Innovation brief

RESEARCH PROGRAM ON Livestock

CGIAR

Photo ILRI/ Stevie Mann

LIVESTOCK HEALTH | ECo-PPR Project: Tools to support peste des petits ruminants (PPR) control and eradication

KEY MESSAGES

- The control of *peste des petits ruminants* (PPR)–a highly contagious and potentially lethal viral disease among sheep and goats–is essential to safeguard the livelihoods of millions in Africa who depend on these animals.
- FAO and World Organization for Animal Health (OIE) jointly developed a coordinated PPR Global Control and Eradication Strategy (GCES), endorsed by more than 200 countries worldwide, aiming to achieve a PPR-free world by 2030.
- The ECo-PPR project contributes to global PPR eradication efforts by generating evidence on disease epidemiology, social networks and gendered disease impact to support surveillance and control actions within its six targeted countries in Africa.
- The project toolbox contains interdisciplinary, trilingual tools for digital administration.
- The tools address research gaps in socio economic impact and epidemiology to improve PPR control and eradication strategies.
- The project has been instrumental in the creation of strong partnerships with national partners, governments, and scientists to execute research and disease control activities in six targeted countries.

INTRODUCTION

There are an estimated 2.3 billion small ruminants (SRs) globally, with 40% in Africa (FAOSTAT 2021). For millions of smallholder herders and farmers across the continent, keeping livestock is the cornerstone of their livelihoods, contributing to household food and nutritional security and providing readily available cash income (De Haan et al. 2015). Women hold more control over SRs, compared to other livestock species such as cattle, relying on them economically but also to fulfill various socioeconomics functions, such as dowries for weddings, charity, and inheritances (Wodajo et al. 2020).

Animal disease outbreaks create a significant threat to the livestock sector, negatively impacting livestock keepers. Consequently, control of major disease threats, such as peste des petits ruminants (PPR), would protect and enhance the ability of livestock keepers to benefit from their livestock.

PPR is a highly contagious and viral disease, characterized by high mortality and morbidity rates, that predominantly affects sheep and goats (OIE 2021). It is endemic in most areas in Asia, the Middle East and Africa, where it was first reported and described in 1942 (Zhao et al. 2021). The control of PPR in these endemic settings presents challenges that need to be systematically addressed to ease the burden of disease on herders and farmers who are dependent on SRs for food and income. The World Organization for Animal Health (OIE) and the Food and Agriculture Organization of the United Nations (FAO) have developed a coordinated PPR Global Control and Eradication Strategy (GCES), endorsed by more than 200 countries worldwide, aiming to achieve a PPR-free world by 2030 (OIE and FAO 2015). To support this global vision, the International Livestock Research Institute (ILRI) is implementing the Epidemiology and Control of Peste des petits ruminants (ECO-PPR) research project in six countries in West and East Africa: Senegal, Burkina Faso, Mali, Kenya, Tanzania and Ethiopia.

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

ECO-PPR PROJECT DESCRIPTION

The ECo-PPR project contributes to the global PPR eradication efforts, especially in the endemic settings, by generating evidence on disease epidemiology, social networks, and gendered disease impact to support surveillance and control actions within its targeted countries. It emphasizes high-risk areas that are difficult to reach with vaccination campaigns which could potentially become pockets of further infection, jeopardizing control efforts elsewhere (ILRI 2019b).

Specifically, it will provide a deeper understanding of the socioeconomic impact of PPR and the challenges to control it using an interdisciplinary approach that bridges socioeconomics, epidemiology and biosciences. The immediate beneficiaries of the ECo-PPR project are livestock keepers, public and private veterinary professionals, animal health practitioners such as the field delivery agents and the respective countries' governments.

Photo TALIRI/Gilbert Msuta

An enumerator conducting a household survey in Tanzania.

APPROACHES AND RESULTS

The project is organized into four components:

1. **Epidemiology and socioeconomic impact to fill existing knowledge gaps**
2. **Modelling PPR control to assess the effectiveness of different control scenarios**
3. **Vaccine delivery and diagnostics to improve access of vaccines to the livestock keepers**
4. **Capacity development and surveillance to provide an adequate enabling environment for control efforts (ILRI 2019a).**

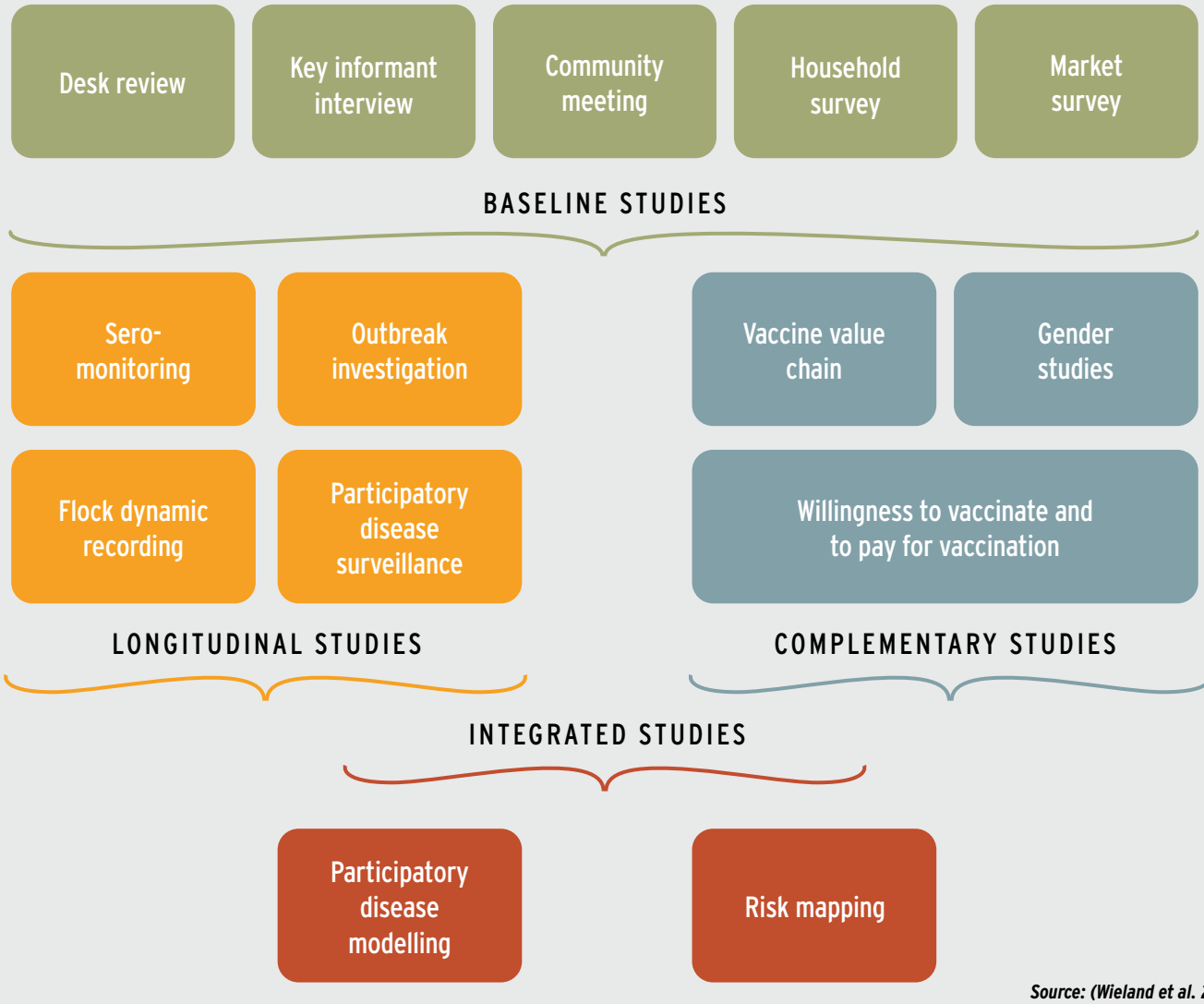
Photo ILRI/Pacem Kotchofa

Group photo of stakeholders who participated in the PPR participatory disease modeling sessions in Senegal

The ECo-PPR project is executed with innovative approaches and methods to capture these components and harmonize data collection across all countries and among partners by developing a data collection framework (Figure 1). Some boxes in the framework correspond directly to research tools, such as the key informant interviews, community meetings, household surveys and market surveys; while other boxes, such as gender and socioeconomic studies, are integrated throughout multiple tools. All the baseline studies tools are interdisciplinary, capturing both the epidemiological and socioeconomic dimensions to support the integrated studies. For example, the household questionnaire which captures SRs husbandry, animal movement to understand disease spread and disease management practices was structured as an intra-household survey i.e. it is administered to both a man and a woman within each household. This structure takes advantage of the different knowledge men and women have due to different gender roles in SRs production and gives gender disaggregated data to better understand women's contributions in disease management and control.

All the tools were used in the six project countries and a selection of tools were modified for use in Uganda as part of the 'Boosting Uganda's Investment in Livestock Development' (BUILD) (Roesel 2020) project. All baseline tools are available in three languages i.e. English, French, and Swahili. Harmonized data collection tools enables comparative and regional analyses (Wieland et al. 2020). Lastly, in response to COVID-19 pandemic travel restrictions, the project developed online training materials in French and English to support national partners in implementing field activities which are publicly available on the ECo-PPR YouTube channel (ILRI 2020).

Figure 1. ECo-PPR data collection framework



Source: (Wieland et al. 2020)

SIGNIFICANT MILESTONES

The ECo-PPR project is still ongoing but there have already been some significant milestones including data collection for the baseline studies, regional cross-border risk mapping meetings, a macro-economic assessment of PPR impact in Ethiopia and Burkina Faso and participatory disease modelling activities in Senegal. As part of the baseline studies, the intra-household survey was administered to men and women from 7,330 households in five project countries. However, research activities were delayed in Ethiopia due to security concerns (Figure 2). The market survey activities were launched in West Africa with more than 200 actors (e.g sellers, buyers, or traders) surveyed in each country in that region.

To promote regional coordination of PPR control activities in West Africa, the project supported cross-border risk mapping analyses with representatives from neighbouring countries. In December 2020, a virtual meeting was held with representatives from Tanzania, Burundi, Democratic Republic of the Congo, South Sudan, Uganda, Rwanda and Kenya to identify areas of PPR risk, animal movement and control activities in East Africa. A regional risk mapping workshop was organized in Dakar, Senegal in June 2021 to optimize surveillance and control of PPR. The meeting brought together veterinary services of Senegal, Mali and Burkina Faso.

A macroeconomic impact assessment of PPR was also implemented in Burkina Faso and Ethiopia to show how the disease may affect the livestock sector and overall economic activities of countries in terms of gross domestic product (GDP), sectoral GDP, employment and household income (Kotchofa et al. 2021). In addition, two participatory disease modelling research activities are ongoing in Senegal to generate evidence in support of the socioeconomic impact of the disease and plans for vaccination as the primary strategy for PPR control in the Sahel. One is led by ILRI, implemented using Spatial Group Model Building (SGMB) approach (Kotchofa et al. 2020), and the other is led by the French Agricultural Research Centre for International Development (CIRAD) using a companion modelling approach.

LESSONS LEARNED, BENEFITS AND OPPORTUNITIES

As data collection and analyses are ongoing, many of the lessons and benefits of the ECo-PPR project are not yet finalised. The challenge of implementing fieldwork during a global pandemic highlighted the necessity of strong partnerships between national governments and research institutions and the value of flexibility in training and research implementation.

The ECo-PPR project has already improved awareness about PPR control and eradication to the international community by winning an award at the 2021 World Food Forum Transformative Research Challenge (WFF TRC) for its risk-based approach to prioritize vaccination in endemic settings where PPR vaccines shortage remains a critical issue (Kotchofa 2021). Even more lessons and benefits of the project are expected in the future once all the ongoing studies are completed.

A local veterinarian in Saint Louis, Senegal, collects a sample from a sheep that is showing clinical symptoms of PPR. Photo ILRI/ Pacem Kotchofa

CONCLUSION

The ECo-PPR project, while still ongoing, has already created a useful and accessible set of interdisciplinary tools and training materials that can be used or modified to address research gaps in disease epidemiology, social networks and gendered disease impact to support PPR control and eradication efforts.

The baseline tools are programmed for digital administration in Open Data Kit (ODK) and available in English, French and Swahili. By administering the tools in six project countries and encouraging their use in partner projects, the project aims to provide harmonized results that can assist with policy decisions at the regional and global level.

Group photo of the regional West African meeting for enumerators trainings before launching field data collection in Senegal Photo ILRI/Pacem Kotchofa

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Cover photo: A young woman tends her goats that she is fattening for sale in a village near Fakara, Niger. Keeping the highly contagious peste des petits ruminants disease from infecting goats is important for the livelihoods of millions of people across Africa.