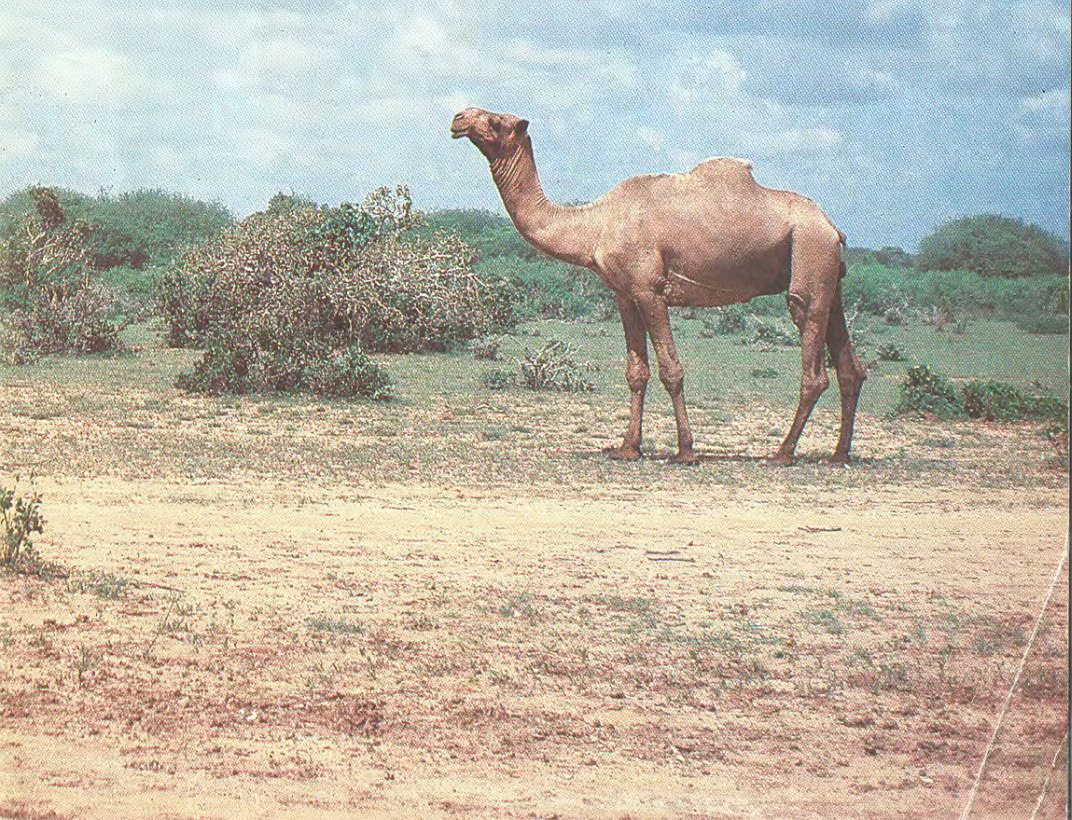
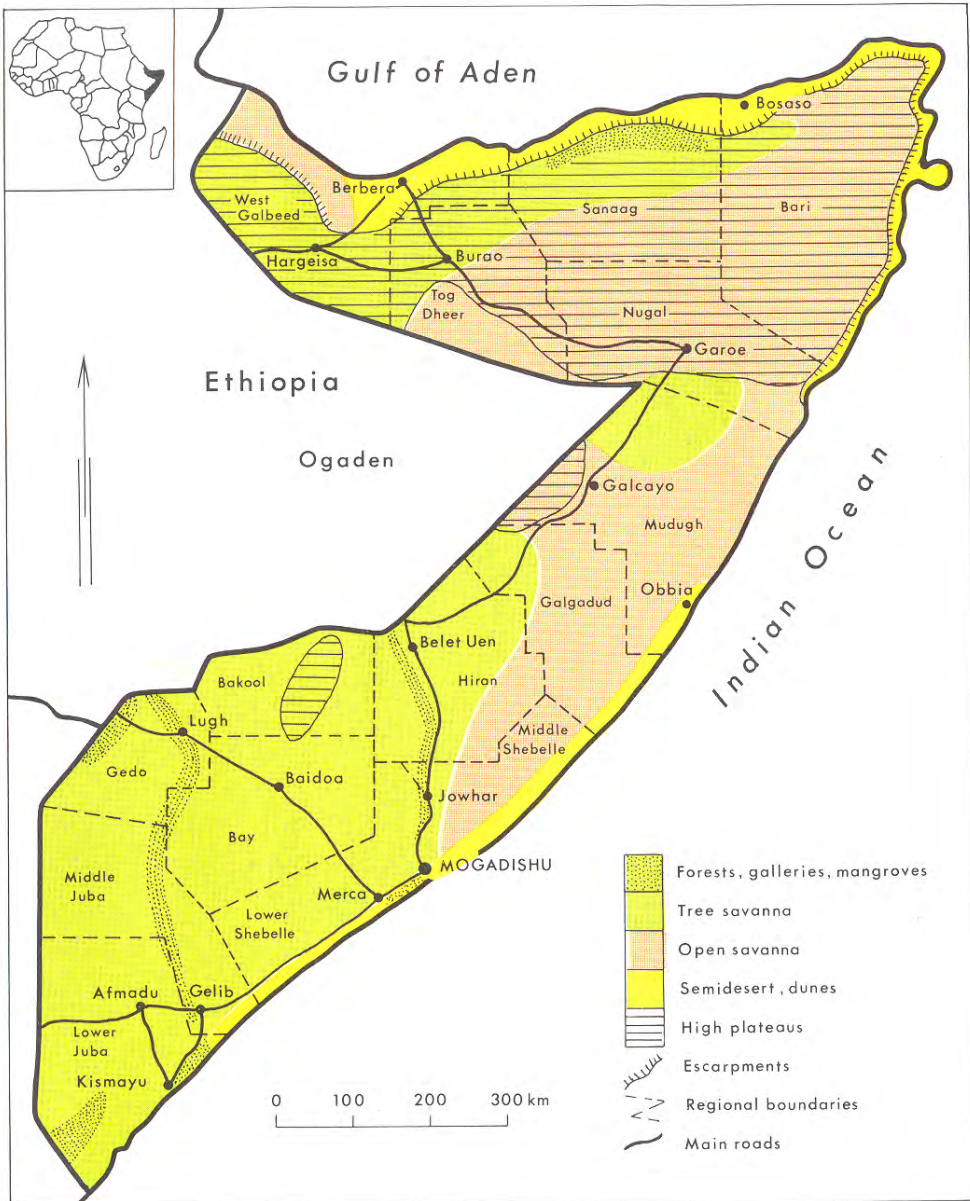


SURVIVAL IN ARID LANDS The Somali Camel Research Project

Mohamed Ali Hussein and Anders Hjort





Introduction

In Mogadishu, Somalia, ideas for a new and different project were born in 1982. *New*, because it was the first time a research proposal with a joint cooperation between Somali and Swedish researchers was offered to the Swedish Agency for Research Cooperation with Developing Countries, SAREC, for funding. *Different*, because the object of this research was the camel, an animal of decisive economic importance for the Somalis.

The early discussions pointed at a vast demand for research. To many the camel symbolizes a timeless past, representing a non-commercial, non-growth, non-development way of life. Such pre-conceived ideas need to be questioned by seeking the benefits and drawbacks of today's camel-rearing practices.

The general importance of domestic animals remains unchanged in development planning. The camel, however, has been almost entirely forgotten here. And yet it is highly important in many arid areas. In places the camel is used for food supply of milk and meat. Such practice requires substantial family herds. Elsewhere, occasional animals are used for draught and short distance transport. The incidence of camels as draught animals is in many places basic to the operation of peasant economies.

A few countries, among them Somalia, host large camel populations representing a basic source of wealth and food supply to their owners. To disregard this fact in development projects is to disregard the interests of marginalized people. Needless to say, this minority often falls in a Fourth World category, i.e., people who are both politically and economically marginalized.

The camel in drylands

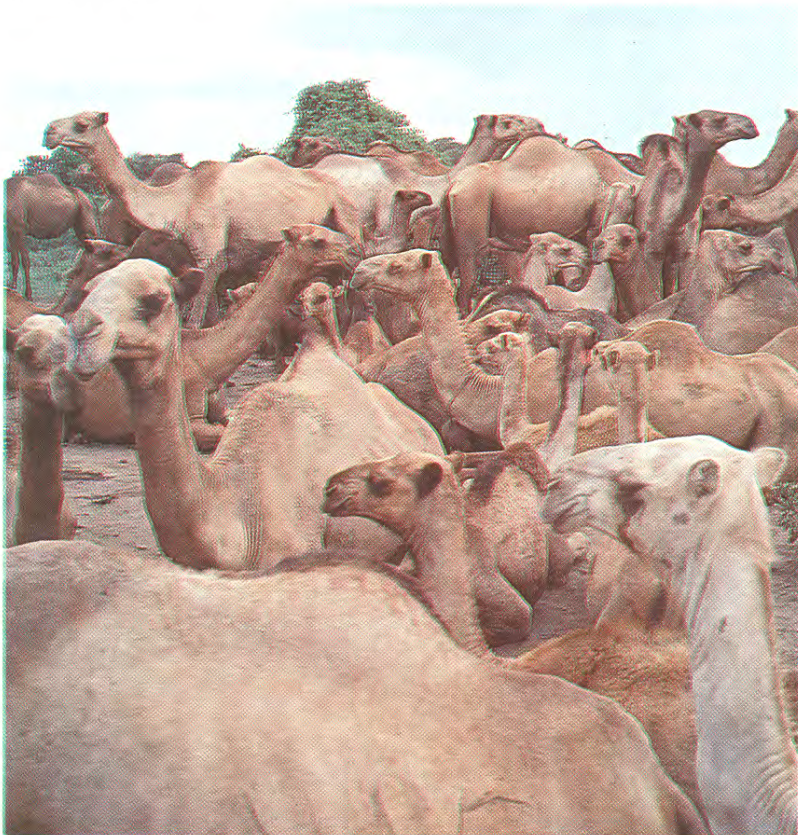
Interest in the dromedary camel has grown lately, following the upheavals accompanying drought disasters.

Camel herding appears to offer *one* important contribution towards identifying ecologically balanced land use practices.

Adaptability

The camel is amazingly well adapted to drylands. Not only can it withstand high temperatures due to its capacity to regulate its body temperature but it also retains much of its body liquids and therefore requires sparse watering (once a week as a rule-of-thumb). It

prefers bush to grass, and while browsing it is always on the move, biting some twigs from each bush before proceeding to the next. In this respect, the behaviour of the camel resembles that of game animals rather than other domestic livestock. The vegetation is spared through an evenly distributed grazing or browsing pressure. Furthermore, the ground vegetation is considerably less trampled than by other kinds of domestic livestock as the feet of the camel are big and soft. When feeding, camels tend to spread out over the area available (in contrast to cattle who prefer to move less).



The camel is well suited to a life in dry areas being able to withstand high temperatures and live longer without watering than other domestic animals. Its big soft feet do not trample the vegetation. The camel prefers to browse on bushes and trees. It does not totally exhaust an area like other domestic livestock. It is a better energy converter than most animals and provides milk almost throughout the year.

Camel milk

Camel milk is as nutritious as other milk. It has the unusual quality of being rich in vitamin C. This is a very important property in drylands where people experience at least seasonal difficulties in getting access to fruits and vegetables. After giving birth, the female camel can produce milk for an entire year (9-18 months). Camel milk is available (though in less quantities) during periods of drought when other livestock dry up. During moderately severe circumstances, when one head of cattle produces one drinking glass per day, the camel is capable of yielding several litres. The milk also keeps better than other milk without refrigeration.

Transport

Before lorry transports became available, long-distance trade relied on camel caravans. Today, the camel remains decisive for short transport distances, i.e. those local movements of bulk which never appear in official statistics. In arid lands it replaces or supplements the donkey in this respect. It is also used for draught, both of a plow or a cart, and for riding in different parts of the world.

The camel in Somalia

Looking more specifically at Somalia, roughly 80 per cent of its citizens are engaged in one form of animal husbandry or another, and 70-90 per cent of the country's export revenues derive from the livestock sector. The main recipient has been Saudi Arabia. Normally Somalia supplies more than half of that country's meat import.

The livestock in Somalia are camels, cattle, donkeys, sheep and goats. Stock counts are extremely difficult to carry out. Seasonal migrations, also across national borders, and reluctance by the local population to mention herd sizes, are only two of the problems. Statistics are particularly poor on camels. It is clear, though, that camel exports account for approximately one-tenth of the total revenues from export earnings.

The Government expenditures in the livestock sector seem weak when considering the dominating role of this sector (some 15 per cent of the budget). These facts in themselves provide strong incentive for a research project on the camel, which will serve as a scientific base for advice in future planning and development.

The greatest single importance of the camel, though, is that it enables people to produce their food locally in a subsistence economy. This function has to exist under extremely varying conditions and preferably also during droughts.

Today, the only planned development effort with a beneficial and direct impact on the camel population is an improved veterinary service. It is hoped that this will bring down the present mortality rates, averaging around 8 per cent, to about 6.5 per cent during the five-year plan period 1981-86. If this is found to be successful, an increased food offtake will balance a growing demand.



At times camel-keeping is very heavy work. Herding is tiresome since the animals cover vast tracts of land. Watering is the most laborious task, especially when wells are deep. Poorly managed herds might suffer during drought, which would then lead to starvation.

The project

Camel rearing activities do not enter official economic statistics. They are a prime reason for the project's research ambitions; to understand food production, to identify bottlenecks and seek ways around them.

The Somali Camel Research Project today remains a multidisciplinary undertaking, based at the Somali Academy of Sciences and Arts (SOMAC), and financed jointly by this institution and SAREC. It engages ten Somali scholars and, on a fairly limited scale, four Swedes. The project places an emphasis on localized research activities rather than short-term expatriate inputs. Inherent values in the project are Somali-based research, long-term perspectives, small-scale project size with gradual build up and multidisciplinary approach. Cooperation is sought with scholars in neighbouring countries.

Intentions

Research on camel husbandry in Somalia would obviously have to come up with projections of alternative developments for the future. This would include a prognosis of where the current situation leads, what complementary activities can be found to present production systems and alternative camel-rearing practices. The Somali camel research project has the ambition to seek answers to these issues. It is being run over many years and on a modest scale. The pace is being set by the availability of Somali researchers rather than issues which require further research.

Dissemination of results

The project will hopefully produce results which are applicable to a planning process. It is important to supply planners with detailed knowledge in order to avoid a situation where new projects create imbalances in the ecological interplay between people, livestock and pastures.

A number of development projects, especially in the field of range development, may have effects on camel husbandry. Not all are beneficial to camel rearing or even to production systems involving camel husbandry. These effects should also be brought up within the research project.

With its long-term approach, the project is gradually growing.



The project is multi-disciplinary. Studies concern, i.a., herding practices, the camel's way of browsing, nutritional qualities in milk, animal health and disease, the social and economic importance of camel rearing and the camel in oral tradition. The researchers have regular contacts with herdsmen.

The total Somali and Swedish costs for the fiscal year of 1985/86 are roughly 1.7 million SEK.

Results from the sub-projects will be published in CAMEL FORUM, a series edited by the project coordinators. Contributors from outside the project are also invited.



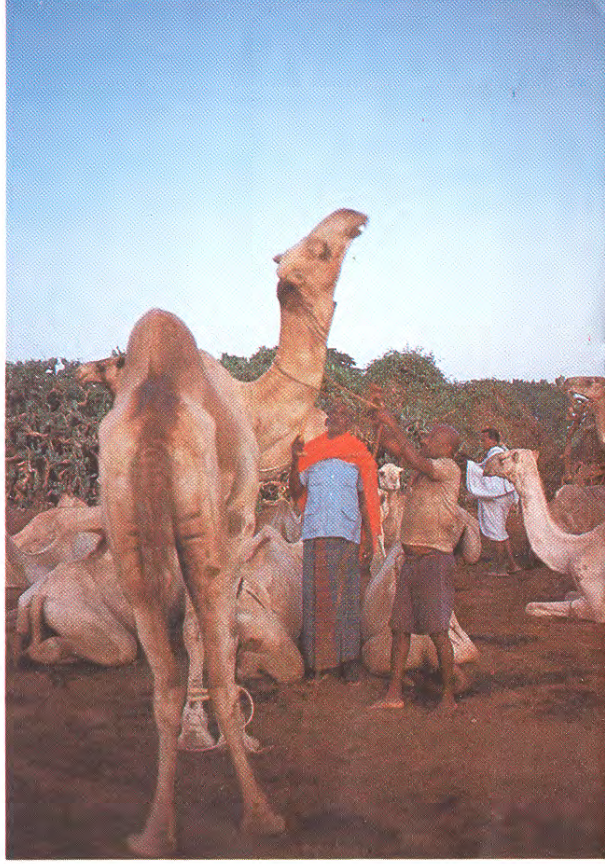
Elders from southern Somalia, project researchers and local administrators discuss problems in a workshop on camels in a provincial centre.

Current project activities

The sub-projects concern how life as a camel herdsman could be improved. Less labour-intensive forms for camel husbandry are sought. Much work can also be done on camel diseases. Milk production can be increased and new dairy products need to be developed. Local trade to small towns and centres could be improved. The specialized knowledge of camel herdsmen on browse and camel husbandry needs to be utilized. In boundary areas where camel herding competes with farming or other land use practices the requirements for camel rearing must be comprehended as well.

The project base will be located in a camel-producing area and not in Mogadishu in order to uphold close links with herdsmen. Project staff have scheduled meetings to discuss ongoing research. Fieldwork is done jointly by several scholars.

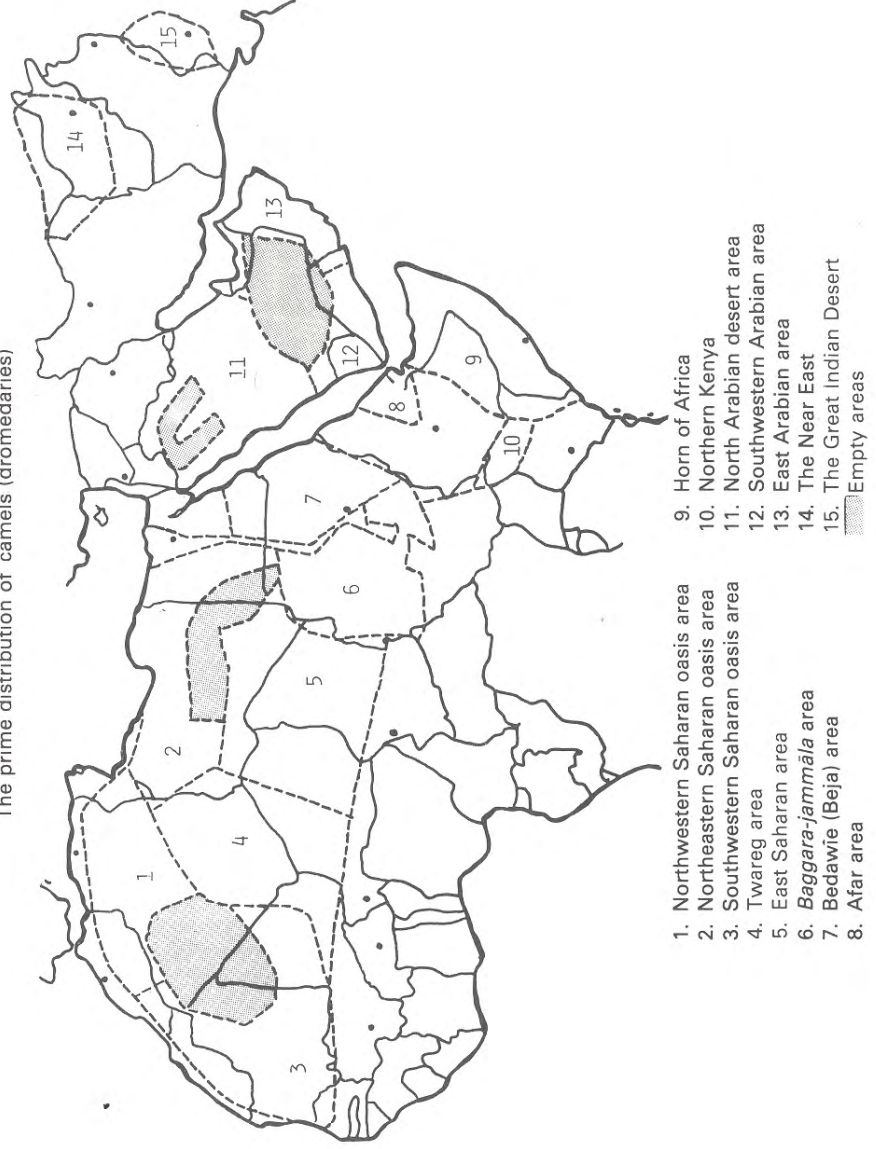
Camel herding is basically a male activity. Labour shortage may cause women to herd camels, but labour division between the sexes is fairly strict: men keep the herd, women load transport animals, men milk, women fetch water, etc.



Conclusions

The project concerns the one-humped camel and the multiple role that this animal plays in people's lives. It touches on soil conservation problems in arid lands where people strive to make a living. Here the camel plays a positive role through its ecological adaptation. It is *the* domestic animal that is best adapted to feeding in dryland, seemingly without upsetting the ecological balance. It is also the most energy-saving of all domestic animals. Hence it combines the qualities of being a suitable forager in ecological terms and an efficient food producer in domestic terms. These are qualities well worth noting as one resource base for a population inhabiting arid lands. It is therefore not surprising that the interest grows when long-term solutions are sought to the dryland inhabitants' efforts to earn their living.

The prime distribution of camels (dromedaries)



List of projects to be carried out during 1985 and 1986:

1. *Camel management and labour migration* (Mohamed Ali Hussein, SOMAC) stems from earlier work on traditional camel husbandry. It consists of two parts; to prepare activities in Northern Somalia, and to detail the acute labour shortage situation in order to reveal its effects and what could be done to ease the situation.
2. *Camel milk composition* (Ahmed Mohamed Hashi, Faculty of Agriculture, Somali National University). This project started late but is now in operation. Judging from experience two more years may be expected before this sub-project has generated its analysis.
3. *Camel milk proteins* (Muctar Ali Mohamed, Faculty of Industrial Chemistry, Somali National University, and Märtha Larsson-Raźnikiewicz, Swedish University of Agricultural Sciences) aims at analysis of camel milk caseins and to find ways to produce camel cheese, something which is impossible today. If successful, this sub-project would open up possibilities to utilize overproduction during rainy seasons.
4. *Camel dairy farm* (several persons involved in the project) is a new sub-project with two parts. One consists of a mobile laboratory intended primarily for chemical and micro-biological studies on milk and blood parameters. With the mobile laboratory and activities linked to it, the framework is set for the other part, to run a stationary dairy farm, including a processing plant, fermentation and preservation product research.
5. *Camel oral tradition* (Ahmed Ali Abokar, SOMAC) is a documentation of material gathered and analyzed during the last two years. The book that is now being published in Somali will also be translated into English with an added introductory chapter providing cultural contexts and comparative references.
6. *Camel health and disease* (Fatuma Mohamed Jama, Serum and Vaccine Institute, Hersi Guleed, Somali National University, Mohamed Farah Diriye, Ministry of Livestock, Forestry and Range, and Set Bornstein, National Veterinary Institute, Uppsala) involves both a continuation of some earlier activities (the disease survey, the health status and the sub-projects concerning brucellosis, toxoplasmosis and trypanosomiasis) and extended activities such as a study of udder infections. These infections cause pain to the animal and great milk losses to its keeper. The proposed study is connected with the dairy farm proposal and the suggested mobile laboratory.
7. *Breeding and reproduction* (Hussein Mohamed Nur, Faculty of Veterinary Sciences, Somali National University) is linked with the health and disease research mentioned above. It provides basic knowledge of values for the understanding of current practices and future proposals for upgrading and specialization.
8. *Camel herd dynamics* (Mohamed Ali Hussein, SOMAC, and Anders Hjort, Scandinavian Institute of African Studies) is important for the analysis of food availability and for a deepened understanding of long-term changes in camel herds. The study is based on a combination of aerial photography and ground surveying.
9. *Camel browsing* (Ahmed Abdi Elmi, Faculty of Agriculture, Somali National University). The camel's browsing behaviour is studied. Both nutritional quality and quantities are analysed, as is the plant selection made by the camels. The next phase in this study will concern how efficiently the animal can make use of the nutritional content of the feed.
10. *Breeds and classification* (Mohamed Ali Hussein, SOMAC) is based on earlier studies in Southern and Central Somalia. Presently, long-term studies are established in the southern part of Somalia and are gradually being extended to the north. To the extent that the great variations i.a. in milk production may be referred to differences in race, this research might prove decisive for further specialization of camel production or for up-grading.
11. *Marketing and commercialization* (Mohamed Said Samater, Faculty of Economics, Somali National University) is a vast undertaking, covering a wide range of economical aspects of camels and camel products. The research activities are presently limited to camel export and milk marketing. Other studies planned concern trade networks, local camel markets and export markets.

Apart from the sub-projects listed above, a few case studies are being carried out on individual herds. The prime purpose of these studies is to uphold a continuous dialogue on all possible issues to be raised in connection with camel pastoralism.



This table illustrates how the current projects are located in the general problem field relating husbandry and rural development in Somalia.

	Human population	Animal population	Land	Economic activities outside the pastoral sphere	The penetration of a capitalist economy into the pastoral production system	Competition with alternative land use practices	Out-migration from the pastoral community of able-bodied members	Culture and historical events that lead up to the present situation	Development process throughout society
1. Management and labour migration	X	X	X			X	X		X
2. Milk composition		X	X						
3. Milk proteins		X	X						
4. Dairy farm	X	X	X	X	X	X			X
5. Oral tradition	X	X	X	X	X			X	X
6. Health and disease	X	X					X		X
7. Breeding and reproduction	X	X					X		X
8. Herd dynamics	X	X	X						X
9. Browsing	X	X	X						
10. Breeds and classification		X							
11. Marketing and commercialization	X	X	X	X	X		X		X

The research topics below were those listed when the project was initiated

1. The camel's browsing and grazing behaviour
 2. Camel trypanosomiasis
 3. Breeding and reproductive patterns
 4. Preservation of camel milk
 5. Different types of camels
 6. Milk production
 7. Collection and editing of Somali folklore on the camel
 8. Long-term changes in migration patterns as reflected in life histories
 9. Culling rate versus balanced herd structure; effects on the reproduction of transport animals
 10. An inventory of the use of the camel as a draught animal in Somalia and abroad
 11. Reproduction of camel herds; herd structures
 12. Management decisions and herding and husbandry techniques
 13. Mapping livestock "genealogies" in a family herd as a method to identify social bonds
 14. The impact of labour shortage due to out-migration on camel herd management
 15. Current cooperative inputs
 16. The camel trade organization
 17. Herd management and labour requirements
 18. The role of water point ownership for controlling access to pastures and infrastructure
 19. Herd ownership structure and resource availability. Changes due to monetarization of camel pastoralism and related activities
 20. Long-term camel herd reproduction. Response to drought, veterinary inputs and increased off-take for commercial markets
 21. A critical analysis of the concepts "carrying capacity" and "stock units" with special reference to the camel
 22. Camel wool production: physiological constraints to the camel
 23. The role of camel hide production
 24. Exploitative relations between town and countryside
- Camel disease etc*
25. An inventory of the disease panorama in the camel in different regions
 26. Traditional treatment of camel diseases
 27. Endo-ectoparasites
 28. Virus diseases
 29. Bacteriological diseases
 30. Camel-pox
 31. Posterior paralysis
 32. *Shimber*
 33. Recording of hydatidosis in camel's liver and lungs
 34. A disease inventory: Analysis of slaughterhouse material
 35. Sexual behaviour of male and female camels
 36. Vector-borne camel diseases (e.g. trypanosomiasis)
 37. Tick-borne camel diseases
 38. An inventory of ticks in Somalia
 39. Tick control on camels; traditional and chemical methods
 40. Neo-natal diseases and their role for calf mortality

SAREC – The Swedish Agency for Research Cooperation with Developing Countries is an independent government agency under the Ministry of Foreign Affairs. SAREC was founded in 1975, its task being to “promote research which can support the developing countries in their efforts to achieve self-reliance and economic and social justice”. The main objective is to strengthen and maintain endogenous research capacity in poor countries in Africa, Asia and Latin America. For support to direct and regional research cooperation, to international research programmes and to Swedish development research SAREC has a total of SEK 181.3 million at its disposal for the fiscal year 1985/86.

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