Training on Scaling of Climate-Smart Washera and Wollo Sheep Breed Improvement Program

Tesfaye Getachew | Berhanu Belay | Barbara Rischkowsky | Mulatu Dagnew | Asemu Tesfa | Aynalem Haile

Technical Report

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Accelerating Impacts of CGIAR Climate Research for Africa

Training on Scaling of Climate-Smart Washera and Wollo Sheep Breed Improvement Program

Training Report

Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA)

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About AICCRA

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Executive summary

The International Center for Agricultural Research in the Dry Areas (ICARDA), The Amhara Regional Agricultural Research Institute (ARARI), the Accelerating the Impact of CGIAR Climate Research in Africa (AICCRA), and the Amhara Livestock and Fisheries Resource Development Office organized a workshop that took place on May 29, 2023, in Bahir Dar Ethiopia. The main goals of the workshop were assessing the advancements of already running community-based breeding programs (CBBPs) and recently formed production Units (PUs) and training livestock development agents and extension workers on managing and establishing production unit sites. The training course was attended by livestock from 16 districts in the Wollo and Gojjam areas, universities, ARARI, and regional and district-level livestock offices. Dr. Likawent Yeheyis, Deputy Director General of ARARI, gave a welcome and opening address to kick off the session. Mulatu Dagnew from the Regional Livestock Office, Asemu Tesfa from the Andassa Research Center, and Tesfaye Getachew from ICARDA each gave a presentation following that. Presentations helped to understand the development and status of CBBPs and PUs, as well as helped to understand how to create and maintain PU sites and breeding tram utilization modality. In the WaWo scaling project, 4280 households in CBBPs and Pu sites have access to the climate-smart breeding program. The training was attended by 67 people in total, 17 of them were women.

Background

Five sheep breeds (Menz, Washera, Wollo, Farta, and Semien) and three goat breeds (Abergelle, Central Highland goat, and Bati) have community-based breeding programs in the Amhara region. In April 2022, the SAPLING CGIAR initiative launched the WaWo scaling effort for Washera and Wollo sheep. Two steering group meetings, which were established to facilitate WaWo scaling, were held to assess the process's progress and accelerate scaling. Many community-based breeding programs (CBBPs) and production units (PUs) have been established along the process, and at this time, there are 20 CBBPs and 6 PUs in Washera, and 11 CBBPs and 4 PUs in Wollo, all of which are available and being used by various partners. The key strategy for expanding the breeding program to reach a larger community has been the distribution of better sires from CBBPs to the PUs. Various institutions from universities (Injibara, Bahir Dar, Debre Markos, Wollo, Mekdela Amba), national research (Andassa and Debre Markos), development partners (water and Land Resource Center and Livestock and Fishery Sector Development Project), International Research (International Center for Agricultural Research in the Dry Areas and Accelerating CGIAR Climate Research in Africa), regional and district level livestock office and private partner (Yazerber animal production center) are participating in WaWo scaling initiative. Human capacity development is extremely important for the successful operation of the program. This training for livestock extension and development agents was organized to support the scaling up of the climate-wise Washera and Wollo sheep improvement program.

Objective

The objective of the training was;

- To evaluate the progress of the ongoing community-based breeding programs (CBBPs) and newly established production Units (PUs)
- To train livestock development agents and extension workers on managing and establishing production unit sites.

Opening remarks

Dr. Likawent Yeheyis, chair of the Washera Wollo (WaWo) sheep improvement steering committee and deputy director general of the Amhara Regional Agricultural Research Institute, welcomed everyone and gave the opening remarks. Dr. Likawnt stressed in his introduction that the Amhara region has enormous potential for sheep and goat production but that the community and the region have benefited less due to inadequate execution in breeding, management, nutrition, animal health, and market interventions. The WaWo scaling effort is now being executed with the participation of numerous stakeholders in the region, but this has to be enhanced and expanded to benefit a larger community in the region. The key forces behind the expansion of CBBPs are extension and development agents, so training that focuses on them is

critical and relevant. Finally, the DDG issued a directive urging full participation from all partners in the training and expressed his hope that it would be a success.

Figure 1. Dr. Likawent Yeheyis, DDG of ARARI, delivers the welcome address and opening statement.

Breeding program progress

Status of sheep and goat community-based breeding programs and production unit sites in the Amhara Region

A presentation was given by Mr. Mulatu Dagnew of the Amhara Regional Livestock and Fisheries Resource and Development office on the community-based breeding programs and production unit sites being used in the WaWo scaling project sites. The Amhara region's West Gojjam, East Gojjam, and Awi zone have all implemented Washera sheep breed improvement in seven districts (Senan, Sekela, Fagta, Banja, Semien Achefer, Yelmana Densa, and Machakel).

Improvements for Washera sheep have been put into place in 5 clusters. Cluster 1 includes Sekela, Fagta, Banja, and Dangila, cluster 2 includes Senan, Bibugn, Kuy, Bichena, and Debre Markos, Cluster 3: Semien Achefer (Kunzla), Debub Mecha (Debre Yakob), Semien Mecha (Brakat) and Bahir Dar Zuria, cluster 4: Denbecha, Machakel, Finote Selam and Burie and Cluster 5: Gonj Kolela, Yelmana Densa, Mota, Gunde Wein, and Adet.

The Washera sheep breed contains 20 CBBPs, with seven, four, two, four, and three being identified in clusters one to five, respectively. In clusters one and two, respectively, two and four production Units have been established. Injibara University, Andassa Research Center, Water and Land Resource Center, Bahir Dar University, and Debere Markos University have all administered CBBPs in partnership with ICARDA, the Regional Livestock Office, and other partners. In contrast, PUs are primarily the responsibility of the livestock office at various levels, working in partnership with the relevant universities and research organizations.

A total of 421 rams were disseminated as part of the Washera breed improvement initiative, and so far, 4474 improved lambs have been born from these rams. Around 2720 households have access to the breeding program in CBBPs and PUs.

Figure 2. Debre Markos University researcher spearheaded the conversation and raised awareness of CBBPs.

Figure 3. Beneficiaries in the Machakel district received pure Washera ram that Debre Markos University had acquired.

Wollo sheep improvement: Wollo sheep improvement has been carried out in two clusters, the first of which included Legambo, Dessie Zuria, Kutaber, Tenta, and Jamma Districts and focused

on crossing Wollo sheep with Awassi breed, and the second of which included Wereillu, Amhara Saynt, Wogdie, and Borana Districts. There are currently nine CBBPs in cluster 1 (crossbreeding cluster) and four CBBPs in cluster 2 (pure breeding).

In both clusters of the Wollo breed development initiative, there were roughly 1560 households with access to the breeding program. In Wollo crossbreeding and pure breeding clusters, 152 Awassi x Wollo crossbred and 55 pure Wollo rams were disseminated to users.

Figure 4. Awassi x Crossbred rams procured by Wollo University for dissemination.

Figure 5. Awassi x Crossbred rams procured by Mekdela Amba University for dissemination.

Figure 6. Discussions with beneficiary households in the Legambo district

Figure 7. Crossbred (left) and purebred (right) improved rams being distributed to farmers.

Strong points observed in the production unit

- Sheep breeders in WaWo sites are aware of the climate-smart community-based breeding program and have begun talking about how to advance in improving their sheep.
- Farmers have praised the fast growth, preferred coat color, morphological characteristics, and higher market prices of lambs born from improved breeding rams.
- It has been noted that CBBP is a topic of interest in the region and is spreading to numerous villages. For instance, the Washera area began in one district and has since grown to seven districts.
- A model CBBP village has been developed, and CBBP is now recognized as the primary method for improving small ruminant breeds and minimizing the impact of inbreeding.
- Negative selection reverted.
- Farmers were interested in breeding the best animals rather than selling them for meat.

Challenges in the production unit

- Scaling is delayed due to the internal conflict in the East Amhara region.
- Lack of revolving fund for breeding ram purchase.
- There is a lack of synergy between animal health, feeding, and home management in some of the production site villages,
- Limited size and capacity of CBBPs to meet the demand for better rams.
- Limited involvement of extension in the CBBP locations and poor partner integration.

Figure 8. Mulatu Dagnew, Amhara region livestock office presenting the status of sheep and goat production unit in Amhara Region.

Training for extension and development agents

The following subjects were covered in depth during training for extension and development agents. Tesfaye Getachew from ICARDA focused on teaching the fundamental principles of animal breeding, the beginning of Ethiopia's community-based breeding program and its early successes, the scaling approach, and factors to be considered when setting up production unit sites, and Asemu Tesfa from the Andassa Livestock Research Center taught the breeding ram utilization modalities.

Overview of community-based breeding program in Ethiopia

Basic concepts of animal breeding

The trainee was educated on the fundamentals of animal breeding. Trainees know that breeding objective traits can be improved through genetic improvement, which involves choosing the flock's best animals based on their genetic merit and mating them with other best individuals. In Ethiopia, genetic improvement in sheep and goats began in the 1940s by importing superior breeds from overseas. The strategy was to distribute crossbred rams to the farmers while the government farms were in charge of multiplying and maintaining pure stock. In the 1970s, improvements to the government farm's local sheep and goat population were also started. Due to expensive startup and operating costs, an objective mismatch, a disease outbreak on government farms, poor adaptation of exotic animals, and a subpar improved ram dissemination plan, both techniques were unsuccessful.

Initiation of CBBPs

The trainee was informed that the community-based breeding program was introduced in Ethiopia's Menz, Afar, Horro, and Bonga sheep breeds in 2009 as an alternative breeding strategy. This project aimed to provide a framework for genetic improvement that can be duplicated both inside and outside of Ethiopia, as well as improve the livelihoods of resource-poor farmers. A community-based breeding program allows for the utilization and advancement of indigenous knowledge while ensuring community ownership. Communities play a significant role in designing and implementing the breeding program's components.

Success of CBBPs

The trainees were given examples to help them understand the success of the community-based breeding initiative. The following were some of the accomplishments and lessons learned from the pat's more than 12 years of experience:

- Significant genetic advancement has been made.
- CBBPs have been advantageous to participating communities in increased income (on average 20%) from CBBP in Bonga, Horro, and Menz, and more mutton is consumed on average (three instead of one) in Bonga, Horro, and Menz.
- CBBPs are among the finest options for improving the genetics of small ruminants. It is relatively less expensive, takes a shorter time to reach the community, has less disease risk, permits research, and allows animal development that fits farmers' situations.
- Sheep and goats are becoming the main activities (more focus by the government, NGOs, and other partners).
- Establishment and expansion of breeder cooperatives.
- Partners' participation is essential for success (extension and cooperative office, for example).
- CBBP villages act as learning sites and as a model for other interventions and research.
- Genetic resources identified and characterized.
- A digital genetic platform has been developed.
- Low-cost and mobile field solutions for AI developed and the technology appreciated by the community.

CBBP expansion and scaling framework

There are currently more than 150 sheep and goat CBBPs (Figure 9) accessible in Ethiopia alone due to the success of the first six CBBPs on Menz, Bonga, and Horro sheep breeds. CBBP's primary goal is to produce improved rams that are distributed to the local community for breed improvement.

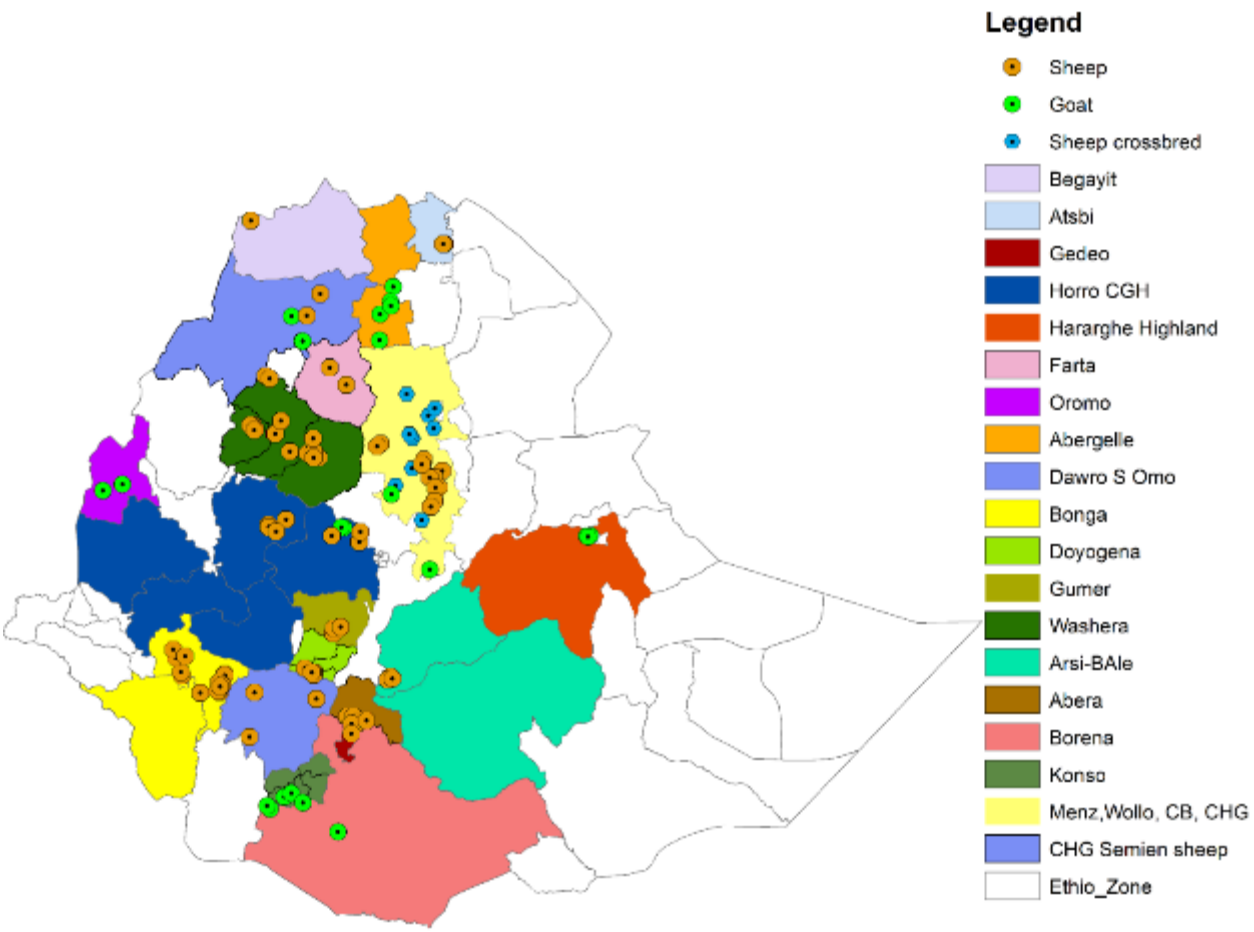

Figure 9. Sheep and goat climate-smart community-based breeding sites in Ethiopia.

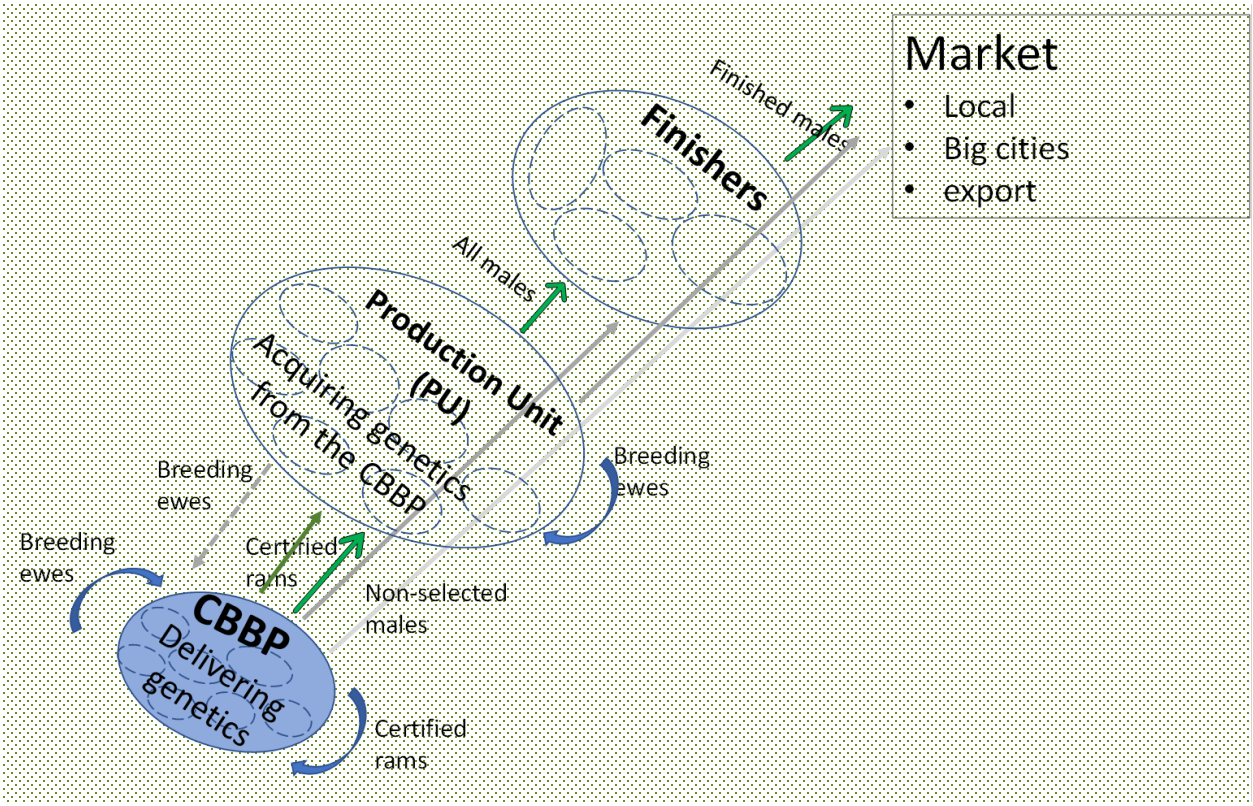

Figure 10. Scaling framework for sheep and goat community-based breeding program.

Scaling framework

Community-based breeding programs (CBBP), production units (PU), finishers, and end markets (consumers) are the four primary parts of the scaling framework (Figure 10). The farmers involved in the CBBP breeder cooperative primarily produce improved rams and provide improved sires for the production unit. The CBBP is the site of meticulous data collecting, genetic evaluation, and sire certification. Universities and research facilities mostly undertook the management of CBBPs. Farmers who participate in PU have formed themselves as producer cooperatives and always purchase improved sire from CBBPs. Male lambs raised in the production unit are either sold straight to the meat consumer or given to the fattener group. In the third component, Youth, women, or other groups organized themselves to engage in fattening by collecting male animals from PU and/or non-selected animals from CBBPs. The primary duty of livestock extension should be to establish and manage the PU, assist fatteners, and establish market ties between CBBP, PU, fattener, and end users.

Steps in establishing production unit sites

The trainee was also given an explanation of the steps involved in setting up a production unit. These steps include:

- Identify and secure locations for the PU with the full involvement of research, university, and extension partners.
- Be informed and engage in community dialogue. We must briefly discuss the significance of genetic enhancement with them and ascertain their interest in the program.
- Group farmers into a manageable size. Due to the less intense animal identification and registration, a PU may be twice as large as a CBBP, which consists of about 1000 breeding females.
- The establishment of mating groups. Farmers' desire to work together and willingness to share a breeding ram must be considered during group formation.
- Procure and allocation of sires to the group. The best option is to choose a sire from CBBPs who is suitable and certified. If this is not practicable, a technical committee of farmers, researchers, and extension agents can purchase superior rams from a local market.
- The procured sire is then distributed at random to each mating group. To prevent bias and conformity from farmers, use a lottery system.
- It is extremely important to monitor sire management and utilization. All sires must belong to the community so that the only committee can sell them once they have served their purpose and purchase replacement rams from the nearby CBBPs.
- The non-selected rams should be sold for meat, castrated, or isolated to prevent them from breeding once we have improved rams in the flock.
- The farmers group needs to be transformed into a formal producer cooperative in accordance with the instructions and suggestions provided by the cooperative office.
- It also needs to ensure that integrated feed, health, and market innovations are in place.
- Create market ties for livestock used for meat.
- Data collection and reporting is very crucial. This needs to be part of the main plan and reporting of the livestock development and extension office.
- Think of expanding production units to other districts, villages and farmers.
- Stay in touch with NGOs and other agriculture partners to explore funding and collaboration opportunities.
- Ensure proper documentation is in place and lessen the detrimental effects of staff turnover.
- Everyone working on the PU must be responsible and accountable for their work and properly transfer when the responsible individual is expected to leave his current position for any reason.

Figure 11. Tesfaye Getachew from ICARDA presents the fundamental factors to consider while establishing and implementing breeding in the production unit site.

Sire procurement and utilization modality

- Make certain that breeding rams come from CBBPs and have certificates stating their pedigree information, breeding value, breeding soundness, and vaccination for recognized reproductive disorders. University and research center researchers must arrange the data and prepare sire certificates for the users.
- Because improved rams are more expensive to purchase than meat animals due to their improved genetics and intensive data collection, we must ensure that breeding rams are used to their full potential.
- A breeding ram can serve for at least three years and roughly 30 breeding females in two months.
- Every year, a ram must be rotated among groups to reduce the level of inbreeding.
- For breeding rams to reach their full potential, proper feeding, health care, and other management are essential.
- When you notice any anomalies or health issues, report them to the committee or any responsible party.
- Limit the rams' needless movement.
- A technical group made up of farmers, extension agents, and researchers will be responsible for purchasing breeding rams.

- Ensure that rams are the community's property and that individual farmers are prohibited from selling or slaughtering rams without the technical committee's approval.
- Sharing rams among the group is mandatory.
- Ram rotation needs to be facilitated by a technical team.
- Ram users must sign the ram Management and Utilization Agreement form (Figure 13).
- After service, rams must be properly removed from the flock and replacement rams must be purchased from CBBPs.

Figure 12. Asemu Tesfa from the Adasssa Livestock Research Center presented on breeding rams.

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Figure 13. Breeding ram delivery and use agreement form.

Discussion and way forward

The following points were made from the discussion.

- Lack of synergy among partners was raised as main issue. Enhancing partner integration and communication was decided. When doing our duties for the community, it is always important to include partners at all levels.
- Using a community-based breeding program is recognized as a practical and affordable strategy by all partners to raise the productivity of small ruminants in the area. The trainees then consented to improve their dedication and pledged to share the knowledge they had learned with their office colleagues and farmers when they returned with that knowledge.
- A telegram group needs to be created or use the existing one to share information and knowledge.
- Accept the inclusion of a community-based breeding program in the livestock extension office's strategy and reporting.
- Developing and distributing standardized data collecting and reporting formats to all sites is necessary.
- Agreed to expand production units to other districts, making it imperative to knock on the doors of NGOs and other partners interested in agriculture to investigate funding and collaboration prospects.
- Integrating feeding, health and market innovations and establishing functional linkages between CBBPs, PUs, fatteners, and consumers is essential.
- Establishing and strengthening fattening cooperatives and producer and breeder cooperatives is crucial.

Meeting agenda

Agenda for the training on “Training on the scaling of the climate-smart Washera and Wollo sheep breed improvement program”, held on May 29 2023, ARARI, Bahir Dar, Ethiopia.

Date	**Activity**	**Time**	**Presenter**
May 29 2023	Registration	8:30	ARARI
	Program Introduction	9:00	Dr Getinet, Livestock Director, ARARI
	Opening and direction	9:10	Dr Likawent Yeheyis, DDG, ARARI
	Status of sheep and goat community-based breeding programs and production unit sites in Amhara Region	9:20	Mulatu Dagnew. Amhara Regio Livestock Office
	Coffee	10:30	ICARDA
	Overview of community-based breeding program in Ethiopia and considerations in establishing CBBPs and production unit sites	11:00	Tesfaye Getachew, ICARDA
	lunch	1:00 to 2:00	ICARDA
	Breeding ram utilization modality	2:00	Asemu Tesfa, Andassa Livestock Research Center
	Discussion and way forward	3:00	Berhanu, Tesfaye
	Coffee	3:30	
	Discussion and way forward	10:00	Berhanu, Tesfaye
	Closing	11:00	Dr Getinet, Livestock Director, ARARI

AICCRA
Accelerating Impacts of CGIAR Climate Research for Africa

About AICCRA

Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) is a project that helps deliver a climate-smart African future driven by science and innovation in agriculture.

It is led by the Alliance of Bioversity International and CIAT and supported by a grant from the International Development Association (IDA) of the World Bank.

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