



What is FORQLAB?

The acronym stands for 'Food Waste Reduction and Food Quality Living Lab'. In this living lab, universities, farmer cooperatives and business partners work together around two action research questions for the avocado and dairy sectors in Kenya : what technical solutions and what governance interventions are required to encourage safe products and reduce food losses?

The FORQLAB partners are Meru university of science and technology and Egerton university in Kenya, and four Dutch universities of applied sciences: Van Hall Larenstein, HAS Green Academy, InHolland and Aeres. These partners will engage with seven Kenyan farmer cooperatives and their business partners in the avocado export and domestic dairy sectors.

The expected results of FORQLAB include ten Master theses on food loss and quality; followed by capacity building with the cooperatives to improve their practices and finally the uptake of this approach in education.

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The FORQLAB Kenya delegation visited examples of living labs in the Netherlands

FORQLAB Kenya team visiting partners in the Netherlands

Between 14th and 24th June 2023, a delegation of five FORQLAB researchers from Egerton university and Meru university of science and technology visited their partners in the Netherlands. The team was led by Prof. Romanus Odhiambo, vice-chancellor of Meru university and Prof. Alexander Kahi, director of CoELIB centre at Egerton university and also included Dr. Tobias Okeno, Wilson Karimi and Dr. Beatrice Owiti.

A first visit was to EcoLaNa in Holwert. EcoLaNa stands for Economically and Ecologically Responsible Agriculture and Nature and is a partnership of two arable farms, a dairy farm and a sheep farm. These farms jointly coordinate their business operations in order to close the nutrient cycles of animal feed and manure fertilizers. They process their products and their energy supply. [Watch this video.](#)

The team also visited the FijldLab Biosintrum in Oosterwolde, a knowledge centre for the biobased economy. The building itself contains 80% bio-based materials and offers an innovation space for education, business and government in the field of the biobased economy in Ooststellingwerf. [Read more here](#)

A visit to Ante BV, a dairy partners in FORQLAB, focused on dairy technology. The company trades in dairy processing machinery and offers maintenance and repair services through a network of businesses in Kenya, Tanzania, Uganda and Ethiopia in East Africa.

During their visits to Van Hall Larenstein university and to HAS Green Academy, the team had a series of meetings and discussions with staff and board members. A main topic of discussion was the living lab approach and partnering with companies on food losses. The team also gave some guest lectures and assessed Master students projects.

The Kenya delegation also took part in the VHL business fair and innovation market for sustainable futures as judges. Bachelor students of the study programmes Animal Husbandry, Food Technology, International Agribusiness and Trade (International Business in Food and Flowers), International Development Management as well as Management of the Living Environment presented their innovative ideas and projects. The students solutions for food waste "[Food for Thought](#) " team took home the most prizes. This group of second-year International Development Management students developed an accessible app that helps consumers reduce food waste.

Read interviews with [Tobias Okeno](#) on dairy and with [Beatrice Owiti](#) on avocados



Tobias from Egerton University



Beatrice from Meru University

FORQLAB mid-term mission to Kenya

Soon after the Kenya delegation visited the Netherlands in June, a group of nine teaching staff from Van Hall Larenstein university and HAS Green Academy visited Kenya in July. The visitors, together with staff from Egerton and Meru universities formed four teams. These teams travelled to meet all seven cooperatives that are partners in FORQLAB.

All staff from the Netherlands and Kenya, the leadership of the cooperatives and a selection of masters students joined the FORQLAB mid-term meeting hosted by Egerton university. Read impressions from the visits and the meetings on the next pages.

Meeting the avocado cooperatives in Nandi county and Meru county.

One delegation visited the avocado cooperative in Kapsabet, Nandi, which showed tangible progress. Young farmers were planting Hass avocado in their tea plantations. The expectation was that growing avocados for the export market would offer better revenues. The county government and the cooperative anticipate this and collaborated in building a new collection, grading and cooling centre. It is funded by Kenya's NARIGP programme and was near completion.

The leadership of the avocado cooperative looks forward to assuming a role in trading larger quantities directly with the exporters. This new role includes organising farmer members in clusters, managing the logistics of their truck and a much better understanding of market demand.

The meetings in Kapsabet with other stakeholders indicated a strong support for the cooperative. All wanted to see that earnings from the avocado business stay in the county and with the farmers.



Farmers plant avocado trees in their tea crop in the expectation of a more remunerative market.



The FORQLAB delegation visited the authorities in Nandi together with the cooperative leadership.



The county government and the cooperative build an avocado collection and grading centre.

A second FORQLAB delegation visited all three avocado cooperatives in Meru county and met with their cooperative boards and members. Meru University hosted a joint meeting with cooperatives and the HCD (Horticulture Crops Directorate), KEPHIS (Kenya plant health inspectorate service) and NARIGP. The meetings led to three priorities for the second year of FORQLAB.



These priorities overlap with those from Nandi county. In Meru however, HCD, KEPHIS and the Meru university extension office explained that they have services available for avocado farmers that are yet underutilised.

Inspection of young avocado trees during a farm visit in Meru county

| Priorities of the cooperative in Nandi County | Priorities of the 3 cooperatives in Meru county |
|--|--|
| Farm level: good agricultural practices in pruning and harvesting | Extension on plant nutrition, quality seedlings, harvesting, pests and diseases. |
| Cooperative level: sustainable growth, 5year strategy, check and balances. | Cooperative governance: needs assessment, business plan, visits to successful cooperatives |
| Market level: understanding avocado chains and how to partner with exporters | From individual to collective marketing. Power of brokers. HCD certifies buyers and exporters. |
| Digitalization of finance, admin, sales and procurement process as well as improvement communication with farmers. | |
| Stakeholder level: Nandi avocado stakeholder platform, link NARIGP. | Cooperatives should register with HCD and link with their Sales & Marketing liaison office. |

Meeting the dairy cooperatives in Githunguri

A third team of five staff and students from Van Hall Larenstein and Egerton universities visited the

Githunguri Dairy Farmers Cooperative Society. This cooperative is known throughout Kenya by their Fresha brand. The visit started with a workshop with 25 cooperative staff working in extension and quality control. The visitors shared an overview of the findings from student research and also the plans for upcoming research. The topics, climate smart dairy farming, circularity and nature inclusive production, milk quality and milk collection contributed to lively discussions.

The next day, field trips were made to two model dairy farms, one milk collection centre, and one forage demonstration plot of GDFCS. Both farms produced a considerable amount of milk and milking procedures looked well. They also faced a serious challenge of manure exposure, which piled up inside and outside the farm buildings without being re-used. The farmers themselves found this situation rather normal. One farm had a high death rate among young calves, the possible relation with the inadequate housing, exposure to wind and dirt were discussed.

The MCC was typical for the region, and is functioning well. The forage demonstration plots showed a huge variety of pastures, some inter-cropping (grass-legumes), with several potential forages for farmers. The plot was rather new and did not create spin-off yet. A very positive element of the Githunguri cooperative is their system of record keeping. It was introduced by TetraPak Sweden and appreciated by both farmers and extension staff.



Visit to a commercial farmer in Githunguri



Year-round availability of quality fodder is key

Meeting the dairy cooperatives in Bungoma

The fourth team of four teaching staff and two students visited the dairy cooperatives in Kitinda and Kaptama, both in Bungoma county. The two MSc students Susan Njuguna and Wilson Karimi from Egerton university presented their research proposals. Susan is focusing on the impact of different nutritional regimes on dairy farmers and their effects on milk loss and waste. Wilson aims to research the effects of digital financial services on the performance of small holder dairy farmers. Both proposals were well-received by the cooperatives, who expressed their commitment to supporting the students during the data collection phase.

Following this, Marco Verschuur and Pleun van Arensbergen (both VHL university) presented the results from previous research done by students from VHL and Aeres universities. This sparked discussions around the possibility of cooperatives conducting experimentation at farm level to mitigate post-harvest losses. The discussions showed that both cooperatives are receptive of the research ideas and were ready to implement the research findings.

The exchange between the dairy cooperatives is also important as they may learn from each other on practical issues (from fodder to inputs to services) and on the strategies to grow the dairy operations and deal with the business partners.

The trip also included farm visits. The first was to a nature-inclusive farmer, who explained the link between agriculture and the environment. Adopting practices that mimic natural ecosystems can lead to improved agricultural yields, reduced environmental impact, and enhanced resilience in the face of climate change. Nature-inclusive agriculture promotes biodiversity, reduces the need for synthetic inputs, and fosters harmony between farming and the natural world.

A second visit to a commercial farmer focused on intensive production and fodder conservation. The farm showed best practices of cultivating high-quality fodder for dairy cattle. Fodder conservation for the dry season is essential for maintaining the health and productivity of dairy livestock.

| Priorities of the Kitinda cooperative | Priorities of the Kaptam cooperative |
|--|--|
| Collecting 800 liters of milk per day | Collecting 3500 liters of raw milk per day |
| New board develops services for members on 14 acre plot: fodder, factory | Services to members: forage harvester, feed mill, milk payment via SACCO, AI service |
| Kitinda coop plans to reduce food losses <ul style="list-style-type: none"> • own transport system • produce <i>mala</i>, yoghurt, cheese, UHT | Kaptama coop plans to reduce food losses: <ul style="list-style-type: none"> • install a milk pasteurizer • produce mala and yogurt • acquire transport, small chillers at MCC • milk testing lab to monitor quality |

The dairy cooperatives from Kitinda and Kaptama remain interested in research topics including clude milk losses during collection, milk cans, milking machines, feed quality and seasonality, governance, business plans, climate smart dairy. In addition, the idea emerged for an exchange visit from Kaptama and Kitinda cooperatives to Githunguri cooperative.



Participants at the FORQLAB Kitinda dairy board governance workshop, in May 2023

FORQLAB mid-term meeting hosted by Egerton University



A lively FORQLAB avocado and dairy cooperatives mid term meeting at Egerton university

The FORQLAB visits to the avocado and dairy cooperatives were concluded by a mid-term meeting hosted by Egerton university. The aim of this meeting was to evaluate progress of the project implementation at cooperative level, enhance living lab meetings, present research findings and chart new research and implementation for the second year of FORQLAB.

The FORQLAB mid-term meeting was made possible by the main donor SIA RAAK, with additional support from NFP and the EU Erasmus+ program.

Effective collaboration and connection among diverse partners and stakeholders is pivotal in addressing the intricate challenges within our food systems. This is even more essential in the avocado and dairy food chains in Kenya. In this regard, FORQLAB will continue its mission of following a living lab approach: master students and teachers do applied research with the business partners in order to find and test solutions for technical issues and better coordination in the avocado and dairy value chains.



University staff from Netherlands and Kenya visited FORQLAB cooperatives.

The ERASMUS+ Program sponsorship

The Kenya teaching staff visit to the Netherlands and the Netherlands teaching staff visit to Kenya were financed through the Erasmus+ programme. The Erasmus Programme (European Community Action Scheme for the Mobility of University Students). Erasmus+, or Erasmus Plus, is the new programme combining all the EU's current schemes for education, training, youth and sport.

Beside the more popular Student Mobility for Studies (SMS), the Erasmus+ programme promotes the teacher mobility (STA), by which University teachers can spend a short period, for a minimum of 2 teaching days and a maximum of 2 months, teaching in a foreign partner University.

To fulfil this requirement the visiting researchers gave guest lectures to students and staff of the Master Innovative dairy chain management and bachelor international farm management. The topic of the guest lectures revolved around dairy farming in Africa with focus on East Africa.



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](#)



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The FORQLAB university partners are:



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