

NLF international report 2021

Thanks to the continued input and enthusiasm of the whole international network, the NLF year 2021 turned out to be one of growing recognition of the impact of our strategy. In spite of all COVID limitations! These are the major developments and achievements over 2021.

1. Joint organization improved

- As an international organization, we improved the coordination of the board, re-defining the people within both the NLF administrative board (Unni, Hester, Arjen, Getachew) and executive board (Nair, Daniel, Elizabeth and Janna), jointly forming the NLF Board. Katrien was positioned as the executive director and link between both layers of the board. The exact functions of each of the layers are still further to be determined, and registered under the new Dutch law.
- Meetings were done in a regular way and well documented.

2. Proof of concept



NLF India-GLOHMSIWA/TDU: upscaling through NDDDB in place, with proof of concept of EVP with over 500.000 smallholder dairy farmers indicating cure rate of 82% of 24 most common cattle diseases. A 3 years intervention of training of farmers to use Herbal formulation indicates about 87% reduction of antibiotic residue in the milk and average 72% cost reduction on cattle health for famers. Moreover, ready-made herbal products for mastitis, external parasites and general immunity will appear on the market shortly.



NLF Ethiopia-ESAP: ARF project on NLF 5-layer strategy successful showing: 50% increase of milk production, 8% reduction of antibiotic residues in milk, 60% reduced calf mortality, 33% increased farm income with cattle health costs reduced by 20%. These excellent results were shared during the ESAP annual conference in Addis Ababa, October 2021.



NLF Uganda-Lake Mburo Farmers Cooperative Society: activities in direct marketing (community milk tank, yoghurt making), as well as diversification (bee keeping and indigenous tree species). A new breeding project is being undertaken with Vleckvieh insemination, in combination with Genetic Resource Centre. An initiative on maintenance of Ankole breed, through re-stocking in the central cattle corridor, and construction of live fence material was undertaken.



NLF Netherlands-Veterinary Knowledge Centre East Netherlands (VKON): NLF strategy is being adapted to large-scale dairy farming. Over the past years more than 400 farmers and 50 veterinarians were trained on herbs in grasslands and safe use of ready-made herbal products. In 2022 NLF Netherlands is the networking partner in Kennis op Maat (Adapted Knowledge) program on Herbal Products, coordinated by Wageningen University.

3. Improved visibility

In 2021 it was possible to improve our visibility as an international network, especially through:

- **Regular webinars:** In 2021 we have developed webinars on specific cattle health topics, in which we shared the experiences and proof of concept to a wider audience. Topics shared:
 - (1) NLF strategy in 4 countries;
 - (2) Natural ways of mastitis control
 - (3) Natural ways of calf management
 - (4) Nature-based solutions: herbs for dairy

- **NLF at ESAP conference** Oct 2021: in spite of Corona, it was possible to present NLF strategy and results at the success ESAP conference on Dairy Development
- **Video for farmers** – Collaboration with Agro-Eco on [video on reduction of calcium deficiency in dairy cows](#)
- **E-list** for sharing info (currently 234 members) combined with whats-app groups to maintain internal cohesion.
- **Website:** new NLF website about to be launched
- **Social media and newsletter:** to be further developed
- **Articles NLF general:**
 - Katrien van't Hooft, Getachew Gebru, M.N.B.Nair, N. Punniyamurthy, E. Katushabe and Maria Groot 2021. [New strategy to reduce antibiotics in dairy farming. MISSET special issue on AMR, December 2021](#)
 - Maria Groot, Bjorn Berendsen, Natalie Cleton 2021 [The Next Step to Further Decrease Veterinary Antibiotic Applications: Phytogetic Alternatives and Effective Monitoring – the Dutch Approach. In: Frontiers Veterinary Science 03 September 2021](#)
- **Articles on Ethnovet practices**
 - Dr. Pankaj Dutta, AV Hari Kumar, AC Mahajan, S Shroff, SK Rana, PJ Sahariah, P Gogoi, D Borah, N Punniyamurthy and MNB Nair 2022. [Case reports on management of LSD like conditions with ethno-veterinary practices. The Pharma Innovation Journal 2022; SP-11\(1\): 236-239](#)
 - Nair M N Balakrishnan, Punniyamurthy, N., Kumar, S. K., Shankar Darshan, 2021. [Ethno-veterinary herbal formulations: An indigenous strategy to reduce use of antibiotics in the management of livestock health. Indian J. Comp. Microbiol. Immunol. Infect. Dis. Technical Article Vol. 42 \(Special Issue\) November, 2021: 76-82.](#)
 - S.K. Rana^{1*}, A.V. Harikumar¹, P. Dutta¹, S. Shroff¹, S.K. Dash¹, N. Punniyamurthy¹, M.N.B. Nair. 2021. [Use of ethnoveterinary medicine for management of common ailments of dairy animals Indian J. Comp. Microbiol. Immunol. Infect. Dis. Technical Article Vol. 42 \(Special Issue\) November, 2021: 83-87](#)
 - Ngwisha J, Samutela M, Phiri B, Zulu M, Mwasinga W, Balakrishnan N, Choongo K, Hang'ombe B. [In-vitro potential of crude extracts of selected garden herbs for mastitis management in Zambia. University of Zambia Journal of Agricultural and Biomedical Sciences \[Internet\]. 5Jul.2021 \[cited 10Nov.2021\];5\(1\).](#)
 - Prathap Kumar Kothapalli^{*}, M.N. Balakrishna Nair, N. Punniyamurthy 2021. [Mycotoxin induced antibiotic resistance, an unsuspected public health impact: a perspective review Ind. J. Vet. & Anim. Sci. Res., 50 \(4\) 1-15, July - August, 2021](#)
 - Santhosha Hegde¹, Pavithra Narendran¹, Malali Gowda² and M N Balakrishnan Nair M. N. 2021. **Metagenomic Profiling of Bovine Milk from Mastitis Infected Udder of the Cows before and after Treatment with Ethno-Veterinary Practice (EVP)**. EC Veterinary Science 6.7.
 - MN Balakrishnan Nair and Punniyamurthy N. 2021 [“Ethno-Veterinary Practices \(EVP\) as a New Approach for Management of Cattle Health without Antimicrobial and Other Chemical Veterinary Drugs”. EC Veterinary Science 6.5.](#)

4. Partnership and fundraising opportunities for upscaling

We have counted with the continued financial support of the Ineke Fund, which will end after the 2022. The improved visibility combined with proof of concept gave rise to increased interest of new organizations to link up and seek collaboration, including especially:

- **SNV-BRIDGE** dairy program in Ethiopia – committed to fund ‘proof of concept for scalability of NLF approach’ – a one year program with emphasis on 10 practical NLF interventions (5 related to animal management and 5 to Ethnovet medicine) into SNV dairy program.
- **NEADAP** (starting 2023)- Follow-up of SNV BRIDGE with scaling possibilities in East African countries – in case of successful intervention in Ethiopia
- **AVSF (VSF France)** – has requested support of EVP synthesis of AVSF work, and possibly collaboration in West Africa and Madagascar
- **Fleming Fund** – AMR funding agency, possibilities NLF strategy in their programs, especially in Africa
- **Centre for Development innovation (CDI)** – expressed interest to collaborate in west Africa
- **London School of Hygiene and Tropical Medicine – medical anthropology of AMR:** interested in NLF approach, and linkage to major funders (incl. Wellcome Trust)
- **Wellcome Trust:** funding agency has expressed interest in NLF approach

Moreover, we have started to collaborate within new regions, especially Latina America – with support of Ana Strappini – with a first webinar and exchange between Netherlands and Chile on calf management - planned on 20th January. This counts with the support of the Dutch embassy in Chile.

Conclusion – we hold a niche position within the international AMR strategy:

All in all, as NLF we have gained a niche position within AMR control – with our experience in bottom-up work with farmers and veterinarians. Most organizations working on AMR (Including major funders like Wellcome and Fleming Fund) until now have focussed on inventorying the AMR problem and developing food control mechanisms. They are now seeing the limitation of this, therefore appreciating our bottom-up and integrated strategy at the level of antibiotic use prevention. Because of this niche position, in combination with the proof of concept and the better visibility, the NLF strategy is now taken serious.



Ethiopian smallholder dairy farmer proudly showing her Aloe Vera plant which she now uses to cure mastitis and shares with other dairy farmers. A direct result of the EVP training during the ARF pilot project on NLF strategy

NLF financial report 2021

This financial year report 2021 includes limited funds, based on a annual donations from a private funder for five years (2018-2022) for international coordination activities. The activities of the international partners of NLF are primarily funded by national organizations within their country. The amounts of that funding are not mentioned in this year report, except for a limited contribution to the general NLF budget from the Applied Research Fund Project in Ethiopia (5000 Euros).

Balance sheet as at Decembre 31th 2021			
		Decembre 31th 2021	Decembre 31th 2020
Assets			
Fixed assets			
Current assets			
Cash and Cash equivalent	€	19.754	€ 16.391
Total	€	19.754	€ 16.391
Liabilities			
Reserves and liabilities			
Reserve	€	19.754	€ 16.391
Total	€	19.754	€ 16.391
Statement of income and expenditures		2021	
Income			
Donations	€	30.000	
Projects	€	5.000	
Total	€	35.000	
Expenditures			
Expenditures on objectives	€	-	
Staff	€	24.008	
Other expenditures	€	7.629	
Total	€	31.637	
Result	€	3.363	