
Dairy Recording in Kenya

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Livestock production is an important sector in the economy of Kenya. The sector contributes to approximately 10% of the gross domestic product (GDP), over 30% of the farm-gate value of commodities produced in the agricultural sector, and employs over 50% of the agricultural labour force (Muthee, 1996). The sector is charged with the responsibility of ensuring that the country is self-sufficient in livestock products. Most Livestock production activities are undertaken in three agro-ecological zones; i.e. the humid and subhumid high potential areas where mixed farming is practised with dairying, pigs and poultry; the medium potential areas where beef cattle and small ruminants are reared, and the low potential areas where nomadic pastoralism is practised. The estimated total population of dairy cattle, sheep, goats, beef cattle are 3 075 200, 781 900, 10 070 700, 9 861 300, respectively (KARI/ODA report, 1996; MoALDM, 1994). The total annual milk yield, which includes production from cattle, goats and camels, is approximately 2.5 billion litres (MoALDM, 1994) of which 70% is produced by the dairy cattle.

Kenya has approximately 13 million head of cattle, of which about 3 million (MoALDM, 1994) are of dairy types: the exotic breeds and their crosses (indigenous x exotic). These cattle are kept under different production systems. The distribution of dairy cattle by provinces which, to some extent relates to the country's agro-ecological zones is given in Table 1. The farming systems range from subsistence agriculture and pastoralism to large and small scale commercial farming and ranching. The objectives of cattle husbandry also vary from traditional emphasis on numbers to high productivity per animal or unit of land and high income levels.

Most of the commercial dairy farms are located in the medium and high potential areas (sub-humid, humid and afro-alpine zones) which receive about 900 mm or more of rainfall annually. Due to the high increase in human population, most farms have been subdivided and it is now estimated that about 80% of the farms in these zones are small scale. On these farms, livestock competes with crops, both staple and cash for the

1. Background information

1.1 Livestock production sector

1.2 The dairy industry in Kenya

limited land. Thus, the rapid population growth and expectation of a high living standard, both in terms of adequate food supply and high income level, require efficient utilization of the cattle resources. Currently, it is estimated that milk yield per cow per lactation is around 1 000-2 000 kg. (MoALDM, 1994; Owango *et al.*, 1996). However, milk yields as high as 6 000 kg or more per lactation have been reported from well managed farms (DRSK, pers. comm., 1996). The low levels of milk production in many smallholder farms is attributable largely to poor feeding and management of the herds. Improvement of these two factors is, therefore, fundamental to achieving sustainable increases in milk production. It would also facilitate correct assessment of the extent to which genetic potential is limiting in the herds.

Table 1. Grade cattle population by provinces ('000) (1990-93).

Province	1991	1992	1993	1994
Rift Valley	1 665.69	1 585.23	1 665.88	1 752.60
Western	114.54	112.48	101.32	105.30
Nyanza	131.25	138.15	150.12	144.95
Central	929.67	838.92	808.86	808.30
Eastern	281.15	292.59	273.58	311.80
Coast	31.18	33.35	45.54	68.44
N/Eastern	0.34	-	0.15	-
Nairobi	11.38	14.06	13.84	13.70
TOTAL	3 165.20	3 014.78	3 059.29	3 205.09

Source: Livestock Production Department Annual Reports

The Kenya Co-operative Creameries (KCC), which currently operates 11 large scale milk plants countrywide, is the major market outlet for milk from smallholder farms. There are also about 46 small scale milk plants which buy, pack and sell milk to local consumers. These have emerged recently following the liberization of the dairy industry in 1992.

2. Role of breeding societies related organizations

The breed societies/associations in Kenya were established mainly to safeguard the purity of their breeds, to conduct the herdbook and promote the general interest of the breeders. These societies have achieved their objectives through collecting and recording ancestry for all animals in the breed, and providing forums for breed promotion for members by holding field-days, demonstrations, conferences etc.

2.1 Breed societies/associations

Several societies/associations exist in Kenya. These include: Friesian, Ayrshire, Guernsey, Jersey, Sahiwal and Boran. The Zebu cattle Breeders have no society though the genotype is predominant. All the breed societies maintain records of registered animals through the Kenya Stud Book Register. They also formulate rules for the Livestock registrations for their

respective breeds. In essence the breed societies have, therefore, a major contribution to make in the development of commercial livestock breeding and production.

The KSB was started in 1920 with the main objective of registering livestock and maintaining pedigree herd registers and a grading up scheme for all breeds of livestock. The registers are useful and are fundamental for commercial livestock breeding, improvement and production. The data are also referred to when selling, buying and exporting breeding stock.

The CAIS was established in 1946 as a semen production and distribution unit. The station is pivotal to livestock improvement by availing to farmers disease free semen from top quality bulls. The station also supplies all the semen needed in the implementation of the Contract Mating Scheme (local recruitment of bulls) and Progeny Testing Scheme (genetic evaluation of A.I. bulls). There is great reliance of the CAIS on livestock registration data and dairy records while delivering livestock breeding services.

The artificial insemination (A.I) services in Kenya were started in 1935 with the main objective of controlling breeding diseases and improving cattle through upgrading the local cattle with exotic. The KNAIS was established in 1966 and re-organized in 1969. The main functions of KNAIS include the administration of actual A.I. services with a livestock breeding function of organizing and controlling the use of semen for both Progeny Testing and Contract Mating Schemes. In essence an effective A.I. service is a pre-requisite to an efficient livestock breeding programme.

The LRC was set-up in 1974 as a joint venture between the Governments of Kenya and Germany. The centre operated a Livestock Breeding Project until 1982. The main activities of the centre are to plan and execute the Progeny Testing and Contract Mating Schemes; perform butter fat testing for milk samples from officially recorded cows; collate the milk production data, and estimate the breeding value for A.I. bulls.

The history of milk recording in Kenya has been closely linked to the establishment of breeds' societies and the subsequent dairy herd development. The first official milk recording scheme was started voluntarily by commercial dairy farmers in East Africa in 1949 (Mosi, 1984). The scheme, which was then known as East Africa Milk Recording Service (EAMRS), covered the whole region though more active in Kenya. Its operations were confined to the large scale farms which dominated the

2.2 Related organizations

2.2.1 Kenya Stud Book (KSB)

2.2.2 Central Artificial Insemination (CAIS)

2.2.3 Kenya National Artificial Insemination Services (KNAIS)

2.2.4 Livestock Recording Centre (LRC)

3. Development of milk recording in Kenya

dairy industry then. The main objective of the scheme was to generate data for herd improvement and management, research, training and planning.

The EAMRS faced serious operational problems in the post-independence period, leading to its collapse in 1970. However, in Kenya, a new scheme named Kenya Milk Records (KMR), was set up in the same year to provide milk recording service (Mosi, 1984). The KMR retained the original objectives of the EAMRS even though it was clear that commercial dairy farming was shifting rapidly from large scale to smallholder systems.

The recording system practised by the two schemes was one in which milk yields of individual cows were recorded daily on official milk sheets by farmers and then submitted to the central office weekly. Official recorders visited the farms at bi-monthly intervals in order to take milk samples for butterfat test and also check whether the recording rules were followed. The feedbacks to farmers from the two schemes were: lactation certificates for lactations of at least 180 days, herd and breed averages and butterfat test results.

In the 1980's, KMR experienced serious financial and management problems, leading to its dissolution in 1994. The present recording scheme, the Dairy Recording Service of Kenya (DRSK), was set up by livestock farmers as a substitute. The main objectives of the DRSK were to revitalise the National Milk Recording Scheme through the provide an efficient milk recording service; it was anticipated that this would consequently increase the number of farmers and herds participating in milk recording. A major challenge to this new scheme is to adopt a more flexible recording system for the smallholder farms which now dominate the dairy industry.

4. Performance of the milk recording schemes

The EAMRS recorded about 500 cows in 16 herds during its initial operational year (1949/50). Its peak performance was in 1957 when about 7 907 cows in 192 farms were recorded. As shown in table 2, KMR achieved its peak performance in 1990 with 22 696 cows recorded in 292 herds (Njoroge, 1990; KMR, 1990). The current scheme (DRSK) had recorded about 10 492 cows in 120 herds by June, 1996 since its inception in 1994 (J. N. Mwangi pers. comm., 1996). Both the table and DRSK figures give simple averages of about 56-89 cows per herd, indicating that it is still more active in the medium and large scale farms than in the small scale farms.

Thus as demonstrated in table 2 recent achievements of the KMR include an annual recording of approximately 20 000 cows, about 300 herds composed of Friesians, Ayrshire, Guernseys, Jerseys, Sahiwals. The KMR also assisted in the establishment of regional testing laboratories which analyzed 10 000 milk samples and, also in the recruitment Artificial Insemination (A.I) bulls and in progeny testing of bulls.

Table 2. Performance of Kenya milk records (1980 - 1990).

Recording year	Total no. of cows recorded	No. of herds participating	Average no. of cows per herd
1980	9 778	153	64
1981	10 544	160	56
1982	12 368	188	77
1983	14 400	174	83
1984	15 840	177	89
1985	17 667	203	87
1986	19 742	224	88
1987	21 138	242	83
1988	21 746	271	80
1989	22 040	292	75
1990	22 696	292	75

Source: Kenya Milk Records, Annual Reports, 1980-1990

According to MOALDM (1994), about 45% (1.35 million) of the commercial dairy herd, estimated at around 3 million, are cows. Based on a mean calving interval of about 456 days or 15 months (Owango *et al.*, 1996), the average calving rate is around 80%. Thus, in a year about 1 080 600 cows should be in various stages of lactation and, therefore, recordable. Though less precise, these estimates show that the DRSK currently covers only 0.98% (less than 1%) of the country's dairy cows population. In certain developed dairying countries like Israel over 50% of the cows are covered by the recording scheme. Thus, the main task of DRSK is now to develop a suitable recording system to enable it expand its services easily to cover most of the 1.1 million recordable cows, the majority of which are with the small scale farmers.

Several constraints limiting the operations of smallholder dairy recording were identified, prioritized by researchers, extensionists and farmers. These constraints are listed below in order of priority:

- Lack of awareness of the importance of records at farmer and extension level.
- Inadequate personnel.
- Inadequate operational funds.
- Inadequate data processing and analysis facilities.
- Poor communication infrastructure e.g. telephones.
- Inadequate transport for field work (recruitment and extension).
- Lack of proper identification methods of the animals.
- Inadequate information on feeding and management at the farm level.

5. Specific constraints to smallholder dairy recording

- Inadequate labour at farm level - e.g. for feeding and recording.
- Inadequate market incentives for products and animals.
- Loss of records as a result of sale and transfers of farms and animals.
- High costs of recording.

6. Strategies towards improved dairy recording

It is apparent that despite the importance of recording on smallholder farms, little has been done to develop suitable recording systems that can generate objective data for use in herd breeding, improved nutrition and management to sustain increased milk production. In 1996, it was realized that solutions to some of the constraints listed could be realized through the conduct of research involving the farmer, the extensionist and the researcher. Thus a pilot research project on the "Development, Testing and Validation of a Standardized Dairy Recording Scheme for Improved Milk Production in Smallholder Systems in Kenya" is being implemented with the assistance of the Cattle Research Network of the International Livestock Research Institute (ILRI). The study is collaborative and involves four institutions thus the Kenya Agricultural Research Institute (KARI), the Ministry of Agriculture Livestock Development and Marketing, the Dairy Recording System of Kenya (DRSK) and the University of Nairobi (UoN). The short and long term objectives of this research project is to develop and test a simplified dairy recording system and to validate and transfer the technology to the smallholder dairy producers in Kenya and other countries in Eastern and Southern Africa.

The project is collecting data from 120 smallholder farmers within two Divisions located in the Rift Valley Province. The data being collected includes production, reproduction, growth characteristics, health care and herd management; feedbacks are routinely provided to the farmer on the same. Preliminary reports have indicated improved farmer perception towards the simplified recording format. It is hoped that the project will be extended in the second phase in which the validated recording format will be transferred to other smallholder farmers in different localities within Kenya.

7. References

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