



## About FORQLAB

Welcome to the 5th edition of the FORQLAB Newsletter, highlighting our journey in reducing food waste and improving food quality in Kenya. While the FORQLAB project officially concluded on 31 October 2024, activities and student research continued right up to the final day. This edition, brings insights and updates from the project's final milestones, celebrating the progress and impact made along the way.

We extend our heartfelt gratitude to all consortium partners who contributed to the success of the FORQLAB project. This achievement was made possible through the dedication of dairy and avocado farmers, seven cooperative societies, six business companies, two network organisations, two Kenyan government institutions, two Kenyan universities, four Dutch universities of applied sciences, 10 TVETs, and over 85 students. We also appreciate the involvement of Dutch university alumni, around 30 university staff, and representatives from the Centre of Excellence Green (CoE GROEN), Regieorgaan SIA, the Dutch Ministry of Agriculture, Nature and Food Quality (LNV), the Agricultural Council of the Royal Netherlands Embassy in Nairobi, and the Erasmus+ (KA171) office. Your collective efforts have been instrumental in driving the impact of FORQLAB forward!

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Avocados from Kenya ready for shipping

## Project Deliverables and Outcomes

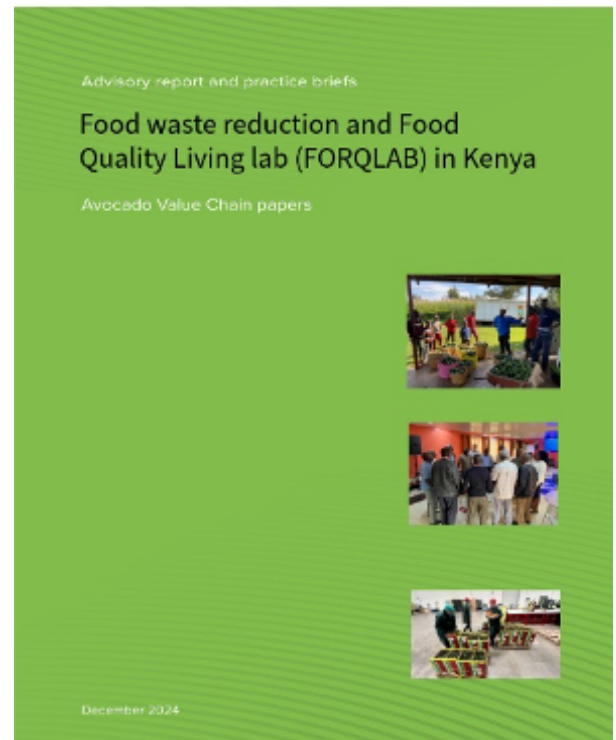
The main deliverables of the project were 30 student studies on technical and governance related questions in the dairy and avocado chains in central versus western Kenya. At the end of the project, 23 thesis and 18 business assignment have been conducted, with participation of over 85 students. Most studies have been summarized in a so-called "practice brief". The practice briefs which will be posted on the [FORQLAB page](#) were the basis for the advisory reports. These products will be put together in a booklet (see figure), which will be expected in January 2025. During a curriculum development workshop with 10 TVETs, 4 modules have been developed, related to different stakeholders in the food chain. These modules were developed based on student research.

At the same time, an action research trajectory was organized by university staff, according to the principles of a "Living Lab". Two till three meetings were organised with supportive stakeholders to set a research agenda, to plan actions for research and support and to report and consolidate research and activities as well as two or three exchange visits or combined with training workshops, co-implemented by Agriterra-Kenya.

Besides, about 30 documentaries were made from different dairy and avocado stakeholders, resulting in an avocado value chain video, launched at the network meeting in April '24, and a food loss cinema, which was showed during the World Food Day event (WFD24) organized by NFP. Besides SIA-funds, also NFP and Erasmus+ funds contributed to these documentaries.

## Model dairy farm in Busia

We are also delighted to note that Egerton Masters student (also instructor at Dairy Training Institute (DTI), Naivasha), Susan Njuguna, started with her husband and family a modern climate adaptive dairy farm with milk processing and biogas unit, the Moo and More Dairy farm in Bumala, Busia. Their farm also serves as training and model farm for farmers in Western Kenya.



Susan Njuguna (left) at her farm in Busia

## Latest Student's Research

Three students from Van Hall Larenstein University of Applied Sciences (VHL) successfully graduated with theses linked to the FORQLAB project, showcasing innovative research and practical solutions.

Bethel Odera Pendo, from Kenya, conducted an "Integrated Assessment of the Presence and Levels of Contaminants (Aflatoxins, Antibiotics, Acaricides, and Pesticides) in Raw Milk in the North Rift Region, Kenya," co-financed by BIOFoods.

Mercy Moraa Mairura, also from Kenya, focused on improving communication and coordination within avocado cooperatives in Meru County. Her thesis, titled "Improving Communication and Coordination through an Information and Communication Technology (ICT) Application within Avocado Cooperatives in Meru County, Kenya," provides actionable insights.

Kareemat Fakorede, from Nigeria, explored similar themes in Nandi County with her work, "Leveraging an Information and Communication Technology (ICT) Application to Enhance Communication and Coordination within Nandi Avocado Farmers' Cooperative Society."



Recently graduated VHL students (L-R) Bethel Odera Pendo, Mercy Moraa Mairura, Kareemat Fakorede

These research projects are integral to achieving the broader goals of the FORQLAB initiative, which focuses on reducing food losses in Kenya's dairy and avocado value chains. By addressing critical issues such as contaminants in milk and enhancing communication within cooperatives through ICT applications, these studies offer practical solutions to systemic challenges, empowering farmers to improve efficiency, quality, and profitability in their operations.

There are also other students from Meru University of Science and Technology (MUST) who have recently completed, or are at different stages of concluding their research. All completed theses and their accompanying practice briefs will be made available online at the [FORQLAB page](#)

## Strategic planning workshop with avocado cooperatives

Following the FORQLAB closing network meeting on 24 April 2024, four avocado cooperative societies committed to strengthening their collaboration. As a first step, they piloted an avocado shipment to the Netherlands and Belgium, supported by consortium partners Airflo, Special Fruits, and HAS Green Academy.

Building on this success, the farmers requested HAS to organise a strategic planning workshop to guide their future cooperation. The workshop, held on 21-22 October 2024 at the CoELIB premises at Egerton University, brought together three board members from each cooperative. Facilitated by Peter Bouma (HAS) and Kennedy Opondo (Agriterra), and funded by NFP with partial contributions from the farmers. The session also benefited from the involvement of MUST, Egerton University, and VHL.



Avocado Farmers at a consultative meeting at Egerton University

The workshop resulted in a strategic plan outlining five key objectives focused on marketing, strategic partnerships, export volumes, and financial goals. The cooperatives pledged to formalize their collaboration in the near future, marking a significant step forward. As a token of appreciation, the farmers surprised the facilitators with certificates of recognition (see photo).



## Updates from Kaptama, Kitinda and Githunguri Dairy cooperative societies

The Kaptama Dairy Farmers' Cooperative Society is experiencing remarkable growth, with its membership and daily milk intake now exceeding 6,000 liters. The cooperative recently showcased two newly constructed buildings, funded through the WB/NARIG project, which will house facilities for small-scale milk processing, SACCO operations, and feed storage. These additions are set to enhance the cooperative's services to dairy farmers significantly.

At Kitinda Dairy Farmers' Cooperative Society, the CEO shared updates on the cooperative's premises reorganization and highlighted the potential of a new dairy union in Bungoma. This initiative could provide Kitinda with critical long-term opportunities.

During a visit to Githunguri Dairy Farmers' Cooperative Society (FRESHA), Francis Muhande, head of quality assurance, reported on substantial advancements. Fresha recently added a milk cooler and collection point, contributing to its daily processing of 260,000 liters of milk sourced from 89 collection points and 13 cooling centers. The ongoing Tetra Pak-Laval/SIDA partnership has reached Phase 3, establishing a Center of Excellence featuring a model farm with eight dairy cows, a fodder demo plot, solar panels, and biogas systems.



Fodder experimental plots at a model farm of Githunguri Cooperative

Rejections of milk due to contamination with antibiotics have decreased from 17,000 kg to 8,000-9,000 kg monthly, but private animal health practitioners still prescribe shorter-than-recommended waiting times. Aflatoxin levels remain a concern, with qualitative tests indicating slightly above-standard levels (0.5-0.6), though no quantitative or route-specific testing is performed yet. Despite testing on concentrate feeds sold in Fresha shops, fodder testing is still lacking.

Further investments are needed in Quality-Based Milk Payment Systems (QBMPs) to reward safe, high-quality milk and ensure cooperation among graders, inspectors, and extension teams for effective route-level follow-ups.

## Food loss cinema at NFP's World Food Day event

FORQLAB presented the Food Loss Cinema at the World Food Day celebrations hosted by NFP in Amersfoort, the Netherlands. Food Loss Cinema ran all day featuring a series of videos highlighting the research findings from the researchers and students involved in the project in Kenya. The interactive film consisted of short clips that showcased food losses across the avocado and dairy value chains, covering all aspect until the processor and export/import level of the value chain. At the end of each video, text questions appeared in the screen to test viewers' knowledge of what they had learned, heard, or observed. The goal was that participants left the cinema with a clear understanding of the food losses occurring in these value chains.

The cinema attracted a total of 203 viewers, with 190 of them actively participating in the interactive questions and answers session at the end of each film. The viewer with the highest score got 27 points out of a possible 80 points across all films. In the avocado value chain section, the most popular videos covered topics such as managing financial constraints, selecting high-quality avocado seedlings, ensuring proper import quality checks, and understanding the role of financial partners in the value chain. For the dairy value chain section, the most-watched videos focused on addressing cow feed scarcity, minimising milk losses caused by herdsmen, and improving cooperative governance



Participants and alumni hosts at Food Loss Cinema in Amersfoort, the Netherlands

Most viewers were curious about various aspects of the living lab, particularly the methodology used in the data collection process, how the living lab was managed given the involvement of multiple stakeholders and the project's duration and future directions. They also inquired about the role of different actors in the research, the experience of collaboration between the participating research institutions, and the role of the Netherlands Food Partnership (NFP) in the project.

### Egerton University Students Exchange Program at VHL

Three students from Egerton University's (EGU) Department of Animal Sciences and Technology —Teresia Wangari Mwangi, Evans Ochieng Odhiambo, and Peter Okoth Otieno— are set to participate in a minor program exchange at Van Hall Larenstein University of Applied Sciences (VHL), The Netherlands. This opportunity, made possible through the Erasmus+ exchange program, will take place from February to July 2025.

The students, who have successfully completed their coursework at Egerton, will specialise in Innovation and Problem Solving in Animal Husbandry during the exchange. This minor program focuses on critical topics such as innovation, farm risk analysis, entrepreneurship, product quality, and professional orientation. The program will develop their skills in problem-solving, innovation development, external communication, project management, teamwork, and presenting. Key program component involves analyzing production systems on Dutch livestock farms, identifying challenges, and designing workable solutions. The students will also be tasked with creating individual detailed business plan for a small company linked to their innovation, providing them with practical entrepreneurial experience. The aim is to equip students with the tools to improve and innovate animal husbandry practices, offer tailored advice to support farm management and design sustainable, real-life solutions for the livestock sector.



Egerton University students (L-R) Teresia Wangari Mwangi, Evans Ochieng Odhiambo, and Peter Okoth Otieno

In preparation for the experience, the students recently attended a pre-exchange webinar for an orientation on VHL's academic structure, course expectations, Dutch culture, and life in the Netherlands. This exchange underscores the importance of continuous innovation and problem-solving in developing sustainable approaches and products in Food and Agri-systems, and a highlight of continuous collaboration between VHL and EGU in academic and professional advancement.

We wish Teresia, Evans, and Peter all the best!

## Other news on dairy and avocado sector

The Smart Avocados are GPS-equipped avocado replicas deployed in real avocado production sites in South Africa. The Smart avocado allow tracing the journey of the fruit, from the production site to the packhouse, from country roads to the cargo ship, and finally to the local reseller in the Netherlands.

The Netherlands University of Twente and its partners in South Africa use the smart avocados to create a high-resolution map of the food flow, enabling our understanding of the environmental impact of the avocado trade. The research aims to pave the way for improved monitoring methods of food flows.

Read more and watch the video [here](#)



## CSRD Impact Avocado



The European Union introduced the Corporate Sustainability Reporting Directive, which will in due course also apply to avocado importers. The new rules will ensure that investors and other stakeholders have access to the information they need to assess the impact of companies on people and the environment and for investors to assess financial risks and opportunities arising from climate change and other sustainability issues. Fruit importer Eosta sees the CSRD as an opportunity to present their sustainable business approach.

To learn more watch this [video](#)

## Women in dairy

The IDF Women in Dairy Report celebrates the transformative role of women in the global dairy sector, highlighting how this sector contributes to their empowerment across multiple dimensions. The report features 16 case studies from across all continents, including one example from Githunguri.

Extension officer Susan Kamau writes about Weezesha, informal saving and credit groups combined with short dairy extension sessions. The women participating in Weezesha improve their income by higher production and reduce cow mastitis in their small farms.

Read more in p36-38 in this [report](#):



## Seasons Greetings

As we close 2024, we extend our heartfelt wishes for a joyous festive season filled with warmth, laughter, and togetherness. May the coming year bring you prosperity, growth, and success. Thank you for being part of our journey

Happy Holidays!



### FORQLAB Community

FORQLAB's online community is hosted by Netherlands Food Partnership. It's a space to come together, exchange and share and find common ground and energy for action.

You can find this newsletter and many other updates from FORQLAB [at this link](#)

### The FORQLAB partners are:

