
Case Study on Cattle Recording Systems in Egypt

H. Mansour

*Department of Animal Production, Faculty of Agriculture,
Ain Shams University, Shubra Alkhaima, Cairo, Egypt*

In Egypt livestock production contributes about 30% of the total value of agricultural production. It contributes considerable share the food of animal protein, represents an important source of cash income to farmers, offers opportunities for employment and provides manure and draft power to crop production. Livestock and poultry numbers for Egypt in 1995 are summarized in table 1.

Annual rates of growth for livestock are 1.7%, 1.4%, 3.4% and 1.3% for buffalo cattle, sheep and goats respectively as reported by MALR in 1989.

The regional distribution of livestock in Egypt in 1995 is presented in table 2.

Mature cows and buffaloes represent 43% and 49% of the total cattle and buffaloes populations respectively. The higher percentage of mature buffaloes confirms the recognition by small farmers of the buffalo as the major dairy animal. About two thirds of domestic milk is produced by buffalo. Cattle and buffaloes produce about 99% of the total milk. They, also, produce 70% of the domestic red meat production. The balance is produced by sheep and goats with a very minor contribution from camels. Production and supply of livestock and poultry are shown in table 3.

Table 1. Livestock and poultry populations.

	Number (million)
Cattle	3.2
Buffaloes	3.0
Sheep & Goats	7.3
Poultry	
Broilers ¹	211.0
Layers ¹	12.5
Traditional rural sector	82.0

Source : Animal Production Sector, Ministry of Agriculture, and Land Reclamation (MALR) 1996

¹Commercial farms, the rural poultry sector is not included.

1. Introduction

Table 2. Regional distribution of livestock in Egypt 1995.

Region	Cattle	Buffalo	Sheep & goat
West North, Coastal Governorates ¹	106	60	1 041
Welta (North Egypt) Governorates ²	1 748	1 653	2 126
Sinai Governorat ³	2	39	378
Upper Egypt Governorates (South of Cairo) ⁴	1 370	1 266	3 808
Total	3 226	3 018	7 352

Source : Animal Production Sector, MALR, 1995.

¹Alexandria, Matruh and El Noubaria

²Governorates (12) between the two main branches of the Nile, Cairo is included

³North Sinai and South Sinai.

⁴Governorates (11) along the Nile South of Cairo, in addition to New Valley Governorate as included.

Table 3. Recent (1995) and projected (2020) demand and local production of livestock and poultry products.

	Red meat		Milk & dairy products		Poultry meat		Egg	
	1995	2020	1995	2020	1995	2020	1995	2020
Demand	675	985	2 550	3	276	405	4 000	5 900
Local Production	425	653	2 400	740	276	405	4 000	5 900
Gap	250	332	150	3740	--	--	--	--
Self sufficient (%)	63	66	94	--	100	100	100	100
				100				

Source: Sharafeldin, M.A., 1993. Assumptions: Human population 60 million in 1995 & 88 in 2020, fixed per capita consumption of 11.25 kg red meat, 42.5 kg milk, 4.6 kg poultry meat and 67 eggs.

Table 4. Relative contribution of animal products to total value of animal production.

Commodity	% of total value
Red meat	44.5
Milk & dairy product	28.3
Wool	0.6
Honey	0.6
Manure	4.8
Poultry meat	16.4
Table eggs	4.8
Total	100

Source : Agricultural Economic Sector, MALR, 1994.

The relative contribution to the total values of animal production is given in table 4.

Over 90% of the cattle and buffalo populations are kept in small farms of 5[<] animals. Purebred cattle (only 4% of the female cattle population) are kept in large specialized dairy farms. Native cattle of exotic origin (Baladi) are relatively small animals and low milk producers. Milk production (Table 5) and body weight of buffaloes are higher. Buffalo milk is more in demand than cow's milk due to its white color, higher fat content and desired taste. Beef is produced mainly by cattle. Buffalo is the major veal producer. Some commercial feedlots use imported bulls for fattening.

The animal feed situation in Egypt (from 1989 to 1992) could be described as reported in table 6.

Table 7 shows annual per capita consumption of animal feeds, while table 8 shows comparable protein and energy estimates.

Table 5. Some productive traits of the Egyptian livestock.

Animal Type	Lactation yield (kg)	Calving interval (days)	Yield of milk/year(kg)
Baladi cows	638	388	600
Crossbred cows	1 339	410	1 192
Buffaloes	1 246	416	1 093

Source : Nigm, A., Soliman I., Hamed M. And Abdel-Aziz A., 1986.
7th conference of the Egyptian Society of Animal Production.

Traditional livestock is an integrated part of the crop/livestock system in the country. Farms of five feddans (feddan=4 200m²) or less contain about 90% of Egypt's cattle and buffaloes. Three types of herds are commonly differentiated according their composition: Cattle herds, buffalo herd and mixed herds which comprise both cattle and buffalo and represent about 60% of total number. There exist an obvious tendency of farmers to keep buffalo as their main dairy animals. Livestock may not provide the best option of investment for small farmer, but both cattle and buffalo are kept at no or little financial losses under current farming conditions. Field surveys showed that farmers also keep small ruminants (less than 5 heads) and poultry in flocks of about 15 birds. Egyptian clover (*Trifolium alexandrinum*) is the main source of livestock feeding in winter, maize and sorghum provide green fodder in summer. Buffaloes and cows in milk

2. The animal feed situation

3. Animal protein in the Egyptian diet

4. Livestock production systems in Egypt

4.1 Traditional cattle and buffalo farms

Table 6. Estimated feed balance for livestock in Egypt, 1992, million tones.

	Amount	TDN	DCP
Requirements:			
Concentrates	10.0	5.5	1.2
Fodder	35.5	3.5	0.7
Roughage	10.7	3.8	0.9
Poultry	5.3	3.9	0.9
Total		16.7	2.8
Production:			
Concentrates	4.0	2.2	0.5
Fodder	78.7	7.9	1.6
Roughage	6.5	2.3	--
Poultry	4.0	3.0	0.7
Total		15.5	2.8
Deficit/surplus:			
Concentrates	-6.0	-3.3	-0.7
Fodder	-43.0	4.4	0.9
Roughage	-6.5	-1.5	--
Poultry	-1.3	-0.9	-0.2
Total		-1.3	0.0

Source : Animal Production Institute, The Feed Gap, 1989.

Table 7. Annual per capita consumption of animal feeds in Egypt, 1995.

	Weight (kg)
Red meat	11.3
Milk & dairy products	43.0
Poultry meat	5.2
Fish	5.8
Eggs	3.3

Source: Sharafeldin, M.A. 1993. Impact of Economic Reforms on Livestock and Poultry Production in Egypt. Agriculture Policy Conference, Cairo.

Table 8. Per capita consumption of protein and energy from animal sources in the human food in Egypt.

Year	Protein			Energy		
	Total gm/d	From animal sources		Total Kcal/d	From animal sources	
		gm/d	% of total		Kcal/d	% of total
1970	64.9	9.5	15	2 442	170	7
1990	84.9	15.3	18	3 309	257	8
1995	91.1	16.0	18	3 750	300	8

Source: Sharafeldin, M.A. 1993. Impact of Economic Reforms on Livestock and Poultry Production in Egypt. Agriculture Policy Conference, Cairo. Production in Egypt. Agriculture Policy Conference, Cairo.

may receive limited amounts of grains or concentrate mixtures. Females are bred naturally, the delivery of A.I. services and the rate of adoption of this service by farmers are still low. Animals are kept in small enclosures connected to the family house. Cattle may be used as draft animals, but buffaloes are seldom used. Livestock depend mainly on labour of women. Animals are milked and milk to middlemen at a low price. Usually, simple products are made (butter, gee and cottage cheese). Live animals are sold alive either when cash is needed or when they are culled. Buffalo male calves are sold for slaughter at a very young age to save their dams' milk.

The total number of dairy farms in the country, with 50 heads or more, is 386 farms. Pure bred cows (mainly Holstein or Friesians and a few Jersey and Brown Swiss) are kept mainly under an intensive production system for milk production. The farms are equipped with milking parlours, cooling tanks. A.I. with imported semen is used. Most farms keep records and some use computerized systems for performance recording and farm management. The average herd size is between 200 and 500 heads. Farms are operated by skilled labour and experienced management staff. Some large companies have their feed mills and dairy processing plants. Another type of commercial farms, relatively smaller, is located at the outskirts of big cities. Buffaloes in milk are purchased and put under a very intensive system of feeding to produce high-fat milk. Immediately after drying off, buffaloes are sold for slaughter.

4.2 Commercial dairy farms

Three different systems could be identified in the feedlot operations:

1. Young native bulls are bought at an average body weight of 180 kg and fed on rice straw and concentrates till they reach 350 kg. Meat produced has the highest price due to the consumers' preference for native cattle (Baladi) meat.

4.3 Feedlots

2. Young buffalo bulls are bought at 200 kg and fed on rice straw and concentrate till they reach 450 kg. This system is supported by soft loans under the National Veal Project.
3. Feeder bulls are imported from Ireland at an average weight of 350 kg and fed on concentrate to reach 500 kg in a five months period.

5. Sheep and goat farms

Sheep and goat production is a main occupation for people living in the semiarid coastal zone of the western desert in Egypt. Almost all flocks are mixed of sheep and goats. Barki sheep and Barki goats are the dominant breeds in this area. Flocks of fewer than 50 head of goats and 50-200 heads of sheep are most frequent. Most flocks are looked after by family members and hired shepherds. Over the past decade the number of small ruminants tended to increase particularly goats with the existing governmental policy encouraging exportation of live animals to the neighbouring Arab countries. Along the Nile and in the Delta (the northern part of Egypt which comprises 60% of the total cultivated area) sheep and goats are integrated in the crop/livestock system. Traditional small flocks represent over 90% of the sheep and goat populations. Flocks from individual holdings (usually <5 heads) are frequently pooled and assigned to a hired shepherd for grazing. The dominating breed of sheep in this area is the Ossimi which is a local white coated fat-tailed sheep. Sheep are kept mainly for meat production and they are seldom milked. Wool production is low in quantity and quality. The local breed of goats is small, black and the coat is covered with smooth short hair. Goats have mothering ability and they are frequently milked by farmers. The "Nubian" breed of goat is a favourable breed that has as relatively higher milk production, heavier weight and high fertility.

6. Support services

6.1 Animal health

Local Veterinary Departments in the Governorates are directly connected with the Central Authority for Veterinary Service (GAVS) with the MALR in Cairo. In most villages there are units that perform disease control, treatment and deal with infertility problems. However, assessment of the needed veterinary manpower showed a shortage at the village level. Facilities for clinical, post-partum or carcass examination are reasonable, but treatment of sick animals and supply of biological products are insufficient in many areas. The veterinary sector is currently undergoing a large scale project for privatizations.

6.2 Insurance

Insurance is provided to farmers through an autonomous organization within the MALR. The Artificial Insemination services are carried out by the veterinary departments in the governorates. The proportion of inseminated animals is still small. There are three major A.I. centers in Egypt that produce frozen semen from Friesian and buffalo bulls. There are plans to privatize A.I. service and to provide credit to operators and benefiting farmers. Technical and veterinary extension services are

delivered to farmers in villages through representatives of Livestock Departments in governorates. Responsibilities are promotion of new technologies, implementation of technical packages and milk recording systems.

Access to credit for the small farmers is offered by the village banks which belong to the principal Bank for Development to establish commercial farms, and to purchase livestock, poultry, equipment and feedstuffs from abroad.

Animal recording including aspects of performance, fertility, growth, feeding and health is practiced in state, research and commercial dairy farms. These recording activities are performed primarily using conventional paper records farm management. Some commercial dairy farms own computerized recording systems for performance recording and farms management. No national breeding programs are implemented in Egypt, due to lack of animals' identification system and to the absence of networking farmers, A.I. centers and functional breeding organizations. Genetic improvement is practical only in large commercial dairy farms by importing quality frozen semen from abroad.

In 1989, the Animal production Department, Faculty of Agriculture, Cairo University started a research project financed by IDRC of Canada to establish a "Pilot Cattle Information System in Egypt". The research project recorded and analysed data on animals of small, medium and large farms, based on once a month visit to each farm (official 24-hour milk recording system, ICAR A4 method). Extension workers of Animal Production Sector, MALR acted as recorders and university staff and post graduate students acted as their supervisor. Monthly reports were issued by the project and sent to the farmers within 4-5 days. As the work expanded, funds were obtained from some local and international development agencies in order to offer incentives for Villages Extensions Workers (VEW's) for extra duties.

To promote enrollment of small farmers the project, with support from development agencies, offered a package of technical services including quality feeds, veterinary services, pregnancy diagnosis, treatment of simple infertility problems, simple milk processing equipment, milking machines beside the technical advice given by the milk recorders on feeding and management of the herd. Services were offered at cost recovery basis. The research project was terminated in November 1994. The project was transferred by Cairo University into a self financed community service centre "Centre for Studies on Dairy Cattle Information Systems" to participate in offering: milk recording, training on dairy management and extension and establishing cattle data base at the national level.

6.3 Credit

7. Animal recording activities in Egypt

The center is equipped with facilities for data entry, analysis, storing and reporting. In 1996 with the help of FAO, the centre was provided with computer laboratory equipped with proper software covering the needs for data entry, validation and reporting. Standard dairy data inputs (herd basic information, individual information on milk production, reproductive performance, health status, feeding and progeny performance) and output records (herd summary, individual information on cows based on input data and attention list to farmers to improve farm management) were designed. The reports are printed in Arabic. Training.

Village extension workers on data collection, milk sampling and dairy extension as well as programmers and data entry personnel is one of the center's major task. The project activities covered the areas of Giza, Fayoum, South Tahreer and West of Nubaria. Up to October 1997 about 4 604 heads are enrolled.

Table 9 depicts the number of enrolled herds and animals along with the number of available animals in the governorates. Other achievements included the enhancement of effective technologies utilization by farmers, and the establishing good contacts with several local and international agencies. Beside the physical achievements of the project, it succeeded in drawing public interest in milk recording. The project succeeded in combining scattered efforts of some government agencies and farmer's and geared them towards a nucleus for national dairy recording program.

Table 9. Number of females over 2 years, number of enrolled herds animals.

Governorate	No. of animals over 2 years	No. of enrolled herds	No. of enrolled animals
Giza	84 871	46	2 332
Fayoum	127 071	54	937
El-Behera	345 433	178	807
Menofiya	197 984	80	345
Qalubiah	60 862	6	183
Total	816 221	364	4 604

In 1996 a Technical Cooperation Program (TCP) project started between MALR and FAO to plan a National Dairy Herd Improvement System (DHIS) with the following objectives:

1. To increase the productive efficiency of milk producers of all categories.
2. To provide the indispensable production recording system on many farms so that a progeny testing program for cattle and especially buffaloes can be executed within Egypt.

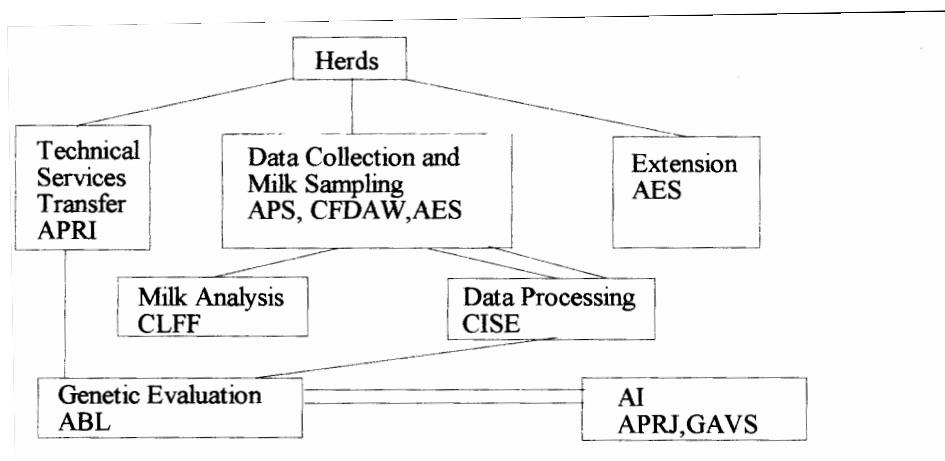
3. To provide reliable information on dairy cattle and buffalo productivity on all types of farms for planning and development agencies to base their projections.
4. To identify specific health and management problems of dairy cattle and buffaloes on all types of farms for solution by animal health and extension agencies.

The preliminary calculations estimated the total cost of recording as £.E. 52.0 (\$1=£.E. 3.38) for cow/year in commercial herds (15 L.E. for recording and data & samples transportation, 15 L.E. for cost of data analysis, 18 L.E. for milk analysis and 4.8 as 10% administration cost). The annual cost is only L.E. 33 in small herds with no milk analysis. The total numbers proposed to be enrolled in years 1998, 1999 and 2000 are 12 800, 22 300 and 31 800 heads, respectively.

A system for functions and institutions for developing National Dairy Herd Improvement Programme (NHIP) in Egypt based on official institution and organizations is proposed. Cattle and buffalo breeders' organizations and Farmer's cooperatives should be encouraged to take over gradually the direction and administration of all activities and especially the functions of data collection and milk sampling and the

8. Recommendations

Figure 1. Proposed functions and participating institutions of National DHIP in Egypt.



ABL - Animal Breeding Laboratory, Ain Shams University; APRI - Animal Production Research Institute; APS - Animal Production Sector; CISE - Cattle Information System; CLFF - Central Fund for Developing Animal Wealth, Central Laboratory for Food and Feed; FSDP - Food Sector Development Program; and GAVS - General Authority for Veterinary Services.

transport of these from the farm to the appropriate data center and milk laboratory. The following figure depicts the functions and institutions for developing the NHIP in Egypt.

**9.
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