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Livestock

More meat, milk and eggs by and for the poor

Training report on community- Based Breeding Program Upscale in Ethiopia

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Training report on community-based breeding programs upscale in Ethiopia

Background

In developed countries and in high input animal production systems, animal breeding has been traditionally supported by the state and implemented by well-organized national breeding programs. Data recording, provision of the recorded data to a data processing center, estimation of breeding values with complex statistical methods and central decisions about the use of male breeding animals are important elements of such breeding programs.

In developing countries, the required supportive infrastructure is largely unavailable, so attempts to replicate 'developed-country' approaches have met with little success (Kosgey *et al.*, 2006). The most common approach implemented in many developing countries, has been centralized breeding schemes, entirely managed and controlled by governments – with minimal, if any, participation by farmers (Haile *et al.*, 2018). These centralized schemes, usually a nucleus breeding unit, established at a central station were run by a governmental organization attempting to undertake all or part of the complex processes and breeding strategy roles including data recording, genetic evaluation, selection, delivery of genetic change, and feedback to farmers. Although well intended, these centralized schemes failed to sustainably provide the desired genetic improvements to smallholders (continuous provision of a sufficient number and quality of improved males) and also failed to engage the participation of the end-users in the process.

Another widely followed strategy has been importing improved commercial breeds in the form of live animals, semen, or embryos. These are usually crossbred with the local and 'less productive' breeds to upgrade them, but in most cases, it is done without sufficient pretesting of the suitability and adaptability of the exotic breeds and their resulting crosses to local production systems or conditions and without a clear strategy what the final genotype would be. Where indiscriminate crossbreeding with the local populations has been practiced, genetic erosion of these local populations and breeds has occurred.

An alternative approach is a community-based breeding program (CBBP). Programs that adopt this strategy consider the farmers' needs, views, decisions, and active participation, from inception through to implementation, and their success is based upon proper consideration of farmers' breeding objectives, infrastructure, participation, and ownership (Sölkner *et al.*, 1998; Wurzinger *et al.*, 2011; Mueller *et al.*, 2015; Haile *et al.*, 2018).

Community-based breeding programs

Breeding programs described as community-based cover a range of situations (e.g. Sölkner *et al.*, 1998; Haile *et al.*, 2018) but typically target low input systems with farmers within limited geographical boundaries having a common interest to work together for improvement of their genetic resources (Mueller *et al.*, 2015). Community-based breeding programs focus on indigenous stock and consider farmers' needs, views, decisions and active participation, from inception through to implementation, and therefore provide a participatory and bottom up approach.

Ethiopian CBPP combines selection of breeding rams/bucks based on careful recording of important production parameters, such as body weight at 6 months and ewe/doe lambing/kidding interval, with expert local opinion as to what constitutes a good ram/buck and communal use of selected rams/bucks. Farmers who wish to participate are organized into sheep/goat breeding associations, many of which later evolve into formal cooperatives (Haile *et al.*, 2018). Local enumerators are recruited to help in data collection, which is then managed in a data base and analyzed by scientists from local research centers to help to inform selection decisions.

The whole community flock is treated as one and two stages of ram/buck selection are usually applied: initial screening when traditionally premature sales of young lambs/kids occur (at 4– 6 months of age) and final selection for admission to breeding. All young rams/bucks are collected at one central place in each community on an agreed screening date. Selection is then carried out based on the estimated breeding values and index is constructed where more than one trait is involved.

A breeding ram selection committee composed of about 3–5 members elected by the community are involved in the selection. If for example 15 rams/bucks were to be selected from 100 candidates, 20 would be preselected based on their breeding values and the committee ranks the selected rams/bucks culling the last five. The committee checks on the conformation, coat colour, presence or absence of horns, horn type, tail type and other criteria in decision making. The number of rams/bucks to be selected depends on the number of ewes/does available for mating with a male to female allocation ratio of 1 ram/buck to 30 ewes/does while accounting for the replacement rate required.

In Ethiopia the pilot CBBPs are designed and implemented since 2010 by a team of researchers from the International Center for Agricultural Research in the Dry Areas and International Livestock Research Institute, BOKU University, Austria and Ethiopian National Agricultural Research Centers. These programs were supported through various projects with financial support from different donors. The day to day follow-up of these programs was done by the research and extension departments of the Ethiopian government.

The Ethiopian Government has accepted CBBP as the strategy of choice for genetic improvement of small ruminants as explicitly indicated in the Ethiopian Livestock Master Plan (Shapiro *et al.*, 2015). Consequently, the second “Growth and Transformation Plan of the Ethiopian Government” and the new World Bank Livestock and Fisheries sector development projects are adopting CBBP. The strategy of up scaling by the Government focuses on using the existing CBBPs as nucleus stock where genetic improvement is generated and disseminated. As part of the upscale operation through the government, we were asked to train Government research and extension staff who will undertake the dissemination of improved genetics.

Trainings conducted

1. Awareness creation trainings

- Training on overview and implementation guidelines of small ruminant community-based breeding program was given for Eastern Amhara extension workers at Kombolcha on 4 January 2019. A total of **280** staff from Wag Hemra, North Wollo, South Wollo and Oromia Zones were in attendance.
- Another training was organized at Wereta specifically for decision makers/officials from all participating zone and werdas of the Amhara region. About **65** staff were trained and the focused was on overview of CBBP, major impact and achievements of CBBP in Ethiopia, scaling out options, CBBP project awareness and implementation guideline of CBBP.



Figure 1. Training for extension workers at Kombolcha

2. Field implementation and trainings

Three parallel trainings (at Menz, Gondar and Sekota) on implementation and scaling out of Community-Based Breeding Program were organized in three different locations of the Amhara region. The training was for three days and had covered both theoretical and practical session.

- Theoretical sessions focused on the overview of breeding program, implementation procedures of CBBP, scaling out options and implementation procedures.
- Practical training covered:
 - Visit to one of the CBBP sites in each area
 - Practical training on participatory sire selection, ranking and price setting
 - Visit to one of scaling out village
 - How to approach and discuss with the new community
 - Training on animal identification and base line data collection

3. Menz implementation/training - 31 March to 2 April 2019

- Experience sharing at one of the old CBBP sites - Molale

- Participatory selection and animal ranking practices were held in the old CBBP
- Awareness creation on sire transfer and base line data collection in production unit
- A total of 141 improved Menz breeding rams were disseminated to about 341 households in Menz area.
 - 25 breeding rams transferred to the production site in 3 villages around the Molale CBBP site (a total of 60 HHs participated).
 - 58 breeding sires purchased by Regional LS agency and disseminated in 2 kebeles (approximately 200 hhs involved) around Mehal Meda CBBP.
 - Another 58 rams disseminated around Molale CBBP for 81 hhs.



Figure 2. Theoretical and practical training in Menz.

4. Sekota implementation/training: 7 to 9 April 2019

- Theoretical training at Sekota research center
- Experience sharing in one of the old sites – Abergelle- Sazba Village
- 11 breeding bucks purchased from Abergelle-Bilaque CBBP site and were transferred to a production site (Sikalla) – Additional 28 bucks disseminated by the livestock agency in the same village. A total of 54 hhs were covered.
- 14 breeding bucks purchased from Zequala goat CBBP site and transferred to selected production site (Tsynakola) involving 18 HHs.
- 24 breeding bucks disseminated in Gosque village by the extension. A total of 65 hhs have been participated.



Figure 3. Implementation/ training in Abergelle area



Figure 4. Selected Abergelle Bucks

5. Maksegnit goat CBBP - Gondar

- Theoretical training at Maksegnit - Gondar
- Experience sharing in one of the old goat CBBP site
- Six breeding bucks were transferred to the production site.

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ANRS
Livestock Resources
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Figure 5. Training - Maksegnit

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