

Feed the Future Innovation Laboratory for Small Scale Irrigation (FtF-ILSSI)

Increasing the availability and efficiency of water use for agriculture is an important strategy for improving agricultural productivity in most Sub-Saharan African countries. Enhancing sustainable small scale irrigation, especially in the dry season, has major potential for both economic returns and improved family nutrition.

The **Feed the Future Innovation Laboratory for Small Scale Irrigation** (FTF-ILSSI) project is a central focal point of the USAID investment strategy to foster improved, efficient methods of supplying water to small holder farmers. FTF-ILSSI was begun in August 2013.



*A Ghanaian farmer irrigates her vegetable seedlings by hand, in Ada Foah
Photo: Thor Windham-Wright*

Through research the project aims to contribute to increasing food production, improving nutrition, accelerating economic development and protecting the environment.

The project team pursues these objectives in Ghana, Ethiopia and Tanzania by identifying, testing and demonstrating, and evaluating technological options in small-scale irrigation and irrigated fodder. Research is supported by ongoing dialogue with key stakeholders and capacity development.

FTF-ILSSI is funded by USAID and is led by Texas A&M University AgriLife Research, through the Norman Borlaug Institute for International Agriculture, in collaboration with the International Water Management Institute (IWMI), International Livestock Research Institute (ILRI), International Food Policy Research Institute (IFPRI) and North Carolina A&T State University.

The project involves stakeholder driven field studies to evaluate small scale irrigation (SSI) interventions and household surveys to assess the impact of SSI on nutrition, economic status and gender related issues. An integrated suite of analytical models, the Integrated Decision Support System (IDSS), is used to plan, evaluate, and interpret results from the field studies.

Field Research: Research in farmer's fields is underway in all three target countries. In Ethiopia, the second cropping season is underway; in Tanzania and Ghana, first year studies have been initiated. Multiple water delivery and distribution systems are being evaluated in collaboration with national university partners. Initial data on small scale irrigation systems have been acquired and are being used in modeling results at multiple levels of scale.

Household Surveys: Baseline household surveys involving groups of farming families living in the field research areas have been completed. These provide data on family nutrition, the economic status of the farming enterprise and gender aspects of small scale irrigation. The preliminary results of these initial studies have been presented in multiple international meetings. These studies will be followed by a second round of surveys to evaluate the impact of small scale irrigation at the household level.

Analysis: The IDSS is being used to assess the consequences of small scale irrigation interventions on production, and on environmental and economic outcomes. Initial model results have forecasted the availability of water and other natural resource inputs for citing small scale irrigation studies.

In the first quarter of year three, prior to field research, (ex ante) studies were completed examining the impact of alternative SSI technologies for the regions of all three countries where field research and household surveys are being conducted. National summaries have been completed for all three countries. These studies provide a quantitative and randomly determined (stochastic) estimate of the consequences of introducing a variety of small scale irrigation interventions.

Analyses, using field and survey research results (ex post), of the impact of SSI based on emerging field and survey data have been initiated and will be used in the second half of year three to provide quantitative estimates of the impact of constraints to adoption of SSI and options for mitigating them.

Capacity Development: Capacity development includes active training of farmers participating in field studies and other residents in surrounding areas. This training considers these audiences as practitioners of the ILSSI methods and includes development of supporting infrastructure such as microfinance and maintenance of irrigation and related equipment. Collaborators in partner universities have been trained in the use of household survey instruments. The latest training workshops for the IDSS were held in Ghana and Ethiopia in February 2016. Seventy one trainees were involved in the Ghana, and 104 in the Ethiopia, workshops (including 15 women overall). In Ethiopia, a follow on advanced IDSS training workshop was conducted as well as individual consultations with previous trainees who are now using the IDSS in their research. Graduate students and faculty members who are involved in field studies under their parent universities are being mentored in biophysical and economic research methods and in the use of the IDSS for analyzing the results of their field studies. 17 masters theses, that are directly related to these studies, were produced in the last year.

Collaboration with other FtF and related Programs: In Ethiopia, there is co-location at several sites and active collaboration with Africa RISING field studies and plans for applying the IDSS to Africa RISING results. ILSSI and the FtF Nutrition Innovation Laboratory, along with Bahir Dar University in Ethiopia were awarded a contract by the FtF Sustainable Intensification Laboratory to study the impact of sustainably intensified production systems on household nutrition. A pilot study was initiated with the FtF Horticulture Innovation Laboratory to apply the IDSS to the analysis of results from farm level studies in Uganda. ILSSI is collaborating with ILRI's Canadian government funded study on Livestock and Irrigation Value Chains for Ethiopian Smallholders (LIVES) in the application of the IDSS to field and survey results. Initial discussions are underway with the FtF Soybean Innovation Lab on collaboration to evaluate the IDSS in assessing the impact of their genetic research in Ghana.

For further information please visit the ILSSI website: <http://ilssi.tamu.edu>
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