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AGRONOMES & VÉTÉRINAIRES SANS FRONTIÈRES
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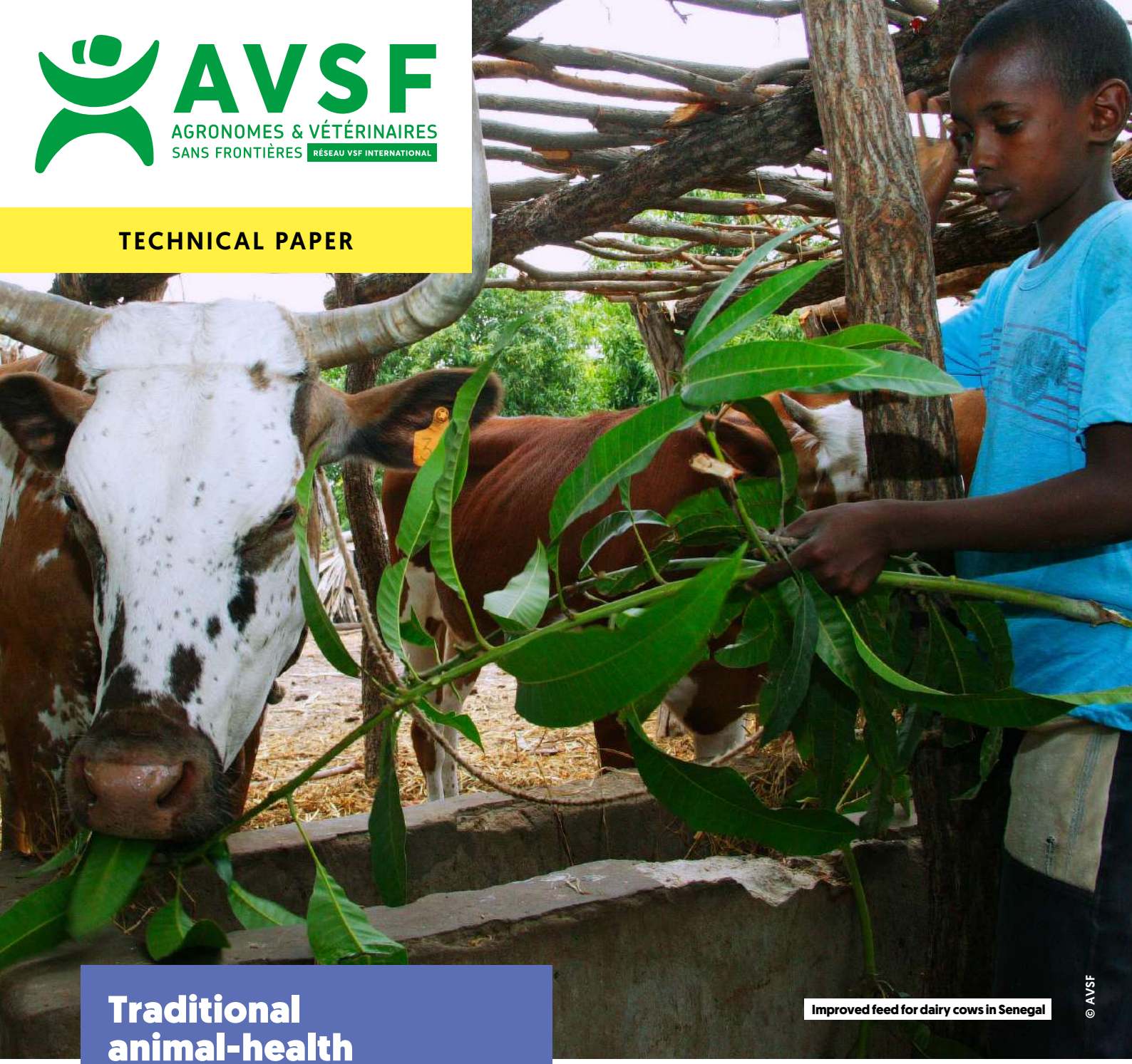
TECHNICAL PAPER



Improved feed for dairy cows in Senegal

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Traditional animal-health practices

Preamble on terminology

"Ethnoveterinary" practices are defined in the AVSF guide "Agroecology as a Substitute for Pesticides"[1] as practices that "consist of the traditional knowledge, skills, methods, practices and beliefs of people used to care for their animals." The guide goes on to say that "this concerns both diagnostic practices (recognition and description of symptoms), prevention and treatment, in particular through the use of medicinal plants, but not only (use of substances such as honey, ashes ...) and also zootechnical practices."

Despite this thorough and detailed definition, the term ethnoveterinary would likely be better understood if it were replaced by the phrase **"traditional animal-health practices"**, which does not actually cover all alternative practices outside the realm of conventional or Western medicine[2]. This document will not cover phytotherapy that is marketed by laboratories, aromatherapy, homeopathy or acupuncture, but will focus rather on the use of "traditional medicines" for preventing or curing animal diseases, as practised in the areas where AVSF carries out its projects.

"Traditional animal-health practices" is therefore the phrase that will be used in this document.

(1) https://www.avsf.org/fr/posts/2518/full/guide-l-agroecologie-pour-sortir-des-pesticides

(2) What we refer to as "modern" or "conventional" medicine is actually Western medicine. According to the French government, conventional medicine is based on "treatments that have been scientifically validated, either through clinical trials or because they are supported by strong professional consensus achieved through the agreement and experience of a majority of the professionals in the field in question." (see: https://sesoignerautrement.net/medecine-traditionnelle-medecine-moderne-quelles- differences/)

1. Why are traditional health practices worth considering?

AVSF's interest in traditional practices[3] is not new. Since 2009, our organisation has been active in a dozen different countries, identifying these practices and conducting field studies to gauge how effective and safe they are, most often through veterinary internships. Our interest in this area stems from our desire to improve animal health at an acceptable cost to farmers, while taking an approach that ensures greater respect for animals, people and the environment (the One Health approach).

Knowledge of traditional health practices has sometimes been lost by farmers: the global dissemination of conventional Western medicine and pharmacology, their effectiveness, and the allure of modernity often lead to **the devaluation and abandonment of traditional knowledge in favour of "modern" medicines and techniques.** Two important trends then appear: **the dependence of farmers** on expensive medicines, and the development of an **uncontrolled market** for poor-quality medicines (defective, counterfeit) with no support in terms of zootechnical or prevention-focused advice, which would be needed for effective treatment. Misuse may give rise to a number of residue problems that can have an impact on human health. In addition to that risk, AVSF is also reluctant to introduce allopathic products without having previously checked whether any better controlled local alternatives exist.

AVSF needs to work to improve care for smallholder livestock, while helping beneficiary populations become less dependent (financially and with respect to supply risks) and curbing bad practices (fraudulent markets, medicines of questionable quality).

Restoring knowledge and promoting certain traditional animal-health practices with a favourable risk-benefit ratio would help minimise dependence and curb bad practices in line with AVSF's approach, which aims to help smallholders transition toward agroecology[4].

The dissemination of practices whose overall assessment is favourable should be associated with discussion on resource preservation in the case of harvesting wild plants, and on biodiversity. If availability is limited or at a level that may risk putting the species in danger, then work may be undertaken to assess the feasibility of cultivation. The methods for processing the plants in question will also be assessed. This may also be an opportunity to put crop and livestock farmers in contact with one another, and more broadly to combine human and animal health within the framework of the One Health approach. A lot of overlap has been noted in the uses of these practices; also, better animal health has a positive impact on human health.

Promoting the use of traditional health practices, and thus limiting the use of conventional medicine, avoids increasing certain risks linked to conventional medicine. **Two major risks are targeted in particular: antimicrobial resistance and the presence of medicinal residues in foods and in the environment.** Assessments of the risk-benefit ratio have been moving for some time in a direction that no longer leaves much room for doubt, in favour of alternatives to antibiotics where such alternatives exist: for example, plant-based alternatives (Baduel, 2017). These alternatives are recommended subject to strict identification of substances and a generic safety margin.

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Assessing the weight of a boar in order to administer treatment. Madagascar

(3) According to the WHO, traditional medicine refers to "the sum total of the knowledge, skill, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness." Traditional medicine includes ancient practices, such as acupuncture, ayurvedic medicine and plant-based mixtures, as well as modern medicines.

(4) In the case of traditional medicine as defined above by the WHO, evaluations are conducted not only to guarantee a range of high-quality treatments, but also to bring about and support public-health policies that can be coordinated with other social, economic and environmental issues, to maintain balance and to limit inequalities.

Lastly, in addition to the previously mentioned technical, economic and environmental aspects, ethical aspects must not be forgotten, and balancing them is a difficult task:

- pre-eminence of the right to human health as a fundamental right: urging humility and caution in the case of repeated long-term use of certain plants for production animals, even if residue risks for plants that are often already human food sources appear at first glance to be zero;
- risk of overuse and consequently depletion of certain natural resources with inherent consequences in terms of biodiversity loss;
- risk of rejection (including by researchers and authorities in the Global South) of "veterinary medicine by barefoot doctors", owing to an aspiration for quality standards equivalent to those of Western countries;
- risk of theft of traditional know-how and knowledge: risk of "biopiracy" (which is not limited to the blatant example of filing patents for plant preparations).

But AVSF, whose aim is to work with indigenous populations to help them achieve food and health autonomy, must remain highly attentive to the development of instruments for utilising the products of "socio-biodiversity" or "bioequity" (fair trade, solidarity-based economy, geographical indications, biodiversity-friendly certifications, etc.), which is the term used by Florence Bellivier and Christine Noiville[5]. AVSF must therefore encourage access to and sharing of the benefits of traditional health practices, while respecting the rights of indigenous groups over these practices. These ideas should be formalised through the creation of an ethics code.

2. Approach to health in livestock farming

Given that health is defined (AEEMA, 2022) as a *"harmonious and sustainable state of all functions of a living being or population of living beings,"* it seems clear that preserving or restoring livestock health requires, above all else, satisfactory livestock management and environment.

The first task is therefore to verify, and where necessary restore, the livestock-farming conditions and practices that make it possible to meet all of an animal's basic physiological needs. A sufficient quantity of quality feed, housing that provides shelter against bad weather and/or intense heat, availability of a sufficient quantity of clean and healthy water, reasoned management of reproduction and genetic selection[6], special care for mothers and young animals, daily care and regular attention for animals, and general hygiene and cleanliness are all factors to put in place in order to keep animals in good health. **This is the first step to take, and the most important in terms of ensuring sound animal health.**

In addition to the basic measures mentioned above, and depending on the context, it is a good idea to implement preventive measures in order to minimise livestock diseases and the risk of epizootic diseases. These measures may be summarised as follows: integrated risk management, biosecurity and medical prevention.

- **Integrated risk management** involves a set of measures to minimise the risk of disease, particularly parasitic disease, on a livestock farm. Typically, integrated management may incorporate traditional knowledge, which would be useful to document. For example, practices such as rotational grazing, mixed-species management, limited use of targeted treatments, and selection of resistant animals help minimise a herd's general parasitic infestation rate.
- **Biosecurity measures** help limit the introduction and spreading of disease among livestock: isolation of herds where possible, age separation, quarantine when disease is introduced, separation of sick animals, footbaths, regular disinfection of livestock buildings, etc.
- **Medical prevention** helps strengthen the resilience of animals or helps protect them through the use of medication. Common conventional practices include vaccination and the provision of vitamin and mineral supplements. Traditional practices also incorporate preventive approaches, such as the use of certain plants to provide metabolic support at specific physiological stages, which do not fall under medicinal treatments.

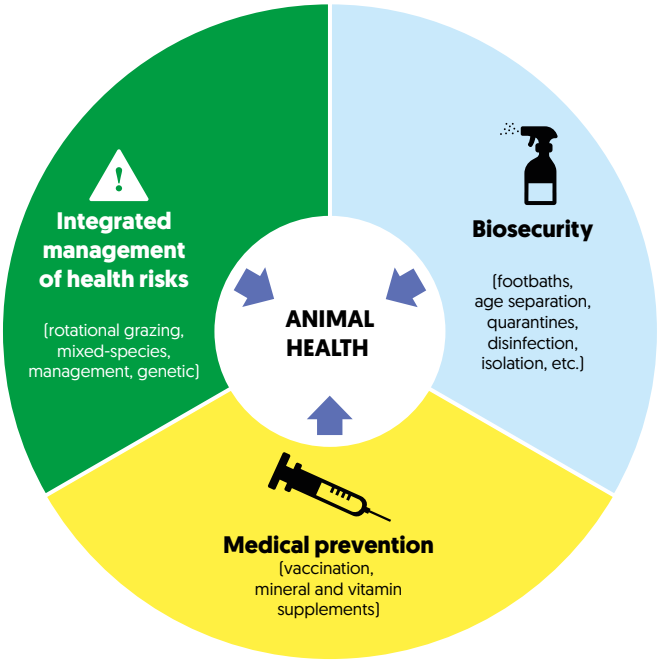

Figure:
The 3 pillars of prevention for animal health

Lastly, independently of the abovementioned livestock-farming practices, which must be restored and implemented on livestock farms over the long term in order to strengthen them, **AVSF encourages farmers to think carefully and choose the most appropriate treatment practices** (whether conventional or traditional) in response to a disease outbreak by assessing their local availability, their quality, their cost, their effectiveness, and how safe they are for animals, people and the environment.

(5) BELLIVIER Florence et NOIVILLE Christine : « La bioéquité, batailles autour du partage du vivant », Editions Autrement, Paris, 2009

(6) See technical paper "Animal genetics: a factor contributing to the development of smallholder livestock farming?", published in 2024 by the Livestock Farming, Animal Health and Veterinary Public Health committee – AVSF.

3. How to identify and use traditional health practices

Traditional health practices are closely linked to the environment (environmental context) in which they were established and in which are used. Attempting to transpose such practices to other areas where the context is different therefore seems, except in very rare cases, illusory. Methodologies for identifying and validating these practices before dissemination may, however, benefit from being established and disseminated in the various areas where this work is planned.

The first step is to identify these practices. To that end, it seems important that all AVSF programmes addressing animal health incorporate a component to **identify traditional animal-health practices at local level.** Inspiration may be sought in the tools and methods described in the *"Agroecology as a Substitute for Pesticides"* training guide published by AVSF in 2021. Identifying these practices is both essential and urgent, as the people who possess this knowledge – transmitted orally for the most part – are often elderly, and their descendants are sometimes no longer interested in holding on to it.

Once the practices have been identified, it is important to assess:

- how effective they are (how to distinguish which are active);
- how safe they are: toxicity, evaluation of the presence of residues that may be harmful to human health;
- how to manage resources to preserve biodiversity by avoiding the use of species that are endangered in nature, ensuring the supply of raw materials, and addressing the problems posed by certain invasive species.

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Plant used in livestock farming in the Vakinankaratra region in Madagascar

4. Activity and safety of traditional health practices: how-to guidance

There are several ways to go about answering the aforementioned questions.

Making a selection through a typical pharmaceutical approach based on clinical trials is not necessarily relevant for local contexts, which present complex sets of conditions that are difficult to measure and reproduce, but also because these evaluation methods were not developed for studying pharmacological products that contain a great diversity of molecules and whose composition is not fixed (variations depending on where they were harvested/grown, weather conditions, when they were harvested, how they were processed), which does not allow for sufficient standardisation or for the evaluation of potential interactions between the different molecules. This methodology also presents a number of disadvantages (overuse) and risks (biopiracy), which were already mentioned in paragraph 2.

An "ethnopharmacological" approach (integration of ethnological, botanical, pharmacological, toxicological and clinical skills) may be of particular interest. It is much more developed for human health than for veterinary medicine. It would therefore be possible to draw inspiration largely from the methodology of human ethnopharmacology. In certain African or Asian countries, a system was established to connect health professionals (hospitals, doctors, pharmacists, researchers, etc.) and traditional healers with opportunities for exchange between the various groups, such as feedback for traditional healers informing them of pharmacological and clinical studies on the activity and safety of traditional remedies.

Even in countries with very high pharmaceutical standards, **it is generally acknowledged that decades of traditional use demonstrating an activity and good tolerance are sufficient to show that traditional practices have a role to play** to fulfil a wide range of functions (e.g. supporting physiological functions, primary prevention, reducing risks of pathological episodes, repulsion of vectors, etc.).

For example, the qualified presumption of safety (QPS), recommended by the European Food Safety Authority (EFSA) in 2013 for the evaluation of herbalist products or plant-based preparations, is defined as a presumption based on "reasonable evidence", as an alternative to a comprehensive safety assessment. To obtain QPS status, a (micro) organism – and by extension, a traditional practice – should meet the following criteria:

- its taxonomic identity (if it makes use of living organisms) is clearly defined;
- the corpus of available knowledge is sufficient to establish that it is safe;
- the absence of harmful properties is established and justified;
- the intended use is clearly described.

In the absence of global consensus on the matter, many other normative and regulatory models were later developed in human medicine and human nutrition (simplified marketing authorisation based on effectiveness shown in the literature or simple registration based on plausible traditional effectiveness, recognition of tradition, quality and safety as an alternative to clinical trials for physiological and nutritional claims of functional foods and food supplements, etc.) and are starting to be developed in animal medicine and animal nutrition (simplified marketing authorisation, European commitment to propose an alternative path in 2027, risk-benefit approach for the

registration of additives including improvement of food quality and mitigation of the environmental impact of animal production, etc.). All these models recognise the strength of general empirical evidence.

With this in mind, AVSF logically began by identifying traditional therapeutic and preventive practices – particularly in places where memory is being lost – not only to build up a corpus of knowledge, but at least to avoid losing that knowledge (CORNILLET, 2012).

Once the taxonomic identity (of plants in particular) is clearly established, it is generally possible to **cross-reference information gathered at local level with one of the databases available** at international level and identify claimed properties and/or any restrictions on use, known or foreseeable risks and warnings. Of course, most of these databases are for use in human health. However, if a plant appearing on these lists presents low or controllable risks for humans, this may be a useful, and generally recognised, criterion for starting to establish the reputation of a traditional practice for production animals in the absence of objective criteria regarding the risk of residues in animal feeds. In 2004, B. Molina-Flores identified a number of collaborative initiatives for AVSF in this regard. The updating of this list could be a topic for a master's or doctoral thesis. In addition, certain classic references (e.g. BRUNETON in plant toxicology, Essential Oil Safety by Robert Tisserand and Rodney Young) are available in a One Health approach. In 2022, ANSES (French Agency for Food, Environmental and Occupational Health & Safety) published a notice on the use of plants and essential oils for food-producing animals (reference no. 2020-SA-0083), which proposes a methodology for assessing the level of risk for the consumer. The notice first identifies various uses in livestock farming, and then presents current knowledge mainly linked to the use of these plants in human nutrition or medicine based on available data and on publications by national and international health agencies, in accordance with an approach based on plants (or plant-based preparations) or substances.

Following this bibliographic study, a preliminary evaluation is performed to assess risks for human consumption with three different categories:
- no risk,
- not enough data to draw a conclusion,
- preparation presents a risk.

Once the level of risk has been assessed, the decision tree proposed by ANSES may then be used to determine which plants or plant preparations would not require the establishment of Maximum Residue Limits, and which ones would. This approach would greatly simplify the process for using plants in livestock farming. In rare cases where a practice utilises a local resource that is not identified or indexed – even at nearby local universities – AVSF's field surveys, which cross-reference information between livestock farmers, could help identify any doubts or contradictions. They should also make it possible to rule out, as a safety measure, medicinal plants that, despite their intrinsic qualities, present major risks in terms of authentication or confusion with other plants, as these situations unfortunately arise often in many different contexts and localities.

Lastly, clinical trials may be carried out at local level, but it is important to put their results into perspective, precisely because of these local conditions, and given the multiple sources of variability in the activity of active botanical ingredients – certain practices combine several different active ingredients so that they can complement one another (ANSES 2014). They may sometimes be oriented, on a case-by-case basis, towards tests for substance combinations (looking for synergies or antagonisms between two substances), for improving authentication conditions, for stability, for substance quality and use, or even tests for animal innocuousness (despite the value of livestock in the countries where the projects are carried out, which makes its difficult), environmental safety and even (geno)toxic safety for humans via derived animal foods.

Administration of a neem-based product (in different forms) as part of a field study in Colombia

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5. Digging deeper

Working with others

In order to continue to learn more about traditional practices and make them even safer and more effective, it would be a good idea to **collaborate with local and/or international research organisations.** Working with local research and development organisations would also help ensure that the results of fieldwork can be utilised in development.

To share costs, collaborative projects for exchanging best practices in a veterinary context could also draw inspiration from collaborative initiatives in the human-health sector (e.g. lists of medicinal plants that are negative (to avoid) or positive (to be given in priority), or tables summarising the observed benefits and risks).

Moving on to the local-development phase

For development, the question arises as to when a traditional practice may be disseminated in the field on a large scale (e.g. inclusion in a CAHW training programme). **Several works by AVSF on these practices have led to small guides for livestock farmers (e.g. Delesalle, 2016),** but AVSF has not yet disseminated them on a large scale to livestock farmers.
The following sequence could make it possible to initiate dissemination in the field:

1. a traditional practice must have been observed to have positive action (effectiveness) and to be safe;

(3) As of 2019, India was the world's largest producer of milk (source: MEAE) and the world's third-largest exporter of beef, behind Brazil and Australia.

Improved chicken coop as a preventive management measure for animal health

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2. the absence of toxic residues must also be probable;

3. it must be verified that the use of this substance in the field will not pose a threat to local biodiversity;

4. an initial phase for testing dissemination of practices on a small scale. This testing phase should be supervised by AVSF or local research organisations to measure the impact of the practices;

5. if the initial results are positive, it is then possible to expand dissemination of the practices in the area in question.

With regard to this last point, AVSF could team up with local partners (preferably from VSF-International's network, for example) in order to maintain a framework of shared values. The collaborative and participatory approach helps ensure the participation of smallholder communities.

Expanding into other areas

Another question is: Can traditional practices (which make use of substances that do not exist in a particular area) be transposed to another area? And can a plant be grown in an area where it does not currently exist (if it appears to be useful for animal health)?

It is clear that caution should be exercised for transpositions like this, both in terms of risks and effectiveness:

- with regard to risk, it is vital to perform a risk-benefit analysis before the transposition. The invasive potential of the plant in question must be carefully measured, as well as its capacity to permanently modify the local ecosystem;

- with regard to effectiveness, it is important to remember that a substance may be effective in one context but not in another. Before transposing the cultivation of a plant, it is therefore important to test its effectiveness in the new context.

For these two reasons, it is therefore important to proceed gradually and **to expand health practices into other areas only depending on the results obtained in the initial trials.**

Should traditional practices be promoted currently?

It seems premature at this stage to encourage authorities in the Global South to develop traditional practices. Those practices should not be encouraged until AVSF has gathered conclusive results from trials to assess the use of certain traditional health practices in the field, because of the high risk of rejection from the veterinary community and from producers of medicines sold on the market.

And yet, many aspects at the intersection of agronomic and economic considerations mentioned in this document (interactions with agroforestry, analysis of the feasibility of growing crops inside or outside the original area, etc.) are already, or may in the future be, advocacy arguments put forward by the organisation more and more regularly.

To ensure the consistency of its advocacy work, **AVSF should therefore continue to consolidate its arguments to persuade veterinary professionals and health authorities.**

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APPENDIX 1: TABLE OF STUDIES/THESES/TOOLS PRODUCED THROUGH AVSF'S ACTIVITIES ON ETHNOVETERINARY PRACTICES

Country	Date	Author or Contact	Document / Tool produced (master's thesis, doctoral thesis, practical field tool, etc.)	Direct links to online documents (if any exist)
World	2004	Baldomero Molina Flores	Ethnoveterinary Medicine: a literature review (document available in English, Spanish and French)	
Mali		Marc Chapon m.chapon@avsf.org	Excel table summarising a few traditional practices in northern Mali	
Brazil	2009	Emmanuel Bayle emanuelbayle@gmail.com	Guide written in Portuguese on the use of medicinal plants for livestock in Brazil (Uso das plantas medicinais na criação animal)	https://fr.scribd.com/doc/124567746/USO-DAS-PLANTAS-MEDICINAIS-NA-CRIACAO-ANIMAL
Colombia-Ecuador	2012	Amélie Cornillet cornillet.amel@hotmail.fr	PhD thesis in veterinary medicine Booklet entitled "CONOCIMIENTO ANCESTRAL INDÍGENA EN SALUD ANIMAL" Fifty-page booklet on useful remedies for dairy farming and results from field trials	https://www.avsf.org/es/publications/conocimiento-ancestral-indigena-en-salud-animal-en-el-territorio-de-los-pastos-colombia/
Togo	2014	ITRA / Stefano Mason / Adom Aliti s.mason@avsf.org	Table showing a few traditional remedies from the presentation "Moving towards ethnoveterinary practices in West Africa: the case of Togo", as part of the AVSF workshop "Helping smallholders in West Africa transition to agroecology", Dapaong, Togo, 2014 (ITRA)	
Cambodia	2013-2014	Victoire Delesalle assomelindika@gmail.com	PhD thesis in veterinary medicine Use of medicinal plants in chicken, pig, cattle and buffalo farmings in Cambodia	http://theses.vet-alfort.fr/telecharger.php?id=2114
Ecuador	2015	Fanny Parenton fparenton@gmail.com	PhD thesis in veterinary medicine Practical guide project: "Guía práctica para la crianza agroecológica de los especies minores"	http://oatao.univ-toulouse.fr/13339/1/Parenton_13339.pdf
Guatemala	2017	Sophie Polydor sophiepolydor@wanadoo.fr	PhD thesis in veterinary medicine Practical guide for smallholder families and agro-veterinary promoters – 22p (Appendix 6 of the thesis))	http://oatao.univ-toulouse.fr/17632/
Bolivia	2017	Richard Labone labonne.richard@hotmail.fr	PhD thesis in veterinary medicine Manual de Etnoveterinaria en la crianza camélida (Spanish) Guía de medicina natural para las llamas	https://www.avsf.org/es/publications/manual-de-etnoveterinaria-en-la-crianza-camelida-en-bolivia/
Madagascar	2018	François Ruaud francois.ruaud@oniris-nantes.fr francois.ruaud@hotmail.fr	PhD thesis in veterinary medicine Article in the journal Ethnopharmacologia (December 2019)	
Colombia	2020	Marine BENOIT et Adrien DEMILLY marine.benoit.mac@gmail.com adrien.demilly@gmail.com	Master's thesis *"Inventaire des pratiques thérapeutiques traditionnelles et mise en place de mesure de lutte contre les mammites de la vache laitière dans la région de Pasto – Nariño – Colombie"* 2 technical brochures (in Spanish) – treatments for guinea pigs and protocol for treating bovine mastitis: Cartilla cuyes y Cartilla mastitis	https://www.avsf.org/valoriser-les-remedes-veterinaires-traditionnels/
Madagascar	2021	Mr Ramaroson, Herilantonirina Solotiana & Dr Raliniaina, Modestine (FOFIFA) as part of the project AFAFI Sud / ECLIPSE AVSF-CIRAD	Report for a study carried out over a six-month period on *"In vivo evaluation of the effectiveness of ethnoveterinary practices for combating helminthiases in small ruminants in southern Madagascar"*	Recap of works performed, presented at the closing webinar for the ECLIPSE project on 17/02/2022 https://www.youtube.com/watch?v=2hZzUdbozSg

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