

BRIDGE+ Research & Development component

NEWSLETTER

Edition 3, November 2026



Introduction

In this third edition of the Newsletter, we are sharing key findings from action research on a number of interesting topics: Evaluating land-use trade-offs and the impact of improved forage and silage systems on smallholder livelihoods, behavioral drivers of manure technology adoption, evaluation of dairy farm school extension approach, cactus as replacement for molasses in urea-molasses blocks. This edition also included key findings on Professionalization modality on BRIDGE+ Input market assessment and school milk program, and the strategic research on assessment of sustainability of dairy sector in Tigray, and training for PhD students on future of tropical livestock systems. It also offers updates on progress of R&D activities and upcoming activities.

Your feedback to issues raised in the Newsletters will be appreciated and can be sent to: augustine.ayantunde@wur.nl.

Content overview

1. Introduction
Page 1

2. Key findings from action research
Page 2

3. Professionalization
Page 5

4. Strategic research
Page 6

5. Ongoing action research updates
Page 8

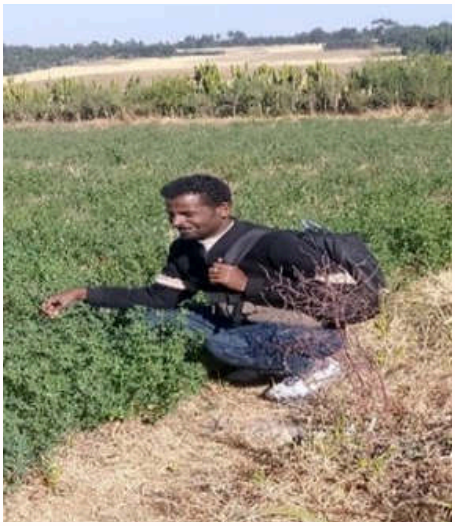
6. New upcoming action research
Page 9

7. About BRIDGE+ R&D component
Page 9

Key findings from action research

2a. Evaluating land-use trade-offs and the impact of improved forage and silage systems on smallholder livelihoods

Though livestock play a vital role in sustaining livelihoods, the low productivity in Ethiopia is largely due to inadequate and poor-quality feed. In mixed crop-livestock systems, crop residues and natural pastures dominate feed resources, while use of improved forages and silage remain limited. This study assessed the economic viability, determinants of adoption, livelihood effects, and optimal land allocation of Improved Forage and Silage Systems (IFSS) among smallholder farmers in Arsi Zone, Oromia Region, Ethiopia. The key findings showed that IFSS outperformed conventional food crops in economic efficiency in terms of Benefit Cost Ratio (BCR 3.67 vs. 3.07), raised net farm income by 19%, and improved food consumption scores by 16.6 points among adopters. This study provides compelling evidence that growing improved forage is viable and profitable, and adoption not only improves household income but also food security. This study was conducted as part of MSc thesis research at Haramaya University supported by BRIDGE+ in building capacity of Ethiopian young researchers.





2b. Behavioral drivers of manure technology adoption in Central Highlands of Ethiopia: Spatial heterogeneity, preferences, and trust

Accelerating circular bio-economy transitions is a critical global priority for poverty alleviation, clean energy access, and ecological preservation. This study examined how households evaluate competing manure technology attributes and investment costs under the modifying influence of institutional trust in North Shewa Zone, Amhara region of Ethiopia. Discrete Choice Experiment (DCE) and an institutional trust game were the main methods of the study. One thousand five hundred choice observations from 300 Dairy Farm School (DFS) households were used for analysis. Qualitative analysis, a panel mixed logit model, and a latent class estimation were used for estimation. Qualitative analysis showed that labor deficits compounded by youth migration, seasonal agricultural bottlenecks, and low-value manure perceptions trapped farmers in sub-optimal stockpiling, driving ecological degradation. Econometric estimations indicated that while smallholders exhibit profound behavioral aversion to incremental time burdens, they assigned substantial welfare premiums to local air quality and agricultural productivity, establishing a clear mandate for technologies that have environmental and health benefits. Results further showed that despite high manure availability, biomass remain severely underutilized and stockpiled. Findings revealed that manure adoption is governed by household labor deficits and clusters mismatches rather than raw resource availability. Furthermore, institutional trust acts as a vital behavioral driver for capital-intensive biogas technology adoption. To address this, policies must pivot from a one-size-fits-all clusters model toward a cluster-based strategy combining community labor-pooling with centralized processing. This study was part of PhD thesis research at Debre Berhan University supported by BRIDGE+.

2c. Evaluation of BRIDGE and BRIDGE+ Extension Approach

BRIDGE+ project has introduced a new dairy extension approach referred to as Dairy Farm School (DFS) for boosting milk production among smallholder dairy farmers. DFS interventions included Lactation cycle-based intervention (LCBI), forage and feed management, provision of clean and adequate water for cows, improved housing, cow health management, and breeding and reproductive management. Action research was therefore conducted by Hawassa University and other Ethiopian universities and Research Institutes to evaluate and document the performance and or impact of the introduced extension approach (DFS), and to propose sustainable dairy extension systems for the country. Results showed that DFS resulted in average increased milk yield from 5.64 liter/cow/day to 8.09 liter/cow/day and a peak yield of 11.07 liter/cow/day. For this study, representative sample households and study cows were taken from 5 representative regional states, 9 milksheds, 3 agro-ecologies and 3 categories of distance gradients (distance from infrastructures). Data from BRIDGE+ implementation team showed that about 65% of farmers have achieved at least 25% increase in peak lactation period.

The impact study revealed a substantial improvement in the adoption of improved dairy farm management practices among smallholder farmers keeping crossbred cows in the five regional states. The adoption of those practices resulted in improvements in milk production, lactation persistence and income of farmers.

2d. Evaluation of the use of cactus as replacement for molasses in urea-molasses blocks

This study was conducted to evaluate the effect of complete replacement of conventional urea molasses block ingredients with locally available feed resources on the physical structure, chemical composition, milk yield, and milk composition of dairy cows in Mekelle, Tigray region. The experiment was motivated by the high cost, limited availability, and poor accessibility of conventional urea molasses block (UMB) ingredients in the study area. Locally available resources were therefore considered as alternative feed ingredients to formulate nutritionally effective and economically feasible multi-nutrient blocks for dairy production. Crossover experimental design was employed using lactating dairy cows assigned to different dietary multi-nutrient block treatments across experimental periods. Data were collected in five days intervals on milk yield and composition parameters including fat, lactose, protein, solid non fat, and total solid content. The results indicated that replacement of conventional urea molasses block ingredients with locally available feed resources significantly influenced some physical characteristics and chemical compositions of the feed blocks. The locally formulated blocks showed acceptable physical quality and nutrient composition suitable for dairy cattle supplementation. Supplementation with experimental blocks improved milk yield and positively affected selected milk composition parameters compared with the conventional formulation. In conclusion, locally available feed resources can effectively replace conventional urea molasses blocks ingredients without negatively affecting the physical quality of the blocks or the productive performance of dairy cows. This study was conducted as part of MSc thesis research at Mekelle University with Tigray Agricultural Research Institute and It was supported by BRIDGE+.

Professionalization

3a. BRIDGE+ Input Market Assessment

The Input Market assessment concluded that BRIDGE+ has successfully established a network of Agro-Input Dealers (AgIDs) and introduced key dairy technologies and services across Ethiopia. The next phase should shift from direct project implementation to a market systems approach, focusing on broader sector development rather than selected beneficiaries. Priority areas include artificial insemination (AI), feed supply, silage markets, commercial dairy farming, and access to finance. Grants should gradually transition toward blended finance and credit mechanisms, while stronger partnerships, regional hubs, and market intelligence systems should be developed to support long-term sustainability.

3b. Analysis of BRIDGE+ Monitoring, Evaluation and Learning (MEAL) data

From the project's MEAL data, the productivity assessment found that 96% of 885 cows increased peak milk yield, with an average gain of 3.4 liters/day and a median increase of 33% compared with the previous lactation. Improvements were consistent across regions and among different farmer groups. The practices clearly associated with higher yields were better bedding and improved water availability, while concentrate feeding showed no measurable relationship with outcomes. Results demonstrate widespread reported productivity gains, although findings are based on self-reported farmer data without a control group.

3c. School Milk Program (SMP) Institutionalization Assessment

The SMP study found that school milk programs are a cost-effective and scalable entry point for school feeding, requiring less infrastructure and funding than cooked-meal programs. Success depends primarily on municipal leadership, local resource mobilization, and government ownership, rather than policy alone. Butajira city emerged as the strongest model, demonstrating how municipal funding, community contributions, and gradual scale-up can institutionalize SMP. The city started with pilot funding, demonstrated early results, integrated SMP into education priorities, and progressively increased local government support while reducing dependence on external funding. The proposed BRIDGE+ roadmap focuses on replicating the Butajira model, building municipal ownership, securing dairy supply chains, and integrating SMP into education systems, with a target of reaching 100,000 children by 2029.



Strategic research

4a. Assessment of sustainability of dairy sector in Tigray

Ethiopia's dairy sector plays a crucial role in supporting the livelihoods of over 69 million people. Dairy production in Tigray significantly impacts the regional economy, generating over 207.8 million liters of milk annually. Since the sector interfaces with multiple physical, biological and economic factors, sustainability is a key issue. Dairy Sustainability Assessment Tool (DSAT) was developed to facilitate and guide discussions among dairy value chain actors on sustainability. DSAT is designed under three dimensions (People, Planet and Profit) and 15 aspects with 2-5 indicators per aspect. To address the dairy sustainability issue in Tigray DSAT was deployed to identify top-policy priority interventions. To extract data using the DSAT tool two major workshops at Mekelle and Axum were carried out on 23-25 September 2025 involving 44 representative actors (22 participants for each workshop). For triangulation, four representatives from pertinent institutions were selected for Key Informant Interview using a guiding checklist.





The result showed that the dairy sector in Tigray is constrained by high feed costs, inadequate artificial insemination services, poor animal care, limited access to production factors, and insufficient water availability. The dairy sector in Tigray requires institutional protection; addressing the Feed-Food competition and strengthening the enabling environment through regulatory and infrastructure support by improving access to production factors, strengthening breed improvement programs, and supporting farmer cooperatives to address structural gaps.

4b. Training for PhD students on Future of Tropical Livestock Systems

Early July, the "Future of Tropical Livestock Systems" PhD course was organized in Hawassa through a collaboration between Wageningen University, ILRI, and Hawassa University, with support from BRIDGE+. The course elaborated how, under increasing social and environmental challenges, the need for sustainable and resilient livestock systems has never been greater. Designing meaningful transitions requires an understanding of the complex interplay between numerous drivers, and of the diverse perspectives of the stakeholders involved. During the course, PhD candidates explored the key drivers shaping the future of tropical livestock systems and learned how to identify and evaluate pathways towards more sustainable, resilient, and inclusive livestock production. It was inspiring to engage with such a motivated group of early-career researchers and to work together on developing the knowledge and tools needed to shape the future of tropical livestock systems. Participants included 12 PhD students involved in BRIDGE+ R&D and 7 other students, while trainers included professor Simon Oosting, Jan van der Lee and Fokje Steenstra from WUR, Kindu Mekonnen and Million Gebreyes from ILRI, and Sintayehu Yigrem from Hawassa University.

See Tropical livestock systems course equips researchers to advance Ethiopia's dairy sector for an interview with Kefale Eniyew, one of the participants, and for more information on the course.



Ongoing action research updates

A brief progress update on the ongoing action research subtopics is provided below:

Evaluation of impacts of BRIDGE+ extension approaches: *The study has been finalized and the report submitted to the project. The research partners have also drafted a practice brief summarizing the study's key findings.*

Barn design and bedding material options for smallholder dairy farmers: *The study is nearing completion. Construction of the new barn pilot is complete, and data collection is nearly complete in two milksheds and progressing in the others. Partners plan to finalize the study and produce its report this November.*

Business climate challenges in the investment and operation of industrial milk processing plants in Ethiopia: *Quantitative and qualitative data collection is underway and nearing completion.*

Monitoring impact of the BRIDGE+ Food safety interventions: *The study is being conducted in Selale and Debre Berhan milksheds. It is led by the Addis Ababa University Centre for Food Sciences in partnership with Selale University. Field data collection began after the inception workshop with key stakeholders and finalization of data collection tools. Wet and dry-season data collection is successfully completed.*

Impact of BRIDGE+ intervention on GHG emission reduction second round study: *The project is implementing the study in partnership with Hawassa, Debre Berhan and Mekelle Universities. Field data collection has been completed in September 2026.*

PhD and MSc thesis research

As reported in the previous update, the project supports 10 MSc and 10 PhD thesis research projects. By the end of the third quarter (Sept 2026),3 PhD students had completed their studies and submitted their reports, while four studies were nearing completion. Of the 10 MSc students, one finalized his thesis in 2025, and another one finalized his thesis in July 2026 while six have drafted their thesis waiting for defense at the end of third quarter. The remaining two students are still working on data analysis and thesis writing. Four of the MSc students had finalized their practice briefs, as required by their contracts, while the remaining five were drafting theirs.

Policy and Practice briefs finalized

The following practice brief and policy brief have been finalized and are ready for dissemination:

- GHG emissions reduction potential for dairy farms
- Improved fodder & feeding tech for livestock
- Dairy research impact and private sector involvement
- Cactus as a molasses replacement in nutrient blocks for dairy cows in Waghimra, Ethiopia

New upcoming action research

- Pilot phase of the heifer multiplication business.
- 2nd round call for MSc thesis will soon be advertised/circulated.

About BRIDGE+ R&D component

The second phase of the BRIDGE+ project (Building Rural Income through Inclusive Dairy business Growth in Ethiopia) aims at transforming dairy value chain to benefit farmers, consumers, value chain actors and the country in terms of economy, investment, employment, nutrition, and environment. BRIDGE+ is implemented by a joint consortium of SNV Ethiopia, Wageningen University & Research (WUR), and AGRITERRA. Research & Development (R&D) is one of the 10 components of BRIDGE+, which focuses on supporting the project implementation with evidence and capacity building, strengthening the linkage between private sector and research, building capacity of Ethiopian Universities and Research Institutes, and influencing dairy sector policy through strategic research on the sector transformation. This Newsletter aims to share the latest key findings from R&D activities and to provide regular updates on progress with BRIDGE+ implementation team and partners, and the wider dairy stakeholders.