

Progress report on feed business in Debre Berhan, Doyogena, and Bonga within the SI-MFS and SAPLING initiatives in Ethiopia

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The [Sustainable Intensification of Mixed Farming Systems Initiative](#) aims to provide equitable, transformative pathways for improved livelihoods of actors in mixed farming systems through sustainable intensification within target agroecologies and socio-economic settings.

Through action research and development partnerships, the Initiative will improve smallholder farmers' resilience to weather-induced shocks, provide a more stable income and significant benefits in welfare, and enhance social justice and inclusion for 13 million people by 2030.


Activities will be implemented in six focus countries globally representing diverse mixed farming systems as follows: Ghana (cereal–root crop mixed), Ethiopia (highland mixed), Malawi: (maize mixed), Bangladesh (rice mixed), Nepal (highland mixed), and Lao People's Democratic Republic (upland intensive mixed/ highland extensive mixed).

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1. Introduction and Background

Feed is a critical component of livestock production systems, directly influencing the growth, health, productivity of animals and overall profitability. In Ethiopia, where mixed farming systems dominate, efficient feed processing and effective marketing strategies are essential to ensure a steady supply of high-quality feed from locally available feed resources. This not only boosts livestock productivity but also contributes to the overall sustainability and profitability of mixed farming system.

In three sites, including Debreberhan, Bonga, and Doyogena, the SI-MFS and SAPLING initiatives have introduced in 2023 three locally produced feed processing units which allow farmer organizations to produce and sell animal feed made of local resources. Various types of co-investments have been instrumental in supporting the development of this feed processing business. The government's provision of land and installation of electricity for the feed processing machines, coupled with the construction of housing for the machines by youth groups, represents a significant infrastructure investment. Agricultural research centers have co-invested in the development of innovations in least-cost ration formulation, further enhancing efficiency and productivity. Additionally, the private sector in Doyogena has co-invested in training and facilitation for market access, fostering stronger ties between producers and consumers.

A monitoring visit has been undertaken by ICARDA's agricultural innovation specialist, Udo Rudiger and ICARDA's NRS livestock nutritionist Muluken Zeleke from 15 – 24 June 2024 (see program in annex 1) to exchange with all relevant stakeholder of the three sites about the progress and challenges faced in the feed business development.

2. Debre Berhan

2.1 Results and opportunities

The feed processing unit has been installed with the Bassona Worena youth group in March 2023. The unit has been used so far for chopping and grinding during the dry season. About 25 youths from the fattening group used the machine to chop crop residues like maize stalks and wheat and barley straw. The group didn't charge anything for the service as it considers this period as a "marketing period" to attract more customers.

No feed processing and commercialization has taken place until now. The youth group has developed a feed production business plan in collaboration with the enterprise office. They are also registered as a small enterprise allowing them to apply for a governmental loan. They applied for a 250,000 Birr loan to initiate the feed business activities and successfully obtained a business license. The loan was approved, and the youths are now awaiting the transfer of funds to their bank account. The youth group has received initial ingredients for feed production from the SI-MFS initiative, enabling them to start the feed business and utilize it as a revolving fund.

2.2 Constraints and Challenges

The major challenge for the development of the feed business in Debre Berhan is the political unrest with ongoing security problems. This has the following negative impact on the business:

- Due to security concerns, scientists from the research center are unable to visit the feed processing youth group in Bassona. The risk of being attacked or kidnapped is high, and rebels

have been known to target governmental vehicles. Transport for farmers from the feed processing unit in Bassona to Debre Berhan town to purchase ingredients or search for advice has become very costly. Exchange between farmers and researchers has become scarce.

- Staff from the different implicated governmental offices like the enterprise office, cooperative office or Kebele office are frequently absent at kebele level, not able to fully perform their duties like the issuing of the business license for the youth group.

Other constraints not linked to the security situation:

- No MoU was signed between ICARDA and the research center in Debre Berhan; therefore, researchers didn't receive any funds to fulfill their duties within the initiative.
- The electrical power problem of the feed processing unit still persists, probably due to low amperage or overuse of other users of the same counter.

2.3 Recommendations

The feed business monitoring team recommends the following:

- Provide feed ingredients and bags needed to start the feed business and serve as a revolving fund for the youth group. The ingredients can be purchased at a local supplier in Debreberhan.
- Assure monitoring and data collection through the site coordinator who is in Debreberhan and already works for other partners. A lump sum of 500 \$ will encourage him to follow up on the business and support further development (purchase and distribution of ingredients, acquire business license, assure access to loan).
- Contact Mecce Enterprise to solve the power problem (evtl purchasing of a second independent counter).

3. Doyogena

3.1 Results and opportunities

The Serena youth group in Doyogena has started providing grinding and chopping services as well as selling animal compound feed in January 2024. For the production of the first feed, necessary ingredients were provided by SAPLING. The collaboration between the researchers, the university in Doyogena and the private feed producer "John's farm", developed the following feed ratios for sheep fattening and dairy cows:



Figure 1: Feed sale shop (U.Rudiger, 2024)

Tab 1: Feed ratios for dairy cows and sheep fattening

Ingredients	Dairy cow feed (in %)	Sheep fattening (in %)
Maize	12	20
Wheat bran	47	50
Nuke cake	30	29
Cotton cake	7	0
Lime	3	0
Salt / Minerals	1	1
Total	100	100
Protein content	16	17

The youth group has provided 65 times grinding and chopping services to farmers between January and April 2024 (dry season). Customers are paying service fees of 2 Birr for 1 kg (eg straw or maize stalks). The total return generated through this activity was 840 Birr (15 \$). The grinding operator from the youth group was paid 0.5 Birr per kg.

The feed production and commercialization business has generated a net benefit of approximately 18,000 Birr (312 \$) in the first semester of 2024. The total amount of feed produced was 3,912 kg. The sale price varied between 2,800 and 3,500 Birr per 100 kg, on average 3,100 Birr / 100 kg. They offer feed in 5 kg, 10 kg and 25 kg bags. The manufactured feed competes with imported feed which costs on average 3,500 Birr / 100 kg. Feed sale takes place mainly once a week during the Doyogena weekly market. The location of the feed shop is ideal, as it is just at the edge of the market.

A great opportunity for fostering the feed business in Doyogena is the signed MoU between ICARDA, the university of Doyogena and John's farm. This public - private -partnership helps to further develop feed ratios taking into consideration prices and availability of ingredients to reduce productions costs and increase competitiveness with imported feed concentrates. The implication of the university will help to determine growth rate and health of sheep and milk production of cows using the new composed feed as compared to traditional feeding methods



Figure 2: MoU signing event in Doyogena (Muluken, 2024)

3.2 Challenges and constraints

The research partners in Doyogena haven't received any MoU from ICARDA in 2024 leading to lack of coaching and support of the Serana youth group. The new administrative allocation of research centers to newly created regions cause delay in sharing responsibilities.

Support has been given mainly by the consultant and John's farm. So far, the youth group has no business plan for the feed business and no loan was provided by public institutions or MFIs. To expand the feed business and satisfy the high demand for cheap and nutritious animal feed, a loan is necessary as the youth group doesn't own sufficient own funds to invest into the business.

Another constraint is the frequent cut of electricity. This might be due to an installation problem (wrong cables or low amperage). Although Mecce, the manufacturer of the feeding unit, has verified the machine twice, the problem persists. An alternative would be the purchase of a generator.

Furthermore, the proposed feed composition needs to be adjusted. The present one is too expensive with a little margin to the imported compound feed. Ingredients like barley grains and faba beans should be considered as alternatives to maize and cakes.

3.3 Recommendations

The feed business monitoring team recommends the following:

- Contact Mecce Enterprise to solve the power problem (evtl purchasing of new cables or increasing ampere)
- ICARDA DG signs MoU for PPP with John's farm and the Wachemo University in Doyogena and transfers 500 \$ to John's farm for provided business development services (feed rationing, access to ingredients, etc)
- Co-develop a cheaper feed ratio including barley, faba beans and other locally available material to compete with imported feed concentrates
- Engage a local feed business manager from July till December 2024 to follow up on access to loan and business linkages

4. Bonga

4.1 Results and opportunities

The cooperative has started grinding and chopping services as well as producing and selling animal compound feed in November 2023. The feed producing unit was once maintained by the manufacturer Mecce and is since functioning properly. The cooperative confirms that there is a very high demand for their services and feed production, even farmers from five nearby Kebeles come to obtain the feed. So far 305 farmers have used chopping and grinding services which are provided for 5 Birr / kg. Cooperative members and non-members have purchased the produced compound feed, which is mainly sold during village market days on Saturdays and Sundays. A total of 1,370 kg had been produced and sold till June 2024, farmers buy on average 15 kg compound feed each time.

The cooperative uses only one feed formula for feed concentrate production. It is composed of 80% wheat bran, 19% nuke cake and 1% salt / minerals and is meant for sheep fattening. The supply of wheat bran is assured by nearby bread factories, the nuke cake is provided by a local trader. The sale price is reasonable with 2,800 Birr (48 \$) / 100 kg. The cooperative manager states that the net benefit from the feed business (chopping and feed sale) after six months of use is about 52,000 Birr (900 \$).



Figure 3: Female farmer group In Bonga (U.Rudiger, 2024)

The women group of the cooperative confirms that with the new feed their sheep reach market weight earlier, allowing them to turn over their stock more rapidly. Before, they used to feed their animals with grass and crop residues only, which took animals about six months to reach the market weight of about 50 kg. Now the same weight is reached in only three months. Although they have additional feeding costs of about 840 Birr per animal their total benefit per year is higher due to the faster turnover of their stock.

4.2 Constraints and challenges

SAPLING had provided one ton of feed ingredients to start the business and serve as a revolving fund. But to increase feed production and satisfy the big demand access to additional finance is compulsory. The cooperative is not registered as an enterprise, so it has no access to cheap credit. If it wants to take a bank loan it needs to pay an official interest rate of 18%, which is too high to make this new business sustainable. Another option could be to negotiate with the cooperative union to get some internal loan. Other cooperatives which are members of the union could be interested as they also would like to obtain cheap quality feed. An internal arrangement could also be a solution, whereby each cooperative member contributes 100 Birr to increase the capital to purchase more feed ingredients. With about 350 members, the capital could be increased to 35,000 Birr. Finally, the creation of a start-up enterprise by some cooperative members could be a solution to obtain cheap loans with low interest rates of 8 % by the enterprise office.

Another constraint is the financial management between the union and the cooperative. Apparently, the feed processing operator which is supposed to get 25% of the chopping fees has never been paid. Also, the research center hasn't been paid in 2024, although the MoU has been signed. This delays regular monitoring of the cooperative.

Further constraints are the lack of means of transport of the cooperative. This is necessary to deliver feed to remote farmers. There is also the opportunity of producing and selling poultry feed, but this requires additional smaller sieves for grinding cereals.

4.3 Recommendations

The feed business monitoring team recommends the following:

- The initiative should appoint a focal point from the EIAR research institute responsible for data collection and feed business development and the organization of field days and demonstration of compound feed for sheep fattening
- The cooperative should separate accounts for sheep fattening and feed production activities to have a clear overview of costs and benefits of the feed business and pay the machine operator
- The Kabele office should discuss with members the cooperative opportunities for loan to extend feed business
- The initiative should pay soon the research center and enumerators for 2024 to ensure data collection and business support
- There should be clear research questions for the coming periods developed by EIAR and ICARDA. Research could look at the development of new feed formula (also for dairy and poultry) and impact of local compound feed concentrates on growth rate, health and reproduction of sheep including economic aspects.

5. General conclusion

The innovative idea of introducing feed production business by farmer organizations in different parts of Ethiopia shows first positive results. Three feed producing units, which were produced by the local machine manufacturer Mecce in Addis Ababa were distributed to three farmer groups in 2023. The units composed of a grinder and chopper, a feed conveyor and a feed mixer have been used to different extents by the groups. The highest number of beneficiaries (farmers buying feed or using chopping and grinding services) can be observed at the experienced cooperative in Bonga, which provides services to over 300 farmers since November 2023, whereas the largest amount of feed being produced and sold (almost 4 tons) is at the youth group in Doyogena which operates the feed unit since January 2024. This is due to the difference in the average quantity being purchased per farmer. In Bonga the average is 15 kg, whereas in Doyogena it is 75 kg per farmer. The lowest performance can be observed with the new youth group in Debre Berhan, where only some grinding and chopping activities took place during the dry season, but no feed production yet. The major reason is the security problems in the region.

The farmer groups have received free ingredients to start the feed production and commercialization and use it as a revolving fund. But to increase production and satisfy the demand of farmers for cheap quality feed and increase productivity in the sheep fattening exercises, it is important that the farmer groups have access to loans or credits. These loans should have a low interest rate to make the feed business beneficial and sustainable.

The multi actor collaboration between ICARDA, the national research institute EIAR, the private actors Mecce and John farm, the livestock departments, the Kebeles and the cooperative and enterprise offices in the respective regions has been essential to develop the business. The implication of the public sector has helped enormously in setting up the necessary infrastructure for the youth groups necessary to produce the feed with the processing unit. Additionally, their collaboration was necessary to have the legal framework for the feed business in place and hopefully provide the necessary financial support through loans in the near future.

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Annex 1: Feed business monitoring program

Program 16 – 24 June 2024 in Ethiopia

Objectives:

1. Discuss with partners action plan 2024 and government co-investment.
2. Participate at MoU signing event with Doyogena partners (private actor/university/ICARDA)
3. Monitor feed business in Bonga and Doyogena
4. Participate at feed fair in Doyogena

Date	Activity
June 16. Addis Ababa	Travel Tunis – Addis Ababa
June, 17 Doyogena	Flight from AA to Hawassa and travel to Doyogena
June 18 Doyogena	Participate at feed fair; monitor feed business and collect first data. Discuss action plan 2024 with partners and consultant
June 19 Doyogena	Travel from Doyogena to Arbamich
June 20 Addis Ababa	Flight Arbamich to Addis Ababa
June 21 Bonga	Morning: Discuss MoU with NARS, SAPLING/SI-MFS budget to centres, with Barbara/Jane/Aynalem Evening: Discuss with Debrebirhan partners on government co-investment action plan 2024; monitor feed business and data collection
June 22 Bonga	Flight to Jimma, travel to Bonga
June 23 Addis Ababa	<ul style="list-style-type: none">• Exchange with feed business stakeholders in Bonga (Research and youth group) about ongoing feed business development.• Collect first set of data. Discuss 2024 action plan
June 24 Addis	Flight Jimma to Addis Ababa Return to Tunis to Tunis



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