

**Promoting Ethnoveterinary Medicine for Sustainable Animal Husbandry  
Practices in Northern Ghana (Ethnovet Project) (130-005-1048 Z)**

**Narrative progress report for 1 October 2020 to 31 March 2021**



Mr Hamza Adam, farmer innovator for the control of Newcastle disease in poultry, demonstrating the application of his innovation to farmer experimenters in Dashei Community in the Tolon operational area  
(Photo: Majeed Fuseini, ACDEP driver)

Submitted by

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Association of Church-Based Development Projects (ACDEP)

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## ACRONYMS

CSIR-ARI	Animal Research Institute of the Council for Scientific and Industrial Research
MoFA	Ministry of Food and Agriculture
CVL	Central Veterinary Laboratory
UDS	University for Development Studies
SWISS TPH	Swiss Public and Tropical Health Institute
EVM	ethnoveterinary medicine
WHO	World Health Organization
ARI	Animal Research Institute
CPMR	Centre for Plant Medicine Research
DoA	Department of Agriculture
ASF	African swine fever
PPR	Peste des Petits Ruminants
NCD	Newcastle disease
MMDAs	Metropolitan, Municipal and District Assemblies
NGO	non-governmental organisation
CLW	Community Livestock Worker
CAHW	Community Animal Health Worker
GFIF	Global Farmer Innovation Fair
PPE	Personal Protective Equipment
AGC	A Growing Culture
NSC	National Steering Committee
ICT	Information and Communication Technology
CEAL	Centre for Ecological Agriculture and Learning
PAS	Presbyterian Agricultural Services

## 1. INTRODUCTION AND HOW THE REPORT WAS PREPARED

Promoting Ethnoveterinary Medicine for Sustainable Animal Husbandry Practices in Northern Ghana (Ethnovet Project) is a three-year (October 2019 – September 2022) project being implemented in four administrative districts in northern Ghana. It is implemented by ACDEP in partnership with the Animal Research Institute of the Council for Scientific and Industrial Research (CSIR-ARI), Veterinary Services Department of the Ministry of Food and Agriculture (MoFA), Pong-Tamale Central Veterinary Laboratory (CVL) and the Animal Science Department of the University for Development Studies (UDS). The Swiss Public and Tropical Health Institute (Swiss TPH) is the international backstopper of the project.

The goal and specific objectives of the project are:

Goal: Improved animal health, production and productivity of rural smallholder farmers through increased recognition and use of ethnoveterinary medicine (EVM) as a complementary and integral part of veterinary services in northern Ghana, resulting in increased incomes of rural households.

Objective 1: To validate potential herbal treatments commonly used by smallholder farmers for poultry and other livestock

Objective 2: To improve preparation, packaging, use and commercialisation of selected herbal medicines

Objective 3: To establish a strong network of EVM practitioners for research, learning and advocacy in Northern Ghana.

This is a progress report for the period from 1 October 2020 to 31 March 2021. It describes activities and outputs achieved in this period and some challenges faced and outlines activities planned for the April–June 2021 period. Activities implemented were: literature review on ethnobotanicals and phytochemical properties of plants used for the herbal preparations, conduct of clinical/on-farm trials, documentation of farmer practitioners' knowledge in EVM, and setting up district networks in four districts. The report has been prepared by the project coordinator, informed by activities and activity reports for the first and second quarter. The draft report was reviewed by the project partners (Swiss TPH, CSIR-ARI, Nyankpala Station, UDS, MoFA, Pong-Tamale CVL and the Executive Director of ACDEP).

## 2. CHANGES IN THE PROJECT CONTEXT

Ghana organised a general election, which saw Ghanaians queuing and exercising their franchise to elect a president and parliamentarians on 7 December 2020. The process was characterised by relative violence with isolated casualties, fear and panic. This had some effect on freedom of movement and further slowed down economic activities. The declared presidential results in favour of the incumbent New Patriotic Party was contested by the leading opposition party, the National Democratic Congress, in the Supreme Court of Justice. The court's ruling finally brought the fear and anxiety to rest.

The Covid-19 pandemic continued to be a major challenge to implementing project activities. The rate of infection had reduced; however, within this reporting period, reported infections increased again from 25 persons to 130 persons per day, with isolated cases of new variants. This again increased fear and anxiety, and affected stakeholders' participation in project activities. In February 2021, the first batch of 600,000 doses of Covid-19 vaccine was received and vaccination will soon start with individuals and personnel of institutions at high risk to the infection.

We continue to manage the fear and anxiety through continuous education and observing the World Health Organization (WHO) protocols for Covid-19 prevention. It is expected that, when the vaccinations start, this will further help to manage the fear and anxiety.

### 3. PROJECT IMPLEMENTATION AND ACHIEVEMENT OF OBJECTIVES

#### *Objective 1: Validation of selected potential ethnoveterinary treatments*

#### **3.1. Detailed documentation of farmers' and EVM practitioners' knowledge on 24 selected EVM treatments**

The 24 EVM innovations were selected and detailed documentation of farmers' and practitioners' indigenous knowledge, commenced as reported in the first annual report (1 October 2019 to 30 September 2021), is being finalised. Work done within this reporting period towards finalising the document included: reviewing and incorporating edits and comments from other stakeholders (veterinary officers, botanists from UDS and Forestry Commission) into the initial draft; then feedback from farmers and innovators who were interviewed was solicited to ensure the report captured and represented their innovations. The draft report edited by ARI and Swiss TPH was improved upon. The final report will be published on the Ethnovet Project webpage and as a booklet to disseminate EVM innovations.

#### **3.2. Literature review on ethnobotanicals and phytochemical properties of 11 plants used for herbal preparations**

After completion of the terms of reference for this study, as reported in the annual report for Year1 (1 October 2019 to 30 September 2020), one of the stakeholder institutions, the Centre for Plant Medicine Research (CPMR) in Mampong, Eastern Region of Ghana, was given the responsibility to conduct this literature review. The study took six months. A first draft report was reviewed and edited by Lisa Crump of Swiss TPH, Franklin Avorny of CSIR-ARI, Edmund K Sallah of UDS, Evans Nsoh Ayamdoo, MoFA Veterinary Officer, Edgar Draha of the Department of Agriculture (DoA) Bongo District and Foster Awuni of ACDEP. Then an improved and final version of the report was produced addressing suggestions and comments by the reviewers.

#### **3.3. Clinical tests and on-farm trials**

Following the participatory processes to identify farmers' prioritised innovations to address common and important animal diseases for clinical and on-farm trials to scientifically evaluate their efficacy, the following five innovations were selected in line with the project target:

1. Use of solution prepared with the roots of *Stereospermum kunthinum* for the treatment and prevention of anthrax in sheep and goats
2. Use of *Mitragyna inermis* leaves and fruits for the treatment of Peste des Petits Ruminants (PPR) in sheep and goats
3. Use of *Mitragyna inermis* leaves for the prevention of keet mortality
4. Use of roots of *Nauclea latifolia*, *Cochlospermum planchonii* and bark of *Pseudocedrela kotschy* for the treatment of African swine fever (ASF)
5. Use of *Evolvulus alsinoides* and bark of *Bombax costatum* for the treatment of Newcastle disease (NCD) in poultry.

The process to come to the clinical and on-farm trials required farmer-participatory development of protocols. The farmers' descriptions of the preparation and administration of their innovations, including signs and symptoms of the disease treated, dosages and number of days the innovative treatment is administered, were recorded. The team of research scientists used these descriptions

and developed them into experimental protocols. After designing the draft protocol to meet scientific requirements and standards, these were presented back to the innovators and other farmers in their communities, who made relevant inputs to the design and the roles they would play. This feedback was used to revise the protocols into a draft that is now being reviewed by the research and development stakeholders. This iterative process is meant to ensure scientific rigour as well as ownership of the process and results by all stakeholders.

Among the innovations for experimentation, the protocol for the use of *Evolvulus alsinoides* and bark of *Bombax costatum* to prevent and treat NCD in poultry was finalised, and the first phase of the on-farm trials started. These are being carried out in six communities: Dakpemyili, Nachimbia, Dashei, Daboshei, Jangyili and Dalugyili in East Gonja in the Tolon operational area. Two communities, Dashei and Jangyili, were assigned “treatment”, Dakpemyili and Daboshei were assigned “control” and Nachimbia and Dalugyili were assigned vaccination with orthodox Newcastle vaccine. The assignment of treatment, control and vaccination to communities was done by balloting. Each of these were written on two pieces of paper and folded for a member of each community to pick. Whatever was picked by a representative was assigned to his or her community. In each community, 20 farmers (10 men and 10 women) were identified to take part in the trial.

The trial started on 27 March 2021 with the collection of fowls with signs and symptoms suspected to be NCD and confirmed by the innovator as the signs and symptoms presented by the disease his innovation prevents and treats. The collection was done by the veterinary technical officers with assistance of the innovator and transported to the CVL in Pong-Tamale for confirmation. Then the innovator prepared the herbs and trained all the treatment farmers in their communities on how to prepare the decoction and administer it correctly to the birds. He gave each farmer enough of the herb for prevention and treatment. The farmers started administering the decoction, and an enumerator from UDS monitored and collected data using a data-collection form. The data are being collected over a period of one month, supervised by Franklin Avorny. Data collection for this first phase is expected to end in May 2021, to be followed by analysis and determination of preliminary results.

### **3.4. Laboratory testing and analyses of five EVM treatments**

The project team decided to delay the laboratory testing and analyses of the plant properties antiviral, anti-microbial, phytochemical and toxicity of the herbs for the five EVM treatments. The delay is meant to enable the team to determine EVM treatments that are effective against the diseases through the farmer-led on-farm and clinical trials. Then we can go further to analyse for plant properties of specific EVM treatments that prove effective against the diseases. However, laboratory analysis to confirm diseases on which innovations are being experimented is being done for NCD and will be done for the rest (ASF, PPR, anthrax and keet mortality)

### **3.5. Annual review, planning and feedback meetings**

These meetings were organised on 13, 15, 20 and 22 October 2020 in Walewale, Bawku, Tolon and Bongo operational districts, respectively. Participants included: representatives of farmers and farmer practitioners from communities, DoA staff (district directors, veterinary, production, extension agents and Women in Agricultural Development officers), coordinating directors and planning officers in metropolitan, municipal and district assemblies (MMDAs), NGOs (Center for Ecological Agricultural and Learning (CEAL) and Presbyterian Agricultural Services (PAS) Tamale), veterinary shop operators and other expert individuals. There were a total of 50 participants (8 women and 42 men).

The meetings achieved the following:

- Updating of district stakeholders on progress of project implementation and achievements from October 2019 to September 2020
- Providing a platform where information on farmers' EVM innovations were shared among stakeholders
- Discussing issues and sharing ideas to inform the way forward going into Year 2.

The district sessions were followed by a meeting of the principal project stakeholders in the ACDEP office. Participants included the veterinary officers of MoFA for Northern, North East and Upper East Regions, DoA Director for Bongo District, researchers from ARI and UDS and staff of ACDEP. The meeting updated all members on the progress of activity implementation and achievements. It also discussed and adopted the annual work plan for October 2020 – September 2021 for collective implementation.

***Objective 2: Improved preparation, packaging and use of selected ethnoveterinary medicines***

Activities to achieve this objective are planned to start in the third quarter (April–June 2021), but significant progress has been made over the reporting period in implementing activities and generating outputs towards achieving Objective 1. In the process, some important inputs needed to commence the implementation of activities under Objective 2 have been generated:

- Identification of EVM practitioners, farmers, community livestock workers (CLWs), community animal health workers (CAHWs) and veterinary technical officers, extension agents, women in agricultural development officers etc
- Documented profiles of farmers' prioritised EVM innovations with information on herbal plants, methods of preparing and administering EVM medicines
- Identification of EVM for scientific evaluation and herbal plants involved.

These are necessary to determine gaps and capacity needs of farmers and other stakeholders and to develop customised training modules on conservation, propagation and establishment of herbal gardens as well as improved preparation, packaging and labeling of EVM products.

***Objective 3: To establish a strong network of EVM practitioners for research, learning and advocacy***

The district-level networks established are made up of farmers and farmer EVM practitioners, CLWs/CAHWs, representatives of institutions and departments (MoFA, DoA), MMDAs, NGOs, veterinary shop operators and individual experts in EVM. These stakeholders are regularly updated on progress of project implementation through meetings and through review and planning at the community, district and project levels. Other means for giving updates to stakeholders are Zoom meetings, emails, WhatsApp and phone calls. These regular updates of all stakeholders and their participation in project implementation are fundamental to ensure rigour in the processes, foster collective learning and identify issues for advocacy.

## **4. OTHER ACTIVITIES**

### **Team update on progress of implementation to Sabine Dorlöchter-Sulser of Misereor**

The project stakeholders comprising Lisa Crump and Jakob Zingstag of Swiss TPH; Franklin Avornyo of ARI; Evans Ayamdoo, MoFA veterinary Northern Region; Edga Drah, DoA Bongo; and Foster Awuni and Joseph Nchor of ACDEP met and gave first-hand updates to Sabine Dorlöchter-Sülser of Misereor through Zoom on 26 January 2021. They reported on progress in project implementation and achievements and discussed issues and implementation challenges.

Foster Awuni, project coordinator, gave a PowerPoint presentation detailing activities implemented, deliverables and outputs achieved, approach used, indicators achieved, what worked well, challenges and constraints, and the focus of activities in Year 2. After the presentation, the following issues were raised:

- Ethical approval for the experiments to be conducted
- Compensation for farmers' animals in experiments
- End points of experiments
- Challenges with funds.

These issues were discussed and the following were arrived at:

- Ethical clearance for the experiments will be obtained from the Ghana Veterinary Directorate or Council.
- There may not be the need for a compensation plan, because the project will not deliberately infect animals; it will use the natural infection of farm animals for the on-farm trials. However, there will be an opening to compensate farmers on a case-by-case basis, e.g., if, in the course of administering the medication, things are not done right by a secondary person entrusted to do so and an animal dies as a result.
- The issue of end point was discussed and a common understanding on it established among the scientists, based on which there was an agreement to review the protocols and state the end points clearly.
- Issues of funds had not been a problem with any of the partners, ACDEP, ARI or Swiss TPH. Misereor always disbursed the funds at the right time, and ACDEP also transferred the funds for ARI promptly.

The major challenge faced was the global pandemic Covid-19, which generally slowed down activities in Ghana including implementation of Ethnovet Project activities. As responses:

- We carried out sensitisation and education of farmers and innovators on Covid-19 prevention measures.
- With approval of Misereor, we procured and provided personal protective equipment (PPE) veronica buckets, liquid soap, tissue and nose masks for farmers and innovators to enable them to practise the prevention measures.

Time conflict with stakeholders' own activities is being managed by planning carefully and with compromises to reduce occurrence so as not to adversely affect project implementation.

Slowness in the processes as against earlier anticipation made us miss achieving Year 1 planned targets. However, this will reap benefits as it is necessary to get the beginning processes right and to build on them during the remaining processes.

There are not many women veterinarians in the project districts. There are also few women EVM practitioners and CAHWs/CLWs. This made it impossible to meet the 15% female targets for veterinarians and EVM practitioners involved in the Ethnovet Project.

Some farmers are not opening up for fear of losing their intellectual property to "outsiders" who might take advantage. However, with continuous contact and open discussions and mutual respect, farmers are gradually opening up with more information on their innovations.

The focus of Year 2 presented were as listed below:

- Scientific evaluation (laboratory testing)
- Field trials of selected EVMs

- Trainings on preparation, conservation etc
- Socio-economic analyses.

## **Showcasing EVM innovations through Global Farmer Innovation Fair (GFIF) 2021**

Two farmer innovators were involved in the GFIF:

1. Yaw Azure from Ayelbia in Bongo District of Upper East Region, who uses a solution prepared with the roots of *Nauclea latifolia*, *Cochlospermum planchonii* and bark of *Pseudocedrela kotschyi* for treatment and prevention of ASF;
2. Ms Sadia Wuntimah Yakubu from Wulugu in West Mamprusi District of North East Region, who uses a solution prepared with *Aloe vera*, bitter cola, pepper, garlic, ginger, *kanafiri* and woodash to treat NCD in poultry.

They showcased their innovations and shared them with other farmer innovators and stakeholders in the virtual GFIF on 10 and 11 February 2021. The fair was organised and hosted by Prolinnova and A Growing Culture (AGC) to recognise the ability of farmer-led knowledge sharing to enhance local capacities, stimulate collaboration and strengthen resilience to change. The farmers learned and were inspired by others during the fair. About 100 participants were recorded. These included 28 innovators and innovator groups from nine countries: Ghana, Burkina Faso, South Africa, Nepal, South India, Sudan, Cameroon, Senegal and Kenya. The proceedings of the fair was recorded and uploaded on YouTube: Global Farmer Innovation Fair (GFIF) Day 1 (full broadcast). Yaw and Sadia's presentation of their innovations in a session moderated by Naaminong Karbo and facilitated by Dominic Avea and Foster Awuni can be viewed from 3:18:50 to 3:51:22s of the 4:05:22s recorded proceedings.

## **Updating Prolinnova–Ghana National Steering Committee on Ethnovet Project**

The project coordinator took part in the Prolinnova–Ghana National Steering Committee (NSC) meeting held on 18 December 2020. He presented an update on activities implemented and outputs achieved since the last meeting in January 2020. The update included the number of innovations identified and being documented, number of innovations being further pursued for scientific evaluation, documentation of farmers' disease case definitions and the screening of PhD candidates to apply for Swiss Government excellence scholarships for foreign students. Ongoing activities were literature review on 11 ethnobotanicals involved in selected innovations for validation and development of protocols to test the innovations. After the presentation, the NSC members asked questions for clarification and made suggestions to improve the work, e.g. in the process leading to selection of student candidates to apply for the PhD scholarship, what the scientific validation of innovations was about and whether spiritual aspects of the innovations will be validated. It was also advised that both scientific and local names of herbs involved in the innovations should be included in every presentation to stakeholders so as to enable the different stakeholders to know the plants.

## **Technical backstopping from Swiss TPH**

Within this reporting period, the local team had unflinching support from the Swiss TPH team through Lisa Crump, who supported implementation and local research scientists in all the stages:

- For implementation, she provided ideas to guide the activities and reviewed and edited reports (report on literature review of ethnobotanicals, annual and quarterly reports) and the documentation of farmer innovation profiles; the final report will be shared among stakeholders and published.

- To local scientists, Lisa shared literature on determining sample sizes and sampling methods to guide protocol development. She discussed with the team and agreed on the research objectives, procedures and methods in developing the experiments and reviewed and edited the protocols, which are still being improved. A Swiss TPH biostatistician provides technical advice on study design and robust data-collection methods.

## 5. PROGRESS IN ACHIEVING PROJECT OBJECTIVES

### ***Objective 1: EVM treatments developed and commonly used by smallholder farmers for poultry and other livestock are validated in a multistakeholder approach.***

The following outputs achieved and consolidated within this reporting period are milestones chalked towards achievement of this objective:

- A report on documented profiles of 24 farmer-prioritised EVM innovations is awaiting editing to be finalised and published.
- Report on literature review containing information on ethnobotanicals and phytochemical properties of herbs involved in the selected innovations has been finalised, and steps are being taking to publish it in a peer-reviewed journal.
- Protocols have been developed to evaluate each of five selected EVM innovations on: NCD in poultry, ASF, anthrax in small ruminants, PPR and guinea keet mortality. Stakeholders reviewed four of the protocols, to be finalised for adoption.
- A first phase of the NCD innovation experiment started in six communities with 20 farmers in each community. This was preceded by taking case samples to the CVL in Pong-Tamale for confirmation.

### ***Objective 2: Improved preparation, packaging and use of selected ethnoveterinary medicines***

Activities under this objective were not started because they depend on outputs of activities in Objective 1 as inputs. These are now set to commence implementation of activities to achieve Objective 2.

### ***Objective 3: To establish a strong network of EVM practitioners for research, learning and advocacy***

A multistakeholder platform dealing with animal health issues meets at least twice annually to discuss questions related to project implementation and overall improvement of animal healthcare:

- The multiple stakeholders in the project took part in half-year and annual project review and planning meetings and discussed questions and shared ideas for implementation.
- The stakeholders participated in discussions and review of study reports and protocols for participatory and farmer-led evaluation of EVM innovations.
- The distant local and international stakeholders participated in the project process mostly through Zoom and email.
- Stakeholder members of the MMDAs and the DoA are accepting the concept of farmer innovations and farmer-led research and the need to adopt the approach in their work; for example:
  - The coordinating director of Bongo District said the approach was the best to ensure endogenous technology development for sustainable solutions to local development challenges and therefore needs attention.

- One of the deputy coordination directors of the Bawku Municipal Assembly said he will recommend to incorporate the project concept in the district medium-term plan when they are reviewing it.
- Key staff of the DoA (directors and veterinary and animal production officers) are participating and learning about the concept as part of their work.

## 6. CHALLENGES

The Covid-19 pandemic still continued to pose a challenge and slowed down the pace of implementation of project activities and achievement of expected results. However, increased use of information and communication technology (ICT) tools helped to improve communication and information sharing with and among stakeholders and farmers. The scale of community and stakeholder meetings was limited.

There are not many women veterinarians in the project districts. There are also few women EVM practitioners and CAHWs/CLWs; this makes it impossible to meet the 15% female targets for veterinarians and EVM practitioners in the project activities.

## 7. CONCLUSIONS

The implementation of project activities is on track to achieving project objectives by the end of September 2022. Farmer-prioritised EVM practices based on important common animal diseases have been documented. A further selection of five EVMs for evaluation was also done, based on which protocols to implement farmer-led experimentation to scientifically evaluate these innovations were drawn up. Phase 1 of the experiment on the NCD innovation has started. A report on the literature review on ethnobotanicals and phytochemical properties of herbs involved in the selected innovations has been finalised. All the relevant multidisciplinary stakeholders continue to show commitment to ensure successful implementation, learning and advocacy. They are actively playing their roles in activity implementation, documentation, editing and reviewing of reports, and sharing ideas to shape project implementation to ensure project success.

## 8 ACTIVITIES PLANNED FOR APRIL–JUNE 2021

Project activities	Planned activities
Documentation, literature review	Finalise documentation of 24 EVMs
Laboratory tests / analyses	Carry out laboratory confirmation of:
	• NCD in suspected poultry
	• PPR disease in suspected small ruminants
	• ASF disease in suspected pigs
	• Anthrax in suspected small ruminants
	• Causes of keet mortality
Clinical / field trials	Organise team of researchers to finalise the protocols for PPR, ASF, anthrax and keet mortality
	Facilitate enumerators and monitor their collection of data on the first experiment on NCD

	Set up, facilitate enumerators and monitor the collection of data on on-farm trials on ASF
	Set up, monitor and collect data on first clinical/on-farm trials on keet mortality
Research, publication, documentation of outcomes	Recruit MSc and PhD students to conduct studies with the project
Cultivation and conservation of plants	Train farmers and EVM practitioners on sustainable exploitation, conservation and propagation of herbal plants; facilitate identified farmers to establish herbal plant gardens
Training on preparation, standardisation and packaging	Train farmers and EVM practitioners on hygienic preparation of herbal medicine, improved packaging and labeling and marketing of herbal products
Promotion through farmer fairs	Participate in or organise district-/community-level EVM fairs