal **nutrition**

SIMLESA-2: 2014-2018

Increased focus on sustainable intensification, integration and impact.

Scaling in final years is the major focus



- Integration across objectives
- Crop-livestock integration
- Greater focus on interactions among varieties and CA-based technologies: incl. intercropping , disease, drought and N-stress tolerance,
- Farm scale studies

➤ 43 maize varieties across all countries selected and their accelerated

➤ 50 legume (pulse) varieties across all countries selected and availability accelerated:

- ❖ Groundnuts
- ❖ Beans
- ❖ Cowpeas
- ❖ Pigeon peas
- ❖ Soybeans

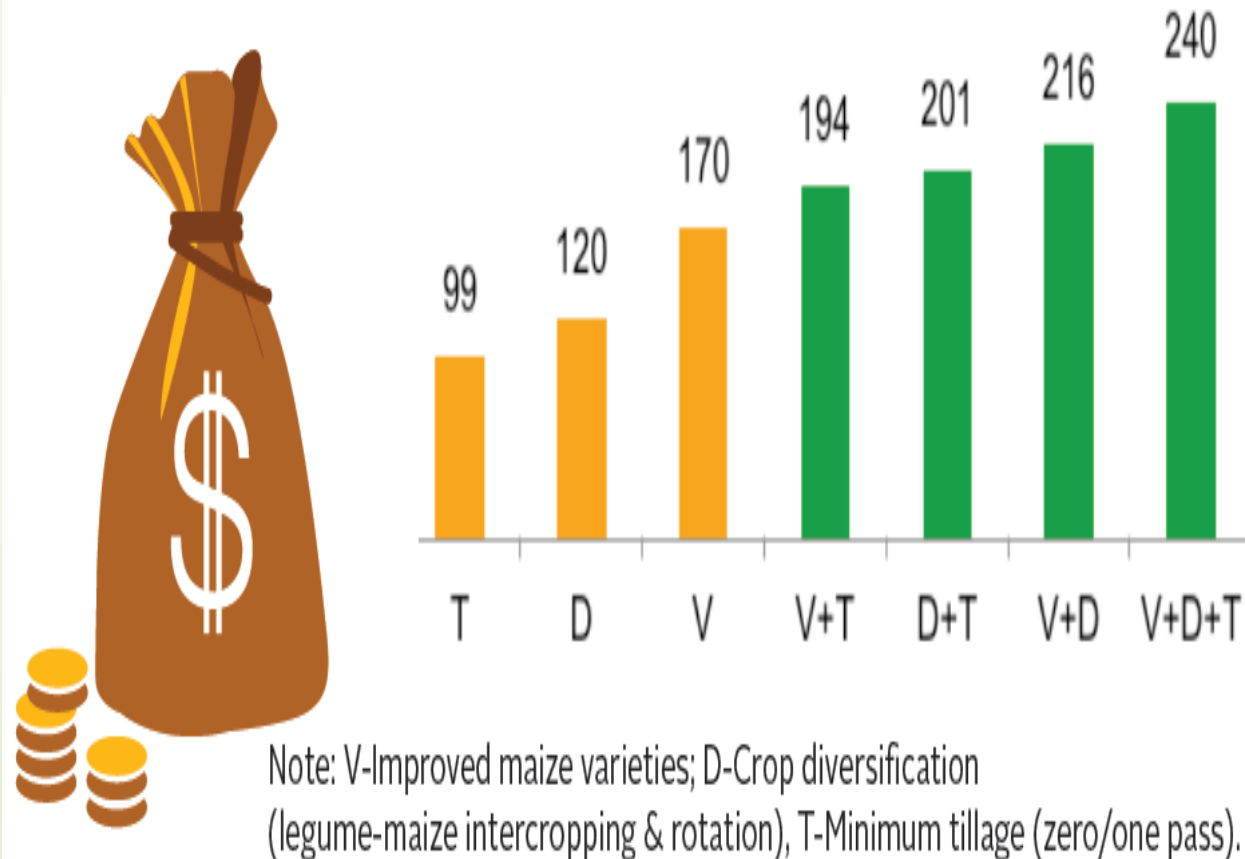


Role of QAAFI (Queensland Alliance of Agriculture and Food Innovation)

- ▶ Modeling of typologies of households to determine who might be able to adopt technologies, and lead change in practice
- ▶ Crop modeling especially implications of new farming systems practices and efficient use of nitrogen and water
- ▶ Provision of the key modelling tool (APSIM and derivatives such as APSFarm)
- ▶ QAAFI researchers based in Harare and Addis Ababa

Maximum impact through adoption of suites of technologies

Additional income from adoption of multiple Sustainable Intensification Practices (SIP) in Ethiopia [in USD/ha]



Capacity building: to increase the efficiency of agricultural research today and in the future

Central to SIMLESA

1. Long term academic support of NARs young scientists
 - A total of 65 SIMLESA (42 MSc and 23 PhD) students were supported
2. Short term trainings were carried out mainly by CIMMYT, QAAFI, ARC and ASARECA –
Seed systems, research management extension and scaling out and M&E
- 3 -Farmer trainings e.g. field days, exchange visits, field tours, field visits



Thank You

