For several decades the United States Agency for International Development (USAID) has been an important partner for the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) towards improving agricultural productivity and livelihoods of smallholder farmers in Asia and sub-Saharan Africa.

The Africa Research in Sustainable Intensification for the Next Generation (Africa RISING), part of the US Government’s Feed the Future research program, works to improve the productivity and environmental, economic and nutritional impacts of crop-tree-livestock systems in key production systems in six countries. ICRISAT is the lead implementing partner for the project: Africa RISING’s Large-scale Diffusion of Technologies for Sorghum and Millet Systems - ARDT-SMS project in Mali. A few highlights in its first year of implementation:

- **30,994 farmers** have applied new technologies on **13,847 hectares**
- 84 private enterprises, producers’ organizations, women’s groups, trade and business associations and community-based organizations (CBOs) **received assistance**;
- **12,150 individuals** received training
Projects

ICRISAT is working on several projects within the Africa RISING program and receives direct and indirect funding from USAID for this and other projects.

Africa RISING: Large-scale diffusion of technologies for sorghum and millet systems (ARDT_SMS)

Grant Period: 2014-2017
Principal Investigator: John Rusagara Nzungize

The goals of the project are to increase the incomes of sorghum and pearl millet producers in targeted Feed the Future intervention areas by raising the productivity and profitability of these principal cereals. The project will focus on diffusion of technologies of proven efficacy for enhancing sorghum and pearl millet production systems under the realities of Malian farmers’ conditions (environmental, economic and social).

Africa RISING: Sustainable Intensification of Key Farming Systems in the Sudano-Sahelian Zone of West Africa

Grant Period: 2014-2016
Principal Investigator: Birhanu Zemadim Birhanu

This project aims at facilitating the establishment of district level research-for-development platforms that recognize the multifaceted challenges of rural development and invites knowledge and actions of all stakeholders in the agricultural system in Ghana and Mali. This will be done by promoting the establishment of physical forums to facilitate interactions, and knowledge sharing among stakeholders selected from a commodity and a system value chain; leading to participatory diagnosis of challenges, joint exploration of opportunities and investigation of solutions. Key livestock value chains will be characterized, and feed markets surveyed. Cost-benefit analysis of promising interventions will be conducted and farmers linked to markets.

Disseminating learning agenda on resilient-smart technologies to improve the adaptive capacity of smallholder farmers in the Mopti region (part of a USAID program titled “USAID-Mali Accelerated Economic Growth Add-On”)

Principal Investigator: Birhanu Zemadim Birhanu

This is the first Climate Change Adaptation program financed by USAID in Mali to implement ground based resilient-smart technologies.

Specific objectives of the project are:

1. Development of innovative solutions to set stage for long term impact:
   a. Participatory planning and implementation of integrated adaptive practices
   b. Production and dissemination of high quality climate information
   c. Accelerating climate change adaptation process through identifying social and cultural barriers to adoption, and identifying critical issues of marginalized population, women and youth.

2. Development of learning agenda:
   a. Tackling the issue of weak capacity of local partners to implement the action research and the mechanisms to upscale proven successful options
   b. Establishing mechanisms for downward communication with farmers
   c. Diagnosing opportunities and constraints; what works where? And why some practices work in some areas and not in others?
   d. Developing tools and approaches to empower climate change adaptation actors for the definition of priority investment needs.

Intensification of maize-legume based systems in the semi-arid areas of Tanzania (Kongwa and Kiteto districts) to increase farm productivity and improve farming natural resource base

Grant Period: 2013-2015
Principal Investigator: Patrick Okori
Climate-smart farming

Ms. Samassa has been trained to read a rain-gauge and has one installed in her compound in the village of Madina-Kouroulamini in Mali. She now has access to vital weather information that she shares with her neighbors. The information she disseminates plays a crucial role in planning farming activities in her local community. This initiative is a step towards climate-smart farming, giving the farmers the necessary resources to plan their cropping practices depending on the seasonal weather forecasts in their local area. Research indicates that farmers gain from strategically choosing the right crops to suit the expected rainfall pattern rather than sticking to regular cropping practices and fixed sowing dates.

The aim of this project is to provide a scientific basis for sustainably intensifying agricultural production in semi-arid areas of central Tanzania. The project will implement activities packaged under 4 thematic areas that address three critical elements of sustainable intensification, ie, genetic, ecological and socio-economic intensification technologies.

**Strengthening partnerships for innovation in beans, groundnuts and sesame research and technology transfer in Mozambique**

**Grant Period:** 2011-2015  
**Principal Investigator:** Moses Siambi

**Reseeding Malawi’s Smallholder Agriculture**

**Grant Period:** 2014-2018  
**Principal Investigator:** Patrick Okori

The focus of this project is to strengthen technology delivery in Malawi with specific attention to Balaka, Dedza, Lilongwe rural, Machinga, Mchinji, Mangochi and Ntcheu, districts in the USAID-Malawi zones of influence (ZOI). Four components implemented by CIP, CIMMYT, IITA and ICRISAT, each focusing on the same or different types of agricultural innovations will be addressed over the next 3-4 years in the seven selected districts.

**Seed Scaling: Groundnut in West Africa (Increasing groundnut productivity of smallholder farmers in Ghana, Mali, Nigeria)**

**Grant Period:** 2014-2018  
**Principal Investigator:** D Hailemichael Shewayrga

This project aims at enhancing the technology dissemination efforts by reaching more smallholder farmers with large scale diffusion strategies for larger impacts mainly in USAID Feed the Future target areas.

The projects will contribute to the achievement of the two Feed the Future goals: ‘Reduce the prevalence of poverty and Reduce the prevalence of stunting in children under 5 years old’ in the target areas.

**Pigeonpea improvement using molecular breeding (Pigeonpea Activity – India)**

**Grant Period:** 2012-2015  
**Principal Investigator:** Rajeev K Varshney

This project is aimed at utilizing the new genomics and molecular breeding approaches such as nested association mapping (NAM) and genome-wide association study (GWAS) for mapping genetic diversity of economically important traits in pigeonpea. In addition, new populations like multi-parents advanced generation inter-cross (MAGIC) and introgression libraries (ILs) will be developed in pigeonpea for enhancing genetic diversity in cultivated gene pool from landraces and wild species.

**Development of Abiotic Stress Tolerant Millet for Africa and South Asia**

**Grant Period:** 2012-2016  
**Principal Investigator:** Vincent Vadez

This is a four-year collaborative research program to develop millet lines for South Asia and Africa that are more tolerant to abiotic stress, including heat and drought. The objective of the project is to demonstrate proof of concept in the field of a technical strategy for pyramiding both transgenic and naturally occurring variation in stress tolerance in pearl millet.

**Advancing the productivity frontier for sorghum**

**Grant Period:** 2013-2018  
**Principal Investigator:** Santosh P Deshpande

The two broad goals of this project are:

1. Advancing the productivity frontier through improved drought and heat tolerance of sorghum.
2. Transforming production systems to reverse losses of ecological capital through multiple crops from single plantings of sorghum.
Programme d’Appui à la Sécurité Alimentaire des Ménages-Tanadin Abincin Iyali (PASAM-TAI) (Support Program for Household Food Security, Tanadin Abincin Iyali)

Grant Period: 2013-2015
Principal Investigator: Dougbedji Fatondji

CRS will use donated commodities and any funds provided by USAID to implement a program that aims to reduce food insecurity and malnutrition among vulnerable rural populations in Niger.

ENSURE Food Security Program

Grant Period: 2014-2018
Principal Investigator: Andre van Rooyen

ICRISAT’s activities under this project include: Post-harvest management; Adaptive research trials for new appropriate varieties; Setting up demonstration plots for the different farming techniques on agro-ecosystem management practices; Methodology development, monitoring of the demonstration sites and information sharing for purposes of learning; and Capacity building of partners.

Moving forward

The ICRISAT Governing Board in September 2014 made a decision to boost its research in Sub-Saharan Africa (SSA) by investing US$ 5 million towards upgrading research infrastructure and building scientific skills on the African continent. This investment will be across SSA where ICRISAT has its offices and will focus on harnessing the required resources to further advance the productivity of smallholder agriculture in SSA for greater self-reliance and resilience, particularly in light of climate change, and for increased participation in the market economy. These new investments will provide greater opportunities for collaborative research and strengthen partnerships along the whole value chain.

ICRISAT is working on developing country strategies which are driven by the respective national priorities and building upon the work done by donors, NARS partners and other research agencies in that country. An intensive stakeholder engagement process drives the process of formulating these country strategies.

Photo: A Diama, ICRISAT