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# The Future of Camels is their Present

M. Djemali and G. Alhadrami

Department of Animal Production, Faculty of Agricultural Sciences, UAE University, P.O. Box 17555, Al-Ain, United Arab Emirates.

## ABSTRACT

The camel (Dromedary or Bactrian) has been serving millions of people living in the driest (hot or cold) areas of the World for centuries. It provides food, fiber, transportation and social status. However, the emergence of the automobile and the appearance of highly specialized animal breeds have relatively lessened the importance of camels. Since then camels have been taxed as low economic animals and symbolized for backward eras. Even though considerable research work has been done in health, nutrition, physiology and reproduction, camel productivity per se is still relatively untouched. This article recognizes two major gaps in the field of camel development; both of them are linked to organization. The first gap is the absence of a real breeding program for camels with identified economical & biological objectives, recording, genetic evaluation, gene dissemination and breed, or farmers', association. The second gap is related to the relatively timid organization of national animal scientists working in dry areas at the level of research priorities, dissemination of ideas and formulation of applied recommendations. In order to alleviate these constraints, a plan of action and a strategy for bringing animal scientists in the dry areas under one umbrella are proposed. These steps should be considered fully at present in order to secure an economic place for camels in particular and local breeds in general, for the future millennia.

**Key Words:** Annual Meeting, Association, Arid Zones, Camel.

## INTRODUCTION

Camels (*Camelus dromedaries* and *Camelus bactrianus*) have demonstrated their high adaptation to the most rigorous environments since their domestication. Their ability to thrive on feed that is not regarded as sustenance for most other domestic animals made them special components for marginal, arid and semi arid ecosystems (Knoess, 1977; Williamson and Payne, 1965; Yagil, 1982). Even though considerable research work has been done on health, nutrition, anatomy, physiology and reproduction, camel productivity is still low and new innovative management practices are mostly needed. The association of camels with harsh environments and the lack of appropriate genetic management strategies did not help camels to reach a better economical status when compared with their counterparts cows, sheep and goats.

The objectives of this article were: 1) to propose a plan of action for camel genetic improvement and 2) to present an organizational scheme that brings livestock scientists working in dry areas under one umbrella. Describe mechanisms that allow these scientists to serve the real needs for camel research in particular and local breeds in general during the future millennia.

### Importance of camels

The dromedary populates the semi arid and arid tropical and subtropical regions of Africa and Asia and other regions such as Australia. The Bactrian is found in regions of Asia with colder climate and is well suited to high mountainous regions. Both types of animals have provided man with animal protein and energy and given nomads immense mobility, (Knoess, 1979). They are animal genetic resources and constitute an indispensable natural resource that must be properly managed. Many studies praised their unique characteristics especially under the most stressful conditions.

As we get closer to the year 2000, agricultural development and food security are becoming the main components in most countries' agricultural policies. It is becoming clear that the food security argument is putting a value on local agricultural products irrespective of their opportunity costs. The strategic idea is to minimize the country’s dependence on external food supply sources.

This choice should allow camels in the future to regain economical importance. If a sharply rising population in the developing countries is to achieve higher real incomes and a better quality of life, agricultural output must rise more rapidly than population growth. In order for the rise in agricultural output to be maintained over time, natural resources, including camels, which provide the basis for such output must be preserved and new technologies offering higher productivity must be developed.

**Genetic considerations**

Looking at camels from a genetic point of view will soon clarify why camels did not progress the way cattle, sheep and goats did in developed countries. While cattle, sheep and goat breeding strategies are generally well established in the latter countries, the situation is completely different in most of the developing countries. The breeding component (Genetic Improvement component) with all its organizational aspects (Breed Associations, legislature.. ) is still not considered as a priority for animal improvement when compared to health, nutrition and feed resources.

The common view is expressed that there is no need to worry about genetics until management is sufficiently improved to allow full expression of the existing available genetic potential. This view, however, fails to recognize that an animal population is dynamic in nature (culling and replacements) and that genetic variability does exist in any given environment. Therefore the notion that there is a genetic potential for each level of management is conceptually and practically more accurate (Falconer, 1996).

The absence of national recording systems and the lack of reliable breeding strategies have been for long time major limitations to improvement. This explains the absence of specialized breeds in camels. The main traditional typology classifies camels into riding and pack types. A further typology allows camels to be classified as lowland or mountain types (Lease, 1927). These classifications assign little importance to the main products (milk and meat). Recent attempts have categorized camels into types comparable to those applied to cattle (beef, dairy, dual purpose and racing) (Wardeh, 1991). There appears little justification for this classification at present because no camels are reared primarily as meat or milk

(Wilson, 1997). Mason has stated (1984) that no true breeds are recognized and camels are named after the tribes that breed them.

**A plan of action**

Breeding programs have been successful in developed countries because they serve real needs and they were designed on solid bases, i.e. identification of economical objectives, recording, genetic evaluation, dissemination of favorable genes and breed or farmers' associations backed up by reliable research institutions. Well-trained people and caring breeders, working together in harmony have made there breeding programs successful and essential for their breed improvement in a sustainable way. These considerations should be taken into account for camels in the future. In order to improve their productivity, a complete strategy, including technical and organizational components, should be implemented according to the prevailing production systems or society use as follows:

**Technical component**

1. Identify types of breeds (meat, milk or dual purpose, racing) based on
   - Number
   - Production system
   - Society preference
2. Develop a breeding strategy for each important breed that includes:
   - Breeding goal
   - A simplified reliable recording system
   - Reliable genetic evaluation methods
   - A plan for dissemination of results and wanted genes
   - An evaluation of management progress and genetic trends in the recorded herds on a yearly basis
3. Implement a sound management program (nutrition, health.. ) specific to each proposed breeding strategy.

**Organizational Component**

In order for the technical components of the strategy to be maintained on a continuous basis the following organizational steps should be respected:

1. Create a national/regional association for the chosen breed with the recorded herds taken as the breed nucleus.
2. Educate and design training programs for nationals who will have the responsibility of implementing the breeding strategy and advising the breed or farmers' association.
3. Make administrators in Ministries of Agriculture aware of the importance and potential of the genetic management of the breed and the role of the association in promoting the breed. This could be achieved through special short courses (Cunnigham, 1987).
4. Build working links between the association and specialized national research institutions.
5. Use the association as a framework for extension programs to enhance the multidisciplinary involvement (nutrition, genetics, socio-economics, environment and marketing) and to develop services and technology transfer to farmers. National legislatures could help enhance this type of organization.

International organizations like ILRI, ICARDA and the FAO have a lot to offer in the field of education and training in animal breeding, management and breed associations organization. They can play a facilitator role in bringing key people and national institutions together for implementation and management of the proposed strategy.

It is important to stress again that the plan of action proposed considers the breeding component as a leading theme due to its dynamic nature in a sustainable way and the amount of information that it generates. The breed/farmer association is taken as a

framework through which any program (nutrition, health, range improvement...) aimed to improve the breed can be executed. It is also essential to note that all the mentioned actions should be taken into account together in order for the strategy to be successful. Resource requirements for the implementation of the strategy could be partially fulfilled by farmers' participation.

**Organizational aspects**

During the past three decades, most developing countries have established an institutional infrastructure for livestock development Research, Extension, Veterinary laboratories, Disease control services and educational institutions at various levels. The technical performance of this infrastructure is variable from country to country and from institution to institution. The institutional impact on livestock production has been open to questions (Bommer and Qureshi, 1988). The development concern these days is not so much about the capacities, in terms of physical infrastructures or size of trained manpower, but about the usefulness of this capacity in improving farm output. One of the alternatives to enhance this capacity resides in the establishment of coordinating mechanisms among different active forces working in agriculture within countries as well as at regional and international levels. The future of local livestock breeds in general and camels in particular depends on the steps taken today toward their improvement. Van Vleck (1987) reported that the true model in studying livestock traits should be defined as y= f (genotype, environment, people). It is the organization of people for the benefit of their animal resources (breed or scientific associations) that generates progress at the productivity level and insures its sustainability. Successful examples are seen in the developed world (European Association for Animal Production, American Dairy Science Association).

This is why it is very important that national livestock scientists in countries with arid and semiarid climatic characteristics should join their efforts now in order to create mechanisms that allow them to meet regularly to present, discuss and exchange information on topics relevant to local breeds. There is no justifiable excuse for not recognizing the real need for such mechanisms. The creation of an Association for Animal Scientists in Arid Zones could

be considered. The responsibility of this association should deal with the organization of future meetings (place and topics) and constitute a dynamic body where efforts are brought together for the improvement of animal productivity under specific arid and semi arid environmental conditions.

## CONCLUSIONS

The potential of camels as a food producer in the arid and semi arid areas of the world should be utilized and improved. The absence of reliable genetic strategies is a real handicap for camel development. A plant of action is proposed considering the breeding component as a leading theme and a generator of useful information with the breed/farmer association taken as a framework for extension programs and a larger multidisciplinary involvement.

In order for the camel industry to benefit from science, dynamic mechanisms should be established to bring together livestock scientists working in arid and semi arid areas to facilitate exchanges of findings, avoid redundancy and set up research priorities relevant to local animal breeds in general and camels in particular.

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