First steps in ARF project to enhance safety and quality of milk in Ethiopia

In the first year of the Healthy Cows, Healthy Food, Healthy Environment project important first steps have been made. Main objective of this project is to improve the milk quality and milk quality in terms of chemical (antibiotic) residues. This is done in two ways: by enhancing the laboratory control capacity and by implementing the Natural Livestock Farming (NLF) 5-layered methodology in two pilot communities. The outcome in terms of milk quality at community level is measured at the government laboratory, which is supported through technical training on residue analysis of milk.

Over the past year the activities included a background/baseline documentation on the study sites as well as two visits of Dutch partners to Ethiopia. Three major aspects were covered: (1) getting to know the two selected communities for the pilot study and (2) review of laboratories where residue analysis is to take place. As a third activity several organizations were visited directly and indirectly involved in Ethiopian small holder dairy farmers, including the state minister of the Ministry of Agriculture and Livestock Resources, FAO-Ethiopia, and the dairy program of Dutch Development organization SNV.

A first glance of community reality

The two communities that are taking part in this applied research project are located near Debre Zeit, an urban area located at 45 minutes' drive from capital Addis Ababa known for its dairy development programs. In both communities the farmers keep between 2 and 10 cattle in a zero-grazing system. In one of the communities the animals are kept in buildings made of corrugated iron sheet – where the farmers were re-located due to urbanization schemes; in the other the cattle are kept directly in or near the homestead. None of the farmers own land.



To get to know the farmers and their concerns related to animal health a participatory analysis was organized, known as the Wheel of animal health and wellbeing. This is a method developed by Dutch Farm Experience which allows (illiterate) farmers to express and prioritize their animal health concerns.
(link https://www.dutchfarmexperience.com/dairy-wheel/)



This participatory base line on cattle health management with a total of 24 farmers in the two selected peri-urban communities, revealed extremely high mortality rates amongst calves (average 73% and 56%), with mortality of 16-18% for adult cows. Calf death occurs especially at (very) young age due to weakness and diarrhoea – with calf blindness as an additional symptom.



The analysis of Natural Livestock Farming 5-layer strategy revealed the following:

1. **Animal Management:**
   High mortality rates are linked to problems in cattle feeding and management: the animals are kept indoors, tied with very limited space, lack of ventilation. Shortage and low quality of roughage feeding (due to lack of land), lack of quality water, housing with serious deficiencies ('the cows are our prisoners'), frequent disease including mastitis, Foot & Mouth Disease, hoof problems



2. **Breeding**:
   The continued crossbreeding of local breed cattle with Holstein-Friesian semen (through artificial insemination) seems to further enhance this problem: low fertility, problems with prolonged parturition and calf weakness.


3. **Use of herbs**:
Some curative and preventive use of herbs, farmers interested in learning more about this and are motivated to use herbs. One farmer has specialized in growing medicinal herbs.

4. **Milk quality:**
No information available at the moment

5. **Farmer economy:**
Milk is marketed through formal dairy chain. But profitability is low due to high mortality of the animals. High costs for inputs due to lack of land – farmers must buy all feedstuffs from the market. Veterinary services are often not available, contributing to the high mortality rates reported. Survival rates of calves is too low for proper replacement of adult cows – surviving calves of low quality.

To further detail this preliminary analysis of the cattle management and health situation, a more detailed quantitative study is in plan to analyse the situation at individual farm level.

New state laboratories

The use of antibiotics in the communities visited seems to be relatively low, due to lack of veterinary services. The rapid growth of veterinary colleges (1 ->10) may however result in too many practitioners in the future, which is expected to cause rise in antibiotic use, while currently no proper control system on residues is in place. Meanwhile, the frequent contamination of cattle feed with Aflatoxines is expected to be one of the underlying causes of the high mortality rates encountered.

The Ministry of Agriculture now counts with a new laboratory for quality controls: VDFACA (The Ethiopian Veterinary Drug and Feed Administration). In the brand-new laboratory building motivated staff and good equipment are available. Meanwhile, there is lack of experience with routine sampling and control on antibiotic residues. The project includes a training of six laboratory staff analysts from VDFACA and one from ESAP, in residue analysis at RIKILT-Wageningen University and Research in the Netherlands in November 2018.

Meeting organizations working with smallholder dairy farmers

Improving dairy farming is a priority within the Ministry of Agriculture and Livestock Resources, which is also heading the VDFACA laboratory. Several organizations, including the Dutch Development organization SNV, are working in the field of dairy development, and the risk related to residues of antibiotics and other chemicals is increasingly recognized.

Meanwhile, it is clear that residues of aflatoxines in the milk are of special concern. This is a highly political issue as recent scandals caused upheaval amongst Ethiopian consumers. Though this topic is not included into this ARF project, it is suggested to include it as part of the upcoming trials in the two communities by stimulating the use of a mycotoxin-bindning mineral (Bentonite) in cattle feed– this is a mineral that is known to reduce the impact of Aflatoxine in cows. The impact on residues in milk can then be monitored in the VDFACA laboratories.

While the budget of the ARF project does not allow to include this aspect, we are looking for additional support from SNV-Ethiopia. The linkage with the dairy program of SNV-Ethiopia was further strengthened through a recent gift of milk containers to the dairy farmers in the two pilot communities.

June 2018 Discussing the outcome of the ARF project with the State Minister of the Ministry of Agriculture and livestock Resources