

currently operating below its potential mainly due to availability of cheaper milk imports from other districts. The price of milk ranges between Kshs. 20-35/= depending on location.

4.0 PASTURE AND FODDER PRODUCTION

4.1 Kisii Central District

The district has a pasture area of 14050 acres and 3079 acres of established Napier grass. There are 41000 fodder trees, which include mainly Calliandra and Leucaena. Due to the increasing attention to grade dairy cattle there are measures in place to encourage farmers to grow fodder legumes such as desmodium and dolichos. The land allocated to growth of pasture and fodder is therefore likely to increase.

Table 4.1.1 Fodder and pasture production in Kisii district per division

Division	Pasture (acres)	Napier grass (acres)	Fodder trees (No)	Sweet potatoes (acres)
Masaba	3,000	549	4,250	0.2
Keumbu	2,400	1,000	6,700	-
Suneka	3,650	870	16,000	2.5
Marani	3,600	290	1,300	3.5
Mosochho	1,400	267	12,750	3.0
Total	14,050	3,070	41,000	9.2

4.2 Nyamira District

The district has an area of 83660 hectares (691 km²), which is utilized to grow natural and improved pastures, fodder crops and food crops and woodlots. The breakdown of district land utilization is as follows:

- Natural pastures 9010 ha
- Improved pastures 960 ha
- Fodder crops 1668 ha
- Food crops and woodlots 71400 ha
- Total 83660 ha

There are 6.2 acres of bulking plot established and 16 acres of on-farm demonstration. 16500 fodder tree seedlings have also been distributed in the district.

Table:4.2.1 Pasture and fodder distribution in the district per division

Division	Natural Pasture (acres)	Improved Pasture (acres)	Napier Grass (acres)	Fodder Legumes (acres)	Fodder Shrubs (Nos)
Nyamira	1,950	45	1,180	1.3	3,286
Ekerenyo	2,300	105	429	0.8	2,016
Manga	2,000	25	207	0.5	1,365
Rigoma	1,340	23	315	0.6	2,772
Borabu	2,400	762	154	1.8	990
Total	9,010	960	2,285	5.0	10,429

The pasture and fodder utilization in the district is also reflected in its production and consequent utilization:

- Average Napier grass per farm 0.52 acres
- Number of cows per farm 1.10
- Average milk production /cow/day 6.69 Litres
- Average quantity of concentrates /cow/day 0.36 kg
- Quantity of milk sold in district 42.6%
- Average price per litre Kshs. 13.41
- Number of farms using fertilizer on napier grass 20%
- Number of farms with good napier grass management 60%
- Number of farmers that give cows minerals regularly 30%

4.3 Rachuonyo District

Fodder and pasture production and management is crucial for continued milk production in the district. There is a protein gap in the dairy cattle feeding which can be narrowed or eliminated through feeding of fodder legumes, multi-purpose trees, sweet potato vines and other legumes. There is an urgent need for intensified fodder conservation for dry season feeding so that milk production is maintained throughout the year.

Table: 4.3.1 Pasture and fodder production in the district

Napier grass (acres)	Fodder trees (Nos)	Sweet potatoes (acres)	Natural pastures (km ²)	Other legumes (acres)
959	346,000	1,240	24	-

5.0 ORGANIZATIONS INVOLVED IN DAIRY PRODUCTION

5.1 Kisii Central District

- National Dairy Development Project (NDDP): 1987 – '95 operates throughout the district (GOK and GON)
- Livestock development project (LDP): 1991 – 2001 operates throughout the district (GOK and GOF)
- Canadian fund for local Initiative (CFLI): 1997 – '98 operates only in Keumbu division and involves Mochengo Women's group (GOK and GOC)

5.2 Nyamira District

- National Dairy Development Project (NDDP): operates district wide(GOK and GON)
- Livestock Development Project (LDP): operates throughout the district (GOK and GOF)
- Rural Dairy Development Project (RDDP)
- Heifer International (GOK and GOF)
- IFAD

5.3 Rachuonyo District

- Heifer International (GOK and GOF)
- Amani Christian Community Development Project: (1993 - 2000) provides cows to poorer members of the society in conjunction with Heifer International Project. (GOK and UK)
- Catholic Diocese

6.0 List of publications on Livestock Research and Development in the Region

1. Evaluation of economic viability of zero-grazing dairy cows under smallholder conditions in Homa Bay, Nyamira and Kisii Districts. (KARI, RRC Kisii, Annual a Report KARI 1992)
2. Economic evaluation of zero-grazing under napier based system in high yielding cows at smallholder level. (KARI, RRC Kisii, Annual Report, 1993).
3. Survey on livestock feeds, feeding and management practices limiting milk production. * To identify and prioritize problems for research intervention ((KARI, RRC Kisii , Annual Report, 1994).
4. Effect of sweet potato vines in the diet of Friesian calves on growth rates. Lumen development and feed cost (KARI, RRC Kisii, Annual Report, 1997)
5. Maize defoliates as an alternative source of livestock feed with no effect on the maize grain yield. (KARI, RRC Kisii, Annual Report, 1997)
6. Effect on dm yield and economic implication of using organic and inorganic fertilizer on napier grass inter-cropped with Desmodium and Dolichos in south west Kenya. (KARI, RRC Kisii, Annual Report, 1997)
7. Effect of good quality fodder and legumes on milk production. (KARI, RRC Kisii, Annual Report, 1998)
8. Effect of intercropping forage legumes with maize on grain yield. (KARI, RRC Kisii, Annual Report, 1995)
9. District Livestock Production Officer, Central Kisii. Annual Reports 1998, 1997 and 1996 APD/1V/4 Vol. II (28)
10. Livestock Development Project, PRA report 1999
11. Amani Christian Community Development Project Report, 1999.
12. Participatory evaluation of the efficacy of farmyard manure and inorganic fertilizers as sources of plant nutrients: Effect on napier grass and legume dry matter yields. Mid year report, Soil Management Project (SMP), RRC – Kisii.1997.
13. Ministry of Agriculture and Rural Development, Nyamira District Annual Report 1992.
14. Ministry of Agriculture and Rural Development Nyamira District Annual Report 1989 pages 4, 7 and 13-14.

7.0 Appendix

Table: 7.1.1 Ten year projection and milk production in Nyamira District.

Year	Human Population	Milk needs Million (L)	Zebu Cattle population	Grade Cattle population	Milk yield Million (L)	Deficit Surplus Million (L)
1996	489,883	44.1	50,493	36,737	32.5	- 11.6
1997	507,029	45.6	29,786	45,734	41.0	- 4.6
1998	524,775	47.2	29,160	47,929	43.1	- 4.1
1999	543,142	48.9	28,547	50,230	45.0	- 3.9
2000	562,152	50.6	27,948	52,641	47.3	- 3.3
2001	581,827	52.4	27,361	55,168	49.7	- 2.7
2002	602,191	54.2	26,786	57,816	52.3	- 1.9
2003	623,268	56.1	26,223	60,591	55.1	- 1.0
2004	645,082	58.1	25,672	63,499	58.0	- 0.1
2005	667,660	60.1	25,133	66,547	61.0	+ 0.9

Table: 7.1.1 Livestock census for Zebu and dairy cattle in Nyamira District 1998

	Nyamira	Manga	Rigoma	Borabu	Ekerenyo	Total
Zebu cattle						
Cows	3,182	3,459	1,232	2,374	3,565	13,812
Bulls	648	748	187	764	1,541	3,888
Heifers	577	1,469	318	1,573	1,106	5,043
Calves	1,325	2,408	559	1,808	943	7,043
Sub-total	5,732	8,084	2,296	6,519	7,155	29,786
Crosses						
Cows	3,052	5,337	3,942	12,398	2,802	27,531
Bulls	303	596	570	767	570	2,806
Heifers	560	1,665	1,231	1,026	819	5,301
Calves	987	1,855	1,107	952	731	5,632
Sub-total	4,902	9,453	6,850	15,143	4,922	41,270
Purebreds						
Cows	171	290	290	699	316	1,766
Bulls	74	268	92	66	123	623
Heifers	68	319	98	162	141	788
Calves	83	418	318	174	294	1,287
Sub-total	396	1,295	798	1,101	874	4,464
Total	11,030	18,832	9,944	22,763	12,951	75,520