1. Problem definition

Farming systems across the sub-humid zone of West Africa often depend on cattle keeping, both as a production activity and to provide animal traction for cultivating expanded crop areas, especially for cash crops such as cotton. This zone is infested by the tsetse fly which transmits the potentially debilitating and fatal cattle disease: trypanosomosis. Farmers employ a combination of strategies to manage this disease challenge, the most popular of which is regularly treating their cattle with trypanocides, veterinary drugs specific to the disease that can be used prophylactically or curatively; as the local saying goes, ‘here, you farm with a syringe in the hand’. Each head of cattle is treated on average at least once a year. When drugs are used extensively in this manner, drug resistance can be expected to emerge, and the drugs will become less effective. Both farmers and veterinary professionals find it difficult to detect drug resistance due to a combination of lack of awareness as well as other possible explanations for drug failures, including inappropriate administration of drugs, which is often done by the farmers themselves. However, if drug resistance is allowed to become established and spread, the viability of cattle keeping and animal traction will be threatened.

In the mid-90s, scientists from ILRI teamed with collaborators in Germany and West Africa to develop a technique for detecting resistance, testing it in a zone of suspected resistance in southwestern Burkina Faso. Having confirmed the presence of drug-resistant pathogens (trypanosomes), a new project was initiated in 2002 to apply the detection technique to other suspected hotspots of resistance in Mali and Guinea, and test appropriate strategies for farmers, veterinary professionals, and policy makers that would minimize the risk of creating new resistance. That project, which is just ending now, confirmed that pockets of resistance exist across the zone studied, and provided evidence that promoting information and training on rational drug use and integrated disease control could reduce the risk of resistance. A protocol for more rapid detection of resistance and a range of prototypes for informational and training materials and decision-aid tools were developed. A new phase of the project is just starting, and in addition to understanding better how established resistance might be reversed and assessing the impacts of these research efforts, a major objective is to scale up and out across the region the prototypes developed during the preceding phase.

This evolving collaborative effort involves several research challenges.

- It concerns an invisible problem that required international and regional researcher action to identify and to bring to the attention of local researchers and authorities, and so is at its origins unabashedly supply-driven. Awareness was subsequently raised and cooperation cultivated through a sequence of consultations and increasing direct collaboration with local actors.
• Evaluating the appropriateness of response strategies has, however, required partnership with local actors right from the start, and a participatory approach was adopted.

• As the overall effort has evolved over the years and new information and understanding was generated, research objectives were periodically revised through consultation with both local users and international research actors.

• It was appreciated early that the problem and proposed solutions required a systems perspective since determinants of resistance range from the microbial to the international policy level.

• The current challenge is devise a strategy for efficiently and effectively scaling up and out such a variety of products, feeding them into the appropriate development and policy channels across the varying country contexts in the region.

2. Research management

While the funding for the initial phase of ‘discovery’ was oriented to scientific outputs, the funding source (BMZ Targeted funding for the CGIAR) for the two subsequent phases have stressed development objectives. This has contributed to more careful planning of the objectives and research activities to ensure their relevance, appropriateness and likelihood of impact. Progress markers and measures of success were set by the researchers primarily in terms of completing planned tasks rather than impact measures. Progress and achievements are reviewed annually in donor reports. ILRI scientists were held accountable for the overall objective of the project in the form of Medium Term Plan outputs, but it no longer appears under the current format. Specific project deliverables may, however, be explicit in individual scientist’s annual work plans and performance evaluations. It is not clear to what extent collaborating scientists and partners are held accountable.

3. Program organization

In the recent phase, the project operated with boundary partners at four levels:

i. National research: to ensure understanding, ownership, capacity, and advocacy of the issue, the direct participation of the relevant national veterinary research institutions and trypanosomosis control agencies was solicited in each country

ii. Local farmer and service providers: Within the study sites, cattle keepers and service providers (animal health technicians, veterinarians, drug sellers) were recruited as individuals and their representing organizations, to participate in the project activities, which often involved not only providing information, but also receiving training.

iii. Local and national policy makers: Local and national stakeholder workshops provided forums to present the issues and involve key actors and policy
makers in understanding the problem and analyzing the feasibility of proposed solutions.

iv. Regional and international actors: Contact was maintained through a project newsletter and periodic interaction with relevant international agencies (esp. FAO PAAT, AU-IBAR ISCTRC) and the pharmaceutical industry to keep them informed and solicit feedback on the findings being generated by the project.

4. The decision-support system

An end-to-end, integrated system sounds in part like a code word for what we have termed a systems approach: the problem of resistance cannot be effectively addressed by focusing only on the epidemiological dynamics without addressing farmer incentives to undertake control actions, or policy makers’ incentives to provide the appropriate enabling policy or institutional environment. Along our continuum of systems, the status report for the project partners may look something like this:

- Epidemiology of resistance: While we have a crude but robust understanding of the main drivers that lead to resistance, providing the basis for formulating prevention strategies, our knowledge of how to contain and reverse established resistance is still poor.

- Farmer and service provider incentives: Through socio-economic analyses and intervention trials, the project has identified a set of key informational messages and techniques for influencing the practices of those most directly involved in the delivery and use of trypanosomosis control technologies, esp. drugs. While different channels (state services, private sector, NGOs, media) have been proposed through which these products could be disseminated, a clear strategy for accessing these channels has yet to be devised.

- Policy support: Stakeholder analyses have made clear the complexity of perceived interests, and how promoting rational drug use is seen by certain parties as a threat to the professionalism of veterinary services. The strategy adopted is to work with national partners to generate evidence of resistance in a country, use this evidence to raise awareness among stakeholders, and then work with stakeholders to evaluate potential responses.

To tie these together and improve the likelihood of sustained follow-through to the end users, the project promotes ownership and buy-in by empowering different actors: state research and veterinary services to monitor the problem and inform the other stakeholders, certain stakeholder organizations pursuing their interests as lobby groups, pharmaceutical suppliers protecting their markets, and policy makers appreciating the threat to livelihoods and how vested interests may be managed.

5. Learning orientation

The project operates in a learning mode; initial design of project activities is often rather sketchy, and is refined as the project evolves. Annual project meetings are structured
around a review of findings from the previous year and discussion of their implications for the activities planned for the coming year. Findings are not always predicted; the advantages of rational drug use, for example, emerged as it was tested and compared to other strategies during the preceding phase. Some risk-taking is encouraged, such as the potentially controversial testing and promotion of rational drug use messages.

6. Continuity and flexibility
A variety of strategies have been incorporated into the project to promote continuity without depending on external support, including:

- Ensuring that managers and technical staff in state agencies (which tend not to change quickly!) are directly involved, and having them present results to national stakeholders to establish their role
- Developing a fairly low-cost and easy-to-apply methodology for monitoring drug resistance accessible to resource-constrained national agencies
- Assigning one such group from one country to backstop the introduction of the methodology in other countries, thereby enhancing regional expertise and ownership
- Preparing and disseminating training materials, including training modules to be incorporated into conventional technical training for professionals and technicians
- Raising awareness among key stakeholder groups so that they may continue to act as lobby groups to maintain pressure for policy action
- Working with the pharmaceutical industry to identify actions and messages that may be in their own interest to promote as part of their marketing efforts
- Exploring with NGOs and other development actors what messages and tools might help to support their own development objectives, as an indicator of their willingness to replicate and promote the messages without additional support.

7. Other insights
A systems perspective is critical to ensure that the project’s research findings translate into changed mindsets and practices. Focusing only on working with and disseminating biological/epidemiological knowledge within the regional research community is not likely to lead to impact. Clearly, the problem and potential solutions require understanding and exploiting incentives at all levels, from farmers and local service providers, to professional organizations, public sector technicians and policy makers, and the private sector.

8. Other issues
We are struggling just now with designing components of the new phase of the project related to rolling out the various products from the preceding phase of the project across the region, and undertaking impact assessment to value the returns to the donor research investments made to this research over the years. Although initially conceived as independent activities, we are proposing to integrate the two activities by considering the regional roll-out within an innovation systems framework, i.e. using tools to identify the actors who might be involved in promoting the products and analyzing their strengths, weaknesses, and incentives in doing so, and based on this devise a roll-out strategy. The challenge would be to figure out if we can evaluate how effective this approach is. This would then be integrated into the impact assessment, which will be projecting future uptake of the research results. The idea would be to evaluate how eventual impact of the research results—both in terms of its timing and its extent—is influenced by applying an innovation systems-inspired strategy for dissemination and uptake. We would like to have the opportunity to pick everyone’s brains on this at some point during the meeting.

Readings:

(1) D. Grace. Resistance to trypanocides: And what drug makers and sellers can do about it. This document will give the reader a sense of the types of messages that we are interested in promoting through the pharmaceutical industry to reduce the risk of resistance.

(2) Workshop report: Better management of trypanosomosis in the presence of drug resistance. Bobo Dioulassou, Kenedougou, Burkina Faso, 16-17 August 2004. During this workshop, results from the project were fed back to local stakeholders in Burkina Faso. Certain sections are highlighted as examples of the potential reluctance to promoting the recommendations.


(5) L. Duckworth. Consultancy report on media-based dissemination strategies. This loosely organized report gives an overview of a range of dissemination media that have been evaluated in preparation for regional roll-out of the project’s messages.