Natural Livestock Farming

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An effective approach to reduce the use of anti-microbials and other chemicals - towards sustainable dairy production

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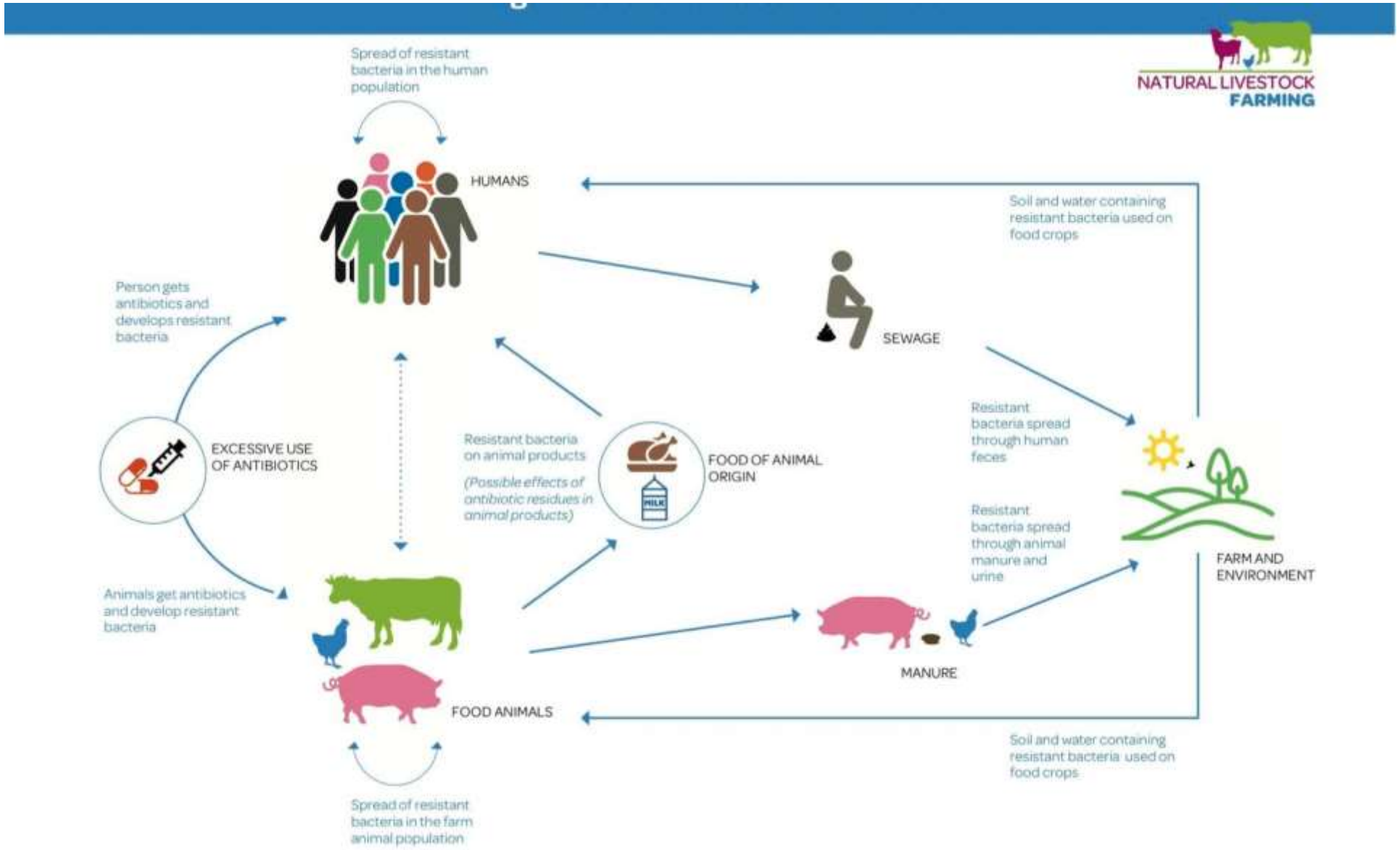
Personal intro

Katrien van't Hooft: Dutch veterinarian with 30+ years of dairy experience world wide

Both smallholder and large scale dairy farming

Lead executive board
Foundation for Natural Livestock Farming (NLF)

Excessive use of antibiotics and Anti-Microbial Resistance is a One Health issue

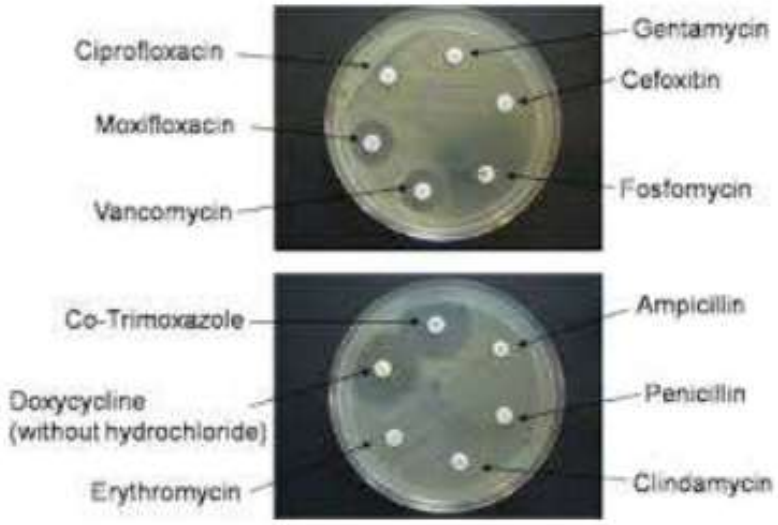


If no action at farm level:

Antibiotics, as well as dewormers and insecticides, increasingly in-effective for humans and animals alike

Local dairy markets may collapse in countries with insufficient residue control

Affecting farmer livelihoods and country economics



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Why Natural Livestock Farming?

Expertise: effective support to dairy farmers to reduce their use of antibiotics and other chemicals

Dairy systems: both smallholder and large scale dairy farmers

Resulting in: increased quality *and* quantity of milk, improved farm income, and up to 87% reduction of antibiotic residues

Natural Livestock Farming:
a practical contribution to One Health

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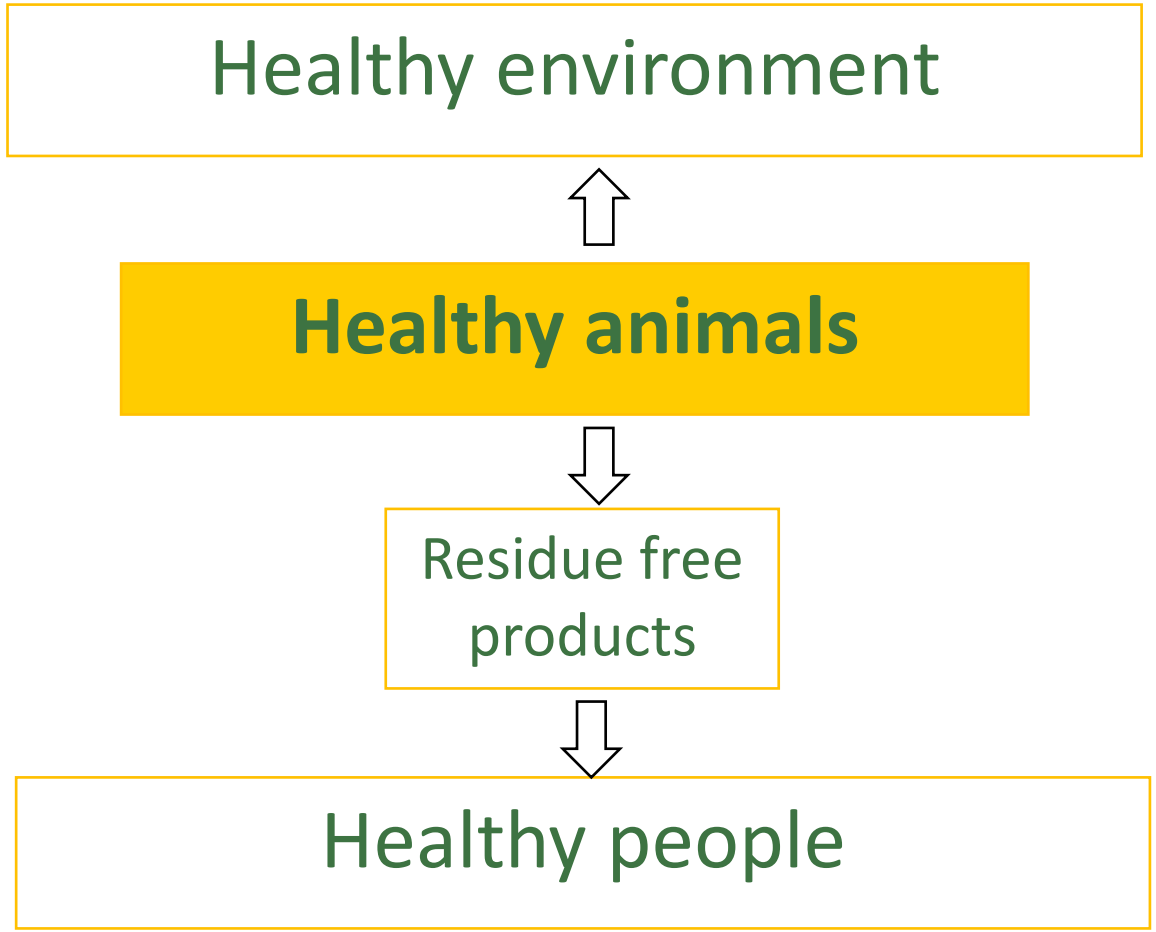

2014 Exchange program veterinarians and farmers between Netherlands and India

Topic: use of herbs to reduce need for antibiotics

2015: Exchange also included Ethiopia and Uganda

Topic: effect (cross-) breeding on use of antibiotics & acaricides, and on milk quality

Leading to joint strategy:

Natural Livestock Farming 5-layer strategy for Sustainable Dairy Farming

NLF participating organisations

natural livestock farming ethiopia

natural livestock farming india

platform natuurlijke veehouderij

natural livestock farming uganda








How is NLF working?

International collaboration (Ethiopia, India, Netherlands, Uganda) combining a variety of farming systems

Building on a variety of knowledge systems

Combining expertise from the grassroots (farmers and veterinarians) with scientific back-up

Pilots with implementation of NLF 5-layer strategy

NLF activities and results in
India, Ethiopia, Uganda, Netherlands

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Smallholder dairy INDIA

- Largest dairy producer in the world, based on 98% smallholders with 2-5 cattle/buffalo
- Decades of continued crossbreeding with HF
- Unintended side effects: high disease incidence & antibiotic use

Other challenges dairy India

Over the counter sales of antibiotics & other chemicals

+ limited residue control

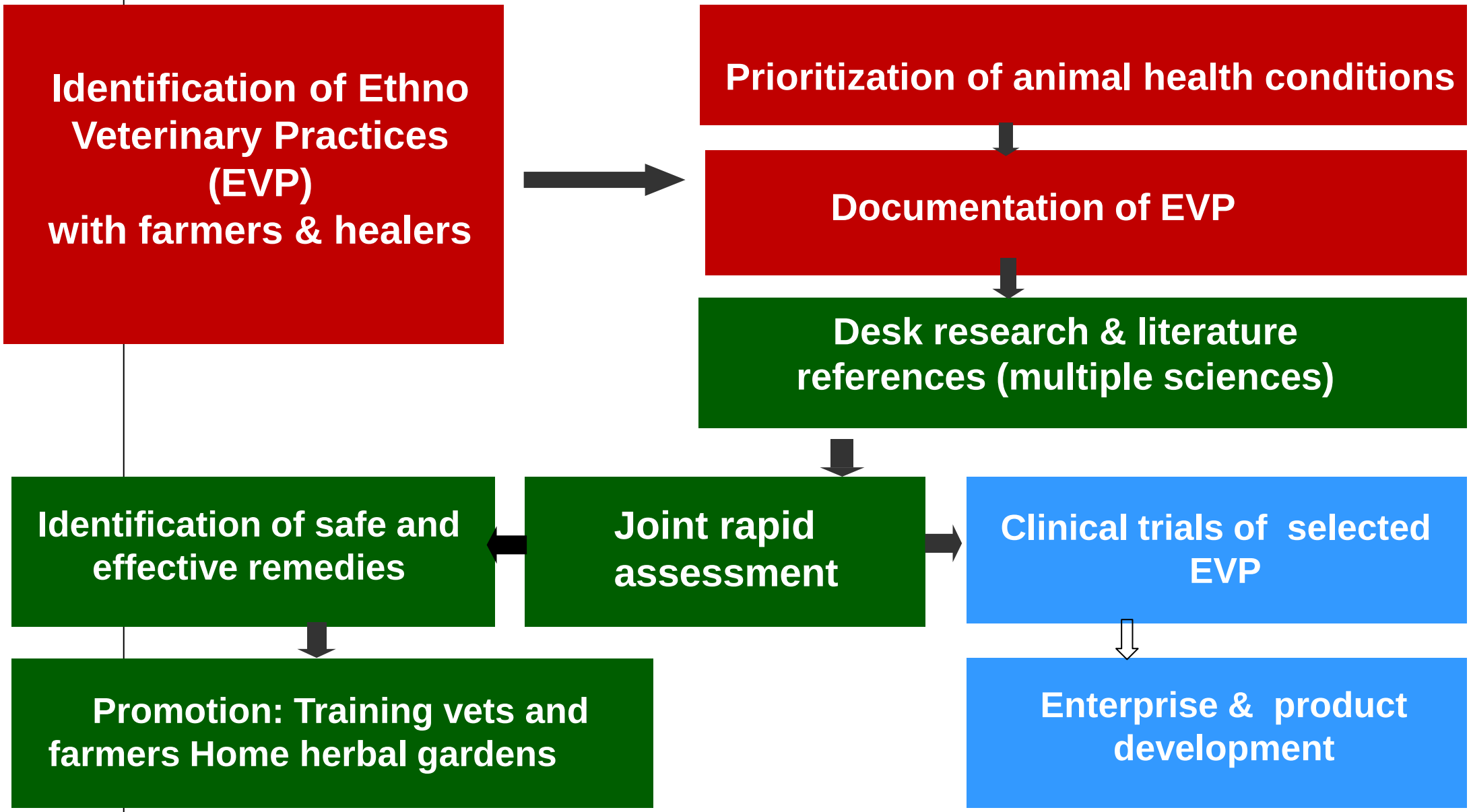
NLF in India

Trans-Disciplinary Institute (**TDU**) + **GLOHMSIWA**:

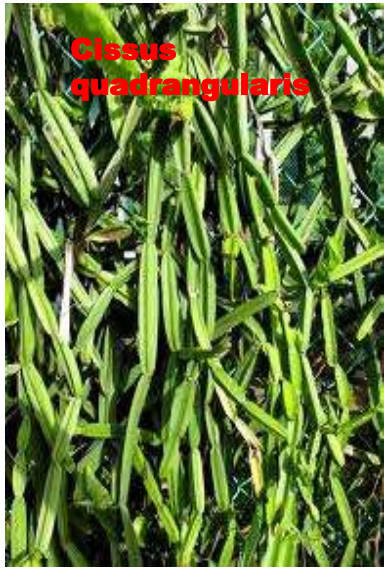
- Curative and preventive use of herbs / natural products
- Based on knowledge from farmers, Ayurveda science, & western science

Documentation and validation: 353 out of 441 veterinary herbal remedies acknowledged safe and eficacious

Steps in EVP implementation strategy



EVP remedy for Mastitis



Recovery:

- Acute mastitis 79,3 %
- Subclinical: 82,5 %
- Chronic: 78,6 %

Fever

















Warts / Udder pox










Metritis / Repeat breeding

Bloat / indigestion

NLF India: activities & results (now with NDDB)

1. Nation wide training of vets and farmers on herbal medicine for common cattle diseases
2. Videos on herbal treatments in local languages
3. Analysing results

Feedback from over 500.000 cases from NDDB through INAPH *
Efficacy of EVPs for 24 clinical conditions in cattle from 2017-18 to 2021-22

S No	Ailment	Total treated cases	Total clinical recovery	% clinical recovery
1	Fever	113172	94583	83.6
2	Diarrhoea	110046	93658	85.2
3	Acute Mastitis	104475	82878	79.3
4	Chronic mastitis	52791	41502	78.6
5	Indigestion	27358	22961	83.9
6	Sub-clinical Mastitis	23986	19780	82.5
7	Anoestrus	17617	13132	74.5
8	Blood in milk	15718	13269	84.4
9	Repeat breeder	13262	9017	68.0
10	Deworming	11916	10690	89.7
11	Udder oedema	9567	7993	83.5
12	Wound	6534	5339	81.7
13	Retention of placenta	5744	4094	71.3
14	Bloat	5220	3959	75.8
15	Ectoparasites/ticks	4164	3444	82.7
16	Teat obstruction	4030	2714	67.3
17	Endometritis	3770	3056	81.1
18	Agalactia	2721	2048	75.3
19	Downer	2720	1801	66.2
20	Wart	2573	1802	70.0
21	Lumpy Skin Disease	2258	1693	75.0
22	Swelling/ Joint Pains	1913	1424	74.4
23	Prolapse	1543	1052	68.2
24	Poisoning (unknown origin)	647	448	69.2
Total EVM Treatment		543745	442337	81.4

Antibiotic residues in farmer's milk samples one year after EVP training

MILK Union	# Farmers	Residue Negative	Residue Low Positive	Residue Positive
Allapra	15	12	2	1
Arakkapady	15	11	2	2
Chakkampuzha	10	10	0	0
Maneed	10	7	3	0
Manikyamangalam	15	12	2	1
Monippally	10	6	2	2
Puthrika	10	10	0	0
Sreemoolanagaram	15	15	0	0
Thirukanurpatti (TN)	20	20	0	0
Aralumallige (Karnataka)	20	20	0	0
	140	123	11	6
Percentage		**87.86%**	**7.85%**	**4.29%**

Comparing farm expenditure in Rupees for treatment with conventional medicine and EVP (1 USD = 73.52 Rupees on 01/12/2020)

No.	Disease conditions	cases	western drug treatment	EVP treatment	Amount saved	%
1	Mastitis	35	3000	120	2880	96
2	Maggot wound	28	963	60	882	92
3	Bloat & Indigestion	34	719	224	495	69
4	Repeat breeding	23	3061	430	2631	86
5	Cow pox	18	583	335	250	43
6	Foot and Mouth Disease (FMD)	22	3165	1640	1525	48
7	Diarrhea	3	500	166	334	67

NLF in Ethiopia

Focus in peri-urban smallholder dairy

- Improve calf management
- Cattle feeding and housing
- Reduce use of antibiotics
- Milk quality
- Revitalize knowledge herbal medicine

Healthy Cows – Healthy Food
Pilot project 2018-2020 Debre Zeit

1. Enhance (VDFACA) laboratory capacity
2. Improve cattle health in peri-urban dairy farms, through implementation of the NLF 5-layered methodology on 60 farms
3. Establish outcomes in lab through milk quality control

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WAGENINGEN UNIVERSITY & RESEARCH

DUTCH FARM EXPERIENCE

TDU

Laboratory capacity improvement VDFACA

7 staff trained at Wageningen Food Safety Research (Oct2018)

- Total bacterial count (TMC)
- Somatic cell count (SCC)
- Identification selected pathogen bacteria (Salmonella, E.coli & Staph.aureus)
- Antimicrobial resistance (AMR) profiles of the identified pathogen bacteria
- Antibiotic residues

Next to the training, laboratory supplies were purchased and sent to Ethiopia

NLF Ethiopia / ESAP – field activities

Participatory analysis and monitoring of cattle health situation

Using “NLF wheel of animal health and wellbeing”

Training on herbal medicine

Training on improved calf care and hoof trimming

Project results – milk quality
(info from VDFACA and WFSR)

Table 1. Comparison NWO-ARF milk data on pathogen bacteria isolation test results

	n	E.Coli	Salmonella	Staph Aureus
NWO/ARF	60	11,67 %	1, 67 %	46,67 %
Reference data	59	25,42 %	1, 69 %	67,80 %

Reduction in the presence of E. Coli with more than 50 % and Staph aureus by 30 %

Milk quality data of the project samples compared with reference samples also showed that in most aspects (fat, protein, lactose, solid non-fat and density) the project samples scored better than the reference samples from comparable dairy farmers.

More project results:

- 8% reduction of antibiotic residues in milk
- 50% increase in milk quantity
- 33% increase in farm income
- 60% reduction in calf mortality
- 20% reduction of average costs for cattle health

Herb technologies proved especially appropriate for women – raising gender equality and women's leadership skills

UGANDA – one of the main challenges for dairy farmers:

- High incidence of ticks & tick-borne diseases
- High use of acaricides for tick control
- High use of antibiotics due to East Coast Fever
- Ticks increasingly resistant against acaricides

Biodiversity loss: bees, butterflies, tick eating birds

No control of chemical residues in milk

Influence of continued crossbreeding Ankole Longhorn with Holstein Friesian (HF) breed

NLF in Uganda

- Piloting herbal alternatives + application methods for tick control (2017-2019, with SNV Uganda) incl. training by Indian NLF partners
- Initial promising results – but more steps required
- Herbal garden initiative picked up

NLF Uganda – current activities

- Community milk tank
- Value addition incl. yoghurt and butter making
- Planting indigenous trees species
- Beekeeping
- Restocking local Ankole Longhorn cattle in central cattle corridor
- Promote natural fencing
- Crossbreed with robust cattle (Vleckvieh) instead of HF

Challenges large scale dairy farming - Netherlands

Mastitis, calf diarrhea, hoof problems
Search for increasing life-span
Environment: biodiversity loss & excess nitrogen

Government decree 2012: obliging livestock sector to reduce use of antibiotics by 70% (compared to 2009) before 2015.
This was successful.

NLF Netherlands - activities

- Promotion of herbs in grassland and cattle feeds
- Training of 400 farmers and 50 vets on safe use of herbal products
- Requested: pilots on natural control of worms and ticks

Outcome: increased resilience

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- **More resilient cattle**: cattle productive while able to withstand local challenges
- **More resilient cattle health system**: more farmer independence
- **More resilient livelihoods and food systems**: food security in the face of climate change & COVID-19, strengthened role of women
- **More resilient marketing**: consumer confidence in residue free products
- **More resilient human & animal health care**: reduced AMR
- **More resilient environment**: less chemicals in soil, water and biodiversity
- **More resilient country economics**: improved dairy production and reduced imports of livestock products & chemicals
- **Lower CO2 footprint in livestock production**: improved productivity (reduced CO2 per kg of milk), reduced use of improved soil fertility

What can NLF offer you:

Webinars and training programs e.g.:

Natural mastitis control (April 2020)
Natural calf raising (August 2021)
Nature Based Solutions - herbs for dairy health India and Netherlands (Oct. 2021)
Upcoming: FMD

Facilitation of:

Support to dairy programs
Exchange programs on livestock-health related topics

Participate in NLF network & join the upscaling!

Take away lessons - conclusions

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1. Only milk control will not solve the milk residue problem
2. Farmers are the starting point for residue-free milk
3. Start with farmers' perceived challenges is key to success
4. Besides farmers, veterinarians are crucial to involve
5. Africa can learn from India: strengthen a tri-partite learning between Ethiopia-Netherlands-India
6. Herbs are a perfect way to engage women (dairy) farmers
7. NLF 5-layer strategy now has 'proof of concept':

it is possible to have a win-win-win-win-win:

cattle health, milk quantity, milk quality, farm income & environment!

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