

## TROPICAL LIVESTOCK: PRODUCTION AND MANAGEMENT

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## Summary

Small farm systems in Latin America usually are subsisting enterprises, even though there are found some incidental activities that result in small cash sales or trades with neighboring subsistent farmers. Livestock represents for them an important source of food, clothes, and family stability. In the most commercially productive medium and larger size farms, the efficiency of crop-animal interactions is becoming intense and profitable. Livestock production and management is complex in a tribal continent like Africa, where true state nations with their delineated frontiers do not exist as such. Transhumant herders travel up and down eroded deserted territories looking for food and water for their animals and for themselves. Amongst superb native livestock breeds, Africans have not been able to structure a solid tropical beef and dairy industry. Exotic livestock breeds brought in to increase productivity have succumbed to the harsh conditions existing, contributing also to genetic contamination. In Southern tropical Asia agriculture is the utmost generalized people's source of income and subsistence. The first livestock position in the subcontinent corresponds to India as far as cattle and sheep is concern;. pigs, goats, buffalos, horses, mules, camels, donkeys, chicken and ducks are also important possessions for Asian farmers. The Australian tropics cover 36% of the country and cattle's rising is the main activity developed in these 2.8 million square kilometers. The main products of the cattle industry are manufacturing beef destined for export. The Australian beef industry is dependent on export markets, with over 60% of Australian beef production exported, primarily to the United States, Canada and Japan. The industry has benefited from the discovery of bovine spongiform encephalopathy (BSE) also known as mad cow disease, in Canada, Japan and the United States, as Australia is free of the disease.

## 1. General Introduction

Mixed farming systems which include crops and livestock are widespread at all altitudes in the tropical world on small and medium sized farms. On larger farms, as in the savannas, integration between crops and animals is just beginning. This chapter describes and examines the present development of the animal component in small and medium mixed farming systems in tropical countries of the world, with a brief mention of larger enterprises and higher altitude livestock gatherings. Emphasis is on domestic livestock as it contributes to the rural family economy with meat, milk, wool, leather and other important by products. When the tropical world is defined, it is said to be a strip of land between the Cancer and Capricorn tropics, with only one characteristic in common; the soil temperature year around at a determined depth. Temperature variation at a depth of 50 cm is less than 5° C during the dry and rainy season alike, no matter the

altitude above sea level.

The great tropical world comprises most of Central and South America, part of the African continent, southern Asia and northern Australia. More than any other use today, people rely on tropical lands to provide forage for the production of domestic livestock. From cattle, buffalos, camels, sheep, and goat herds, to horses, pigs and llamas, low and high lands support large numbers of domestic and wild animals, which become the source of food and other goods for humans. When studding or carrying out research in the tropics, it is necessary to remember, that altitude above sea level, relative humidity, soil composition and wind direction, define the type of production and animal management of any type of agrarian activity. Low tropics range from 0 to 1000 m above sea level (m.a.s.l); middle tropics from 1000 to 2000 and high tropics from 2000 m upwards.

Before any consideration of livestock production and management, it is necessary to take into account the socioeconomic status of the great majority of rural people that live in the so called tropical strip of land in developing countries. It is said over and over again, that the poorest people on earth live in rural areas of the tropical world; this is partially true, as most of the poorest people in the world as a consequence of migration due to political violence, interethnic conflicts, deforestation, agricultural subsidies in developed countries and other calamities like land tenure and degradation, flooding, epidemics, live today in slums around big cities and not in rural areas which have been progressively abandoned. Migration is creating a serious socioeconomic problem; poverty due to rural migration has flourished around main cities of the tropical world as it is seen in Mexico, El Salvador, Guatemala, Belize, Nicaragua, Honduras and Panama in Central America; Colombia, Venezuela, Ecuador, Peru, Bolivia, Brazil, the Guiana's and northern Paraguay in South America; Ethiopia, Eritrea, Somalia, Uganda, Sudan, Nigeria, Ghana, Ivory Coast, Cameroon, Mali, Guinea, Liberia, Benin, Central African Republic, Congo, Kenya, Burkina Faso, Senegal, Mauritania, Niger, Chad, Rwanda, in the African continent; China, India, Bangladesh, Bhutan, Brunei, Cambodia, Indonesia, Lao, Malaysia, Maldives, Myanmar, Philippines, Singapore, Sri Lanka, Thailand and Timor-Leste in southern tropical Asia.

Important as well when considering rural development in the tropics, is the understanding that internal economic growth in most developing nations is low, meager or negative, to the point of frustrating most efforts to introduce viable technologies to improve rural areas. Any introduced technologies, as simple as they can be, not only have to account on the economically steady growth of receptor countries, which have to generate surplus to keep specific projects going on when local subsidies or foreign aids expire, but also with the creativity, enthusiasm and knowledge of agrarian local conditions of a large number of herders, farmers and technicians that ought to understand the real nature of the economic and social problems to be tackled and the consequences involved.

Although the developing tropical world is trying hard to push up economic growth, globalization has taken them unprepared to face or even to understand the meaning of the so called *global village*. The economical and technological changes which are happening fast in industrialized countries are not fully understood by developing and

tribal nations. Their development economical models, with a few exceptions in Asia, have never considered science and technology (S&T) as a driving force to reach prosperity. Their governments have not understood that structural changes, where ever they occur, are mounted on three important transition zones called by the economist Hazel Henderson zones of decomposition, fibrillation and advance.

It is necessary, as said, not to pay much attention to the content module (daily quantification of happenings and data), as to the context module and the global processes implied in it. Due to the accelerated globalization process which is evident in technological innovations, more turbulence and instabilities can be expected in the developing world, which has not left yet the decomposition zone, where society and its institutions fall in disuse and are steadily weakening year by year. In this zone of decomposition, not only the institutions, cities, suburban and rural areas are in jeopardy, but also the cultural and political manifestations together with the value system, which above all are the fundamental milestones of society.

Even though instability and turbulence are happening all the time in the above mentioned zone, it is important to consider that this zone also contains the seeds to evoke metamorphosis in order to move into the fibrillation and advance zones. To move forward, governments or project developers of the national agricultural sector in developing and tribal countries, have to realize, that research directed to crop-animal systems have to take into account a chronological spatial arrangement of animal populations with entrances of feed and water, and exit of meat, milk, wool, eggs, leather, manure and other important by-products. All of this leads one to consider the need to adopt a systemic approach in tropical agricultural investigation, realizing that the function of any system depends not only on the structure of it, but also on the relationship between its different components and subcomponents.

The agricultural research institutions in tropical developing nations have followed the atomistic approach, which is planning and working through disciplines or through crop or animal species, not realizing that production in tropical areas in comparison with temperate ones does depend on close interaction between each of the agricultural phenomena. Most herding and agricultural holdings in the tropical strip of land world wide, do not have a well defined security, social and market structure to guaranty economic surplus for the farmers to improve living standards. They subsist without progression to an interaction with other important economic systems. Livestock revolution to feed the poor has a long way to go in the understanding of the complex aspects of tropical community and technical innovations that will connect agriculture with all economic sectors of a given nation. It is also necessary to understand that countries with a meager or negative economic growth will not be able to feed themselves until they reach a comprehensive integrated economy.

## **2. Tropical Livestock Production and Management: Generalities**

Farming systems consists of a small numbers or dominant crops and numerous minor crops that fit around them. The systems given attention here are those having an animal complement, with dominant crops largely determining the feed source and, hence, being a major factor in selection of animals for systems to be viable. It is assumed though, that

the present pattern of rural structures to be described here, are not always going to remain similar to what it is now. Instead, as agricultural economy becomes more advance or declines, the crops and livestock that are more profitable to produce in particular regions keep changing more frequently. The demand for certain farm products may decline because development of substitutes or commercial covenants, like free commercial trading with industrialized countries. Regions once devoted to a particular farm system approach find that other regions become capable of growing the same crops at a lower cost, and must, in consequence, turn to other types of farm production. Migration because of land degradation, political violence or incipient industrialization is another cause of changes in rural structure as seen in some Latin-American, African and Asian countries. These and many other additional factors describe the interrelated physical, environmental, and social elements which must interact in any particular farm system approach.

### **3. Latin America Livestock Production and Management**

#### **3.1. Socioeconomic Trends**

Major social, economic and environmental changes have taken place in Latin America since the 1970s Inflation. Acute fiscal deficits and large foreign debts have been seen increasing in most tropical countries, pushing unemployment rates higher up.. Macroeconomic adjustments forced by the World Bank to reduce market distortions and public deficits have been inefficient in most countries. They have included removal of subsidies which led to lower production of staple foods, and reduced social services. Public spending on agricultural research and support has decreased steadily in the region mainly due to fiscal deficit, an economic growth below 6% and a surprising rise in the cost of fertilizers mainly due to world oil higher prices. Rural poverty increased and in addition a rising proportion of the poorest rural families are migrating to major regional cities. Organized violence and illicit crops production and trading, although apparently controlled by local governments, symbolize the present period.

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### Biographical Sketch

**Gustavo A. Morales** received his degree in Veterinary Medicine and Animal Management (M.V.Z) in 1963 at National University in Bogotá, Colombia; his Diploma in Tropical Veterinary Medicine (D. T. V. M) in 1965 at University of Edinburgh, Veterinary Faculty, Scotland; his M.Sc. and Ph.D in 1969-1973 respectively at University of Connecticut, USA; in CIAT he was senior staff member of the Beef Program until 1979, where he received the Lederle Laboratory Prize for the best paper on basic sciences, V Colombian Congress of Internal Medicine held in Cali. In 1979 he left CIAT to work as FAO Consultant in tropical health and management and latter, as an I. A. D. S- Rockefeller Chief Project Manager in

Ecuador. From there he went to Central America in 1982 to work in CATIE's Beef Project as AID-OEA research scientist. In 1985 he was awarded the prize of Veterinary Medicine and Animal Management in the XIV Colombian Veterinary Congress held in Cartagena, and in 1992 he was named a Corresponding Member of the Colombian National Academy of Science. In 1993 he assumed as Executive Director and latter President of the Colombian Medical Veterinary Association. From 1994 to 2004 he was the founder and Dean of the Veterinary Faculty at San Martin University in Bogotá, Colombia.

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