Ethiopia: forging ahead with breeding digitalization

17 April 2019, Addis Ababa, Ethiopia – The Ethiopian Institute of Agricultural Research (EIAR) is working diligently to integrate the latest technology for data digitalization across its breeding programs, starting with bean, sorghum and chickpea. A big push has now been given in this endeavor, with extensive work and training sessions with the Integrated Breeding Platform (IBP) for the deployment of its Breeding Management System (BMS), from 12-29 March, at various locations across the country.

A push for technology adoption

This work is set in the context of the MERCI project awarded in 2016 for the "Modernization of the Ethiopian Institute of Agricultural Research" by the Bill & Melinda Gates Foundation (BMGF), with technical advice provided by the Queensland Alliance for Agriculture and Food Innovation, of the University of Queensland in Australia (UQ). It is also driven by the spirit of partnership between EIAR and the IBP, which goes back to 2015 when technology adoption was first explored with bean breeders.

During the past few weeks, EIAR was able to establish a core focal team of expert technicians and users of the BMS to provide the first line of support at implementing centers in EIAR. The BMS has been successfully deployed for use in the first three breeding programs supported by the MERCI project (common bean, sorghum, chickpea). Discussions were also held to develop a project proposal to cover a second phase of deployment to remaining EIAR crops.

"The move to a connected database system not only secures our data, but will also allow people to work with the latest data from different locations – an important part of modernizing our breeding programs. In this view, EIAR management is working on a large infrastructure upgrade for ICT services to have most stations actively connected, and able to work off a central infrastructure from any location. Our breeding teams are to take this technological shift seriously, starting by using the BMS fully form the current season. The IT teams should keep up to speed so that they can provide the necessary support. I realize that change in working practices can bring some concerns, but I'm sure that we will soon be very pleased with the benefits that will come from it. I encourage everyone – the crop administrators and the IT support staff – to work as a team to help all users master the BMS and put it to good use," said Mr Mandefro Nigussie, Director of EIAR.

This view is shared by Dr Alemayehu Assefa, coordinator of the MERCI project, who assured participants in this month's workshops that: "EIAR Management is very serious about the deployment of the BMS," encouraging them to be equally serious in learning and forming an effective support group to take forward their respective crop programs.

Indeed, EIAR breeders had a full program ahead of them. After set-up in Addis Ababa on 12 March, a technical workshop was first held for the IT staff, and the crop administrators for bean, sorghum and chickpea, from 13-15 March. It was followed by a training workshop for the breeders from those same three crops – a group of 30 participants met from 18-20 March – where technicians of the first workshop were ready to help the new users. The team then transferred to Melkasa to set-up two LAN servers on the 21st, a solution chosen by EIAR and set up by the UQ team to facilitate team collaboration and sharing. Finally, adoption workshops were facilitated with the sorghum and bean breeders (16) in Melkasa, form 22 to 27 March, and with chickpea breeders (11) in Debre Zeit, on the 28 and 29 March.

Adoption workshop with bean, sorghum and chickpea breeders in Addis Ababa, 18-20 March. "We notice big improvements in this version of the BMS and we believe it will be very useful in our programs," said participants.

Mr. Assefa Funga (crop administrator for Chickpea), Mr. Kidanemaryam Wagaw (crop administrator for Sorghum) and Mr. Abel Moges (crop administrator for Common Bean), were not new to the BMS, having either attended previous workshops or using earlier versions to conduct some breeding tasks.

A technical training was held with IT staff, and the crop administrators for bean, sorghum and chickpea, on 13-15 March. Together they form a core focal team of expert technicians to provide the first line of support for the BMS at implementing centers in EIAR

At the end of the first technical workshop, they collectively expressed that they were quite interested in the new features presented to them, such as the new inventory management functionality, and noticing big improvements in the latest version (BMS v11). “This will surely be very useful for our programs,” confirms Mr Funga. For his part, Mr Gezahegn Tolosa, IT specialist and technical lead on the BMS deployment project expressed: “I am confident that the infrastructure and my support team will be able to provide the necessary technical backstopping for the BMS deployment, especially if the connectivity between research centers is to be improved”.

The larger picture

EIAR deals with a wide range of crops and collaborates intensively with other institutes, a wide range of agricultural research services including regional institutes and universities. The vision shared by the IBP and EIAR for breeding digitalization in Ethiopia is therefore to work with EIAR sequentially crop by crop, and expand to other institutes through their collaborations. The adoption would have a staged process, starting with MERCI project supported programs (common bean, chickpea, sorghum, wheat and maize) in the first phase, and continuing with the best-connected centers, with the most enthusiastic teams, in the second phase. Dr Taye Tadesse, Director of Crop Research at EIAR, supports this approach: “We appreciate the importance and positive impact of the BMS, firstly from the feedback of our researchers. We intend to adopt it further by scaling up its implementation to all the national commodities.”

In this view, several of the programs (5 crops and 8 programs) at EIAR have benefited from a modernization program over the past few years, through the MERCI project sponsored by BMGF. After this month’s work, these programs are now well on their way to fully integrate the technology and its attendant benefits into their practices. Once the programs who have received modernization resources, together with crops closely allied with those programs, are fully implemented, a second phase will be considered to cover the remaining crops and new centres not covered in MERCI. The IBP and EIAR are also exploring the possibility of establishing a Hub at EIAR to support further adoption of the BMS with other organizations in Ethiopia.

“Ultimately, what we are striving to do is to provide the tools, services, knowledge, resources and peer interactions that will enable breeders to save time and increase their accuracy in developing new varieties. This is especially important in Africa, where higher yields and more resilient crops will enhance food security and household incomes. Ethiopia is positioning itself as a trailblazer in this regard, and we’re confident we can achieve great impact there under the initiative and leadership of EIAR ,” concludes Dr Graham McLaren, IBP Global Deployment Manager.

About the Ethiopian Institute of Agricultural Research

The Ethiopian Institute of Agricultural Research is one of the oldest and largest agricultural research system in Africa, having evolved through several stages since its first initiation during the late 1940s. In 1966, it was established as the first nationally coordinated agricultural research system in Ethiopia, with a mission to formulate national agricultural research guidelines, coordinate the National Agricultural Research System, and undertake research in its centers and sub-centers located in various agroecological zones of Ethiopia. Its objectives are to generate, develop and adapt technologies for agricultural development; to coordinate research activities at the national level; to build up a research capacity and establish a system that will make agricultural research efficiently linked to development needs; and to popularize agricultural research results. EIAR aspires to see improved livelihood of all Ethiopians engaged in agriculture, agro-pastoralism, and pastoralism through market-competitive agricultural technologies. For more information visit: www.eiar.gov.et

About the MERCI project

Modernizing Ethiopian Research on Crop Improvement (MERCI) is a project funded by the Bill and Melinda Gates Foundation (BMGF) to support the breeding programs of targeted commodities, such as wheat, maize, sorghum, common bean and chickpea, to improve their optimal performance and effectiveness in breeding, and generate improved varieties of crops with important traits. The objective is to increase the rates of genetic gain and provide farmers with new crop varieties that respond to their felt needs. The application of advanced breeding techniques in EIAR in general, and in the national research programs in particular, will be an important area of focus to speed up the knowledge transfer and narrow the skill gaps in breeding activities. The project aligns with the national development and research agendas, including insuring food and nutrition security; satisfying the input requirements of agro-industries and the exportation market; and cross-cutting with issues of climate change and gender. In short, it aims to use full package research outputs to bridge the national crop yield gap. The Queensland Alliance for Agriculture and Food Innovation, of the University of Queensland in Australia, provides technical advice, training and support for the implementation of MERCI activities. For more information: Dr Alemayehu Assefa, alemayehuag@gmail.com.

About the Integrated Breeding Platform (IBP)

The Integrated Breeding Platform (IBP) is a not-for-profit entity whose mission is to help accelerate the delivery of new crop varieties, in the context of an increasing demand for food and unprecedented environmental challenges. It does so by providing IT tools, crop breeding services and training to breeders, especially those in developing countries, so that they may fully join in the global effort towards achieving food security in the context of climate change. We believe that access to the right tools and opportunities will help breeders achieve more efficiency in crop improvement, and therefore have a concrete and direct impact on their specific local environments. For more information visit: www.integratedbreeding.net

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