DEPARTMENT OF PASTORAL SYSTEMS DEVELOPMENT

1.0 INTRODUCTION:

The department is charged with responsibilities of Range Management and Animal feeds Development.

Tanzania is endowed with abundant natural resources, which include land and a huge livestock resources base. Out of the total 88.62 mill. Hectares of land resource, 60 mill hectares are rangelands ideal for livestock grazing with carrying capacity potential of 20 mill. Livestock Units. However, due to tsetse infestation which is estimated to occupy 40% of the total land, its full potential has not been fully realized. Five main rangelands type have been identified according to ecological zones as follows:

1.1 Semi-arid to sub-humid rangelands.

These cover nearly 30% of the grazing areas and are mainly found in the Central plains of the country and include the typically pastoral systems of Arusha, Dodoma, Shinyanga and Singida. About 43.3% of the national cattle herd is found here at a density of less than three hectares per head. The area receives between 200 and 600 mm of rainfall per year. Seasonality of production, drought and overgrazing are the major problems.

1.2 Humid Plateau lands:

These lands represent nearly 30% of the grazing land areas and support nearly 50% of the cattle herd. The agro-pastoral areas of Mwanza, Mara and Mbeya typify them.

1.3 Humid lowlands:

The lands represents 20% of the grazing areas, but are grossly under utilized and only 2% of the herd is found here. The regions covering this type and offering the most potential are Mtwara and Lindi.

1.4 Very Humid Highlands:

These cover 9% of total area and support 5% of the cattle. They are typical of parts of Kilimanjaro, Mbeya, Ruvuma and Kagera and most of the exotic and crossbred cattle are found there.

1.5 Very Humid Lowlands:

This type covers a limited area of about 1%, and is restricted to coast regions. It includes moorland and grassland or barren land and is most suitable as water catchment. However, livestock production, especially crossbreed is of increasing importance.

1.6 Some climatic and carrying capacity characteristics of the rangeland vegetation regions

Map showing climate, vegetation and estimated carrying capacities for diffferent regions

Region + Dominant pasture Spieces 1	Climate 2	Rains 3	Dry month per year 4	Carrying capacity 5	Districts 6
Kilimanjaro, Tanga Iringa, Arusha, Mbeya, and Ruvuma *Pennisetum* Giant	H	VH- H	-	0.9 – O.6	Ludewa, Njombe, Makete, Rombo, Moshi, Rungwe, Lushoto, Mbinga and Ngorongoro
Kagera *Pennisetum* Mid - Grass	H – SH	VH – M	0.4	1.9 – 0.6	Bukoba.
Tanga *Hyperrhenia* Tall - Grass	H – SH	H – M	2 – 7	5.2 – 0.6	Muheza, Tanga and Pangani
Morogoro, Lindi, Mtwara, Ruvuma, Tabora, Rukwa, Shinyanga, Mwanza *Hyperrhenia – Hyperrhelia* Tall Grass	SH	H – M	5 – 7	5.2 – 0.6	All districts in the following regions - Coast, Dar es Salaam, Rukwa, Kigoma, Tabora, Lindi, Mtwara, Ruvuma (except Mbinga.), Mbeya – except Rungwe, Chato, Ngara, and Biharamulo in Kagera region and Tarime in mara region
Manyara, Arusha, Kagera *Panicum – Hyperrhenia* Tall Grass	SH – SA	H – M	2 – 3	5.2 – 0.6	All districts in Mara (except Tarime),Dodoma Mwanza, Shinyanga, Arusha, (except Ngorongoro) Manyara, ,

					Singida, Muleba and Karagwe districts in Kagera region, Mwanga in Kilimanjaro region and, Kilolo and Mufindi in Iringa region.
Themeda Mid – Grass	SH – SA	H – M	2 – 7	>5.2 – 0.9	
– Arusha, Kilimanjaro *Cenchrus – Shoenefeldia* Annual Mid Grass	SA	L – VL	7	14.3 – 5.2	
Chrysopogon Mid Grass	SA – A	L	4 – 6	>10. 5 – <3.3	
Leprothrium Mid Grass	A	L – VL	8 – 9	>14.2 – 7.1	
Aristida Annual Short - Grass	A	L – vl	6 – 11	13.5 – 8.1	
Panicum – Annual *Aristida* Mid/Short - Grass	A – HA	VL	11 – 12	>14.2 – 13.5	

Source: *Rangelands Resource in Eastern Africa*

KEY:
1. Grass height: Short = <25 cm, Mid=<150 cm, Tall = 150 – 300 cm and Giant = >300 cm

2. Climate: H = Humid, SH = Sub - Humud, SA = Semi – Arid, A = Arid, HA = Hyper Arid.

3. Mean annual rainfall: VH = very high = >1500 mm/year, H = High = 1000 – 1500 mm/year, M= medium = 500 – 1000 mm/year, L = LOW = 250 – 500 mm/year, vl = very low = <250 mm/year,

4. Dry season length = Average number of dry months per year

5. Potential estimated carrying livestock capacity = Ha/Tropical livestock unit = 250 kg / TLU

2.0 PRODUCTION SYSTEMS:

The major production systems in Tanzania are pastoralism, agropastoralism and to smaller extent ranching, which are elaborated as follows:-

2.1 Pastoralism:

This is a traditional cattle production system which is characterized by long range migration, opportunistic flexibility and risk spreading. A number of factors such as increase of livestock number, human population growth and expansion of arable land into grazing areas have led to disintegration of this system. It is estimated that only 15,488 households (0.004%) of the total households in Tanzania practice the system.

2.2 Agro-pastoralism:

This is another livestock keeping system characterized by production of crops and livestock for sustenance, income and savings. It represents about 40% of the agricultural households in Tanzania and it has expanded to the disadvantage of pastoralists. It increased from 14% in 1984 to 29% 1995 and it contributes about 80% of beef production in the country.

2.3 Commercial Ranching:

This is of minor importance and accounts for about 2% of the total cattle herd.

2.4 Rangeland productivity versus livestock productivity

Livestock productivity is directly correlated to rangeland productivity. When there is ample supply of pasture resources, livestock production shoots up

and the converse is true for short supplies of the same. The table below is indicative to production performance under potential range conditions.

Ruminant livestock productivity in the traditional Sector

Livestock species	Parameter	Performance level
Cattle	Calving rate (%)	40-50
	Calving interval (Months)	18-24
	Pre-weaning mortality (%)	25-40
	Calf mortality (%)	≥ 25
	Adult mortality (%)	8-10
	Mature weight (kg)	200-300
	Off-take rate (%)	8-10
	Carcass weight (kg)	100-175
	Age at slaughter (years)	6-7
Sheep and Goats	Lambing/kidding rate (%)	100-150
	Lamb mortality (%)	20-40
	Adult mortality (%)	8-15
	Off-take rate (%)	
	Sheep	15
	Goats	25
	Carcass weight	12

Source : UNDP 1993

3.0 MAJOR CONSTRAINTS IN THE PRODUCTION SYSTEMS:

3.1 Land

Most rangeland resources suitable for livestock keeping are communally utilized without planned improvement strategies by livestock keepers resulting into misuse of land resources. Lack of defined land utilization schemes for both livestock keepers and farmers has led to keeping large herds of animals and expansion of agriculture into fragile marginal lands or migration to other parts of the country.

3.2 Water:

Water scarcity in semi-arid areas is a limiting factor especially during the dry season. Also increased human and livestock population have resulted into higher competition for both land and water resources causing severe environmental degradation. The Government has embarked on construction of charcos, and dams to facilitate rainwater-harvest. Rainwater-harvesting technologies have proved to be viable alternative ways of range water distribution. The policy adopted by the Ministry is that of cost sharing between it, District Councils and livestock keepers on 50%, 30 and 20% respectively. Since year 2001/02, the ministry has contributed towards rehabilitation/construction of 340 charcos.

3.3 Pastures:

Seasonal fluctuations of pastures during wet and dry seasons necessitate migration of *pastoralists from one area to another in search of pasture and water* resulting into conflicts *with other land users.* In addition a lot of pasture and fodder biomass is lost every year through trampling and uncontrolled burning of grazing lands.

The situation is being addressed through better land use policies, proper grazing management plans, formation of livestock keepers associations, enacting and enforcing by laws and regulations pertaining to range resource management and utilization, sensitization on fodder harvesting and conservation, utilization of crop residues and promotion of in situ fodder conservation methods locally known as "*ngitiris"* in the West, *"alalili*" in the North and *milaaga* in central parts of the country.

For a long time, the promotion of fodder production has been implemented by availing quality pasture seeds to livestock keepers from Government farms. Currently, private farmers are also a major source of the same. The list of pasture farms in the country are as shown below.

List of some pasture farms in the country

Name of the farm/ Institution	Location	Size of the farm (acre)		Average production (kgs/year)		Pasture species
		Total	Established	Seeds	Hay	
Vikuge pasture seed farm	Kibaha Coast	515	950			

(government)	Region					
Langwira pasture seed farm (government)	Mbeya Region	294				
Kongwa Pasture research Institute (Govt)	Dodoma Region					
Mpwapwa Research Institute(Govt)	Dodoma Region					
Buhuri livestock Training instistute - LITI (Govt)	Tanga Region					
Tengeru LiTI (Govt)	Arusha Region					
NAIC -	Arusha Region					
Sao Hill Livestock Multiplication Unit (LMU) (Govt)	Iringa Region					
Peramiho RC Mission (Private)	Ruvuma Region					
Mama Anna farm (Private)	Bagamoyo Coast Region			500		
Idrisa Farm				300		
Lyode				280		
St Gasper Seminary				200		
Lutheran Seminary				100		
Tanga Fresh				70		
Wangwe				20		

pasture farm						
Lupiana Farm				100		
Rweyemamu Pasture Farm				50		
Mojatta Farm				50		
Small holder Dairy Farmers Tanga.				160		
Kuzilwa						

4.0 ANIMAL FEED:

4.1 Compounded Feedstuffs:

While rangeland will continue to be the main source of animal feed, compounded feedstuffs are important especially for poultry, dairy and pig production. These feedstuffs account for about 60% of production costs of farm animals. Optimum productivity of animals largely depends upon the adequacy of all essential nutrients in rations.

There is no large scale production of crops such as yellow maize, soya beans, simsin and groundnuts which could provide feed and feed by-products for livestock, to give animal feed manufacturers' ingredients for production of high quality feeds.

Compounded feedstuffs production is estimated at 500,000 tons per annum while the demand stands at 650,000 tons. The difference is bridged by backyard compounding of feeds by smallholders mainly poultry, pig and dairy farmers.

There are complaints by livestock farmers on the low performance of their animals, the problems could be associated with low quality feedstuffs as a result of weak regulatory mechanism. However, compounded feedstuffs are constrained by high taxes, seasonal availability of raw material, inadequate credit facilities, lack of knowledge on feed formulation and high cost of production.

The Policy Objective regarding animal feeds is to promote production of quality animal feedstuffs for increased production and productivity of livestock.

4.2 Crop Residues and other Supplementary Feedstuffs:

Tanzania has a wide range of agro-ecological zones, which favor production of a number of cereals and leguminous crops. These crops are a potential source of post harvest animal feeds during the dry season. However, there has been limited conservation and utilization of this resources for improved production and productivity.

Similarly, poor utilization of concentrate and other supplementary feeds have also shown to affect animal productivity in the country. These constraints are offen aggravated by inadequate water particularly in the traditional cattle herds, knowledge on the importance and skills of utilization and conservation at crop residue as animal feeds.

The Policy Objective is to promote efficient conservation and utilization of crop residues and other supplementary feeds for increased production and productivity of livestock.

List of Selected Animal Feedstuffs Manufacturing Plants

S/No	Name of Plant	Region	Installed Capacity Tons/day	Utilized capacity Tons/day
1.	Kimara Animal feeds	DSM	16	5
2.	Lengesia	DSM	10	3
3.	Interchick	DSM	66	20
4.	Hill Animal feeds	DSM	24	15
5.	Twiga feeds Ltd	DSM	25	10
6.	Jadide	DSM	15	5
7.	Riyami	DSM	15	5

8.	A to Z	DSM	30	16
9.	Ilala Animal feeds	DSM	15	10
10.	Moselmach (T) Ltd	DSM	10	2
11.	Amadori	DSM	20	8
12.	Mkuza Chicks	COAST	10	4
13.	Tanzania Poultry Farms	ARUSHA	1	0.5
14.	CPPS Dodoma Mission	DODOMA	5	2
15.	Burka Animal Feeds	ARUSHA	5	2
16.	Kibo Feed Limited	KILIMANJARO	10	5
17.	Chamifugo Supplies Ltd	MWANZA	5	1
18.	Misenani Agri Services	MWANZA	8	2
19.	Elly Mushi enterprises	MWANZA	3	1
20.	A. S. Feeds	MWANZA	5	1
21.	Ndokeji Animal Feeds	MWANZA	5	3
22.	Nyakato Posho Mill	MWANZA	5	1.5
23.	Elion Trading	MWANZA	5	1
24.	Momix Feed Millers	Morogoro	1	100 kg