

3.3.2 Land Tenure and Farm Size

The size of land holding per household varies greatly, and is generally seen as one of the main determinants of the intensification level (Table 6). In the Districts where land sizes are small and land is thus a primary constraint to production, farmers have an incentive to intensify and the main system of keeping cattle is “stall feeding”. Mean land holding was 6.6 acres (2.4 hectares) with the larger farms in Narok and Nyandarua (18.8 and 13.4 acres respectively) and the smaller ones in the High-Medium sites (Murang’a, Maragua, Kirinyaga) with 3.1, 3.1 and 3.8 acres respectively. Most farms had been established nearly 20 years ago and in three quarters of the cases remained the same size since.

Table 6: Total Land Sizes, Number of Plots and Years Since Establishment.

District	Total land (acres)	No. plots	Years est.	Acreage same as at est. (%)
Maragua	3.1 (5.6)	2.1 (7.1)	22.6 (11.1)	78.4
Murang’a	3.1 (3.2)	1.9 (7.1)	23.0 (11.5)	74.2
Kirinyaga	3.8 (3.5)	1.4 (0.6)	20.4 (14.0)	72.4
Nairobi	7.1 (20.3)	2.1 (1.3)	8.1 (7.8)	76.2
Machakos	9.5 (11.5)	1.1 (1.1)	26.8 (14.2)	67.2
Nyandarua	13.4 (20.0)	1.7 (1.2)	16.8 (11.8)	62.8
Nakuru	5.3 (9.4)	1.8 (6.6)	14.7 (7.1)	87.7
Narok	18.8 (23.5)	1.6 (0.9)	11.8 (8.0)	57.1
Total/Av.	6.6 (11.9)	1.8 (5.4)	18.9 (11.7)	77.7

Majority of households surveyed had only a homestead plot and often one other separate plot. The land tenure of the homestead plot was freehold (with title deed) on 72% of farms while the remaining 28% were inherited (traditional tenure). For those with second plots half were freehold, 30% rented and 15% inherited. This confirms that significant numbers of farmers hire land, where available, to grow crops and fodder.

To investigate changes over time in types of crops grown in the area, respondents were asked to state crops grown now but not 10 years ago, and conversely, crops grown 10 years ago but not now. Figure 5 and Figure 6 below summarises the changes that have occurred in types of crops cultivated according to the survey results.

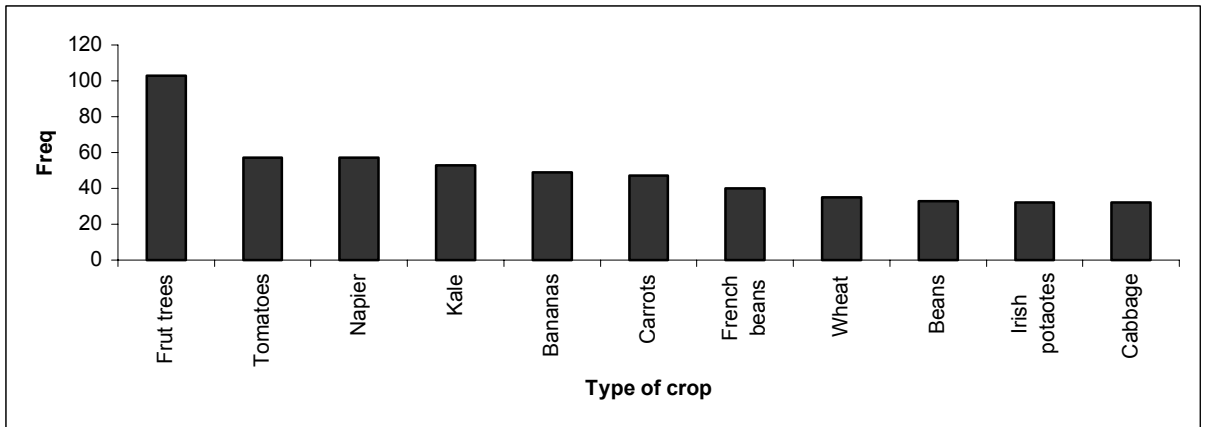


Figure 5: Frequency of households growing crop now but not 10 years ago

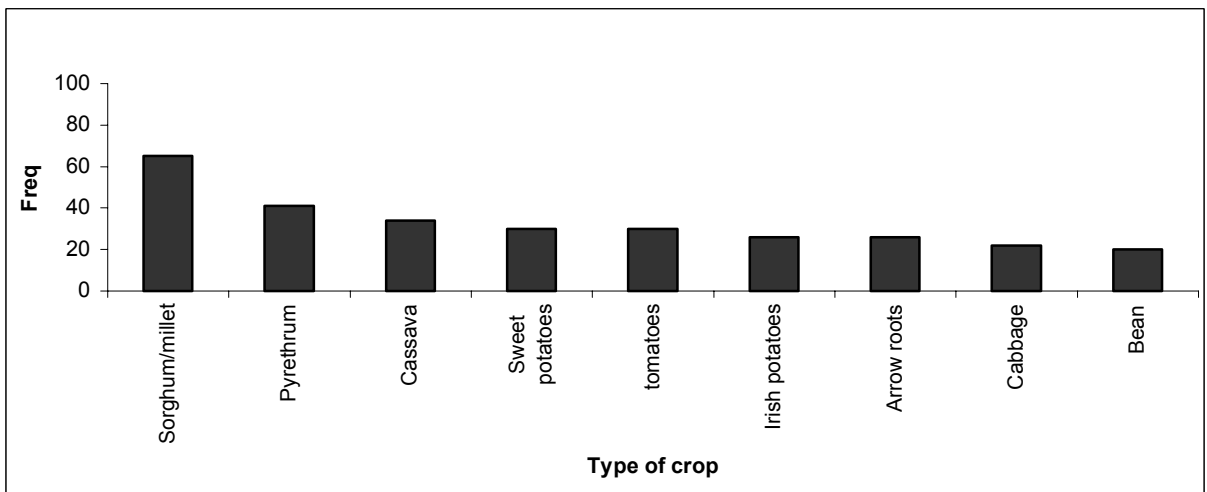


Figure 6: Frequency of households growing crop 10 years ago but not now

From Figure 5, it is apparent that growing of Napier grass, together with that of fruit trees and tomatoes, has increased over the last 10 years leading to the time of the survey. The increase in households growing napier may be an indication of a shift towards a more intensive mode of dairy production, prompted by either decreasing land sizes or better knowledge of dairy technologies. Conversely, the results suggest that farmers are abandoning the growing of traditional crops such as sorghum/millet, cassava and sweet potatoes, as high as 60% of respondents in the case of sorghum/millet. The later findings are similar to those for Kiambu, where most households reported a decline in cultivation of sweet potatoes (Staal et al, 1998). Pyrethrum was another crop whose growing was reported to have declined.

Table 7 shows allocation of land to crops and pasture. Arable land is here defined as the total land size minus pasture and includes cropped and fallow land. For Maragua, Kirinyaga and Nairobi, as in Kiambu District, all land, including that planted in fodder, is 100% arable (cropped). Nyandarua has 67% of the land as pasture (mostly established pastures) with only a third of the total land being cropped. In Narok the arable to pasture ratio is higher than expected because animals are grazed on communal land, and the percentage of arable land reported include only cropped and fallow and excluded the total land owned and/or communal pasture.

Table 7: Average Arable and Pasture Allocation (acres)

District	Arable		Pasture	
	Mean	Sd	Mean	Sd
Maragua	3.2	5.0	0.0	0.1
Murang'a	3.1	3.2	0.2	0.6
Kirinyaga	4.3	4.6	0.0	0.1
Nairobi	5.3	17.1	0.0	0.0
Machakos	8.6	13.4	0.6	2.1
Nyandarua	5.2	8.0	3.5	8.6
Nakuru	3.8	5.8	1.0	3.6
Narok	17.3	23.8	0.4	1.2

3.3.3 Farm Infrastructure and Transport

The majority of agricultural households (45%) had only manual farm transport available. This includes bicycles and wheelbarrows. About 44% had no farm transport whatsoever with the remaining households having combinations of animal drawn carts and manual transport (7%) or motorised and manual transport (4%). It was clarified that motorised transport was actually in many cases a group organised affair and not individually owned transport.

3.3.4 Labour Resources

The results reflect those households hiring external labour for mainly dairy related activities. "Mainly" means that a hired labourer spends more than 50% of their time on dairy activities . A high percentage can be explained in two contrasting ways; for highly intensified zero grazing systems labour is necessary to carry out the "cut and carry" feeding activities (labour intensive), while on the other hand, the extensive systems where animals are grazed, the hired labour is required for herding. In general 40% of households hired no

labour relying solely on family labour (Table 8). This figure reflects the results from Kiambu (Staal et al, 1998). Of the 60% hiring labour, two thirds of it is only casual labour, the rest being split between those hiring only permanent (long-term) labour, 13%, or both types (20%). These findings again suggest the important role of dairying in generating employment within producer communities.

Table 8: Percent Hiring Casual or Permanent Labour or Both

District	No hired labour	Casual labour only	Permanent labour only	Both casual and permanent labour
Maragua	45.2	45.2	0.0	9.5
Murang'a	36.0	48.4	3.8	11.8
Kirinyaga	31.3	56.3	6.3	6.3
Nairobi	64.0	16.0	16.0	4.0
Machakos	36.4	38.8	13.2	11.6
Nyandarua	29.1	47.3	7.3	16.4
Nakuru	45.0	39.0	7.1	8.8
Narok	31.0	31.0	11.9	26.2
Average no.	39.7	40.2	8.2	11.8

The allocation of family and hired labour to dairy activities is summarised in Table 9. Overall the primary responsibility for the dairy activities are 36%, 24%, 12%, 10%, 3%, 9% and 6% for adult males, adult females, both, children, permanent and casual labourers respectively. The high percent for males can be attributed to them being responsible mostly for obtaining breeding or veterinary services (62%) and spraying or dipping of animals (56%). Women, on the other hand, are evenly involved in all activities more so in the milking and sale of milk (Narok and Machakos 83% and 64% of dairy households respectively report the adult females doing the milking). Child labour is virtually non-existent except in Narok where they are responsible for grazing (29%), selling milk (37%) and watering the animals (29%). The Table also shows that permanent labour is hired mainly for dairy activities and is corroborated by the farmers who say casual labour is used for crops management while permanent labour is used for herding cattle. In addition casuals are rarely given food whilst permanent labourers are given both food and housing.

Table 9: Allocation of Household and Hired Labour to Dairy Activities (%)

Dairy activity	Adult male	Adult female	Both (m/f)	General Household	Children	Perm. Labour	Casual Labour
Graze/cut feed	30	24	12	9	4	15	6
Process feed	17	25	29	10	1	12	6
Tend fodder	34	17	8	21	1	7	12
Milking	26	41	11	8	2	10	2
Sale of milk	33	35	9	7	6	8	2
Spray/dipping	56	11	9	8	3	9	4
Cleaning shed	35	22	13	13	1	8	8
Obtain AI/Vet	62	14	10	5	2	6	1
Water animals	32	31	10	12	5	5	5
Overall av.	36	24	12	10	3	9	6

3.4 Livestock

3.4.1 Cattle Numbers and Breed Types.

Dominant genotype differs according to the system for keeping cattle with improved animals being present where the main system is stall-feeding while local animals are found in grazing areas. Cattle rustling and tribal clashes have distorted the cattle inventory in Nakuru with farmers saying numbers are usually higher.

As shown in Table 10 the mean number of Zebu, cross and grade cattle per household were 6.9 (sd 9.6), 3.8 (sd 4.3) and 3.5 (sd 5.0) respectively. As expected, the largest herds were in the extensive grazing systems in Narok with 16.2 animals predominantly Zebu. Nyandarua District also had relatively large herds (5.5) though these are all upgraded dairy animals, and land sizes are larger. The sample in Nairobi was small but showed the trend towards intensification in that the dairy farmers are keeping on average 7.5 cows, all grade on very small pieces of land.

Predominant dairy breeds reported are Friesian (42%), Ayrshire (18%), Guernsey (12%) and Jersey (3%) with the *Bos indicus* (Zebu, Sahiwal and Boran) reported in 25% of farms. This agrees with the farmers views, aired

during the feedback meetings, that the Friesian and Ayrshire are preferred due to their higher milk production.

Table 10: Cattle Inventory and Means per Household Reporting

District	Zebu			Dairy		Herd size	
	N	Mean	SD	Mean	SD	Mean	Mean
Maragua	61	0	0	2.0	1.0	2.0	1.0
Murang'a	148	0.1	0.3	2.2	1.5	2.3	1.5
Kirinyaga	76	0.1	0.5	2.1	1.2	2.2	1.1
Nairobi	14	0.1	0.5	7.4	17.6	7.5	17.5
Machakos	78	3.1	2.9	0.8	1.8	3.9	3.1
Nyandarua	98	0.1	0.3	5.4	4.8	5.5	4.7
Nakuru	230	0.6	3.2	4.1	5.1	4.7	5.7
Narok	36	13.8	14.2	2.4	4.7	16.2	13.4
Overall	741	6.9	9.6	3.5	5.0	4.3	

3.4.2 Herd Sizes And Structures

From Fig.7a below it can be seen that overall, herds are composed of mostly adult cows (45%) which together with the heifers and female calves account for nearly two thirds of the animals in the herds. Bulls formed only 6% of the herd. The similar number of female and male calves suggests that the males did not leave the herd until after weaning.

Maragua is shown in Fig. 7b and represents other parts of central Kenya where land is a constraint. Here cows and heifers account for 76% of the herd and the relatively higher number of bulls are because they are kept for draught and later sold for meat. Herd composition is very diverse especially in Narok and Nyandarua where land size is not a constraint (Narok, Fig. 7c).

In Narok and Machakos the Zebu cattle are not mainly kept for income from sales of milk but for production of milk for home consumption and cash from sales of steers hence herds also have higher number of males. In Nyandarua the farmers report that one in every three households keeps a breeding bull.

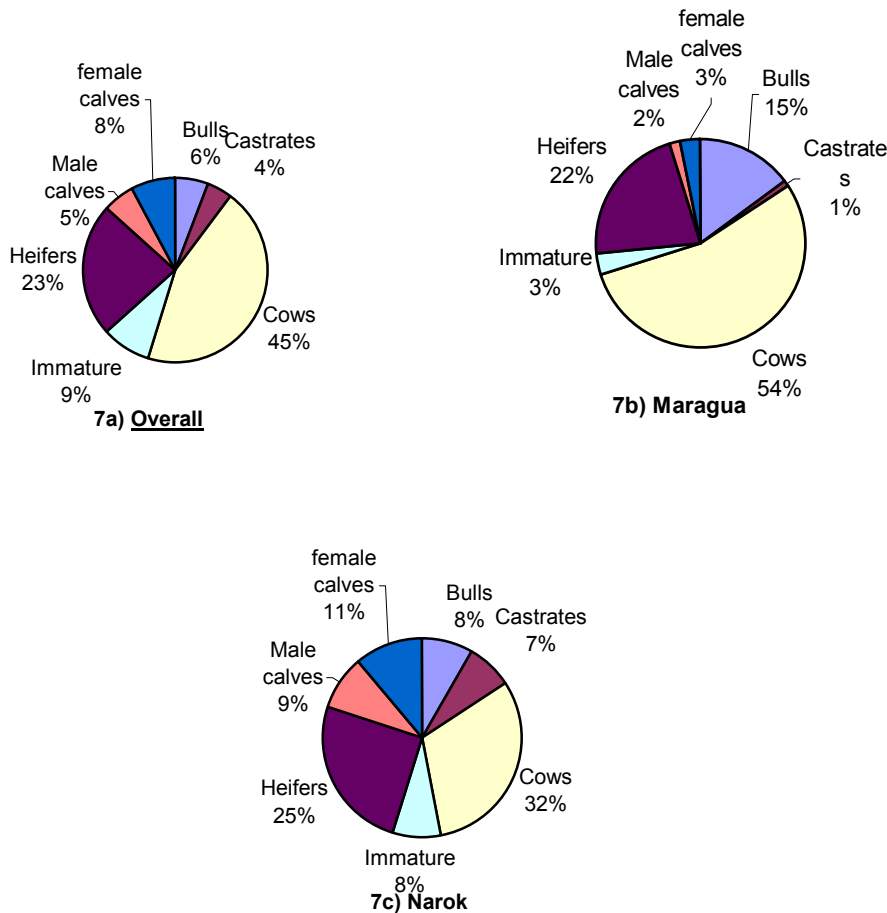


Figure 7: Herd Composition (Overall, Maragua and Narok)

3.4.3 Non-Cattle Livestock Inventory

Smallholder farmers keep other livestock beside cattle (namely chickens, sheep, goats, donkeys for farm transport and a few pigs). Table 11 shows the proportion of all agricultural households reporting having the different livestock, the mean numbers and standard deviations. The main livestock kept are local poultry kept by 76% of all agricultural households, local goats by 37%, sheep (36%) and donkeys (16%). Local chickens are kept by 65% to over 90% of households in all Districts with an average of 4 to 12 in number. The local goats are predominantly in Machakos and Narok with 67% each but with flocks in Narok being much larger (average of 24 animals) when compared to 3 goats in Machakos.

A lower percentage of households reported keeping sheep, with only Nakuru, Narok and Nyandarua reporting about 70% each. Whereas Narok will have the hair sheep breeds like the Red Maasai the other 2 Districts have predominantly wool sheep e.g. Doper and Merino. Nairobi has the predominance of commercial layers, broilers and pigs with 8, 27 and 36% reporting. This is probably due to the nearness of input markets for feed and the sales outlets to hotels, institutions etc.

Table 11: Proportion (%) of Agric. Households with Livestock other than Cattle, the Mean Number and SD

	Goats		Sheep		Poultry		Donkeys	Pigs
	Local	Dairy	Local	Layers	Layers	Broilers		
Maragua	32.3 (0.7 ± 1.3)	6.6 (0.1 ± 0.7)	17.2 (0.5 ± 0.5)	65.3 (3.9 ± 4.4)	6.6 (19.2 ± 19.2)	0	1.6 (0.0 ± 0.3)	4.9 (0.3 ± 1.6)
Murang'a	42.3 (1.2 ± 1.8)	6.3 (0.2 ± 0.7)	14.1 (0.4 ± 1.4)	68.3 (4.0 ± 4.5)	1.4 (1.1 ± 12.5)	0.7 (0.0 ± 0.1)	0	4.8 (0.3 ± 0.2)
Kirinyaga	36.4 (0.9 ± 1.5)	5.5 (0.2 ± 0.7)	13.7 (0.3 ± 0.9)	83.5 (8.1 ± 9.0)	1.4 (0.0 ± 0.4)	0	0	8.2 (0.8 ± 5.9)
Nairobi	28.6 (6.8 ± 17.8)	0	15.4 (6.8 ± 16.8)	35.7 (4.6 ± 10.7)	7.7 (15.4 ± 55.5)	26.7 (69.7 ± 140.6)	0	35.7 (10.0 ± 20.6)
Machakos	67.4 (3.1 ± 3.4)	0	19.0 (0.8 ± 2.0)	94.6 (7.4 ± 5.6)	1.3 (1.6 ± 13.8)	0	13.0 (0.1 ± 0.4)	0
Nyandarua	3.1 (0.1 ± 0.3)	1.0 (0.0 ± 0.1)	69.7 (6.2 ± 9.5)	92.3 (8.9 ± 8.4)	3.1 (0.1 ± 0.1)	0	23.5 (0.3 ± 0.7)	1.0 (0.1 ± 1.4)
Nakuru	17.7 (0.7 ± 3.0)	1.4 (0.1 ± 0.6)	69.9 (4.0 ± 5.9)	91.5 (12.0 ± 11.0)	2.7 (2.3 ± 20.8)	0.5 (1.4 ± 20.2)	18.0 (0.2 ± 0.7)	8.7 (0.3 ± 3.3)
Narok	66.7 (24.0 ± 21.4)	11.8 (1.3 ± 4.6)	71.4 (18.4 ± 22.4)	76.3 (8.5 ± 8.2)	5.9 (0.5 ± 2.2)	5.9 (1.0 ± 5.5)	74.3 (2.5 ± 2.6)	0
Overall.	36.8	4.0	36.3	76.0	3.8	4.2	16.3	7.9

3.4.4 Feed Resources and Production

The dominant systems for keeping cattle were defined as only stall feeding (zero grazing), grazing and mainly grazing with some stall-feeding (semi-feeding (semi-zero grazing)). The semi-zero grazing described is paddock grazing on improved pastures with a little “cut-and-carry” as in Nyandarua or enclosing of animals in semi-permanent structures with predominantly “cut-and-carry” with a little grazing as in parts of central Kenya. Overall the main production systems were semi-zero grazing for 38% of farms, zero grazing for 37% and grazing for 25% of farms mostly in Narok (Figure *).

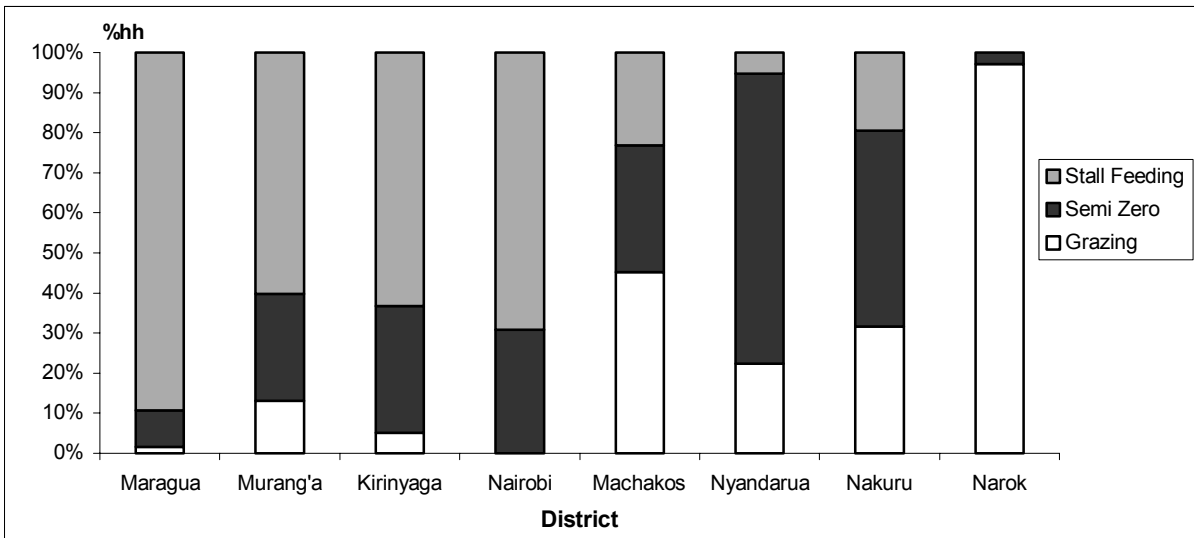


Figure 8: Main Feeding System Currently Practised

In Narok and Machakos the pasture is grass. After harvesting wheat, animals graze on the fields as well. In Nyandarua, rhodes and rye grasses are grown for pasture, but due to overgrazing, have been taken over by star, couch and wire grasses, which are of poorer quality.

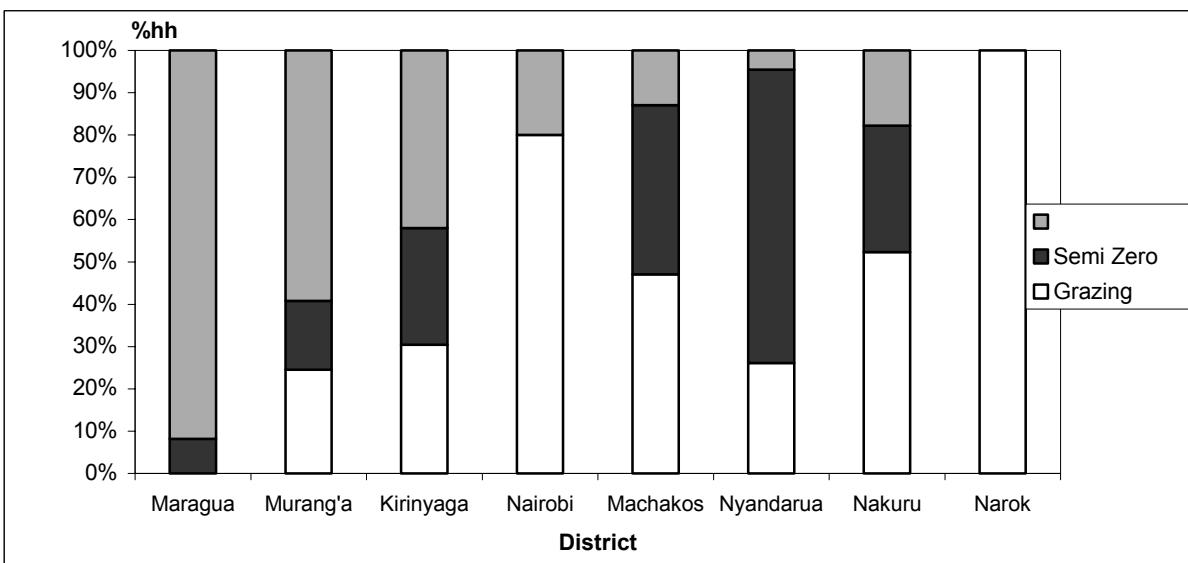


Figure 9: Main Feeding Systems 10 Years Ago

Strategies employed to alleviate the limited feed supply include the feeding of crop by-products, fodder cultivation on roadsides and reliance on fodder markets. There is an increasing shift towards intensification of dairying through growing of fodder crops with “cut-and-carry” feeding systems and keeping of improved dairy breeds on the ever decreasing land available for agriculture. Fodder production and feeding systems were consistent with the farmers’ reports and changes in feeding systems was attributed to decreasing land holdings with subsequent pressure on land. Even those reporting grazing their animals are not doing so on their own land but in the forest reserves, along the roadsides and on fallow plots.

Farmers were asked to record feeds they use now and not 10 years previously and those they used previously and no longer use them. From Figure 10 below it can be inferred that use of napier, maize stover (mostly dry stover), mineral salts, weeds and other crop residues has gone up while use of concentrates and roadside grasses has gone down. This is as expected except for decreased use of concentrates probably due to the rising costs relative to the prices paid out for milk. Concentrate feeding now is not at recommended levels because many farmers agree they use it to relax the cows when milking and not really for increased milk production. Farmers also expressed concern on the quality of concentrates.

The project is testing the intervention of better targeting concentrate feed to take advantage of the physiological ability of cows in early lactation to convert concentrate feed more efficiently. Feeding in Nairobi is mainly on rations formulated from fodder (napier, grass, vines) and agro-industrial waste like brewer's waste, barley husks, pineapple waste, French beans and passion fruit waste.

Figure 10: Changes in Feeds Used Now and 10 Years Previously

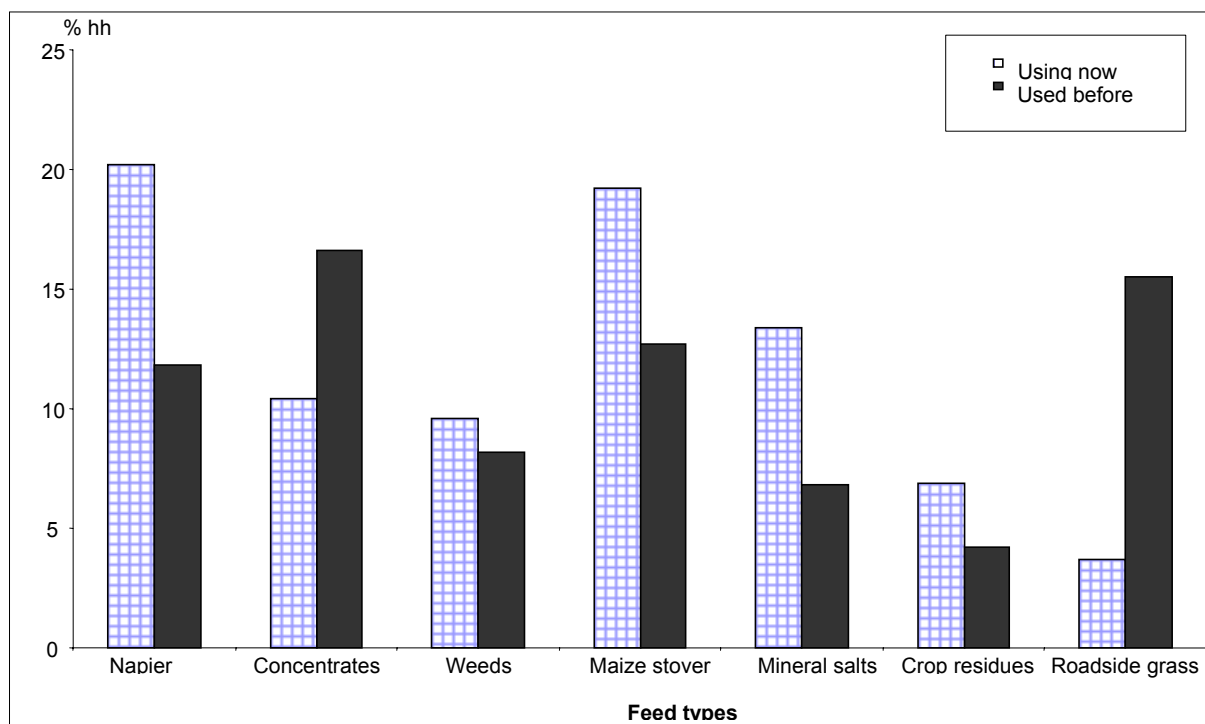


Table 12 and 13 give the results for the major feeds namely Napier grass, concentrate feeds, garden weeds, maize stover (dry and/or green), mineral salts and any others unique to a particular District.

Table 12: Major Feeds Used Now and Not 10 Years Previously (% of Dairy Households)

District	Napier	Concentrates	Weeds	Maize stover	Mineral salts	Other
Maragua	22.6	9.8	10.4	20.1	10.4	
Murang'a	22.3	4.6	13.7	20.3	13.7	
Kirinyaga	6.7	13.3	-	13.3	13.3	33.3 Hort.
Nairobi	10.5	21.0	5.3	7.9	2.6	15.8 Brewers
Machakos	32.3	9.7	5.4	12.9	17.2	
Nyandarua	19.4	25.0	3.7	14.8	11.1	
Nakuru	14.6	13.0	7.5	21.1	15.9	
Narok	-	-	33.3	33.3	-	33.3 Crop res.

Roadside grazing has declined dramatically in Murang'a, Machakos and Nakuru as reported by 20, 39 and 27 % of dairy farmers respectively (Table 13). This might have been as a result of decreased sizes of road reserves, their in-accessibility and

the knowledge that animals pickup more ticks when grazed hence more prone to TBDs.

Decreased use of vegetable by-products like pyrethrum in Nyandarua and horticultural waste would probably mean they are not grown on as large a scale as before.

Table 13: Major Feeds Used 10 Years Previously and Not Anymore (% of Dairy Household)

District	Napier	Concentrates	Weeds	Maize stover	Mineral salts	Other
Maragua	25.6	13.3	11.1	23.3	13.3	
Murang'a	6.5	18.3	7.5	14.0	-	Roadside 20.4
Kirinyaga	-	50.0	-	-	12.5	Hort. 12.5
Nairobi	-	-	100	-	-	-
Machakos	10.7	-	25.0	3.6	-	Roadside 39.3
Nyandarua	11.3	18.9	3.8	7.6	7.6	Pyreth. 13.2
Nakuru	4.9	19.5	-	7.4	1.2	Roadside 26.8
Narok	-	-	-	-	-	-

Table 14 quantifies the feed based on farmer recall. Average quantities, in kg per day, were reported for “cut and carry” fodder and crop residues, and for concentrates and other agro-industrial by-products. Grazing was estimated in hours.

Maragua, Murang'a and Kirinyaga, practising predominantly stall-feeding, reported 31.6, 22.9 and 47.8 kg of fodder given to all the animals daily. In addition the animals get 0.8, 8.1 and 12.1 kg. of concentrate. Given that the herd sizes in these Districts is on average 2 cows, it would be correct to assume they get 15 to 25 kg fodder and 4 to 6 kg concentrate (probably twice a day at milking as is the practise). Under-nutrition of the animals is evidenced by the low amounts of fodder and the flat rate concentrate feeding whose effects would not be felt because the animals are not meeting their dry matter requirements.

Narok is predominantly grazing with farmers reporting grazing the animals for almost 9 hours in a day. Machakos, Nyandarua and Nakuru also graze the animals most of the day with some supplementation with a little fodder and concentrates. Longitudinal studies in Nakuru (Rongai) and Nyandarua (Ol Kalou) will attempt to quantify over a year the feed available to these animals.

Table 14: Daily Grazing Hours, and Quantities of Fodder or Agro-industrial by-Products Fed (Kg)

District	Grazing	Fodder	By-products
Maragua	0.1	31.6	0.8
Murang'a	1.4	22.9	8.1
Kirinyaga	1.2	47.8	12.1
Nairobi	1.5	2.9	2.7
Machakos	4.4	6.2	0.6
Nyandarua	6.5	8.8	1.0
Nakuru	5.2	1.5	11.3
Narok	8.8	0	0

Water supply for livestock is not adequate and farmers are forced to trek their livestock for long distances in search of water. From Table 15 below it can be seen that only in Nairobi and Nakuru, with understandably the best infrastructure, do 90% and 30% of farmers respectively report using piped public water. The majority, 34%, have on-farm shallow wells that are prone to drying in the drier seasons. Nearly a quarter of farmers either take the animals to drink from rivers and dams especially so in Nyandarua and Narok or have to trek long distances down steep slopes to collect water from the rivers (Maragua). About 18 % report carting water that they have to buy, from private pumps, many of which are also a good distance away.

Table 15: Sources of Water for the Dairy Animals

District	Carted	On-farm well	Piped water	Rivers/dams
Maragua	11.1	9.3	14.8	64.8
Murang'a	26.2	16.2	20.0	37.7
Kirinyaga	55.6	23.8	14.3	6.3
Nairobi	8.3	-	91.7	-
Machakos	16.7	37.2	-	46.2
Nyandarua	12.4	61.9	19.6	6.1
Nakuru	25.0	25	29.6	20.4
Narok	8.6	45.7	2.9	42.9
Overall	18.2	34.0	13.0	23.1

3.4.5. Livestock Breeding Management

Smallholder farmers use artificial insemination (AI) services or rely on communal bulls where private or public AI services cannot be accessed easily. Very few farmers raise bulls for breeding on their own farms because they would rather use their limited fodder supplies for cows and female replacements. A shortage of own-produced replacements due to low calf survival and heifer and cow mortalities implies that many farmers obtain replacements from large-scale farms. Breeding is an overall constraint due to the collapse or lack of Artificial Insemination (AI) services so a large number of farmers are inadvertently using bulls of unknown pedigree and probably born on the farm thus posing threats of in-breeding. Over 71% used bulls as the natural source of service (Table 16), with the rest using artificial insemination from private practitioners (14.6%), dairy co-operatives (7.2%), Government (5.8%) and other sources like church NGOs (0.7%). Some complaints were made of private veterinarians not being successful due to poor heat detection, infertility problems with the cow or low semen quality.

Table 16: Breeding and Source of Service (%)

District	Pregnancy rate	Source of service				
		Bull	GOK	Coop.	Private	Others
Maragua	41.7	46.9	-	-	51	-
Murang'a	39.5	66.7	2.7	20.7	9	-
Kirinyaga	50.7	50	20.6	22.1	4.4	2.9
Nairobi	50.0	18.8	3.1	-	78.1	-
Machakos	30	76.6	9.4	4.7	-	7.8
Nyandarua	51.6	78.7	1.7	10.1	9.6	-
Nakuru	52.6	60.2	8.6	3.2	18.2	-
Narok	69	100	-	-	-	-
Overall	48.8	71.4	5.8	7.2	14.6	0.7

3.4.6 Livestock Health Problems and Management Practises

Infectious and vector-borne diseases can be locally important but often their incidence decreases with increasing subdivision of farms and stall-feeding. The main health problems reported were attributed to East Coast fever (47% of dairy household), anaplasmosis 16% and mastitis, worm loads and respiratory problems 7% each (Table 17). Tick-borne diseases like ECF and anaplasmosis are major causes of deaths in extensive farming systems, warmer climates and lower altitudes (Maloo et al., 1994), but are of low importance in cooler areas of higher terrain elevation, especially if animals are stall-fed (Deem et al., 1994; Omore et al., 1996a). This therefore means whilst the number of dairy farmers reporting for ECF is high in all Districts (Table 17) the distinction is that in the intensive systems of the

central highland Districts of Maragua, Murang'a, Nairobi and Kirinyaga the figures reflect the farmers' perceived importance of the disease while in the extensive systems in Machakos and Narok it is related to actual incidence (cases) of the disease.

The low percentage reporting for mastitis may be because production is generally low showing that diseases of intensification have not become a serious constraint to milk production. Mastitis therefore is not currently an important constraint to productivity but may be a big problem in future once milk yields are increased. Respiratory problems like calf pneumonias are relatively high in Kirinyaga (9.6%) and Nyandarua (9.5%) probably due to the prevailing cold wet conditions in these Districts. Rampant abortions reported after last heavy rains are being attributed to Rift Valley fever or Lumpy Skin Disease. Moreover, Zoonotic diseases, like Brucellosis, have recently been reported in Mau Narok.

Table 17: Main Diseases Reported (%)

District	ECF	Anaplasmosis	Mastitis	Worms	Respiratory
Maragua	45.8	12.5	12.5	4.2	4.2
Murang'a	20.9	25.6	19.8	4.7	5.8
Kirinyaga	53.8	1.9	1.9	15.4	9.6
Nairobi	75	-	-	-	8.3
Machakos	46.7	6.7	4	9.3	12
Nyandarua	33.3	39.3	2.4	3.6	9.5
Nakuru	55.6	11.6	6.8	6.8	6.3
Narok	73.5	11.8	-	2.9	-
Overall	46.9	16.0	7.0	6.6	7.3

The health management practises, in the last one year, were mainly tick control by 90% of farms (mostly hand sprayed acaricide), use of anthelmintics (92%) and cattle vaccinations by 69%.