

Improving water productivity in crop-livestock farming systems in northern Ghana



A motorized pump used for small-scale vegetable irrigation in Upper East Ghana. Photo: P. Schmitter

The challenge

Smallholder farmers in northern Ghana face a number of challenges. Soil fertility is inherently low and in decline due to continuous cropping. Erratic rainfall patterns result in alternating floods and droughts, and there are limited small-scale irrigation technologies to bridge farmer family income and food security during 6-monthly dry season.

Some of these challenges could be addressed through better water management practices. For example, rainwater harvesting or sourcing groundwater through shallow wells for supplementary irrigation during the rainy season. This enables farmers in northern Ghana to increase the productivity of their crop and livestock farming systems. They can grow vegetables in the dry-season when they are in strong demand and the higher prices will provide important income for better livelihoods during the dry season.

How this project is addressing the challenge

The International Water Management Institute (IWMI) leads the research-for-development (R4D) component which is focused on improving water management strategies for sustainable crop-livestock production. The overall aim is to intensify cereal-legume-vegetable farming systems in the three regions of Ghana: Northern, Upper West and Upper East. Rice, sorghum, millet, cowpea, groundnut, soybean and, in particular, maize cropping systems dominate in these areas, with livestock providing an important additional source of food and income.

Research began in 2011 and is expected to be completed in 2016. IWMI, in collaboration with partners, is also promoting use of small-scale irrigation technologies in northern Ghana. The irrigation delivery technologies include water cans, tanks with hoses for overhead irrigation, and bucket-drip irrigation. Water lifting technologies include water cans, motorized pumps and solar pumps.

Research activities

Researchers from IWMI are working on the following three main activities; testing and recommending appropriate small-scale irrigation technologies for dry-season vegetable production, demonstrating water management practices for improving productivity in rain-fed crop-livestock production systems, and preparation and dissemination of evidence-based knowledge to those who can make the best use of it.

- Improved capacity and knowledge of graduate students and interns in irrigation management.
- Development of scientific papers for dissemination of novel finds on water management

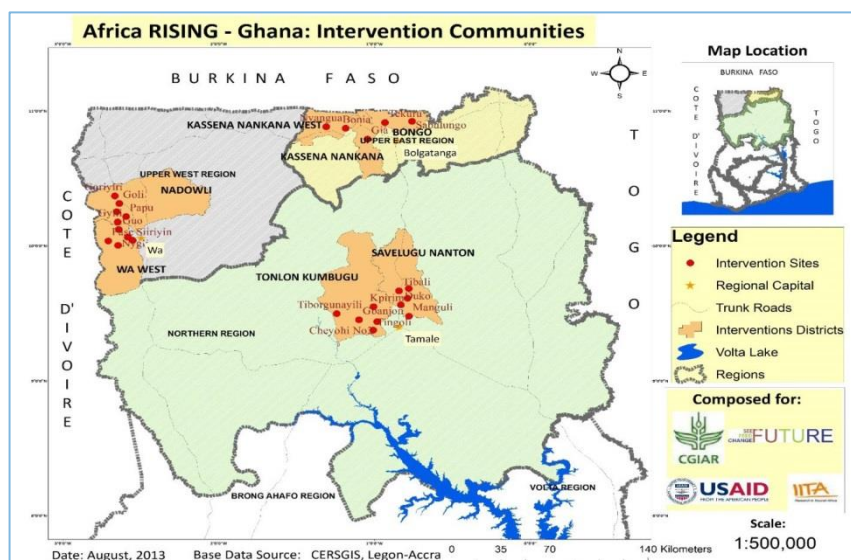
Expected outcomes

- Farmers get 10 to 20% higher crop yields as a result of improved irrigation management
- Increased household income by 10 to 30% from irrigated dry season vegetable production
- Improved water savings by 20 to 40% compared to traditional practices
- Improved knowledge of farmers and extension workers in irrigation water management and technical and investment analysis of irrigation technologies

Positive outcomes for local communities

Development outcome	Impact
Improved household income and nutrition	Dry-season irrigation offers farmers a diversification option; growing crops when there is no rainfall, and providing necessary additional cereals and vegetables for food and income.
Increased crop production	Irrigation technologies combined with improved water management practices lead to increased crop yields.

Africa RISING project sites in northern Ghana



The Africa Research In Sustainable Intensification for the Next Generation (Africa RISING) program comprises three research-for-development projects supported by the United States Agency for International Development as part of the U.S. government's Feed the Future initiative.

Through action research and development partnerships, Africa RISING will create opportunities for smallholder farm households to move out of hunger and poverty through sustainably intensified farming systems that improve food, nutrition, and income security, particularly for women and children, and conserve or enhance the natural resource base.

The three projects are led by the International Institute of Tropical Agriculture (in West Africa and East and Southern Africa) and the International Livestock Research Institute (in the Ethiopian Highlands). The International Food Policy Research Institute leads an associated project on monitoring, evaluation and impact assessment.

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