Department of

Livestock Production Management

Livestock Production Systems

Introduction

- Livestock production systems are considered to be a subset of farming systems.

- A review of the literature revealed that most farming systems classifications are not backed by quantitative criteria, which would enable cases to be clearly allocated to one class. These classifications are closer to typologies.

- The classification criteria were limited to three: integration with crops, relation to land and agro-ecological zone.

Conditions that Influence production system

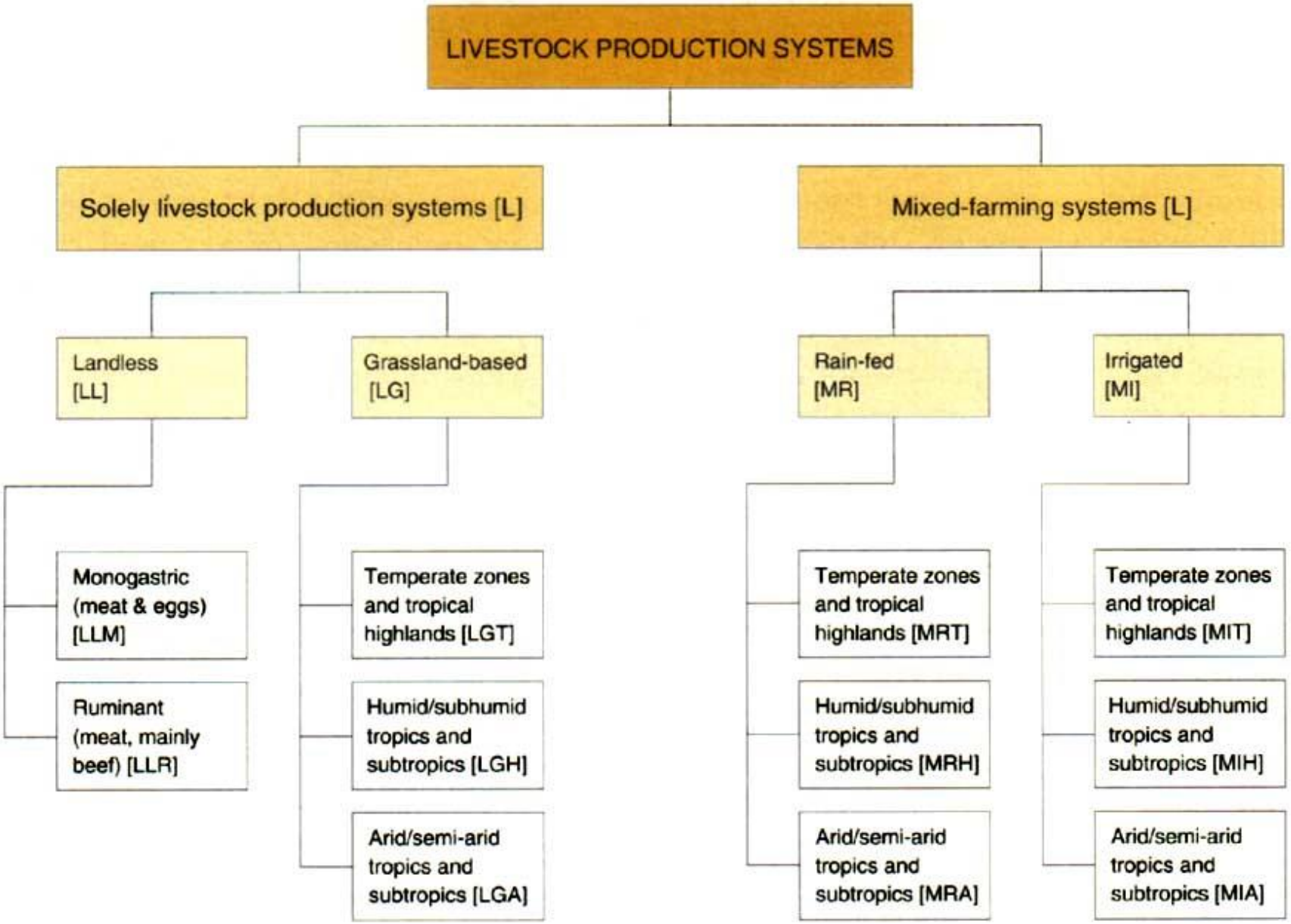
A. Stage of overall development of the area

A. Farming situation

B. Market demand

C. Organisational support

D. Resources of the farmers & social factor


LIVESTOCK PRODUCTION SYSTEMS
Solely livestock production systems [L]
Mixed-farming systems [L]
Landless [LL]
Grassland-based [LG]
Rain-fed [MR]
Irrigated [MI]
Monogastric (meat & eggs) [LLM]
Ruminant (meat, mainly beef) [LLR]
Temperate zones and tropical highlands [LGT]
Humid/subhumid tropics and subtropics [LGH]
Arid/semi-arid tropics and subtropics [LGA]
Temperate zones and tropical highlands [MRT]
Humid/subhumid tropics and subtropics [MRH]
Arid/semi-arid tropics and subtropics [MRA]
Temperate zones and tropical highlands [MIT]
Humid/subhumid tropics and subtropics [MIH]
Arid/semi-arid tropics and subtropics [MIA]

1. Solely livestock production systems (L) :-

- Livestock systems in which more than 90 % of dry matter fed to animals comes from rangelands, pastures, annual forages and purchased feeds *and* less than 10 % of the total value of production comes from non-livestock farming activities.

A. Landless livestock production systems (LL)

- Subset of the solely livestock production systems in which less than 10 percent of the dry matter fed to animals is farm-produced and in which annual average stocking rates are above ten livestock units (LU) per hectare of agricultural land.

a. Landless monogastric production system (LLM)

- This system is defined by the use of monogastric species, mainly chickens and pigs, where feed is introduced from outside the farm, thus separating decisions concerning feed use from those of feed production, and particularly of manure utilization on fields to produce feed and/or cash crops.
- This system is therefore open in terms of nutrient flow.

Conti....

- In Southeast and eastern Asia, this system is especially important. As much as 96 percent of the total pig-meat production in Asia occurs in China, Viet Nam and Indonesia.

- The system is typically competing with traditional land-based production systems for shares in the urban markets.

b. Landless ruminant production system (LLR)

- This production system is defined by the use of ruminant species, principally cattle, where feed is mainly introduced from outside the farm system.

- Landless ruminant production systems are highly concentrated in only a few regions of the world.

• The LLR system is based almost exclusively on high-producing, specialized breeds and their crosses, which, nevertheless, have not been bred specifically for performance under "landless" conditions.

B. Grassland-based livestock production systems (LG)

- The importance of grassland-based systems in Central and South America and the developed countries dominate the picture in terms of meat production, together accounting for more than three-quarters of the world's production.

a.Temperate zones and tropical highlands grassland-based system (LGT)

- In these areas, the grazing system is constrained by low temperatures.
- In the temperate zones, there are one or two months of mean temperatures, corrected to sea level, to below 5°C, whereas in the tropical highlands daily mean temperatures during the growing period are in the range of 5° to 20°C.

b. Humid and subhumid tropics and subtropics grassland-based system (LGH)

- The LGH system is defined as a grazing system found in regions with more than 180 days of growing period.
- It tends to be concentrated more in the subhumid zone, particularly in regions where access to markets or, for agronomic reasons, crop production is limited.

c. Arid and semi-arid tropics and subtropics grassland-based system (LGA)

- The LGA system is defined as a land-based system in tropical and subtropical regions with a growing period of less than 180 days, and where grazing ruminants is the dominant form of land use.

- This system is found under two contrasting socioeconomic frameworks: in sub-Saharan Africa and the Near East and North Africa regions, and in Australia, parts of western United States and southern Africa.

2. MIXED FARMING SYSTEM :-

- Livestock systems in which more than 10 % of the dry matter fed to animals comes from crop by-products or stubble or more than10 % of the total value of production comes from non-livestock farming activities.

- Mixed farming exists in many forms depending on external and internal factors.

- ✓ External factors are weather patterns, market prices, political stability, technological developments, etc.

- ✓ Internal factors relate to local soil characteristics, composition of the family and farmers' ingenuity.

A. Rain-fed mixed-farming systems (MR)

- The geographic distribution of mixed-farming systems is depicted in Sub-Saharan Africa, West Asia and North Africa, and Central and South America are relatively unimportant in terms of meat production, whereas developed countries and Asia together contribute about 70 percent of the total meat production from mixed-farming systems.

a. Temperate zones and tropical highlands rain-fed system (MRT)

- This system is defined as a combination of rain-fed crop and livestock farming in temperate or tropical highland areas, in which crops contribute at least 10 % of the value of total farm output.

- The main common feature of these two regions is that low temperatures during all or part of the year limit and determine vegetation that is quite distinct from that found in tropical environments .

b. Humid and subhumid tropics and subtropics rain-fed system (MRH)

- In the humid and subhumid regions of the tropics and subtropics, livestock production is based on mixed-farming systems.

- This system includes regions with especially difficult climatic conditions for livestock (high temperatures and high humidity).

- Adaptation of highly productive temperate breeds to these challenges has been notably poor.

c. Arid and semi-arid tropics and subtropics rain-fed system (MRA)

- The MRA system is a mixed-farming system in tropical and subtropical regions with a vegetation growth period of less than 180 days.
- The main restriction of this system is the low primary productivity of the land resulting from low rainfall.
- The more severe the constraint, the less important crops become in the system and the more livestock take over as a primary income and subsistence source.

B. Irrigated mixed-farming systems

- A subset of the mixed systems in which more than 10 percent of the value of non-livestock farm production comes from irrigated land use.

a. Temperate zones and tropical highlands mixed system (MIT)

b. Humid and subhumid tropics and subtropics mixed system (MIH)

c. Arid and semi-arid tropics and subtropics mixed system (MIA)

a. Temperate zones and tropical highlands mixed system (MIT)

- This system belongs to the group of land-based mixed systems of temperate and tropical highland regions.
- The system's importance in tropical highlands is negligible.
- About 10 % of the global population lives in regions where this system is dominant.
- A large share belongs to developed countries with relatively high income levels and where agricultural trade is important.

b. Humid and subhumid tropics and subtropics mixed system (MIH)

- This is a mixed system in tropical and subtropical regions with growing seasons of more than 180 days, and in which the irrigation of crops is significant.
- The MIH system is particularly important in Asia.
- High population densities require intensive crop production, and the irrigation of rice makes it possible to obtain more than two crops per year, even under conditions of very seasonal rainfall, substantially reducing yield variability as compared with the yield of upland rice or other rain-fed crops.

c. Arid and semi-arid tropics and subtropics mixed system (MIA)

- This is a mixed system of arid and semiarid regions, in which irrigation makes year-round intensive crop production feasible.

- The main interaction with other systems occurs through the international market, particularly for milk and dairy products.nited States and Mexico.

Conclusions

- Globally, mixed-farming systems contribute the largest share (53.9 %) of total meat production, followed by landless systems (36.8 %)

- Land-based systems still provide a large share of the total livestock output: 88.5 % of beef and veal, 61 % of pork and 26 % of poultry, representing 60 % of the total of all three meats.

- Women play a major roll in livestock production.

Thank you