Consultation workshop on Washera and Wollo sheep improvement In Amhara region: Summery Report

April 15, 2022

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1. Workshop background

Since 2009, the International Centre for Agricultural Research in the Dry Areas (ICARDA) in partnership with the International Livestock Research Institute (ILRI), the University of Natural Resources and Life Sciences (BOKU) and Ethiopian NARS has been implementing community-based breeding program (CBBP) in Ethiopia, to support the livelihood of smallholder farmers by improving the productivity of small ruminants through selective breeding. Since then, a remarkable progress has been made in improving the livelihood of small holders in different parts of the country. Currently, the CBBP initiative has been expanded to cover more than 10,000 households in Ethiopia. Generally, improved productivity, higher offtake, and higher annual income were recorded in those households participating in CBBPs. For example, an average genetic gain of 0.20kg per year for six-months weight and, and increased mutton consumption (from 1 sheep to 3 slaughtered/year/HH) were achieved in CBBP intervention areas.

ICARDA has been working on Menz sheep and Abergelle goat CBBPs improvement closely with the Amhara Regional Agricultural Research Institute (ARARI) and Amhara Region Bureau of Agriculture to transform small ruminant value chains in Amhara region and beyond. CBBPs is adapted by different institutions in the region and being expanded in many parts of the region. As an example, Washera sheep CBBPs and Wollo sheep improvement has been implemented by various institutions (different universities, research centers and the Ethiopian Biodiversity Institute). However, there is no a harmonized breeding objective, CBPP implementation modality and a clear roles and responsibility shared among stakeholders working in the region. Hence, bringing all institutions together and harmonizing the scattered efforts in Washera and Wollo sheep improvement is crucial to bring impact at scale. As part of the joint effort, ICARDA in collaboration with ARARI organized a two-day consultation and planning workshop in Bahir Dar at Unison Hotel from 14-15 April 2022.

2. **Objectives of the consultation workshop**

The specific objectives of the consultative workshop were,

i) Agree on the vision for Washera and Wollo sheep improvement, and map resource base of the two populations
ii) Design framework and agree on implementation modality of Washera and Wollo sheep improvement
iii) Agree broad roles and responsibilities and a calendar of key activities

A total of 25 participants (Annex IV), including high-level officials and experts drawn from governmental and non-governmental organizations were in attendance of the consultation workshop.

3. **Session I. Key messages from welcoming speech and opening remarks**

In line with the above objectives, a welcoming speech, opening remark and different technical presentations were delivered according to the provided workshop schedule. After a brief process introduction by Dr. Aynalem Haile, a welcoming speech was delivered by Dr. Barbara Rischkowsky from ICARDA. Dr. Barbara made a brief overview about the motivation and objectives of the consultation workshop, highlighted ICARDA's remarkable progress over the last 10 years on Ethiopia's small ruminant breed improvement through community-based breeding program (CBBP). Dr. Barbara pointed out that strong partnership was the key for effective implementation of CBBPs, in which various small holder farmers have been benefiting. And she has mentioned her expectation and conviction about the relevance of the consultative workshop which could pave the region's effective CBBP implementation in the future.

An official opening remark was delivered by Dr. Gashaw Muche, head of Livestock and fishery office, Bureau of Agriculture, Amhara Regional State. During his speech, the current opportunities and challenges in the livestock sector were highlighted and key messages on how to bring a practical change in the small ruminant sector were forwarded to the meeting participants.

Dr. Asrat Tera, Director General, Livestock Development Institute (LDI), Ministry of Agriculture (MoA), made a brief overview in line with the workshop. He mentioned the relevance of the consultative workshop, organized at critical time, where smallholder farmers are in need of our support. Dr. Asrat forwarded his suggestions that could be considered during the consultation meeting, these included:

- ❖ Possibilities to consider areas affected by the conflict in the region
- ❖ Practical way to improve livestock production and productivity. Red meat production (sheep and goat) is one of the priority commodities identified by MoA. How to maximize export earnings through red meat export
- ❖ Analyze clear roles and responsibilities among stakeholders
- ❖ Identify the role of the private sector in the livestock industry
- ❖ Identify best practices, experiences and models for future scaling up

4. Session II: Vision and the resource base of Wahsera and Wollo sheep in Amhara region

Following the welcoming and opening remarks, technical presentations were made on Washera and Wollo sheep breed improvement as follows,

4.1. Washera sheep: The resource, past and current breed improvement undertakings. by Dr. Likawent Yiheyis, livestock Director, ARARI

Dr. Likawent Yiheyis, highlighted the resource base, major constraints, current and past breed improvement undertakings by ARARI. He mentioned that Washera breed (Dangila/Agew) is one of the 14 indigenous sheep breeds in Ethiopia, predominantly found in East and West Gojjam and Awi Zone. Recent reports showed that the breed is found in some parts of Central Gondar (Alefa Takusa area), South Gondar, South and North Wollo Zones and Benishangul-Gumz region (Dangur and Mandura districts), pointing to the wide adaptation potential of the breed. According to CSA (2020/21), the current Washera population is estimated to be 3.2 million.

Feed shortage (shrinkage of grazing land), animal disease problem (lack of efficient/quality vet service), poor breeding practice (early age marketing (negative selection)), traditional culling practice, unhygienic docking and indiscriminate and unplanned marketing and moving of the breed to other places for production and crossbreeding purpose were/are the major constraints affecting the Washera breed improvement efforts.

❖ *Past undertakings*

The first Washera sheep breed improvement attempt focusing on on-farm monitoring activity was made by the Ex-Sheno Agricultural Research Center in collaboration with the Andassa Livestock Research Center (ALRC) at Quarit and Yelmana Densa districts using the village-based monitoring and breeding program. In parallel to this nucleus herd was also established at Adet town under on-station condition, but both efforts were not successful and on-station nucleus program was closed due to rampant disease incidences (Orf and foot-rot).

❖ *Current Washera sheep and other undertakings in the region*

Currently, different CBBP initiatives on Washera breed are implementing by the ARARI in Sekela district, Injibara University (in Fagita Lekoma, Awi Zone), Bahir Dar University (Bir Adama, YilmanaDensa Zone), Debre Markos University (around Debre Markos, East Gojam), Ethiopian Biodiversity (in Fageta Lekoma district, Awi Zone), Debre Markos Research Center in Senan District and in Kunzula watershed by the Water and Land Resources Center (WLRC). However, these initiatives are not well organized, implemented in a piece meal approach with no harmonized implementation modality, including on data collected, the breeding objectives and the target traits to be improved.

Another effort involving Washera breed is use of Washera breed to improve productivity of local sheep breeds in different areas of the region (North Gondar, South Wollo and North Wollo). Performance evaluation of pure Washera and Washera x Farta crossbreeding in South Gondar area showed that the yearling weight of pure Washers had highest weight (25 kg) followed by crossbreds and pure Farta with yearling weight of 22.5 and 20.0 kg, respectively.

In-collaboration with ICARDA and the ANRS Livestock Agency, ARARI has established and implementing different breeding programs in 32 villages in the regions (Table 1). The program has covered 35,934 of breeding stock, 32 cooperatives and 1795 participant farmers (Table 1).

Table 1: Current Washera Sheep Improvement Activities

No.	Program	District	No. of Cooperative/Village	Participants farmers	No. of Breeding stock	Certified Cooperatives
1	Menzsheep selective breeding	Menz Mama MenzGera	5	287	11800	3
2	Semien sheep selective breeding	Dabat Debark	4	364	5109	0
3	Washera sheep selective breeding	Sekela	1	106	650	0
4	Dorpersheep crossbreeding	Merehabete Shewarobit Ataye Efratagidim DebereBirhan Kobo	7	189	3114	0
5	Awassi sheep crossbreeding	Basonaworana DebereBirhan Akesta Gazo	4	155	4556	1
6	Begayit sheep crossbreeding	Abergelle	1	18	867	0
7	Central highland go selective breeding	Gondarzuria WestBelessa Kalu	5	510	3867	1
8	Abergelle goat selective breeding	Abergelle Ziquala Sekota	5	166	5971	2
	Total		32	1795	35934	7

❖ Constraints/challenges

Wahera breed has been widely disseminated to other areas of the region. Absence of planned and harmonized breeding program in the region expected to lead to the over exploitation of rams and can negatively affect the gene pool of the breed. The genetic improvement progress on the breed is so weak compared to other breeds, which necessitates urgent actions by all stakeholders and partners to come on board and work together.

4.2. Implementation of Wollo sheep improvement program: by Shanbel Besufkad, Debre Birhan Agricultural Research Center (DBARC), ARARI

Mr Shanbel Besufkad highlighted the resource base of Wollo sheep population and distribution, and the number of exotic sires distributed by DBARC as part of Wollo sheep breed improvement program. He mentioned the past and on-going undertakings on Wollo sheep improvement. According to CSA (2020), about 1.5 million sheep were found in South Wollo, of which crossbred sheep constitutes about 5%.

Mr. Shanbel mentioned that village based wollo sheep crossbreeding, based on Awassi sire, was established in 1998. Since then, a high grade Awassi rams were distributed to improve Wollo sheep. Farmers were organized into groups to facilitate ram sharing and rotation. More than 10,000 crossbred wollo sheep were produced by this initiative. Through crossbreeding of Wollo sheep with Awassi, more than 60% (from 22kg (local) to 35kg (crossbred)) yearling weight gain improvement was acheived. Besides, crossbred ones survived better when compared to local Wollo sheep breed.

Current and on-going breed improvement programs

Current initiatives to improve Wollo sheep breed are focused on crossbreeding using exotic Awassi breed and selective breeding using community-based breeding approach. Awassi x Wollo crossbreeding program is being implemented by DBARC and Mekdela Amba university. Four breeding cooperatives were established in selected target areas for crossbreeding. Baseline data were collected. Community-based breeding program targeting selective breeding is being implemented in Wereillu and Borena by the DBARC and Mekdela Amba University, respectively. Private ranches working on Awassi crossbreeding are available in Guguftu and working on Dorper and Awassi available in Jamma district (though all the animals in Jama were looted during the recent political instability).

4.3. Existing extension initiatives and plans for Washera and Wollo sheep breeds in Amhara region: by Mekuanint Damite, ANRS Livestock and Fishery Office, BoA

Mr. Mekuanint Damite has highlighted the region's small ruminant share and resource base, the existing sheep and goat breed improvement clusters. Mr. Mekuanint mentioned that his office has begun implementing the sheep and goat CBBP scaling out activity in 2011EC in eight (8) selected Zones and 13 Districts. According to his presentation, from 2011 to 2014 EC, a total of 12503 participants farmers were registered, 38 nucleus sites and 116 production sites were established, and 30639 lambs were born from these sites (Table 2).

Table 2:CBBP nucleus and production sites in Amhara region, 2011 to 2014 EC

Year	Kebeles covered	Participant farmers	Female (sheep and goat) breeding stock	Male (sheep and goat)	Nucleus site	Production site	New born lambs and kids
2011	11	2884	23825	846	14	26	6602
2012	32	3437	30002	1011	8	30	3117
2013	32	3437	30002	1011	8	30	3117
2014	41	2745	22845	1224	8	30	17803
Total	86	12503	106674	4092	38	116	30639

Strengths of current CBBP scaling out activities

- ❖ Strong research-extension linkage
- ❖ Improved farmer's awareness
- ❖ Improved production and productivity

Weakness of current CBBP scaling out activities

- ❖ The initiative has been affected by the current national security problem
- ❖ Dependency syndrome (lack of ownership by some farmers, they also expect free services of ram supply and vet services from Livestock Agency
- ❖ Lack of budget to scale out production sites
- ❖ Ram mortality problem
- ❖ Weak linkage and coordination among research-university and extension to sustain the good initiatives

4.4. Question and answering session

Following the three presentations, various questions were raised by participants as summarized below;

- ❖ What makes this consultative workshop different? We had a lot of meetings with no change/progress? (To ICARDA team)
- ❖ Why limited participants invited?
- ❖ Why only on Washera and Wollo sheep?
- ❖ Why only CBBP, crossbreeding may speed up the red meat supply?
- ❖ How to integrate this initiative in the red meat value chain development?
- ❖ Is there a possibility to introduce a cluster approach for small ruminant production as crop?
- ❖ Why do-little attention given for Wasehra sheep breed improvement?
- ❖ How to link this initiative to microfinance as future scaling activities demand finance?
- ❖ How to establish and sustain CBBP cooperatives?
- ❖ How Universities found in the region are serious in running such initiatives as CBBP is more fit to universities?

Responses from ICARDA team: Dr. Aynalem has briefed the objective, scope and expected output of the consultative workshop. Dr. Aynalem has mentioned that the workshop has brought key practical agenda that can significantly impact the region's small ruminant production and productivity through CBBPs, in which the approach was tested effective and practical. After the consultative workshop a clear framework and implementation modality will be developed.

Although other sheep and goat breeds exist in the region, due to already ongoing initiatives and interests by partners, Washera and Wollo sheep are selected for wider scaling up. These can serve as model to develop an upscaling approach and then can be adopted and expanded to other breeding in the region as well as in the country.

4.5. Group formation to agree on the vision, mapping of the resource base and consolidate the existing CBBP initiatives

After question and answering session, participants were grouped into two groups (Washera and Wollo) based on their interest and previous field experiences. Based on drafted group work guidelines (Annex 3), groups were expected to agree on the objectives and vision of Wasera and Wollo sheep improvement, with three years program in mind, map the resource base, identify and consolidate the existing initiatives (both GOs, NGOs and private). Groups were also expected to identify possible areas of collaboration among partnering institutions (Research centers, universities, extension and private bodies). After the group work, group leaders presented their draft framework and field implementation modality. Discussions were made in plenary to enrich the draft and the final version presented in Annex 1 and 2.

5. Session III: Framework for Washera and Wollo sheep improvement

After accomplishing session II, three presentations on *''framework for Washera and Wollo sheep improvement''*, were made as below;

5.1. Small Ruminant value chain Transformation (SmaRT) in Ethiopia: SmaRT pack innovations and achievements: by Dr. Barbara Rischkowsky

Dr. Barbara Rischkowsky has highlighted the objective, vision and project sites of **SmaRT-Ethiopia.** Dr. Barbara has also showed the small ruminant transformation path-way model and **SmaRT** pack components and achievements, which included genetic interventions, health interventions, feeding interventions, marketing interventions and gender interventions.

a. **SmaRT pack Genetics – achievements**
   - >7,000 households involved in and benefit from CBBP through improved incomes (up to 20%) and increased home consumption (from 1 to 3 sheep/goats consumed per year)
   - >100 community-based breeding programs and 35 breeding cooperatives established
   - App based data collection management systems (DTREO) in 27 CBBP sites in Ethiopia and Tanzania

- 19 data collectors trained and equipped with tablets to capture reproductive and genetic data
- More than 25 Ethiopian universities included CBBP into their curriculum, and 50 Masters and 15 PhD students focusing on CBBP were trained
- Simple and cheap artificial insemination services accessible to 6,000 households in 12 districts in Menz, Horro, Bonga, Doyogena, Konso and Abergelle,
- Proven synchronization protocol using prostaglandins costs USD 1.30 vs. USD 8.50 per ewe with the conventional protocol

Pregnancy diagnosis service for improved herd management

- 2014/2015 ultrasound-based management of reproduction and reproductive disorders in sheep and goats were initiated in 3 sites (Menz, Bonga, Doyogena), and then expanded to 8 CBBP sheep and goat sites
- Core teams of national technical staff at each CBBP site (veterinarians and animal production specialists) trained on machine use, interpretation of ultrasound images
- Reliability of their diagnosis now exceeds 95%
- Well trained veterinarians and livestock technicians can handle over 200 females in a single day
- Diagnosis is discussed with farmers to advise on culling of unproductive animals or to develop supplementation strategies to match requirements of animals (barren animals, single fetus bearing females and multi-bearing females)

b. SmaRT pack Health- achievements

Respiratory diseases
- More than 4,000 farmers in Amhara, SNNP and Oromia regions, who owned more than 60,000 sheep and goats, participated in the program.
- Decreasing trend of respiratory disease incidence from 2018 to 2021, thereby reducing economic loss attributable to animal death and disease

Reproductive diseases

- 1,021 householders have benefited from improved reproductive performance of flocks (122% annual flock level lambing percentage at CRP health intervention site compared to 109% of control sites)
- Identification of diseases and bacteria that can cause abortion in small ruminants, including Brucella spp., Chlamydia abortus, Toxoplasma gondii and Coxiella burnetii
- Greater community awareness of relationship between abortions and zoonotic risks
- GIT control
- 4,000 farmers, who owned more than 60,000 sheep and goats, and 36 veterinarians and researchers have followed the seasonal deworming calendar.

- 20 veterinarians and 16 researchers were trained on how to diagnose and control GIT parasites
- Proportion of sheep infected with fasciola (liver fluke) declined from 18.2% to 4.2% over a period of 4 years
- In most sites, reduction of mean fecal egg count after deworming campaigns was greater than 90%.

Coenurosis- breaking the cycle

- Dogs in the intervention sites were registered and dewormed.
- Implementation of regular deworming of dogs in communities every three months.
- Deworming campaigns were conducted by national agricultural research institutes in collaboration with veterinarians from district agricultural offices
- Reduction in the morbidity of small ruminants infected with coenurosis

c. *SmaRT pack Feeding – achievements*

Sheep fattening in youth groups

- 838 youth (37% female) are members of 44 sheep fattening youth groups.
- Business models for sheep fattening developed.
- 100% of original members of the 44 youth groups still participating after 3 years, with a 42% increase in new memberships.
- Nine sheep fattening cooperatives, including two women-only cooperatives have been registered to date.
- Fattening weights of rams have increased by up to 87%, while utilizing only locally available feed resources.
- Increase in fattening rams during each fattening cycle of 3 months, from 2 rams to between 12 to 16. over 3 years
- Average individual youth income from fattened rams have increased to ETB 19,000-24,000 (USD 410-520) during each fattening cycle

d. *SmaRT pack Marketing - achievements*

Market Information
This was tested in an experiment ('treated' and control farmers); weekly market data collection and relaying back to farmers every 2 weeks through mobile phones (50 weeks of data collection and 25 rounds of information)
- Higher confidence in bargaining prices for their small ruminants.
- More frequent and richer communication among themselves on livestock market related issues

- Higher market participation
- Changes in marketing behavior such that farmers were able to postpone their selling and buying decisions.

- Recipients of market information generated 20% higher income and 32% higher aggregate cash income from their small ruminants within a year

Market Facilities

Experiment comparing local markets with and without sheds:
- Neither the farmers nor the animals were subjected to the rain or sun, which increased sales, decreased pressure to sell the animals quickly, often below market prices
- Market sheds significantly increased farmers' market participation
- Market sheds improved farmers' income from small ruminants by 40%.

Willingness to pay (WTP) choice experiment with SR producers:
- revealed that veterinary clinics, fenced market sheds and watering troughs are the most preferred facilities

e. **SmaRT pack components – Gender interventions**
  - Gender capacity development (GCD) of research & development partners
  - 100 people (including 21 women) from 12 research and development partners received gender capacity-development training and coaching support
  - Changes in organizational and individual gender capacities of national research partners (NRP) and national development partners
  - Community conversations (CCs) to improve gender capacities at HH and community level and to transform constraining gender relations in livestock production
  - 1,517 people (including 38% women) participated in community conversations at 5 sites

f. *Developing an enabling environment*
  - Targeted and integrated capacity development program with NARS, universities and extension
  - Ownership of the regional and local research center leading to strong commitment of local actors
  - Coordination of research and development at the sites
  - Integration of interventions through site level intervention calendars and joint topics like increasing reproductive performance
  - Community of Practices to enable uptake of SmaRT pack
  - Link with other projects, e.g. ILRI HEARD project which develops models for improved access to veterinary services
    - Joint learning leading to local solutions and demonstrate impact

g. **What's next**

Make SmaRT Pack smarter, climate smart, refine technology solutions, and consolidate, simplify and adapt to new sites.

Work on input and output markets with existing providers of supplies and services including development agents

- Institutionalize support services required for the interventions, e.g. micro finance institutions
- Develop scaling strategy and scaling partners for SmaRT Pack and individual innovations

5.2. Up-scaling of Integrated Village Based Wollo Sheep Crossbreeding System: by Dr. Berhanu Admasu, Private investor

Dr. Berhanu highlighted his private firm ''YAZERBER ANIMAL PRODUCTION CENTER'', a business-oriented private share company established in 2018 on 200 ha land in Jamma woreda in South Wollo Zone and its undertakings on Wollo sheep crossbreeding using dorper sheep. YAZERBER envisages a profitable large-scale and model commercial sheep enterprise in the country. The goal of **YAZERBER;**

- Revamp the sheep cross-breeding programs through a rational strategy with smallholder sheep producers and communities (women and youths) to optimize the sheep meat supply chains
- Develop a viable model of public-private partnership to improve productivity and market participation of smallholder sheep producers,
- contribute to increased income of resource-poor smallholder producers, communities
- Create business opportunities for the unemployed youth and young women,

Alternative production and marketing system
- YAZERBER is currently working to launch a trustful and contented market linkages between sheep and goat producers and domestic consumers in and around Addis Ababa city.
- This activity is expected to increase sales of animals from target areas through increased market access and improves efficiency in well-organized livestock markets.
- The activity will largely cover Addis Ababa's and other large towns mutton consumption behavior and demand, which is changing fast as a result of social class transformations (occupation, education and income).
- The business is organized to function through web-based access: https://tebotgebeya.com/

The alternative production Program
- Accelerating Breeding stock multiplication
- Crossbred lamb production system

- Crossbred lamb finishing business

Access to inputs/services and markets

Provision of health and feed supply services

- Simple flock health packages for crossbred flocks, rams and finishing YSMR Package to be scaled up,

i. Animal health posts to be strengthened with supplies,
ii. Mobile health service (on-call service), to be developed with dedicated motor bike,
iii. Feed shop businesses by landless/jobless young women to be established to deliver (TMR, concentrates, etc,) for crossbreeding and finishing businesses
iv. Crossbred lamb production and youth finishers' cooperatives, to be organized to supply of large volume and uniform product for the market
v. Marketing and sales interventions – ''*Tebot letena model''*

5.3. Framework for Washara sheep improvement; By Dr. Aynalem Haile, ICARDA

Dr. Aynalem has mentioned the Ethiopia's huge and diverse small ruminant genetic resources in his introductory remarks. He emphasized that pro-poor livestock development is not about a single intervention, rather it requires a concerted effort in genetics, reproduction, feeds, health, markets, institutions, and policy. He has also highlighted his observations on Africa's history of livestock breeding. Some of which include,

- Although many attempts to improve livestock in Africa have been made, mainly by 'upgrading' with temperate breeds in crossbreeding but many attempts have failed.
- Except very few structured breeding programs, many breeding programs have been too complicated in terms of logistics, technology and requirements of resources without considering the infrastructure available.
- Indiscriminate crossbreeding of indigenous breeds with exotic breeds without enough consideration of environmental conditions for production.
- Lack of analysis of the different socio-economic and cultural roles that livestock play in each situation, usually leading to wrong breeding objectives
- Wrong mind set: Big and exotic is not necessarily the most profitable

Dr. Aynalem has also mentioned the history of Community-based breeding program, which was first introduced in Ethiopia by ICARDA-ILRI-BOKU project – in 2007.

Benefits of CBBP to the smallholders

- Higher offtake, higher return per sheep/goat, and higher annual income for those participating in CBBPs and get vet services
- Increased income from sheep production showed an average increase of 20%
- Increased mutton consumption from 1 sheep to 3 slaughtered/year/hh

In Bonga CBBP:

- The total amount of existing capital for the whole cooperative 561,478 USD
- How much dividend was shared with all 87,127 USD
- 10,373 USD was used for different community service

Expansion of CBBPs

- About 10,000 house-holds are covered by CBBPs in Ethiopia
- CBBP ends in producing improved genetics in CBBP flocks
- Optimization of CBBPs to maximize genetic gain and capacity of sire production
- Improved genetics need to be disseminated

Strategies for up/out-scaling CBBPs

- Out-scaling with more CBBPs
- Up-scaling with more males produced per CBBP
- Up-scaling with more intense use of males

Table 3:Realistic target for up/out-scaling of CBBPs for Washera sheep

Parameter	Washera
Average nr of breeding females per CBBP	605
Nr of male lambs born per year	555
Nr of male lambs at measurement per year	444
Nr of male lambs at selection per year	444
Proportion selected on measurement	0.5
Nr of male lambs selected on measurement per year	222
Proportion selected on visual traits	0.9
Survival from measurement to breeding age (n4/n3)	0.9
Nr of young rams for breeding per year	180
Nr of CBBPs necessary to provide rams to target population	6

Dissemination of improved genes

- Improved breed developed: Sire production capacity – 2,776 ram per year
- Improved commercial production

- Youth group engaged in feed and other input supply, fattening of culled animals, facilitate market linkage
- Acquire genetics
- Genetic gain transferred to about 50K marketable lambs per year

Some thoughts

- Population wide strategy needed
- Genetic link between breeding programs
- Can we bring other interventions into the whole genetic improvement structure?
- Commitment from all partners needed if we have to make a difference
- Women and youth involvement crucial
- Capacity development at different levels important

6. Session IV: Planning of the implementation of the agreed framework

6.1. Filed implementation of the agreed framework for Washera and Wollo sheep

The two groups (Washaera and Wollo) further discussed, refined their drafted framework and developed practical field implementation plan for Washera and Wollo sheep, defined role of all partners and agreed on time frame and budget considering identified clusters (Annex 1 for Wollo and Annex 2 for Wahsera sheep). Some of the iidentified partners were: Livestock and fisheries sector development project (LFSSDP), Research centers, Universities, ICARDA, cooperatives, credit institutions, small and micro enterprises, prejects, input suppliers and private sectors (Annex 1 and 2).

Approach of improvement is by using existing CBBPs (new CBBPs will be established when needed) as breeding ram source and the surrounding community considered as upscaling sites, organized themselves and will receive breeding rams from CBBPs. Universities, research ceneters, biodiversity institute and WLRC mainly engaged in establishing and running CBBPs however, extension mainly responsible for organization and implementation of in the upscaling sites.

Washera sheep breed improvement implementers include Regional, Zonal and district level livestock offices, Injibara, Debre Markos and Bahirdar Universities, Andassa and Debre Markos research ceneters, and Water and Land Resource Center (WLRC).

Washera sheep improvement organized in to five clusters.

- Cluster 1 (Sekela –Fagita_biradama)-Adet, Dangila and Bahir Dar
- Cluster 2 (Sinan-Bibugn-Kuyi-Bichena)-D/Markos, Dembecha, F/Selam
- Cluster 3 (Dangila-Kunzila(Semien Achefer) Debub Mecha(D/Yakob) and Semien Mecha(Birakat) -Bahir Dar Zuria)-Bahir Dar, Kunzila
- Cluster 4 (Dembecha-Finoteselam-Burie) - D/Markos, Dembecha, F/Selam
- Cluster 5 (Gonji Kolelea-Yilmana Densa-Mota-Gondewoin)-Adet

Wollo sheep breed improvement implementers include Regional, Zonal and district level livestock office, Mekdela Amba and Wollo Universities, Debre Berhan Agricultural Research Center and Yazerber private sheep breeding center.

Wollo sheep improvement organized in to two clusters

- Cluster 1. Crossbreeding (Legambo, Tenta, Dessie Zuria, Delanta, Mekdela, Jama, Ambassel, Gazo and Meket districts)
- Cluster 2. Pure breeding (Sayint, Woreillu, Borena and Legehida districts)

Different intervention and activities including strengthen existing CBBPs, establish new CBBPs, digitize database system, breeding ram selection, dissemination of selected rams to CBBP and up-scaling site, arrange sire use, organize cooperatives in both CBBPs and up-scaling sites develop improved forage, develop different feeding packages based on available feed resources, implement fattening of culled sheep, market linkage strategy, use of animal health interventions (deworming, vaccination) will be integrated in CBBP and upscaling sites. Detail planning are presented in Annex 1 and 2.

6.2. Formulation of steering committee

To follow and report on developments and next steps, a steering committee which was drawn from different partnering institutions was formulated (Table 4). ARARI was selected as the coordinator of the initiative of improving Washra and Wollo sheep breed through CBBP. The steering committee will critically evaluate and monitor the implementation and progress of CBBP in the respective sites and provide a progress report from each CBBP site twice per year. The first progress report will be presented in August, 2022.

Table 4:List of steering committee members and their role

Sr. No	Committee members	Institution	Responsibility	Remark
1	Dr. Likawent Yeheyis	ARARI	Chairperson	
2	Dr. Gashaw Muchie	ALDA	secretary	
3	Dr. Asrat Tera	ANRSLRDPA	Member	
4	Dr. Berhanu Admassu	YAPC	Member	Private sector
5	Dr. Tesfaye Getachew	ICARDA	Member	
6	Dr. Tarekegn Tintagu	Wollo University	Member	
7	Mr. Melkam Abate	Ingibara University	Member	

7. Session V: Closing remarks

Before closing, participants were asked to give names for the initiative and for the time being agreed to be WaWo sheep improvement program. But this is open, if someone has a better suggestion, it will be replaced anytime as needed. Dr Melkam took the responsibility for creating a telegram group to facilitate communication and share ideas among implementing partners. ICARDA will develop ToR for the steering committee and will send it as soon as possible. Mulatu from Livestock Agency took responsibility to provide sheep population size by identified cluster group.

The closing remark was made by Dr. Tilaye Teklewold, DG of ARARI. In his remark, he highly appreciated and acknowledged ICARDA for organizing this workshop and all other partners for their active participation. He also highly acknowledged ICARDA for the financial and technical support in running the breeding community-based breeding programs in the region. The contribution of the on-going community-based breeding programs being implemented by ICARDA and ARARI in Menz sheep and Abergelle goat impacted the livelihood of households in the areas. This is a big initiative and is in line with the regional government's interest. All parties engaged in this initiative (universities, ARARI, regional Livestock office, EBI and private partners) and researchers and experts working in different disciplines (breeder, health, feed, extension, cooperatives, market) should take this as a serious activity for the success of the program. Dr Tilaye once again confirmed that ARARI has firm interest to continue working with ICARDA and other partners for the benefit of the community. Then, the meeting officially adjourned.

8. Annexes

8.1. Annex 1: A framework to agree on implementation modality of Wollo sheep improvement

Objectives:
- Discuss on how the breeding structures looks like targeting the whole Washara and Wollo sheep population
- Determine size of CBBPs based on the target population
- Which interventions and how different interventions can be integrated in the framework?
- How input service provision be part of the framework
- How youth groups can be engaged in fattening and input supply
- Gender mainstreaming
- Institutional and policy issues
- Discussion on possibility of linking CBBPs within or among clusters within the same breed
- Potential markets for each cluster
- Human capacity development needs

Table 5:A framework to agree on implementation modality of Wollo sheep improvement

Cluster 1	Estimated target population	CBBPs	Size of CBBPs	Describe status of CBBPs	Target population sites	No of CBBPs needed to be established	By Whom?
Pure breed	390,852	9	1320h	Needs strengthen	✓ Sayint ✓ Woreillu ✓ Borena ✓ Legehida		✓ Institute of biodiversity ✓ ARARI(Serinka and Debre berhan) ✓ Wollo University with Yazerber animal production center ✓ Mekdela amba university
Crossbreed	1,024,892	6	243	Needs re-established	✓ Legambo ✓ Tenta ✓ Dessie Zuria ✓ Delanta ✓ Mekdela ✓ Jama ✓ Ambassel ✓ Gazo ✓ Meket		✓ ARARI (Serinka and Debre berhan) ✓ Wollo University with Yazerber animal production center ✓ Mekdela amba university

Table 6:Clusters and implementation approach for Wollo sheep improvement

Clustered sites	Interventions and methodology/approach for implementation				
	Breeding interventions	Feed resource development and utilization interventions'	Health interventions	Input service provision and market	Gender interventions
cluster 1 (Pure breed)	CBBP Selective breeding	✓ Grazing land management ✓ Back yard forage development(tree lucerne, Cassava, Foderbeet, Festuca Desho grass) ✓ Crop residue (straw) ✓ Multinutrient urea molasses block ✓ Agro industry by-product, ✓ On farm forage production (oat)	✓ Young stock mortality reduction package will be implemented ✓ Strategic deworming ✓ Periodic Vaccination ✓ Treatment ✓ Coenurosis control package (ILRI)	✓ Forage planting material from ICRDA; research institutes and Agriculture office ✓ Standard Digital weighing scale (ICARD) ✓ Vaccine from NVI ✓ Veterinary drugs importers and NGO ✓ Treatment and diagnostic equipments from importers and Donors ✓ Agro industry by product (factories) ✓ Ear tag applicator from ICARDA ✓ Yazeber marketing strategy will be expanded in the major cities in the country	✓ Member in the CBBP ✓ Provision of concentrate feed and other inputs through different cooperatives ✓ Training
Cluster 2 (crossbreed)	Synthetic breed				

❖ Human capacity development needs: full package training

Table 7: Clusters, intervention package, implementation period and responsibility of stakeholders for Wollo sheep improvement

Clusters	Component	Activity	Implementation period	Where	By whom?		Budget source
					Leader	Partner	
Pure breed	CBBP	Site refining and strengthen the existing selected breeding CBBP	May, 2022	Sayint and Legehida	MU	ICARDA, EBI,ARARI	MU
				Woreillu and Borena	EBI &MU	ICARDA, WU, ARARI, MU	EBI; MU
		Site refining and establishing new selective breeding CBBP	September, 2022	Sayint and Legehida	MU	ICARDA, EBI,ARARI	MU
				Woreillu and Borena	EBI &MU	ICARDA, WU, ARARI, MU	EBI; MU
		Awareness creation	May, 2022	Sayint and Legehida	MU	ICARDA, ARARI	MU
				Woreillu and Borena	EBI &MU	ICARDA, WU, ARARI, MU	EBI; MU
		Enumerators recruitment	May, 2022	Sayint and Legehida	MU	ICARDA,	MU
				Woreillu and Borena	EBI &MU	ICARDA, WU, NLDI	EBI, MU
Crossbreed (synthetic breed)	CBBP	Site refining and strengthen the existing selected breeding CBBP	May. 2022	Legambo	DARI &MU	ICARDA, ARARI	DARI &MU
				Tenta and Mekdela	MU	Regional and zonal livestock office, ICARDA, ARARI	MU
				Dessie Zuria, Delanta, Ambassel and Jama	WU&YAPC	Regional and zonal livestock office, ICARDA, ARARI	WU
				Gazo and Meket	ARARI	Regional livestock office, ICARDA	ARARI
		Site refining and establishing new selective breeding	September, 2022	Legambo	DARI	Regional and zonal livestock office, MU,	DARI

Clusters	Component	Activity	Implementation period	Where	By whom?		Budget source
					Leader	Partner	
						ICARDA,	
				Tenta and Mekedla	MU	Regional and zonal livestock office, ICARDA, ARARI	MU
				Dessie Zuria, Delanta, Ambassel and Jama	WU&YAPC	Regional and zonal livestock office, ICARDA, ARARI	WU
				Gazo and Meket	ARARI	Regional livestock office, ICARDA	ARARI
		Awareness creation	May, 2022	Legambo	DARI	Regional and zonal livestock office, MU, ICARDA, ARARI	DARI
				Tenta and Mekdela	MU	Regional and zonal livestock office, ICARDA, ARARI	MU
				Dessie Zuria, Delanta, Ambassel and Jama	WU&YAPC	Regional and zonal livestock office, ICARDA, ARARI	WU
				Gazo and Meket	ARARI	Regional livestock office, ICARDA	ARARI
		Enumerators recruitment					
Intervention packages for Wollo sheep improvement (pure and crossbreeding)							
	Feed	Planting material multiplication site selection	June, 2022	Sayint, Tenta, Legehida and Mekdela	MU	Regional and Zonal livestock offices	MU
				Woreillu and Borena	EBI&MU	Regional and Zonal livestock offices	EBI&MU

Clusters	Component	Activity	Implementation period	Where	By whom?		Budget source
					Leader	Partner	
				Legambo	DARI	Regional and Zonal livestock offices	DARI
				Dessie Zuria, Delanta, Ambassel and Jama	WU&YAPC	Regional and Zonal livestock offices	WU
				Gazo and Meket	ARARI	Regional and Zonal livestock offices	ARARI
		On farm and Backyard forage production	July, 2022	Sayint, Tenta, Legehida and Mekdela	MU	Regional and Zonal livestock offices	MU
				Woreillu and Borena	EBI&MU	Regional and Zonal livestock offices	EBI&MU
				Legambo	DARI	Regional and Zonal livestock offices	DARI
				Dessie Zuria, Delanta, Ambassel and Jama	WU&YAPC	Regional and Zonal livestock offices	WU
				Gazo and Meket	ARAI	Regional and Zonal livestock offices	ARARI
		Multi nutrient production	December, 2022	Sayint , Tenta, Legehida and Mekdela	MU	Youth and women	MU
				Woreillu and Borena	EBI&MU	Youth and women	EBI&MU
				Legambo	DARI	Youth and women	DARI
				Dessie Zuria, Delanta, Ambassel and Jama	WU&YAPC	Youth and women	WU
				Gazo and Meket	ARARI	Youth and women	ARARI
		Grazing land management	February, 2023	Sayint, Tenta, Legehida and Mekdela	MU	Regional and Zonal livestock offices	MU
				Legambo	DARI	Regional and Zonal livestock offices	DARI
				Dessie Zuria, Delanta, Ambassel and Jama	WU&YAPC	Regional and Zonal livestock offices	WU

Clusters	Component	Activity	Implementation period	Where	By whom?		Budget source
					Leader	Partner	
				Gazo and Meket	ARARI	Regional and Zonal livestock offices	ARARI
		Crop residue treatment by EM	December, 2022	Sayint; Tenta, Legehida and Mekdela	MU	ICARDA	MU
				Woreillu and Borena	BEI &MU	ICARDA	BEI &MU
				Legambo	DARI	ICARDA	DARI
				Dessie Zuria, Delanta, Ambassel and Jama	WU&YAPC	ICARDA	WU
				Gazo and Meket	ARARI	ICARDA	ARARI
	Health	Introducing full health package	July, 2022	Sayint, Legehida, Tenta and Mekdela	MU	MoA; Regional livestock office Yazerber Animal production center	WU
				Woreillu and Borena	EBI&MU	MoA; Regional livestock office Yazerber Animal production center	EBI&MU
				Legambo	DARI	MoA; Regional livestock office Yazerber Animal production center	DARI
				Dessie Zuria, Delanta, Ambassel and Jama	WU&YAPC	MoA; Regional livestock office Yazerber Animal production center	WU
				Gazo and Meket	ARARI	MoA; Regional livestock office	ARARI

Clusters	Component	Activity	Implementation period	Where	By whom?		Budget source
					Leader	Partner	
						Yazerber Animal production center	
		Strategic deworming	May, 2022	Sayint; Tenta, Legehida and Mekdela	MU	Regional and Zonal livestock offices, ICARDA	MU, Regional and Zonal livestock offices, ICARDA
				Woreillu and Borena	EBI&MU	Regional and Zonal livestock offices, ICARDA	EBI&MU, Regional and Zonal livestock offices, ICARDA
				Legambo	DARI	Regional and Zonal livestock offices, ICARDA	DARI; Regional and Zonal livestock offices, ICARDA
				Dessie Zuria; Delanta, Ambassel and Jama	WU &YAPC	Regional and Zonal livestock offices, ICARDA	WU &YAPC; Regional and Zonal livestock offices, ICARDA
				Gazo and Meket	ARARI	Regional and Zonal livestock offices, ICARDA	ARARI, Regional and Zonal livestock offices, ICARDA
		Periodic vaccination	Calendar based vaccination	Sayint, Tenta, Legehida &Mekdela	MU	Regional and Zonal livestock offices, ICARDA	MU, Regional and Zonal livestock offices, ICARDA
				Woreillu &Borena	EBI&MU	Regional and Zonal livestock offices, ICARDA	EBI&MU, Regional and Zonal livestock offices, ICARDA
				Legambo	DARI	Regional and Zonal livestock offices, ICARDA	DARI; Regional and Zonal livestock offices, ICARDA
				Dessie Zuria, Delanta, Ambassel &Jama	WU &YAPC	Regional and Zonal livestock offices, ICARDA	WU &YAPC; Regional and Zonal livestock offices, ICARDA
				Gazo and Meket	ARARI	Regional and Zonal livestock offices, ICARDA	
	Marketi	Establishing cooperatives	May, 2022	Sayint, Tenta,	MU	Regional and Zonal	

Clusters	Component	Activity	Implementation period	Where	By whom?		Budget source
					Leader	Partner	
	ng			Legehida &Mekdela		cooperative office, ICARDA	
				Woreillu &Borena	EBI&MU	Regional and Zonal cooperative office, ICARDA	
				Legambo	DARI	Regional and Zonal cooperative office, ICARDA	
				Dessie Zuria, Delanta, Ambassel & Jama	WU &YAPC	Regional and Zonal cooperative office, ICARDA	
				Gazo & Meket	ARARI	Regional and Zonal cooperative office, ICARDA	
		Linkage with public and private institutions	May, 2022	Sayint, Tenta, Legehida &Mekdela		Yazerber Animal Production Center	
				Woreillu &Borena	EBI&MU	Yazerber Animal Production Center	
				Legambo	DARI	Yazerber Animal Production Center	
				Dessie Zuria, Delanta, Ambassel & Jama	WU&YAPC	Yazerber Animal Production Center	
				Gazo & Meket	ARARI	Yazerber Animal Production Center	
	Inputs	Planting material supply	May, 2022	Sayint, Tenta, Legehida &Mekdela	MU	ICARDA, ARARI, regional and zonal livestock offices	MU, ICARDA, ARARI, regional and zonal livestock offices
				Woreillu &Borena	EBI&MU	ICARDA, ARARI, regional and zonal livestock offices	EBI&MU, ICARDA, ARARI, regional and zonal livestock offices
				Legambo	DARI	ICARDA, ARARI, regional and zonal livestock offices	DARI, ICARDA, ARARI, regional and zonal livestock offices

Clusters	Component	Activity	Implementation period	Where	By whom?		Budget source
					Leader	Partner	
				Dessie Zuria, Delanta, Ambassel & Jama	WU&YAPC	ICARDA, ARARI, regional and zonal livestock offices	WU&YAPC; ICARDA, ARARI, regional and zonal livestock offices
				Gazo & Meket	ARARI	ICARDA, regional and zonal livestock offices	ARARI, ICARDA, ARARI, regional and zonal livestock offices
		Improved ram supply	May, 2022	Sayint, Tenta, Legehida &Mekdela	MU	NLDI, ICARDA	MU, NLDI
				Woreillu &Borena	EBI&MU	NLDI, ICARDA	EBI&MU, NLDI
				Legambo	DARI	NLDI, ICARDA	DARI, NLDI
				Dessie Zuria, Delanta, Ambassel & Jama	WU&YAPC	NLDI, ICARDA	WU&YAPC, NLDI
				Gazo & Meket	ARARI	NLDI, ICARDA	ARARI, NLDI
		Veterinary equipments, drugs and biological (vaccine)	May, 2022	Sayint, Legehida, Tenta and Mekdela	MU	Regional and zonal livestock offices, ICARDA	MU, Regional and zonal livestock offices, ICARDA
				Woreillu and Borena	EBI&MU	Regional and zonal livestock offices, ICARDA	EBI&MU, Regional and zonal livestock offices, ICARDA
				Legambo	DARI	Regional and zonal livestock offices, ICARDA, ARARI	Regional and zonal livestock offices, ICARDA, ARARI
				Dessie Zuria, Delanta, Ambassel and Jama	WU	Regional and zonal livestock offices, ICARDA	WU, Regional and zonal livestock offices, ICARDA
				Mekdela			
				Gazo and Meket	ARARI	Regional and zonal livestock offices, ICARDA	ARARI, Regional and zonal livestock offices, ICARDA
		Ear tag applicator, other animal identification and weighing balance	May, 2022	All CBBP sites	ICARDA	Regional and zonal livestock offices, ICARDA, EBI, WU,MU	ICARDA

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Clusters	Component	Activity	Implementation period	Where	By whom?		Budget source
					Leader	Partner	
		provision					
		Tablets Provision	July, 2022	All CBBP sites		Regional and zonal livestock offices, ICARDA, EBI, WU,MU	ICARDA
	Follow up	Monitoring and evaluation	Quarterly	All CBBP sites	ARARI	Steering committee	Regional and zonal livestock offices, ICARDA, EBI, WU,MU

8.2. Annex 2: A framework to agree on implementation modality of Washera sheep improvement

Objective
- To develop framework and agree on implementation modality of Washara sheep improvement

Discuss on how the breeding structures looks like targeting the whole Washera population
- Assessing and establishing CBBs to produce rams
- Establishing cooperatives from the breeding site
- Distribution of breedings to production sites
- Producer cooperatives at production sites
- All males from production site sold to market
- Creating market linkage between breeding site and production site
- How youth groups can be engaged in fattening and input supply
    o Creating market linkage between production site and end market
- How Input service provision be part of the framework
    o Involvement of private feed and medicament suppliers
    o Creating credit access to the youth and women to fatten animals.
- Institutional and policy issues
    o Complementarity between cooperatives and other institutions

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- By law for CBPP members
- M & E
- Discuss on possibility of linking CBBPs within or among clusters within the same breed
  - Ram exchange based on AGEZ
  - Experience sharing
- Potential markets for each cluster and market linkage strategy
  - Cluster 1 (Sekela –Fagita_biradama)-Adet, Dangila and Bahir Dar
  - Cluster 2 (Sinan-Bibugn-Kuyi-Bichena)-D/Markos, Dembecha, F/Selam
  - Cluster 3 (Dangila-Kunzila(Semien Achefer) Debub Mecha(D/Yakob) and Semien Mecha(Birakat) -Bahir Dar Zuria)-Bahir Dar, Kunzila
  - Cluster 4 (Dembecha-Finoteselam-Burie) - D/Markos, Dembecha, F/Selam
  - Cluster 5 (Gonji Kolelea-Yilmana Densa-Mota-Gondewoin)-Adet
- Human capacity development needs

Table 7: List of clusters and responsibility of stakeholders for Washera sheep improvement

Cluster	AEZ	Estimated target population	CBBPs	Size of CBBPS	Describe status of the CBBPs	Target Production sites	No of CBBPs need to be established	By whom?

Sekela Fagita Biradama	Highland		10		Well going	Extension	Addition 2 at Sekela	ALRC, IU, BDU
Sinan Bibugn Kuyi Bichena	Highland		2		Well going	Extension	4 additional by DMU and 2 additional by DARC (@ Kuy and Bichena)	DMU, DARC
Dangila-Kunzila(Semien Achefer) Debub Mecha(D/Yakob) and Semien Mecha(Birakat) -Bahir Dar Zuria	Mid altitude		2		Newly established	-Bahir Dar Zuria -Dangila are production	2 additional by Kunzila project	WLRC, Extension
Dembecha-Finoteselam-Burie	Mid altitude		0			Finote Selam	2 CBBP by DMU burie campus	DMU(Burie campus), Extension
Gonji Kolelea-Yilmana Densa-Mota-Gondewoin	Mid altitude		0			Extension		Extension

Table 8: Interventions, input service and marketing for Washera sheep breed improvement

Clustered sites	

	Breeding interventions	Feed resource development and utilization interventions	Health interventions	Input service provision and market	Gender interventions
All clusters	CBBP	-Improved forage introduction (Oat, densho, vetch, bracheria, elephant grass) -tree Lucerne adaptation -Fodder development in area closure areas	-Strategic deworming and vaccination -castration	Medicament, forage seed, balance, eartag applicator, Burdizo, Data collection tools, enumerator, AI, stakeholder meeting	Women led CBPP
	Production site	-Improved forage introduction (Oat, desho, vetch, bracheria, elephant grass) -tree Lucerne adaptation -Fodder development in area closure areas	-Strategic deworming and vaccination -castration	Medicament, forage seed, balance, eartag applicator, Burdizo, Data collection tools, AI, Ram, stakeholder meeting	

Table 9: Field implementation of the agreed framework for Washera breed improvement

Component	Activity	When will it be implemented	Where?	By whom?	Budget source?

Component	Activity	When will it be implemented	Where?	By whom?	Budget source?
CBBP	Site selection	1st week of May (WLRC)	In newly selected district	WLRC, DMU, DMARC	Respective Institutes
	CBBP establishment	1st week of May (WLRC)	In newly selected district	WLRC, DMU, DMARC	Respective institute
	Production site establishment	1st week of May	In all sites	Extension	LFSD, Livestock agency
	Enumerator recruitment	1st week of May (WLRC, BDU)	CBBP sites	WLRC, BDU	WLRC, BDU
	Ram procurement	1st week of May (WLRC, IU, ALRC, BDU, DMARC); August (DMU)	CBBP sites	ALRC, IU, WLRC, DMU, DMARC	ALRC, IU, WLRC, DMU, DMARC
	Establishing cooperatives	1st week of June (IU, ALRC, WLRC)	CBBP sites	ALRC, WLRC, IU	ALRC, WLRC, IU
	M & E	Monthly (Quarterly)	CBBP sites	All parties	All parties
Feeds	Distribution /development of forage seeds/seedlings	May-July	CBBP sites	All parties	All parties
	Enhancing feed utilization	Periodic	CBBP sites	All parties	All parties
Health	Strategic deworming	May/October	All parties	All parties	All parties
	Vaccination	Recommendation	Extension	Extension	All parties
Markets	Creating market linkage for breeding ram	Starting from May	All parties	All parties	Respective actors
	Creating market linkage for	Starting from May	All parties	All parties	Respective actors

Component	Activity	When will it be implemented	Where?	By whom?	Budget source?
	live/fattening animals				
Inputs	Ram	Starting May	CBBP sites	All parties	All parties/LDI/ICARDA
	Medicaments and medical equipment	Starting May	CBBP sites	Extension/ALRC/Universities	All parties
	ID equipment	Starting May	CBBP sites	ICARDA	ICARDA/LDI
	Weighing balance	Starting May	CBBP sites	ICARDA	ICARDA
	Feed/seed	Starting May	CBBP sites	-	All parties

8.3.   Annex 3: Group Working Guideline

- ❖ Group 1. Wollo sheep
- ❖ Group 2. Washera Sheep
- ❖ Group member elect the facilitator and reporter
- ❖ Topic: Vision setting and Resource base Mapping
- ❖ Goal: Setting a vision and understanding the resource base for planning and improvement

Core areas of discussion

- What is/are the goals to achieve in three years' time in improving Wollo sheep and Washera/Dabgile sheep based on the plenary papers and your experiences?

Vision for Washera and Wollo sheep (three years'**)**

➢ Improved livelihood of farmers (youth and women) through genetic improvement and associated intervention packages (feed, health, market…)

- Mapping of the resource base (Population, performance, flock dynamics and composition, area coverage, agro-ecology distribution, known market destinations)

- Mapping of the current CBBP initiatives run by different institutions (ARARI, Extension Universities, private sector etc.) and the status of complementarity of existing initiatives. Good practices of Initiatives that are worth sharing to contribute to the broader frame work development.
- What are the challenges in making Wollo sheep and Washera sheep improvement endeavors?
- Other notes in relation to the resource base

Table 10:Group work guideline for Washera and Wollo sheep breed improvement

1. Resource Base	Description and number				Remark
Population					
1.5 M					
Performance					
Small in size					
Flock dynamics/composition					
High young stock mortality, seasonal marketing, negative selection					
Area coverage					
Cool highlands of South Wollo					
Agro-ecology					
Sub alpine and highland					
Distribution/density					
High					
Market destination					

1. Resource Base	Description and number				Remark
Tigray, Addis Ababa					
2. Existing Initiatives					
Running Institution	House hold /no./	CBBP Villages/no./	When started	Current Status	Future Plan
ARARI					
1. Debre Birhan	67	2 (in one district)	1998	Ongoing	
2. Srinka ARC	88	2 in (one district)	2005	Ongoing	
Extension					
1.					
2.					
3.					
University					
1. Mekdela Amba university	50	2 (in two districts)	2021	Ongoing	Continued/ CBBP/Crossbreeding
2. Wollo University and Yazerber		6 (in three districts)	2022	Ongoing	
Others					
1. EBI	120	2 (in two districts)	2019	Ongoing	Conservation
2.					

Challenges

- ❖ Feed availability both in quality and quantity

- ❖ Sustainable breeding ram supply for both pure breeding and crossbreeding

- ❖ Animal health problem (serious young stock mortality, sheep Pox, Pasteurollosis, internal parasite, cenourosis, poor lamb management)

- ❖ Poor marketing network and facilities, existing of broker

- ❖ Poor coordination among stakeholders

- ❖ Skill gap for professionals (graduated Animal science)

- ❖ Knowledge gap for the implementation of CBBP

- ❖ Lack of knowledge/awareness about market-oriented animal husbandry practice

- ❖ Lack of improved infrastructures (animal health service, live animal transportation)

- ❖ Watering point and water source problem

- ❖ Lack of coordinated or defined breeding program for different breeding initiatives

- ❖ Lack of standardize and uniform recording system

- ❖ Negative selection

- ❖ Uncontrolled animal movement across breed

- ❖ Lack of directives for breeding policy implementation

- ❖ Lack of credit for small ruminant investment

- ❖ Limited engagement of cooperatives agency in small ruminant genetic improvement initiatives

8.4. Annex IV: List of Workshop participants

Table 11: List of Workshop Participants from different partner organizations

No	Name	Organization
1	Dr Berhanu Admasu	Tuft University
2	Dr Tarekegn Tintagu	Wollo University
3	Shambel BesuFekad	Debre Berhan Research
4	Dr Kasahun Ahmed	Mekdela Amba University
5	Dr Tadesse Ahmed	South Wollo livestock
6	Dr Likawent Yeheyes	ARARI
7	Dr Gashaw Muche	Amhara Livestock and Fishery Office
8	Damitie Kebede	Bahir Dar University
9	Dr. Gete Zeleke	Water and Land Resource Center (WLRC)
10	Dr Adebabay Kebede	Andasa LRC
11	Dr Yeshiwas Ferede	Amhara Scholars Council, Livestock Working Group
12	Zewdu Wondifraw	Debre Markos University
13	Abebe Hailu	Ethiopian Biodiversity Institute (EBI)
14	Dr Asrat Tera	Livestock Development Institute (LDI)
15	Aynalem Haile	ICARDA
16	Tesfaye Getachew	ICARDA
17	Berhanu Belay	ICARDA
18	Barbara Rischkowsky	ICARDA
19	Dr Melkam Abate	Injibara University
20	Dr Tilaye T/Wold	Debre Berhan Research

No	Name	Organization
21	Bainesagn Worku	Debre Markos Research
22	Abebaw Ewenetu	ARARI
23	Mekuanent Damitew	Amhara Livestock
24	Mulatu Dagnew	Amhara Livestock
25	Ayana Denberu	ARARI PR