



Mirimir

• ETHIOPIAN • INSTITUTE • OF • AGRICULTURAL • RESEARCH •

Combining Confidence and Research in Improving Water Productivity

We know that, like elsewhere in the world, our agriculture is facing impending water shortages that will complicate our national efforts to transformation. It is also clear that our agriculture is the largest water consuming economic activity. With this in mind, solving the problems associated with water scarcity in agriculture is an urgent matter. Business, as usual, is no longer an option.

Researchers and development partners often acknowledge that increasing crop water productivity is a key response option where water is scarce compared with land and other resources involved in agriculture. Researchers in this sector also recommend that improvements in agricultural water productivity, i.e., water productivity in crop, livestock, and aquaculture help meet rising demands for food.

Whenever the issue of water productivity in drier areas of our country is considered, there are several messages drawn from proponent policymakers, research managers, researchers, development partners, local governments, farmers, and pastoralists. The key messages include:

- Improvements in water productivity can effectively address food insecurity and poverty alleviation. Ethiopia has tremendous potential to improve water productivity through improved and known water management practices;
- Management practices that increase agricultural yields also improve water productivity. This is primarily achieved by reducing water losses on the farmer's field;
- The greatest potential to increase yields and water productivity is in areas where agricultural productivity is currently low;

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- Water productivity gains are also realized by non-water management interventions such as the choice of crop varieties, fertilizer, pest and weed management, timely operations and post harvest management
- Integrated water and land management at watershed scale improves water productivity and enables sustainable water resource management;
- Targeted policy actions can support integrated water and land management for improved water productivity;
- Capacity building and awareness are essential to manage water and land for water productivity gains, sustainable development, and poverty alleviation.

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To tackle such extraordinary and complex issues, Melkassa Research Center (MRC) of the Ethiopian Institute of Agricultural Research (EIAR) with the support of Association for Strengthening Agricultural Research in East and Central Africa (ASARECA) is implementing *Integrated Management of Water for Productivity and Livelihood Security under Variable and Changing Climatic Conditions* in Jogo-Gudedo-Kechema and Adulala-Goro-batu-Roge watersheds in the Central Rift Valley.



Field days were organized on 21 and 23 October 2011 to highlight research and development works conducted at Adulala-Goro-Batu-Roge watershed to ASARECA Executive Director, Director General of EIAR, extension agents, local authorities, and researchers.



Dr Seyfu Ketema, Executive Director of ASARECA, visited the project site and briefed on the progress of the work by the principal investigator of the project Mr. Habtamu Admassu. The Executive Director appreciated what has been achieved so far and suggested to expand the work and keep the momentum of the task by involving more farmers, extension agents and local authorities as well as actors from different business and development entities for more success in increasing crop yields by improving water productivity. He also appreciated the innovative platform approach followed in implementing the project.

Dr Solomon Assefa, Director General of EIAR, visited the project site and impressed by the work done promised to do more by protecting the environment and thereby improving water productivity using both conventional and modern approaches. He also suggested that there are large opportunities that are still possible in the management of other semi-arid rainfed areas. His major note was on the integration of agricultural research with improved natural resources within watersheds.

In implementing the project, the roles of the communities in the watershed are unprecedented instrument for our transformation endeavor or convention. The confidence of farmers as well as researchers has been boosted because of the manifested mobilization of the communities and the continuous support from agricultural bureau heads and development agents. This shows that it is possible to change the watershed, make it more productive, and bring about success in improving food security and reducing poverty in the watershed and beyond. We must also appreciate that the history of agricultural research is the history of our hope and determination.

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USAID Administrator Visits EIAR

On October 4, 2011, Dr Rajiv Shah, USAID Administrator and his team paid a visit to the Ethiopian Institute of Agricultural Research (EIAR) and met EIAR management staff at EIAR HQ hall. Key officials with the Administrator were the Ambassador to UN Agencies for Agriculture; Deputy Coordinator for Diplomacy of Feed the Future, Director and Deputy Director of USAID Ethiopia. The purpose of the visit was to discuss USAID-supported research projects in Ethiopia and future collaboration needs with EIAR researchers and management.

Dr Solomon Assefa, Director General of EIAR, presented the successes and challenges in the National Agricultural Research System (NARS) along the stipulated development need in the five year GTP. During his presentation he cited USAID supported interventions in the deployment of yellow rust resistant wheat variety and seed increase schemes. He mentioned that the intervention has helped the wheat industry survive, which would have been a big challenge for the Ethiopian food security efforts in major

wheat growing areas. The Director also included achievements in the development and adoption of chickpea technologies in major tef growing areas of the country. This effort has helped farmers increase their farm income, as farmers are now growing chickpeas for market without affecting their tef production. In line with this, efforts exerted through ICARDA were encouraging and have helped farmers gear towards market oriented production system and expanded export item for the country.

Farmers invited from wheat and chickpea growing areas witnessed the importance of working with research centers. Ato Beyene Taddese, a farmer from Arsi Zone, Hitosa Wereda, explained the potential danger of yellow rust disease on wheat which could lead to a total yield loss and result in food shortage. Ato Gebre Dadhi, a chickpea growing farmer from Ada'a Wereda explained to the team how research generated chickpea has helped increase their farm income in combination with tef, and affirmed current possibilities to produce export

standard chickpea that fetches better price even compared with tef. Due to the effort, farmers are promoted to double cropping pattern reducing their fertilizer cost with additional income from chickpea, he said.

The team also visited the Crop Quality Analysis Laboratory located at EIAR HQ. Dr Adefris Teklewold, Director of Crop Research Directorate briefed the Administrator and his team on current status and future visions in quality research and some important crops to be commercialized through enhanced capacity and better facilities.

Dr Rajiv explained the commitment of USAID to support the national agricultural development program through technology supply and adoption in package which will help Ethiopia outshine in the food security achievement in Africa.

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Improving Livelihoods through Integrated Crop-Livestock Systems

Melkassa Research Center (MRC) of the Ethiopian Institute of Agricultural Research (EIAR) is implementing a project on *Improving the Livelihood of Rural Community in Dry Areas*.

The project is technically supported by the International Center for Agricultural Research in Dry Areas (ICARDA) and funded by IFAD. The objective of the project is to improve people's living conditions and their access to agricultural technologies and services by integrating crop-livestock management for sustainable increase in productivity and rural income, and to reduce vulnerabilities to climate change. The implementation of the project on mixed enterprise was based on the grand assumption that local communities know what their needs are in terms of improved technologies.


On 4 November 2011, a field day was held at MRC to demonstrate the current activities and progress to the project. It was noted on the field day that this kind of project is the first of its kind in terms of design and application in Gedemso area of West Arsi Zone of the Oromiya Region. Since the first year of the project, 38 farmers are participating.

Benefiting farmers from the project stated that the project is supporting them by building their capacity to identify the most challenging production problems and to implement project

activities that help resolve those problems. They also boldly pointed out that the project pays particular attention to sustainability and maintenance of what it is meant to attain.

In recognition of the efforts on project implementers and the farmers, the Principal Investigator of the project Dr Tilahun Hordofa, declared that based on what has been recorded as success story, participating farmers will be doubled next season and more improved technologies will be included. The Country Director of ICARDA, Dr Geletu Bejiga, also promised to continue working with the communities by identifying more technologies suitable for the area and solicit them accordingly.

The Director of Soil and Water Research Directorate of EIAR, Dr Tolosa Debele, also reassured representatives of the communities that EIAR will continue providing technical support until the desired impacts are met.

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Travel Workshop for Joint Evaluation

Jima Research Center (JRC) is a federal research center mandated to coordinate coffee, spice and tea research in Ethiopia. A four-day travel workshop was organized from October 5 to 8, 2011 in Jima and Illuababor Zones to evaluate jointly ongoing research activities, to further popularize demonstrated and pre-scaled up recommended technologies and share the interim result of on farm research findings for wider dissemination in the near future.

Researchers, agricultural extension service partners, farmers and local administrators participated in the event. Eight Weredas and 16 sites were visited. Concluding discussions on how to accelerate the pace of technology dissemination were held at each site.

Ato Tesfu Kebede, coordinator of the event and representative of Soil and Water Research Directorate in JRC, briefly explained the different research activities conducted and the range of activities to be covered during the travel workshop. Some of the visited on-farm activities were lime application, Phosphorus (P) calibration, evaluation of blended fertilizer for micro nutrients, bio-fertilizer trials,

and application of effective micro-organisms (EMI) for compost making. Integrated nutrient management and watershed intervention were also among the activities visited.

Dr Tolosa Debele, Director of Soil and Water Directorate, briefly stated that the new strategy was adopted in the Process to conduct more than 90% of the activities on farmers' plots and nationally coordinated demand based research activities. He mentioned the case of fertilizer trials that are planned to produce recommendations that lead to soil-test and crop-response-based fertilizer application in the coming main production season. He underlined the need to use soil-test based application in countries like Ethiopia where fertilizer is imported on foreign currency. He explained the benefits of such endeavors as increasing efficiencies in resource use and improving profitability of farms.

Dr Tesfa Bogale, a senior researcher on cereal crops agronomy explained the results on alternative fertilizer for urea for southwestern and other parts of the country where rainfall is high and soil acidity is a problem. He explained that the impact of continuous urea

application in this region exacerbates soil acidity problem. To minimize soil acidity in the region, one fertilizer with slow nutrient release capacity was introduced, evaluated and recommended, he said. Dr Tesfa also explained that the indicative non significant results of Potassium application on test crops (maize and soybean) confirmed that potassium is not a production-limiting nutrient in the area.

Finally, a concluding discussion was held with the key stakeholders on scaling up activities and the use of research outputs. The initiative of the Center and the Soil and Water Research Process was highly acknowledged by the participants, and they confirmed their determination to take part in the scaling up of outputs and recommendations. The workshop was recognized as an innovative method for joint evaluation and sharing valuable comments for activities conducted on farmers' fields.

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Hopes in Dry Areas

In the face of the growing threat of climate change on the lives and livelihoods of people in poor countries, the pace of agricultural transformation and food security can only be realized through the use of science-based and modern agricultural technologies. Despite the existing negative and persistent perceptions towards the production potentials of arid and semi arid areas, livelihood improvement issues have got attention by respective governments and international research communities in Sub-Saharan Africa (SSA) and South Asian (SA) countries. Crops like sorghum and millet are termed as key in the aforementioned regions, playing a significant role in curbing food insecurity.

Though agriculture remains the mainstay of the economy for the majority of the countries in the Regions, it could not provide the desired source of livelihood to the expected level due to the recurrent drought compounded by climate changes. As a result, there has been a widening gap in food deficit and agriculture could not provide adequate raw materials for agro-industries that may contribute towards closing the balance of payment through growth in export. This perennial problem coupled with soaring global food price seems to have reached its climax, and several millions of people

in the SSA and SA at risk have become vulnerable and food insecure. For example droughts that have happened for decades in eastern Africa are most severe in sorghum and millet agro-ecologies. The high erosion and sharp decline in soil fertility coupled with weeds like striga and parthenium have become the major production constraints in sorghum and millet growing belts of Africa. Reliance on pro-poor development strategy of agricultural development with its fundamental focus on smallholder farmers' agriculture as critical entry point to transform agrarian economy is the approach.

ICRISAT and national agricultural research systems of respective countries of the Regions are jointly working on dryland targeted technology generation to address productivity gaps. The joint venture, which was launched two years ago, aims at harnessing opportunities and potentials for productivity enhancement (HOPE) for sorghum and millets in SSA and SA countries supported by Bill and Melinda Gates Foundation (B&MGF). The overall goal of the project is to solve the problems of hunger, malnutrition and food insecurity in developing countries through science-based solutions. The project started operating in 12 countries in the two continents including Ethiopia. Target intervention focus of the project was to enhance the productivity of sorghum, finger millet and pearl millet.

EIAR and ICRISAT co-hosted a Midterm Joint Project Review that was held in Ethiopia from October 12 to 15, 2011. The objective of the workshop was to review the project achievements in terms of the original strategy, showcase and strengthen partnerships in the implementation of project objectives. Review of the results and achievements made so far was expected to refocus the project agenda for greater effectiveness to meet the project objectives in the remaining project periods. The workshop was officially opened by H.E. Ato Wondirad Mandefro, State Minister of the Federal Ministry of Agriculture in Ethiopia. The need for increased intensification and wider adoption of agricultural technologies in dry areas was underlined by the State Minister. He cited the remarkable double-digit economic growth achieved in Ethiopia for the last eight consecutive years as feasible investment indicator to focus on smallholder agricultural as well. Dr Solomon Assefa, Director General of EIAR on his part stressed the need to give hopes for those who suffer from food insecurity and malnutrition, and make sure the availability of science-based solution to poverty reduction. He also stressed on the need for research agenda to be more practical and applicable, and to provide solutions to the millions of resource-poor farmers in the drier regions.

Scientists from all corners of the world and Project Managers from ICRISAT, B&MGF, and representatives of research institutes in respective countries were present on the meeting. At the end of the workshop all scientists travelled to visit farmers' plots and research station trials in Ethiopia, where they

observed sorghum and millet farms and discussed with farmers on the potential benefits of dryland-focused technologies generated so far in terms of addressing food deficit gaps. The encouraging results through improving

productivity of these selected dry area crops have an immense potential to halt food insecurity and poverty in the regions.

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