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Date received: 02 January, 2015

Date accepted: 02 May, 2016

## Lessons from interaction of researchers with pastoralists from eastern Africa

C.G. GITAO<sup>1</sup>, S.M. KIHU<sup>1</sup>, A.E. MUSE<sup>2</sup> and M. WANJOHI<sup>1</sup>

<sup>1</sup>Faculty of Veterinary Medicine, University of Nairobi, P. O. Box 29053-00625, Uthiru, Kenya

<sup>2</sup>Sokoine University of Agriculture(SUA), Department of Veterinary Medicine and Public Health, P. O. Box 3021 Morogoro, Tanzania

Corresponding author: cggitao@gmail.com

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### ABSTRACT

Pastoralism is a way of life in the arid and semi-arid areas of East Africa where livestock rearing is the cornerstone of livelihoods and is characterized by movement of people and livestock in search of pasture and water. Due to past neglect and marginalization of this sector, little is known on the contribution of the sector to society and how new innovations can change their lives leading to overall economic development. In addition, current undergraduate training especially for science students is lacking in soft skills which is essential if proper engagement between researchers and pastoralists is to be useful. In this study, two research projects based in pastoral areas are analyzed. In the first project supported by RUFORUM, disease search for *Peste des Petits Ruminant* (PPR) a disease which has been killing goats in East Africa was conducted among the Turkana people in Northern Kenya as well as Tandahimba, in Mtwara, Southern Tanzania. In the second project, supported by Kenya Agricultural Productivity Project (KAP), the constraints of hygiene on camel milk chain was analyzed in Garissa and Wajir districts in Northern Kenya. In all projects, engagement of multiple stakeholders enhanced achievement of results. Use of participatory techniques was found effective in eliciting response and support for the study. Soft skills were found to be effective in enhancing the researcher-pastoralist interface. Proper planning in logistics was paramount in overcoming challenges like distance, flooding, and the nomadic lifestyle of the pastoralists. It is recommended that researchers be trained in soft skills before embarking on research in pastoral areas. Engagement of multiple stakeholders and a clear understanding of the socio-culture and natural environment in the pastoral areas is also highly recommended.

Key words: Case studies, East Africa, lessons learnt, participatory techniques, pastoralism, undergraduate training

### RÉSUMÉ

Le pastoralisme est un mode de vie dans les zones arides et semi-arides de l'Afrique de l'Est, où l'élevage est la pierre angulaire des moyens de subsistance et se caractérise par le mouvement des personnes et du bétail à la recherche de pâturages et d'eau. En raison de la négligence et de la marginalisation de ce secteur dans le passé, on sait peu sur la contribution du secteur à la société et comment les nouvelles innovations peuvent changer leurs vies conduisant au développement économique global. En outre, la formation du premier cycle universitaire, en particulier celle des étudiants en sciences manque de compétences alors que ces dernières sont primordiales si la collaboration entre les chercheurs et les éleveurs se veut être utile. Dans cette étude, deux projets de recherche basés dans les zones pastorales sont analysés. Dans le premier projet financé par RUFORUM, la recherche sur la peste des petits ruminants (PPR) ; une maladie qui a tué des chèvres en Afrique orientale a été menée auprès de la population Turkana dans le nord du Kenya, ainsi que Tandahimba, à Mtwara, sud de la Tanzanie. Dans le second projet, financé par le projet de Productivité Agricole du Kenya (PAK), les contraintes d'hygiène dans la chaîne du lait de chamelle dans les arrondissements de Garissa et Wajir au nord du Kenya ont été analysées. Dans tous les projets, la participation de multiples acteurs a facilité l'obtention des résultats. L'utilisation de techniques participatives a permis l'obtention des réponses et du support pour l'étude. Les compétences se sont montrées efficaces dans l'amélioration de l'interface chercheur-pasteur. Une bonne planification de la logistique était primordiale pour surmonter des défis tels que la distance, les inondations et le mode de vie des pasteurs nomades. Il est recommandé que les chercheurs soient formés sur les techniques avant de se

lancer dans la recherche en zones pastorales. L'engagement de multiples acteurs et une compréhension claire de la socio-culture et de l'environnement naturel dans les zones pastorales sont également fortement recommandés.

Mots clés: Etude de cas, Afrique de l'Est, les leçons apprises, les techniques participatives, le pastoralisme, la formation universitaire du premier cycle

## INTRODUCTION

Pastoralist people are those whose way of life largely depends on mobile livestock-herding. They live in a range of environments in many countries across every continent in the world. In sub-Saharan African, mobile pastoralism is predominantly practiced in arid and semi-arid lands (ASALs). These areas are hot and dry, with low and erratic rainfall. There are not many livelihoods that are suited to this arid environment but mobile livestock - keeping is relatively well adapted. In fact pastoralism in Africa evolved in response to climate variability over 6000 years ago (Brooks, 2006 a) when the Sahara entered a period of prolonged desiccation. With no reliable supplies of permanent water, pastoralism enabled people to adapt to an increasingly arid and unpredictable environment by moving livestock according to the shifting availability of water and pastures (Brooks, 2006b). This opportunistic management system continues to this day making pastoralism an effective and efficient land use and production system for the drylands of the world.

The dry and pastoral lands of East Africa occupy 70% of the horn of Africa. This ranges from 95% of the total land area in Somalia and Djibouti, to more than 80% in Kenya, 60% in Uganda and between 50-60% in Tanzania. While Kenya is home to 4 million (10% of the population) pastoralists (Govt. Kenya, 2004), Uganda has 5.5 million (22%) while Tanzania has 4 million (10%) pastoralists who depend mostly on livestock for their livelihoods. At the moment, years of political and economic marginalization; inappropriate development policies and increase in resource competition; increase in abnormal climatic environment and a fundamental misunderstanding of their social economic value has reduced the ability of many pastoralists to maintain a sustainable livelihood. This bleak situation, however, affords a major opportunity for researchers to document traditional skills which can be useful, as well as design and implement innovative technologies and practices that can improve the livelihoods of pastoralists. In doing this they need to network with all stakeholders involved in order to enhance their chances of success. Perhaps as part of past neglect or marginalization of this sector, there is little documented on how to conduct research in these environments. The other challenge is related to the style and content of teaching undergraduate (and indeed post graduate) students especially in science based courses in East Africa. Most courses are delivered through the

lecture-based model with no emphasis on soft skills. To be able to engage pastoralists properly, soft skills are necessary in order to overcome the socio-cultural barriers between the researcher and the pastoralists. The case study reported is of research conducted in three different pastoral areas of Kenya and Tanzania with the aim of sharing experiences gained in those environments during the course of the work.

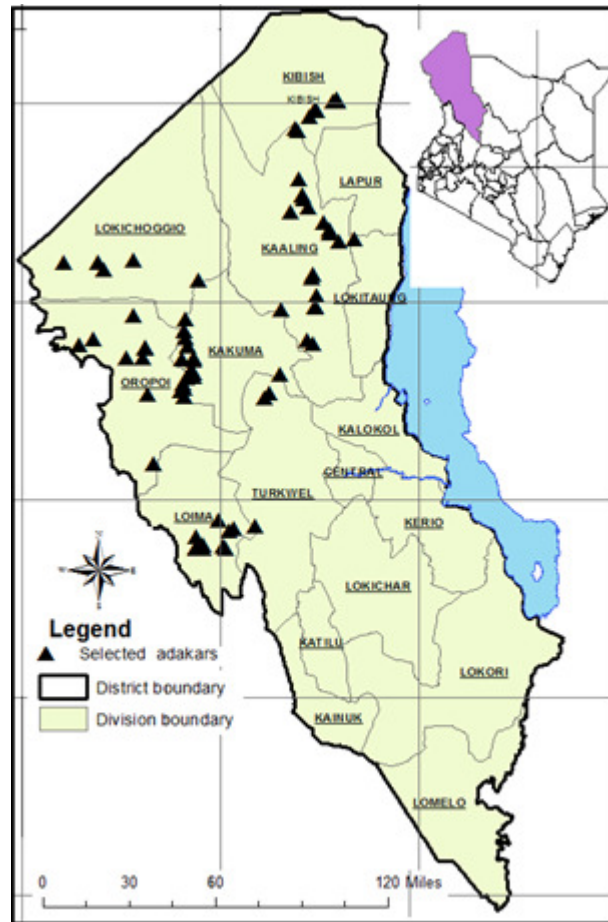
## METHODOLOGY

The study is composed of three case studies from two projects. The first project is a Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) supported project (ID No. RU 2009 GRG 17 TADS) conducted between 2009-2012 in Turkana and Mtwara in Tanzania titled "Developing capacity for implementing innovative *Peste des Petits Ruminant* (PPR) control strategies based on the epidemiology and socio-economic aspects of the disease in the East African region". In this project the epidemiology of PPR including risk factors, prevalence, and socio-economic effects were analyzed using participatory tools. The research used observations in combination with over 30 participatory interviews as well as over 20 focus group discussions. Samples for virus isolation and blood for serology were obtained from different sites. In the second case study, the virus characteristics and disease description were described. Over 200 questionnaires were administered, and samples obtained from animals and observations recorded. In the second project funded by Kenya Agricultural Productivity Project (KAPP CGS 06/1RC-LVST), research was conducted between 2006-2009 in Garisa and Wajir labeled "Camel milk value chain enhancement: the case of Wajir and Garissa pastoral communities of north eastern Kenya". In this project, current camel milking practices and their impact on milk quality were analyzed through questionnaires and laboratory analysis of milk samples.

### Study areas

**Case 1.** The study was carried out in six administrative divisions of Turkana district namely Loima, Orropoi, Kakuma, Lokichogio, Kaaling and Kibish. The district is located in the extreme north west of Kenya (Figure 1). Turkana district covers an area of 77,000 km<sup>2</sup> with a human population of 849,277.

The district is characterized by arid and semi-arid lands covered with grass and sparse thorny shrubs. The



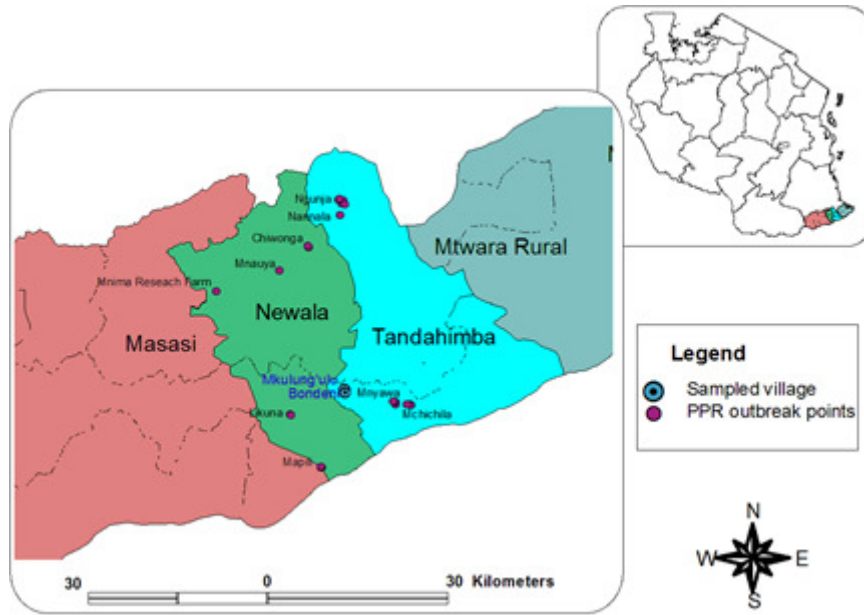
**Figure 1: Study sites in Turkana**

central, eastern and southern parts of the district consist of low-lying vast plains, with isolated rocky mountainous and hilly ranges surrounded by several seasonal rivers. The area to the west bordering Uganda and Sudan to the north consists of mountainous ranges where elevations vary from 1800 - 2100 meters above sea level. The latter areas comprise the main grazing lands. The mountains are the sources of numerous seasonal streams, which feed into the Turkwell and Kerio rivers that end up draining into Lake Turkana. The district's woody vegetation is found on the escarpments, mountainous areas, along the Turkwell and Kerio rivers and within the other numerous seasonal watercourses. Generally, the district experiences both temporal and spatial rainfall variability as well as frequent droughts and famines. Results from times series plot indicate that Turkana district has two distinct rainfall seasons: long rains (Akiporo) that fall between March, April and May (MAM) and short rains (erupe) that are experienced between October, November and December. The annual rainfall ranges between 100 to 600 mm per year.

**Case 2.** In the second case based in Tandahimba, Tanzania, the study area lies between Latitude  $10^{\circ}422$  and  $10^{\circ}522$  South of Equator, and Longitude  $39^{\circ}242$  and  $39^{\circ}472$  East of Greenwich at an elevation of 100-

800 m above sea level. The rain is monomodal with rainy season starting in November to May and a total rainfall averaging 600–1000 mm (Figure 2). The mean monthly temperature varies from  $23^{\circ}\text{C}$  to  $27^{\circ}\text{C}$  and relative humidity varies between 79% and 87%. Statistics based on figures available in the District Council Offices (DVO) show that Tandahimba district has population of 203,837 and livestock population of about 149,945 goats and 2,348 sheep. This district borders Mueda district of the Cabo Delgado province of Mozambique.

**Case 3.** This KAP supported study was carried out in Garissa and Wajir districts of North-Eastern province. These are two of the four districts making up the expansive North Eastern province of Kenya. They lie in the Arid and Semi-Arid Lands (ASAL) of the country (Figure 3). The rainfall pattern is erratic and unreliable. It is always less than 600mm annually. Temperature ranges between  $22^{\circ}\text{C}$  to  $42^{\circ}\text{C}$ . The districts are flat, covered by trees and shrubs with grass undergrowth. Water sources are rivers (permanent and seasonal), pans, boreholes, dams and shallow wells. The mainstream activity of the two districts is livestock keeping. The livestock are kept under pastoralist system and include cattle, sheep, goats, camels, donkeys and poultry. Nomadic



**Figure 2: Map showing two village (Mahuta ward) with PPR outbreak in March 2011**



### Figure 3: Wajir and Garissa Districts

pastoralist communities living in ASAL regions largely depend on milk produced by camels which contribute 80% of the household needs. Surface water is a serious problem in this area. Animal husbandry is characterized by extensive pastoral production system and seasonal mobility. Camel and cattle herd splitting into mobile “*forra*” and home-based “*herd*” is practiced as strategy to mitigate forage and water shortage. Camel herd movement may involve moving the whole herd to water point and to relatively high altitude where green forage is available.

### *Emerging issues*

The PPR disease search results have been documented (Kihu *et al.*, 2012a,b; Muse *et al.*, 2012) as well as the health constraints in Garissa and Wajir (Wanjohi *et al.*, 2012, 2013). What remains to be documented are the lessons learnt in conducting the research. In Turkana, the activities were started by training 20 veterinarians from Turkana county and other Rift Valley districts in participatory epidemiology in a ten day workshop. The trainees were Veterinarian and District Veterinary Officers (DVOs) from districts of Nakuru, Molo, Kipkelion, Trans Nzoia, Uasin Ngishu and Turkana. Some of the topics covered in inter-active sessions included semi-structured interviews, mapping, simple ranking, pair wise ranking, matrix scoring, seasonal calendars and this was done in a participatory manner (Plate 1). This training ensured that all data



collectors were well versed in the participatory techniques to be used. This allowed the deployment of three teams in the field working simultaneously and under the supervision PhD student. This saved on time and resources. The institutional arrangement was such that multiple institutions were involved. The main data collectors were serving Government officers. These officers knew the terrain and the local people. In addition, even after the research, the skills learnt would ensure that local capacity had been enhanced. The training of these trainers was handled by a trainer from the International Livestock Research Institute (ILRI). This ensured that the trainees were exposed to current international practice (Plate 1). Vetworks, a local NGO provided logistical support. RUFORUM was the main sponsor. At Mtwara, the Veterinary Investigation Laboratory (VIL) was instrumental in providing sampling bottles as well as linking the researcher to the pastoralists (Plate 2). Most of the virus isolation and pathology work was performed at Sokoine University of Agriculture (SUA). The demonstration

of active cases of PPR in Mtwara was instrumental in convincing the Tanzanian Government to initiate vaccination campaigns against the PPR disease. In the KAP research in Garissa and Wajir, community mobilization was achieved through Government livestock officers as well as Arid Lands Development Agency (ALDEV), an NGO that works closely with women groups. Most of the Laboratory sample preparation was achieved at GRIFTU, a Government training centre about 130 km west of Wajir. Most of the pastoralists in Wajir were interviewed at a watering point as animals were being watered (Plate 3). Many a times the pastoralists including women were very helpful in showing researchers how to restrain camels (Plate 4). The Griftu women group was very helpful in demonstrating their insight and skills in milk camel milk processing. Most of the camel milk was however, sold in open dusty spaces where contamination was possible (Plate 5). The synergy created by multiple stakeholders increased the efficiency, effectiveness and sustainability of the project objectives.



**Plate 1: Training of trainers by ILRI**



**Plate 2: Data collection in Mtwara, Tanzania**



**Plate 3: Watering point in Garissa**



**Plate 4: Restraint of camels (even by women)**



**Plate 5: Camel milk on sale in Wajir**



It is important to adopt a learning attitude and avoid a know-it all-attitude when working with pastoralists. This enhances easy communication and ease with pastoralist, who at times knows more than the researcher. It is also important to avoid having long questionnaires and is better to talk to pastoralists directly, face to face and have someone else to document the issues. This creates confidence and trust. In matters of time, it is important not be in a hurry. The challenge is that there is need to cover so many areas within a certain time and therefore, tendency to be in a hurry. This can be annoying to the pastoralist and it is important to adjust the researchers time to accommodate him or her.

The strong seasonality that characterizes pastoral environments has a specific impact on the work of a researcher. During the long dry seasons herds are forced to move far deep into the bush, thus further from communication and transport networks. The

roads are difficult to traverse in remote neighborhoods with no assistance in case of trouble (Plate 6). The environment in the three research areas were characterized by poor infrastructure and pastoralists who were sparsely populated which meant driving a long distance before finding settlements. Longer distances and harsher climatic conditions also affect the state of animals, their health and productivity. During the wet season, the opposite holds true. Due to the lowland nature and fragile soils, there is frequent flooding that covers vast areas. This makes most areas inaccessible by traditional modes of communication for the researcher. Even more dangerous are flush floods which appear from nowhere after it has rained upstream and vehicles are commonly washed away. This nearly happened during one research visit in Turkana, despite having a four wheel Vehicle. The only redemption was by being towed by another vehicle eight minutes before the river was over flooded (Plate 7).



**Plate 6: Difficult terrain in ASALs**



**Plate 7: Stuck in a river bed a few minutes before proper flush flooding**



Watering time for animals is one of the best times to perform interviews or discussions, because the animals are drinking or resting and so is the pastoralist. This normally happens at the communal watering point where there are many pastoralists and so group discussions can easily be done (Plate 8). In terms of logistics, it is important to plan in advance; how long it will take, the required human resource, etc., and any omission can be very expensive. It is useful to plan with host personnel, and think about things unavailable in those areas like mosquito bite repellants, photographic equipment, solar power units, etc. In many pastoral areas, there is poor infrastructure and at times in order to ensure maximum use of resources and time, it may be prudent to camp near pastoralists. This requires the researchers to have proper camping gear. The student used such facilities to undertake the research (Plate 9). In arid areas, pastoralists follow strong traditional cultures. In Turkana, men wore

scanty clothing as well as women. This can cause cultural shock to researchers who are unfamiliar with this situation. Soft skills in how to interact with the communities are essential. For example, if one is male researcher, they should go to the men who are the heads of the communities who will give the green light to proceed to the female members. Some pastoralists are of Islamic faith. When engaging such groups, especially if the researcher is male, they should be sensitive to gender rules especially when dealing with the opposite sex. Discussions should be structured to respect the times of prayers. In many cases, insecurity is rife and many fire arms some of which are illegal are present as in Plate 10. It is important to liaise with community leaders to know where to put up for the night in order to ensure safety. The prevalent vegetation in the arid and semi-arid lowland areas is thorny vegetation especially the *Acacia* spp. One such shrub is the *Acacia greggii* whose common names include



**Plate 8: Participatory data collection in Turkana**



**Plate 9: Tented Residence as alternatives**



**Plate 10: Insecurity in ASAls**

the Catclaw Acacia, Devil's Claw or Wait-a-minute Tree, these names mostly come from the fact that the tree has numerous hooked prickles with the shape and size of a cat's claw, that tend to hook onto passers-by; the hooked person must stop ("wait a minute") to remove the prickles carefully to avoid injury or shredded clothing. Other dangers include scorpions which prefer deserts and semi-arid regions. Scorpions are most active during the night, although they can also be seen during the day where it is cool and moist. Scorpions prey on insects, spiders and other invertebrates. They are able to detect their prey by sensing the preys' vibrations as they move. Scorpions are known for hiding and waiting for their prey. If the prey is small, they crush it or, if larger, inject it with venom – a complex mixture of neurotoxins that affects the victim's nervous system (Rowe and Rowe, 2008). Although the venom is used to capture prey, scorpions can use it to defend themselves from predators or other threats (Rowe and Rowe, 2008). Other animals of interest while visiting arid areas are snakes some of which may be poisonous. The most prevalent problem is however, that of mosquitoes some of which transmit the plasmodium that causes Malaria. Semi-arid areas, have mostly warm climates, and epidemics are associated with anomalous rainfall, which causes increases in vector breeding and survival (Chretun *et al.*, 2015). It is important to carry mosquito nets and or mosquito repellants.

### **Lessons**

Research in pastoral areas requires proper planning without making any assumptions on physical environment, weather or social set-up. Planning in logistics is very important due to adverse weather, terrain and remoteness. Soft skills in handling pastoralists are very essential if one is to succeed in interacting with pastoralists. Involvement of all

stakeholders can enhance success. Flexibility is important in adjusting to frequently changing scenarios.

### **CONCLUSIONS AND RECOMMENDATIONS**

Research in pastoral areas just like development require affirmative action after years of neglect in sub-Saharan Africa. There is need for policy changes at national and regional levels in order to prioritize development and research in pastoral areas. Due to unique challenges in pastoral areas, researchers need capacity building on how to navigate the challenges. One search area especially for science students is the learning of soft skills in the first year for MSc students during the coursework. The most useful strategies during research are to involve pastoralists in their research and engage public and private stakeholders in order to succeed not only in research but also in adoption of new strategies.

### **ACKNOWLEDGEMENT**

We acknowledge the financial support from RUFORUM project Number RU 2009 GRG 17 TADS for the first project while the second project was supported by KAPP: "Camel milk value chain enhancement: the case of Wajir and Garissa pastoral communities of north eastern Kenya" KAPP CGS 06/1RC-LVST.

### **STATEMENT OF NO CONFLICT OF INTEREST**

We the authors of this paper hereby declare that there are no competing interests in this publication.

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