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### ***POLICY ISSUES IN THE DAIRY SUB-SECTOR***



**APRP**

***Reform Design and Implementation Unit***

*Development Alternatives Inc. Group: Office for Studies & Finance, National Consulting  
Firm Development Associates, Cargill Technical Services, The Services Group, Training  
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*Report No. 98*

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***POLICY ISSUES IN  
THE DAIRY  
SUB-SECTOR***

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# Executive Summary

## Objectives and Methodology

The objective of this study is to identify policy-based bottlenecks in the links between the different marketing channels in the dairy sub-sector. The study also tests the idea of establishing a dairy federation to represent small farmers, large producers, traders and processors. This report covers the first phase of the study: an analysis of the current situation of milk production, processing and marketing and an assessment of the policy reform needs of the various components of the dairy sub-sector.

The study team designed a questionnaire to collect information on the policy constraints to milk production, marketing and processing, the quality of current services, the impact of current policies and legislation on the dairy sub-sector, the impact of applying GATT measures to imports and exports of dairy products, the potential for exporting dairy products, and the need for establishing a dairy federation.

In addition to meeting with senior consultants and officials at MALR, the team carried out 30 field trips (six to big dairy farms, eight to medium farms, ten to small farms, three to milk collection centers, and three to milk processing plants) in Behera, Nobareya, Giza, Fayoum and Ismailia. Interviews were conducted during these visits to ascertain the views of the people involved in milk production, marketing and processing, and to obtain first-hand information on technical, economic, and policy problems of the dairy sub-sector.

A workshop was held on November 28, 1999 to discuss the policy-based constraints to milk production, marketing and processing. The participants represented a focus group of about 40 leaders of the dairy sub-sector. The participants reviewed information obtained from the field trips and interviews. The information from the questionnaire and workshop discussions were used to elicit inputs from all segments of the dairy sub-sector and to determine: 1) knowledge and practices related to the sub-sector, 2) interest in establishing a dairy federation, and 3) the formulation and mandate of the dairy federation.

## Major Findings

The major findings of this phase of the study can be summarized as follows:

1. In recent years, the dairy sub-sector contributed about 70% of the income generated by livestock and poultry, which in turn accounted for about 30% of the total value of agricultural production. The population of cattle and buffalo (the major milk producing animals) was about 6 million head, 42% of which were mature females in their production stage. The total milk production was about 3.2 million metric tons. About 45% of the domestic milk output was produced in only five governorates, mainly located in the Delta region. Dairy processing plants exist in the same region.
  2. Two major milk production systems were identified. Both systems suffer from problems that seriously affect their efficiency. These systems, along with constraints to improvement and recommendations, are discussed in detail in the main study report.
- The first system is the **crop/livestock system**, which is traditionally integrated with the dominant agricultural system, contains about 95% of the cattle and buffalo population, and produces about 75% of the total domestic milk output. This system is characterized by :

constraints to improvement and recommendations, are discussed in detail in the main study report.

- The first system is the **crop/livestock system**, which is traditionally integrated with the dominant agricultural system, contains about 95% of the cattle and buffalo population, and produces about 75% of the total domestic milk output. This system is characterized by :
  - \* Small holdings and herds (1-5 head/farm) of low-producing, native animals.
  - \* Low values of inputs and outputs.
  - \* Labor intensive operations using simple techniques and practices.

The farmers' families are the primary consumers of the milk, and, therefore, the contribution of this system to the regular milk market does not match its large size. Improving this system will do much for the economic well-being of rural women, since about a quarter of these women will enjoy more cash flow from the increase of milk production.

- The second is the **industrial production system**, which includes large commercial farms with more than 50 head, mainly of high-yielding foreign breeds of cattle and crossbred cows. Commercial farms contain only 3% of the total cattle and buffalo population, but they produce about 25% of the domestic milk output. The system is capital intensive, and most farms are properly equipped. Milk is sold fresh at farm gate to dairy processing plants.

Large farms generally suffer from a lack of timely services and an inadequate supply of inputs and regular marketing of outputs. Although most large farmers are members of different dairy associations, these associations do not play an effective role in organizing the sub-sector or in working for the benefit of all stakeholders of the industry. This increases the hazards of investing in the dairy business, especially given current economic changes.

3. Besides the small dairy plants that use relatively poor procedures in milk processing, there are large companies for producing dairy products. These companies cannot depend completely on the domestic supply of raw milk, which is susceptible to substantial seasonal fluctuations in quantity and quality. Most dairy plants depend partially on imported milk powder to secure their milk needs. Almost all Egyptian dairy processing plants are targeting the local market; however, their products can not compete with similar foreign products in the international market, either in cost or specifications.

4. Facilities and channels of milk collection, storage and transport need to be modernized if more and safe milk and milk products are to reach the consumer.

5. There is a serious deficiency in disseminating services to dairy farms. Also, legislation and policies for taxation and customs need to be reviewed to encourage investment in the dairy sub-sector, reduce hazards of local and international regulations and treaties, and promote exports of dairy products.

6. The impact of recent, major economic reforms on milk production was evaluated in the two main production systems. The negative effect of removal or reduction of subsidies was obvious only on commercial farms. Free pricing affected milk production positively in both commercial and traditional systems. In response to GATT measures, imports, world prices, the cost of domestic production, the retail price, and consumption are expected to increase. Milk and dairy products were not seriously considered in most regional and bilateral agreements involving Egypt (e.g. COMESA, free zone trade agreements, GAFTA, tariff concessions, tariff reduction).

7. Research and development, especially genetic improvement programs, cannot be considered a luxury anymore. Without genetic improvements, local breeds will not bring in enough money to cover increasing costs of production. Even large farms, which keep high-producing animals, do not follow well-defined national evaluation and improvement programs.

8. Education and training have to be geared towards the actual needs of the sub-sector and the fast development in technology.

9. The team identified institutional, financial, and technical interventions for removing policy-based constraints to efficiency in the dairy sub-sector. These interventions were proposed and presented in a comprehensive diagram.

10. The major conclusion drawn from the analysis of the questionnaire, interviews, and the workshop was that there is a need for establishing a dairy federation to organize the sub-sector, represent all players, identify and suggest policies to remove constraints and bottlenecks, and to carry out programs for elevating the overall efficiency of the sub-sector.

## Constraints and Recommendations

The policy-based constraints and recommendations for milk production, marketing and processing can be summarized as follows:

### Milk Production

#### CONSTRAINTS

##### 1. High risk associated with investing in dairy farms:

- High investment cost of dairy farms.
- Limited acquaintance with legislation and available services.
- Inconvenient policies of pricing of raw milk.
- Insufficient market structure and information systems.
- High cost of production.

##### 2. Weakness of the existing services:

- Insufficient dissemination of field services for small and medium dairy farms:
  - Veterinary services.
  - Artificial insemination (A.I.).
  - Extension.
  - Information.
  - Animal insurance.
- Insufficient numbers of well-trained animal production and veterinarian specialists at field level.
- Absence of specialized publications and periodicals on practical dairy technologies.
- Insufficient control over feed quality.

#### RECOMMENDATIONS

##### 1. Stimulate private sector investment:

- Improve financing vehicles.
  - Develop new credit lines.
  - Establish reasonable criteria for collateral and loans.
- Revise legislation, customs and taxes.
  - Tax codification for dairy farms (per kg milk or per head).
  - Revise customs on inputs.
- Provide efficient systems for disseminating services and information.
- Optimize use of resources.
- Encourage women's participation in dairying.

##### 2. Strengthen existing services:

- Review disease control policy.
- Artificial Insemination network.
- Extension services.
- Milk recording.
- Animal insurance.
- Revise education and training policies.
- Establish market information network.
  - Issue specialized journal(s).
  - Establish database and expert systems.
- Set standards and quality control mechanism for feed stuffs.

### CONSTRAINTS

#### **3. Weakness of dairy sub-sector productivity:**

- Low genetic ability and reproductive efficiency of local breeds.
- Lack of genetic evaluation and improvement policies in commercial dairy farms.
- Small herd size in the major (crop/livestock) system.
- Inefficient milk marketing scheme.

#### **4. Insufficient supervision on producing high quality (clean) milk:**

- Traditional milking systems.
- Absence of cooling tanks.
- Poor milk handling tools and cold transportation facilities.
- Low quality milk and milk products.

#### **5. Lack of common entity among different parities in the dairy sub- sector:**

- No direct connection between producing, processing and marketing enterprises.
- Weak institutional linkages among official and private components in the dairy sub-sector.

### RECOMMENDATIONS

#### **3. Set well-defined breeding policy:**

- Set different breeding programs for different production systems.
- Design selection and crossbreeding programs.
- Set policies for foreign animals and genetic material importation.
- Perform economic evaluation of genetic improvement programs.
- Review import and quarantine regulations of genetic materials and live animals.
- Implement efficient systems for:
  - Animal identification.
  - Milk recording
  - A.I.
- Optimize herd size.
- Organize milk marketing.

#### **4. Improve supervision and control on private dairy processing units.**

- Establish milking and cooling schemes.
- Make milk handling tools and cold transportation facilities available.
- Apply effective rules for controlling milk quality and handling.

#### **5. Establish the Egyptian Dairy Federation (EDF) to carry out the following tasks:**

- Organize the sub-sector.
- Represent all parties.
- Identify different issues of common interest to the dairy sub-sector.
- Establish institutional linkages with different parties.
- Suggest research and development (R&D) programs.
- Carry out improvement programs for increasing the efficiency of the sub-sector.

## Milk Marketing

### CONSTRAINTS

1. High risk associated with investment in marketing milk and dairy products:
  - Limited knowledge of the available GOE milk marketing legislation.
  - Lack of information about local and foreign markets.
  - Inconvenient pricing and taxation policies for dairy farmers and milk collectors.
2. Loss of raw milk produced by small and medium dairy farms:
  - Small herd sizes.
  - Weak milk collecting and marketing systems.
  - Incomplete acquaintance with rules and specifications of handling milk and milk products.
  - Irregular supply of milk and dairy products.
3. Limited ability to compete on the international market:
  - Lack of information on potential foreign markets.
  - Dairy products do not meet export standards.
  - Improper processing and packing of dairy products.
  - High production costs.

### RECOMMENDATIONS

1. Stimulate private sector investment:
  - Revise available milk marketing legislation, customs and taxes.
  - Protect domestic production of milk and dairy products, within the rules of WTO and GATT.
  - Set a sound market information system.
  - Make available efficient financing mechanisms for milk collection and delivery.
2. Increase the contribution of small and medium farms to the milk supply:
  - Optimize herd size.
  - Develop efficient milk collection, cooling, transportation and marketing systems.
  - Strengthen the role of extension and dairy information.
  - Move from marketing of raw milk to value added products.
  - Establish financing facilities for milk collection and processing units in rural areas.
  - Encourage the participation of rural women.
3. Produce new dairy products and attain export standards in view of WTO:
  - Strengthen market information systems.
  - Identify potential export products.
  - Revise taxes and fees on exports.
  - Implement promotion campaigns.
  - Use better processing and packing technologies.

## CONSTRAINTS

### **4. Inefficient supervision of milk marketing:**

- Lack of knowledge about milk hygiene.
- Few cooling tanks at farm level.
- Weakness of milk handling tools and cool transportation channels.
- Lack of milk test facilities (e.g. milk contents, SCC).

### **5. Lack of common entity among different parties in the dairy sub-sector:**

- No direct connections between producing, marketing and processing.
- Conflict of interest among different parties.

## RECOMMENDATIONS

### **4. Improve supervision and control of fresh milk marketing:**

- Provide extension and training on clean milking.
- Provide on-farm cooling tanks.
- Improve milking techniques, milk handling tools and cold transportation systems.
- Strengthen milk testing facilities and quality control systems.
- Pay incentives for clean milk.

### **5. Establish the Egyptian Dairy Federation (EDF) to carry out the following tasks:**

- Organize milk marketing
- Set standards and specifications for domestic and for export markets.
- Establish links with milk testing facilities.
- Promote exports.
- Revise rules and legislation.
- Represent interests of all parties.

## Milk Processing

### CONSTRAINTS

1. High risk associated with investment in dairy processing:
  - High investment and operating costs of dairy processing plants.
  - Seasonal fluctuations in fresh milk supply.
  - Limited knowledge of the available GOE legislation.
  - Lack of information about local and foreign markets.
  - Inconvenient pricing and taxation policies for dairy processors.
2. Loss in raw milk produced by small and medium dairy farms:
  - Small herd sizes.
  - Weakness of milk collecting and marketing systems.
  - Irregular supply of milk and dairy products.
  - Incomplete knowledge of milk supply legislation.
3. Limited ability to compete on the international market:
  - High cost of production inputs.
  - Lack of information on potential foreign markets.
  - Use of inappropriate technologies in milk processing.
  - Quality of products does not meet export standards.
  - Improper packing of dairy products.

### RECOMMENDATIONS

1. Stimulate private sector investment in dairy processing:
  - Develop financing mechanism for dairy plants.
  - Establish cool storage facilities.
  - Revise legislation and rules, customs and taxes.
    - Taxes codification for dairy plants (on the basis of the amount of processed milk).
    - Protect local dairy products from unfair competition with imported products.
  - Provide efficient information about local and foreign markets.
  - Promote export campaigns.
2. Increase the contribution of small and medium farms to the milk supply:
  - Optimize herd size.
  - Develop efficient milk collection, cooling and marketing systems.
  - Move from marketing of raw milk to value added products:
    - Establish financing mechanism for dairy plants.
    - Establish financing mechanism for milk processing units in rural areas.
    - Encourage the participation of rural women.
3. Produce new dairy products and attain export standards in view of WTO:
  - Revise tariffs on inputs.
  - Strengthen market information systems.
  - Identify potential export products.
  - Use better processing and packing technologies.
  - Revise taxes and fees on exports.
  - Implement promotion campaigns.

## CONSTRAINTS

### 4. Insufficient supervision on producing high quality (clean) milk and dairy products:

- Poor traditional milking practices.
- Lack of cooling tanks and cold transportation channels.
- Weakness of milk handling tools and transportation systems.

### 5. Lack of common entity among different parities in the dairy sub-sector:

- No coordination among production, marketing and processing.

## RECOMMENDATIONS

### 4. Improve supervision and control of private dairy processing units.

- Improve milking systems and cooling channels.
- Improve milk handling tools and cold transportation systems.
- Strengthen milk testing facilities and quality control systems

### 5. Establish the Egyptian Dairy Federation (EDF) to carry out the following tasks:

- Organize milk market.
- Set standards and specifications for dairy products.
- Revise rules, legislation, tariffs and treaties.
- Promote exports of dairy products.

## **Potentials for Development**

- There are an increasing number of large commercial dairy farms that use reasonably developed technologies in dairy production.
- There are developmental projects that encourage establishment of large and medium-sized dairy farms and an increasing herd size in small farms, e.g. the Food Sector Development Project (FSDP).
- There are initiatives by the private sector to invest in milk collection and marketing in rural areas.
- There is a continuous increase in milk processing capacity of the privately owned milk plants and dairy manufacturing companies, and a trend of improving processing technologies.
- There is an emerging market of breeding stock from the surplus heifers and bulls in large farms. This market is a potential source of income and genetic improvement, but it is in real need of organization.
- There are a variety of organizations and facilities that need to be fully utilized to enhance development and improve quality control in the dairy sub-sector (e.g. semen production enterprises, AI networks, milk recording and information centers, milk testing facilities, feed analysis laboratories).

- The MALR strategy calls for organizing the dairy sub-sector, improving resources, establishing financing mechanisms, and adopting a systematic approach of designing development policies.
- The GOE is interested, at the highest levels of authority, in encouraging exports. Dairy products and live animals may represent potential export commodities.
- Along with economic reform policy, the GOE encourages private sector entrepreneurs to establish federations and business organizations.
- As a developing country, Egypt can benefit from the exemptions and facilities offered by the Uruguay Pact in protecting its domestic production, improving and modernizing dairy productivity, and encouraging exports.
- There are research, consulting and training facilities at the universities and agricultural research institutes that can contribute significantly to finding solutions to the problems facing the development of the dairy sub-sector. The GOE can also benefit from the GATT agreement in this respect.

### **The Egyptian Dairy Federation**

The participants of the November 28, 1999 workshop at the Pyramiza Hotel in Giza discussed and revised the constraints and recommendations for milk production, marketing and processing that were proposed by the study team. The participants agreed to the urgent need for establishing an Egyptian Dairy Federation (EDF) for the benefit of all parties: producers, traders and processors.

The EDF is proposed to be an independent, non-profit association that promotes economic, technical and scientific progress in Egyptian dairying, with commitment to safe food, animal welfare and environmental safety.

It was suggested that the EDF would accept as members:

- Dairy farmers who own at least 25 head.
- Dairy farmers who use machine milking and have cooling tanks.
- Dairy farmers who are enrolled in a National Milk Recording System.
- Groups of small farmers who form cooperatives and other types of rural organizations.
- Milk traders who operate milk collection networks (volume to be identified).
- Processors who operate dairy processing units (capacity to be identified).
- Large-scale dairy manufactures and companies.
- Representatives of relevant authorities concerned with animal breeding and health.
- Consultants for the technical, economic and policy aspects of dairying.

The latter two groups may be considered as non-voting members.

A working group was nominated to follow-up with establishing the EDF and to produce a comprehensive document for the proposed Federation.

## **Introduction**

The dairy sub-sector is a major contributor to Egypt's total agricultural income. At the farm level, recent studies showed that a major proportion of farm income is generated by dairy activities.

In 1986, MALR began an effort to establish a federation for dairy producers and processors. This effort was not completed due to the lack of a vision for the role of strong business associations at that time. More recently, as reforms were introduced to the dairy market, the agenda produced by the Agricultural Reform Conference (1995) suggested giving a leading role to livestock organizations in becoming industry representatives. The strong GOE support to the newly established, private sector poultry federation created interest in organizing dairy producers, traders and processors into one entity to represent the interests of all stakeholders.

In support of this initiative, APRP/ RDI proposed a study of the dairy sub-sector to identify policy-based bottlenecks between the different production and marketing channels, and to design policy-based measures to improve the overall efficiency of the sub-sector. The establishment of a dairy federation would contribute to the achievement of this goal. A thorough understanding of the bottlenecks and the development of a well-integrated and functioning dairy sub-sector will form the priority agenda for the proposed dairy federation.

A three-phase approach was suggested. This report covers phase I: analysis of the different production systems, assessment of the various stakeholders of the dairy production, marketing and processing, identification of the key policy constraints, and the proposals of policy measures to address these constraints. If stakeholders decide to establish a dairy federation to represent their interests, RDI will initiate Phase II, which will involve developing a document that defines the objectives, tasks, structure, institutional linkages and resources of the federation. The approval of this document by MALR will signal the initiation of phase III – the implementation of the proposal.

## Milk Production

### Cattle and Buffalo Populations

From MALR published data, the 1997 Egyptian cattle and buffalo populations for all Egypt are summarized in Table 1.

Table 1. Cattle and buffalo populations

|                  | Number (million) | %            |
|------------------|------------------|--------------|
| Cattle:          |                  |              |
| Native           | 2.2942           | 37.0         |
| Foreign purebred | 0.1003           | 1.6          |
| Crossbred        | 0.7230           | 11.6         |
| <br>Total cattle | <br>3.1175       | <br>50.2     |
| Buffalo          | 3.0959           | 49.8         |
| <b>Total</b>     | <b>6.2134</b>    | <b>100.0</b> |

Source: Animal Production Sector, MALR, 1997.

The population of dairy animals is divided almost equally between cattle and buffaloes. The importance of the small proportion of foreign breeds (mainly Holsteins) comes from their significant contribution to the regular milk market.

The regional distribution of cattle and buffaloes is presented in Table 2.

Table 2. Regional distribution of cattle and buffalo populations (Heads in 000's)

| Region                                      | Cattle     | Buffaloes  |
|---|------------|------------|
| West-North-Coastal Governorates (1)         | 3.3        | 2.0        |
| Delta (North-Egypt) Governorates (2)        | 50.9       | 54.4       |
| Sinai Governorates (3)                      | 0.1        | 0.0        |
| Upper Egypt Governorates South of Cairo (4) | 45.7       | 43.6       |
| <b>Total</b>                                | <b>100</b> | <b>100</b> |

Source : Abdel-Aziz. FAO, 1997.

(1) Alexandria, Matruh and El- Nobareya.

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

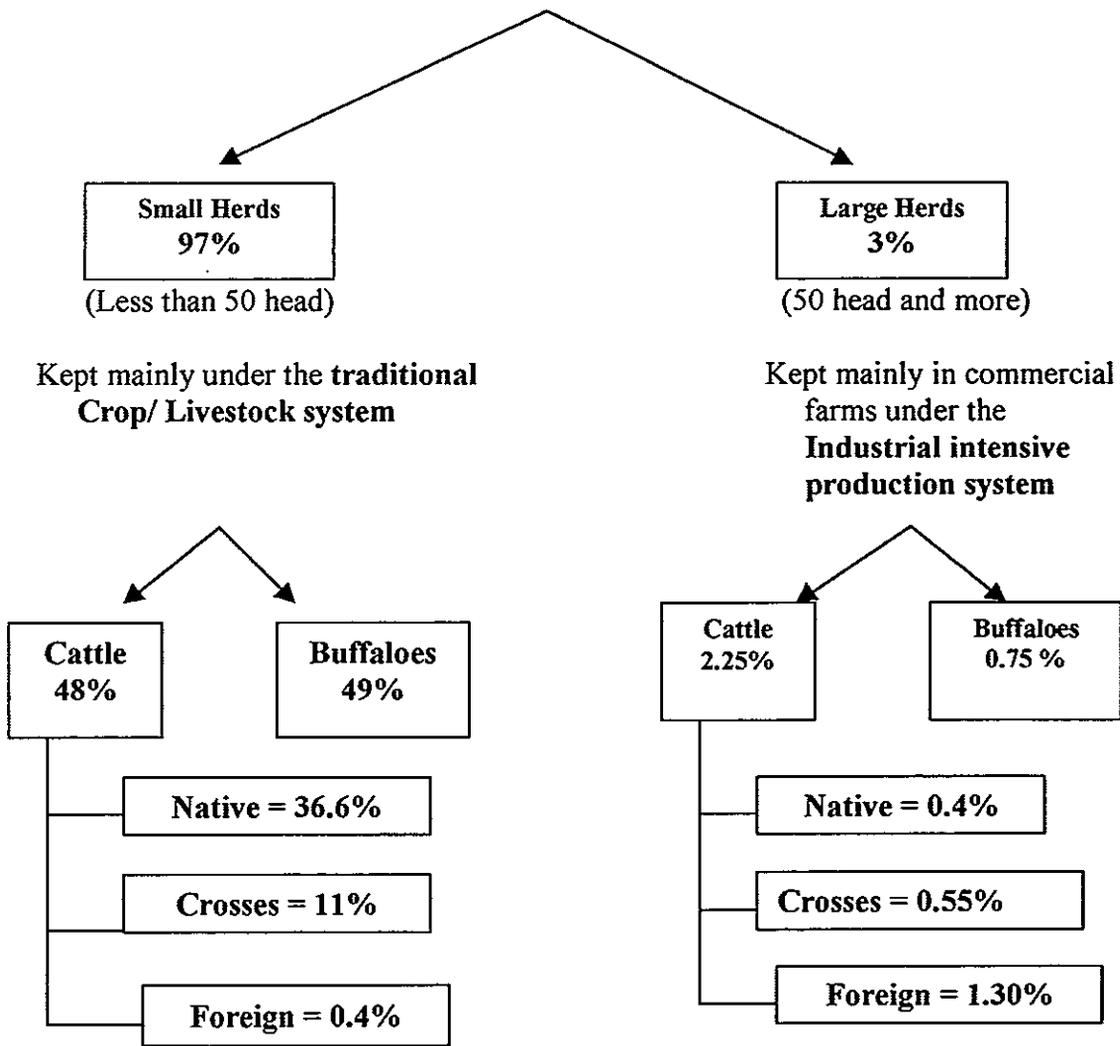
(3) North Sinai and South Sinai.

(4) 11 governorates along the Nile south of Cairo. New valley governorate is included.

The table shows that cattle and buffaloes follow the same regional distribution -- 96.6% of the cattle and 98% of the buffaloes exist in the Nile Valley (Nile Delta and Upper Egypt).

As will be discussed later, there are two main dairy production systems: the traditional crop/livestock system, which includes small herds, and the industrial intensive system, which includes large commercial dairy farms. The distribution of cattle and buffaloes over the two major dairy production systems is shown in Figure 1.

**Fig 1. Distribution of cattle and buffalo populations over the two major production systems**



Concerning age structure, the mature female cattle and buffaloes (> 2 yrs.) represent 39% and 46% of the total cattle and buffalo populations. The higher percentage of mature female buffaloes confirms the recognition of the buffalo by farmers as the major dairy animal.

### Milk Production

According to 1997 MALR statistics, the total milk production from cattle and buffaloes is 3.2 million tons (Table 3). About 60% of the total milk output comes from buffaloes. Buffalo milk is preferred by Egyptian consumers because of its white color, high fat content (about 7%) and flavor. The contribution of foreign breeds and crosses to domestic milk production is about 25%, which is produced mainly by commercial farms. Figure 2 shows the contribution of buffaloes and cattle to total milk production.

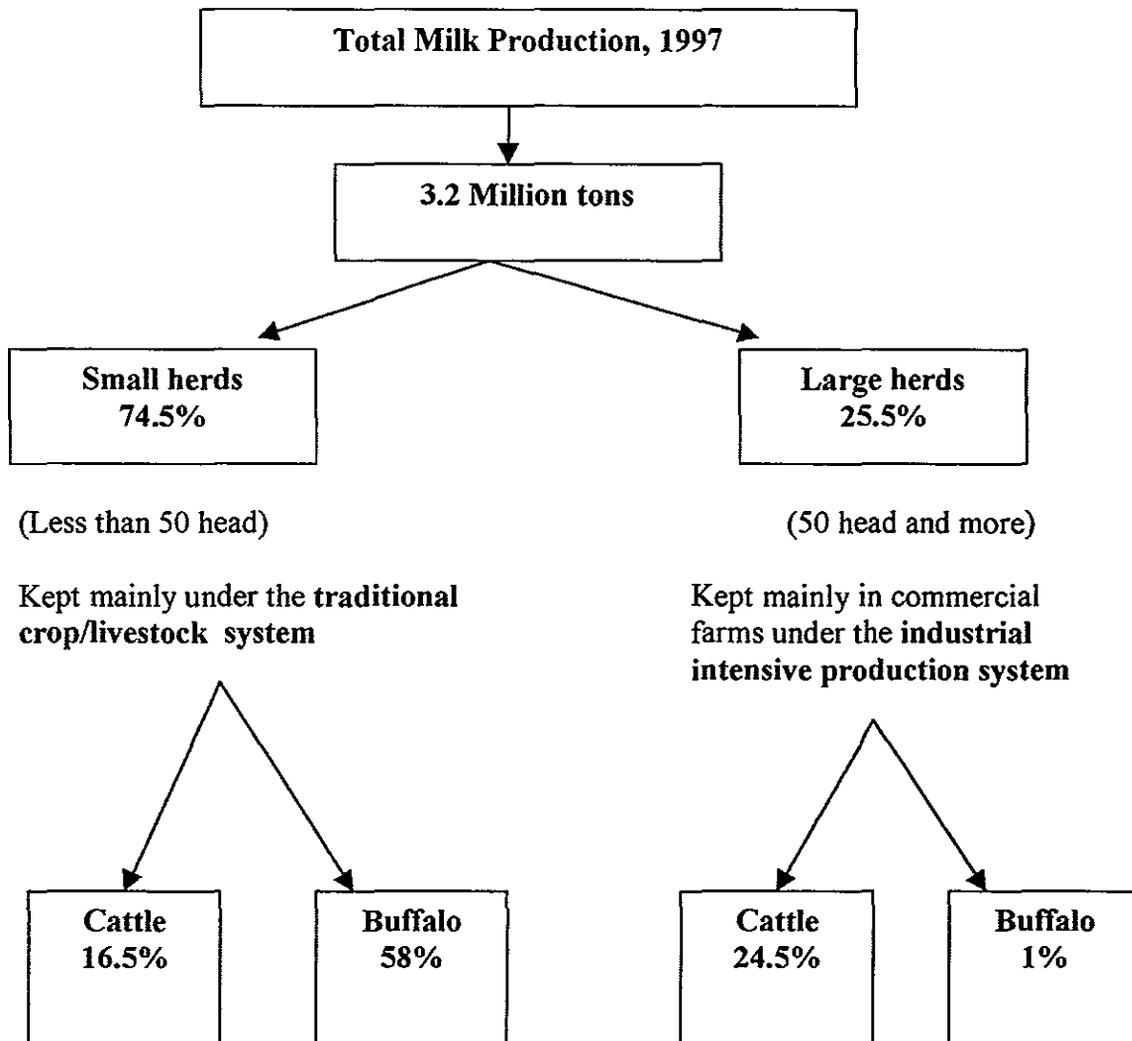
Table 3. Milk production from cattle and buffaloes.

|                               | Milk production<br>(Million tons) | % of total production |
|-------------------------------|-----------------------------------|-----------------------|
| Cattle:                       |                                   |                       |
| Native                        | 0.536                             | 16.5                  |
| Foreign purbreds              | 0.185                             | 6.0                   |
| Crossbreds                    | 0.603                             | 18.5                  |
| Total of cattle<br>production | 1.324                             | 41.0                  |
| Buffalo production            | 1.890                             | 59.0                  |
| <b>Total production</b>       | <b>3.214</b>                      | <b>100</b>            |

### Leading Governorates in Milk Production

- About 45% of the total milk in Egypt is produced by only five governorates (Beheira, Sharkia, Menia, Gharbia and Menofia).
- The same governorates produce about 55% of the total buffalo milk.
- About 65% of the milk produced by native cows comes from Beheira, Beni-Suef, Menia, Sohag and Menofia.
- Beheira and Nubaria only produce about 50% of the total milk of the foreign cows, mainly Holesteins. If Sharkia, Dakahlia, Gharbia and Giza governorates are added to Beheira and Nubaria, the contribution reaches about 85%.
- The top five governorates in milk production from crossbred cows are: Beheira, Assuit, Sharkia, Damietta and Gharbia. Their contribution reaches about 72% of the total milk production produced by crossbreds.

**Fig 2. Milk Production by the Two Major Systems**



## Milk Production by the Major Systems

Figure 2 shows that about one fourth of the domestic milk production comes from cows kept in commercial herds. This estimate, if accepted, indicates the significance of high-yielding foreign breeds to the total domestic milk output. It is also clear that buffaloes are the major milk production animals in small herds -- the buffalo population is almost equal to cattle, yet they produce about 3.5 times as much milk as cattle.

## The Contribution of Animal Production to the Value of Agricultural Production

The total value of animal production represents about 27.8% of the total value of agricultural production. The breakdown of the value of animal production is given in Table 4. The relative importance of milk and dairy products and red meat (which comes mainly from surplus culled and male dairy animals) is obvious as they account for 72.8% of the total value of animal production.

Table 4. Breakdown of the total value of animal production in Egypt.

|                         | Value (Million LE) | % of Total   |
|-------------------------|--------------------|--------------|
| Milk and dairy products | 3,485              | 28.3         |
| Red meat                | 5,475              | 44.5         |
| Poultry meat            | 2,014              | 16.4         |
| Table eggs              | 586                | 4.8          |
| Wool                    | 69                 | 0.6          |
| Honey                   | 70                 | 0.6          |
| Manure                  | 592                | 4.8          |
| <b>Total</b>            | <b>12,294</b>      | <b>100.0</b> |

Source : Abdel-Aziz. FAO, 1997.

## Per-Capita Consumption of Milk and Animal Protein

Tables 5 and 6 show that both annual and daily rates of per-capita consumption of milk and dairy products are below international standards. In general, animal protein is used in the typical Egyptian diet to supplement protein from cereals and legumes, and it accounts for only 18% of all protein consumed and for about 8% of the total calories. A household expenditure survey showed that only 15% of the food bill is spent on animal protein products (Winrock International, Dec., 1993).

Table 5. Annual per-capita of milk and milk products (kgs)

| Source       | Amount (kg)               | %          |
|--------------|---------------------------|------------|
| Cow milk     | 20.8                      | 39         |
| Buffalo milk | 31.7                      | 58         |
| Goat milk    | 1.7                       | 3          |
| <b>Total</b> | <b>53.6<sup>(1)</sup></b> | <b>100</b> |

Source: FAO Yearbook, 1998.

(1) International standard = 90 Kg, approximately.

Table 6. Daily per-capita consumption of animal protein (gm):

| Source                                   | Amount (gm) | %          |
|--|-------------|------------|
| Cow milk                                 | 2.3         | 13         |
| Buffalo milk                             | 4.3         | 25         |
| Goat milk                                | 0.2         | 1          |
| Poultry meat                             | 4.3         | 25         |
| Red meat (cattle+ buffalo+ sheep+ goats) | 6.1         | 36         |
| <b>Total</b>                             | <b>17.2</b> | <b>100</b> |

Source: FAO Yearbook, 1998.

## Dairy Production Systems

There is a wide diversity in the dairy production systems and their supporting services, supply and marketing channels, as well as their level of technical and economic efficiency. The two major systems are, a) the traditional crop/livestock system under which a large proportion of the cattle and buffalo population is kept for milk and meat production, and b) the industrial system which contains commercial dairy farms and feedlots. The main features of these systems are discussed in the following sections.

### 1. Traditional crop/livestock system

The available data allowed only for defining the small herds as those of less than 50 animals. However, the majority of these farms keep much fewer animals (1-5).

Small farms of five feddans or less contain about 95% of Egypt's cattle and buffalo population. On these farms, the animals are kept in very small herds of less than five animals (Table 7).

Regardless of the farm size, part of the farm area is used for fodder production (mainly berseem), while the remaining area is allocated to other field crops, including wheat and faba beans in winter, and maize and sorghum in summer.

Table 7. Cumulative percentage of cattle and buffalo in farms of 0-5 feddans <sup>(1)</sup>.

| Farm size<br>(Feddan) | Cattle    |             | Buffalo   |             |
|-----------------------|-----------|-------------|-----------|-------------|
|                       | Farms (%) | Animals (%) | Farms (%) | Animals (%) |
| 0-                    | 15        | 14          | 12        | 12          |
| 1-3                   | 89        | 82          | 87        | 83          |
| >3-5                  | 96        | 90          | 95        | 92          |
| >5                    | 100       | 100         | 100       | 100         |

Source : Abdel-Aziz. FAO, 1997. (1) Feddan= 4200 m<sup>2</sup>

Small herds are usually kept in simple enclosures connected to the family house. Cattle may be used as draft animals, but buffaloes are seldom used for this purpose. The animals are overseen by family members, mainly women.

Dairy animals may not provide the best option for investment by a small farmer, but analyses of farm budgets indicate that they cause no financial loss under current farming conditions.

### Types of herds

Under the crop/livestock system, three types of herds are commonly differentiated according to their composition: cattle-herds, buffalo-herds and mixed herds, which comprise both cattle and buffalo. Table 8 includes data from surveys of eight villages in four leading livestock governorates in the Nile Delta and in the New Land. Results show that about 60% of the farms contain buffaloes and cows. There is an obvious tendency of farmers to keep buffaloes as their main dairy animals.

Table 8. Herd structure and composition in small farms in old land (Nile Delta) and desert reclaimed areas (New Land).

| Character                                      | Nile Delta | New Land |
|--|------------|----------|
| Number of surveyed farms                       | 152        | 170      |
| Average number of animals per farm             | 1.4        | 4.6      |
| Percentage of mature females in the herd       | 67.0       | 80.0     |
| Percentage of farms keeping buffaloes only     | 33.0       | 30.0     |
| Percentage of farms keeping cows only          | 5.0        | 10.0     |
| Percentage of farms keeping buffaloes and cows | 62.0       | 60.0     |

Source : Abdel-Aziz. FAO, 1997.

### Characteristics of Egyptian dairy animals on small farms

Native cattle are relatively small animals and low milk producers. Milk production of buffaloes is much higher than that of indigenous cattle and is rich in fat and solids. It is generally known that the young males of native cattle gain more weight per feed unit than buffaloes and produce better quality meat. Major characteristics that affect productivity of native cattle, crossbred cattle and buffaloes are presented in Table 9.

Table 9. Characteristics of native cattle, crossbred cattle, and buffaloes

|                                    | Native cattle | Crossbred cattle (a) | Buffaloes |
|------------------------------------|---------------|----------------------|-----------|
| Calving Rate                       | 70            | 70                   | 70        |
| Age at first calving (month)       | 32            | 31                   | 36        |
| Birth weight (Kg)                  | 23            | 35                   | 36        |
| 12-month weight (Kg) (b)           | 268           | 290                  | 248       |
| 18-month weight (Kg) (b)           | 359           | 416                  | 332       |
| Dressing at 18 months (%) (d)      | 58            | 61                   | 50        |
| Mature weight (Kg) (c)             | 400           | 500                  | 452       |
| Total milk yield (litre/Lactation) | 600           | 1,800                | 1,200     |
| Fat content (%)                    | 5.0           | 4.5                  | 7.0       |
| Solids not fat (%)                 | 8.0           | 8.5                  | 10.0      |
| Lactation period (days)            | 180           | 300                  |           |
| Services per conception (number)   | 2.7           | 2.8                  | 2.1       |
| Calving interval (days)            | 470           | 386                  | 600       |
| Calf mortality (%)                 | 11            | 16                   | 15        |

Source : Compiled from published papers

(a) Mainly Friesian crosses  
(c) Females only

(b) Males only at marketing age  
(d) Males at 18 months

### Feeding and breeding

Most surveys showed that farms produce winter fodder along with other field crops, especially wheat and faba beans. In summer, maize and sorghum provide fodder and grains for feed and food. Egyptian clover (*Trifolium Alexandrium*) is the main source of livestock feed in winter. Unshaved green or dry stalks of maize and sorghum, wheat bran, and rice straw are fed to animals in summer. During feeding, considerable wastage occurs as feeds are offered to animals untreated (not chopped, mixed or pelleted). Buffaloes and cows in milk may receive limited amounts of grains and/or concentrate mixes. But not many farmers can afford to purchase these foodstuffs.

Although current artificial insemination (AI) programs are in operation in many governorates, the delivery of AI services and the rate of adoption of this service by farmers are still unsatisfactory. Rates of fertility can be improved by a more ambitious AI project. Otherwise, providing good bulls to farmers or encouraging them to keep bulls for natural mating may be considered. Table 10 shows that over 85% of a surveyed sample of farmers in three governorates desired an exotic bull for their cattle and a selected sire for their buffaloes. An average of about 62% of the farmers wanted their animals to be artificially inseminated, with a higher percentage of 70% in areas where a bull stud exists and an artificial insemination program is carried out (e.g. Sakha in the Delta and Beni Suef in Upper Egypt).

Table 10. Attitudes of farmers towards availability of sires and use of artificial insemination.

| Desired service                   | % of surveyed farmers |
|-----------------------------------|-----------------------|
| Exotic cattle sire                | 85.6                  |
| Selected buffalo sire             | 88.7                  |
| Artificial insemination           | 62.4                  |
| <u>Desired source of service:</u> |                       |
| At cooperative                    | 69.4                  |
| At private farms                  | 69.4                  |
| No response                       | 7.4                   |
| <b>Surveyed farms</b>             | <b>540</b>            |

Source : Abdel-Aziz. FAO, 1997.

### Marketing

Milk is consumed mainly by the subsistence farmers (50% of total production), primarily in the form of processed products. Fresh milk is usually sold to middlemen at a low price, but most products are marketed in processed form. Simple products are made (butter, ghee and cottage cheese) and are sold locally or consumed at home. Table 11 presents the home consumption, processing and sales of milk in a sample of 339 small farms in Egypt. A more comprehensive discussion of milk marketing is presented later.

Table 11: Annual milk production, home consumption, processing and sales of milk in a sample of 339 small farms in Egypt.

|                                  | <b>Mean</b>        |
|----------------------------------|--------------------|
| Total milk production/farm (ltr) | 1,255              |
| Consumed fresh milk (ltr)        | 762                |
| % of Total                       | 60.7               |
| Sold fresh milk (ltr)            | 27                 |
| % of Total                       | 2.2                |
| Processed milk (ltr)             | 466 <sup>(1)</sup> |
| % of Total                       | 37.1               |

Source : Abdel-Aziz. FAO, 1997.

(1) 341 Ltr is home consumed and 125 Ltr is sold in village markets

Live animals are sold either when cash is needed or when they are culled. Buffalo calves are sold for slaughter at a very young age to save their dams' milk for family consumption. Farmers have been encouraged by soft loans provided through the National Veal Project, and by the increasing price of meat, to keep buffalo calves for a longer time to reach the weight of 200 kg, when they are transferred to feedlots to be marketed at about 400 kg.

### **Services**

Small farmers receive veterinary services for their animals at local clinics, which exist in most villages. The services include vaccination, parasite control, treatment of sick animals, treatment of fertility problems, extension, artificial insemination and insurance. Most services are provided free of charge, but a cost recovery-based fee has been applied to some services.

Livestock production departments in all governorates provide farmers with a variety of technical and extension packages, which include the provision of good quality feed and the promotion of new practices in animal husbandry and feeding, such as artificial insemination and using crop residues in animal feeding.

### **Small Farms in the New Land**

Attention has been directed towards the newly reclaimed land located off the Nile Delta, especially the dry lands, as potential areas for livestock development. The animal production system in the New Land is essentially a livestock/crop system.

Small farmers in the New Land areas comprise three different categories: ordinary farmers who own less than five feddans, University graduates who own 15-30 feddans, and early retired employees whose land ownership varies between 5 and 15 feddans according to their rank and the rating of the land they receive. Most farmers still keep native cattle and buffaloes and use simple husbandry techniques in dairy farming.

All farmers are members of local agricultural cooperatives that provide them with services such as purchase of farm inputs and marketing. Local government agencies also provide farmers with extension services, veterinary services and artificial insemination. Other organizations like the Central Fund for the Development of Animal Wealth (CFDAW) provide farmers with selected cattle and buffalo heifers, sheep and poultry. Credit is seldom used because of insufficient collateral.

Table 12 includes data covering the main aspects of livestock in the New Land, including land use, fodder production, and labour efficiency.

Table 12. Land use and labour efficiency in a sample of 540 small farms in two areas of reclaimed land in Egypt.

| Character                                   | Average |
|---|---------|
| Farm size (feddan) <sup>(1)</sup>           | 4.1     |
| Family size(number)                         | 8.6     |
| Cost of animal building (LE) <sup>(2)</sup> | 1743.3  |
| Area of winter fodder (feddan)              | 1.3     |
| % of farm size                              | 31.7    |
| Production of winter fodder (tonnes)        | 16.3    |
| Area of summer fodder (feddan)              | 0.6     |
| % of farm size                              | 14.6    |
| Production of summer fodder (tonnes)        | 8.2     |
| Total fodder area (feddan)                  | 1.9     |
| Labour for cattle per year (man/mon.)       | 10.4    |
| Total milk production/farm (Kg)             | 1255.0  |
| Milk production/feddan (Kg)                 | 660.5   |
| Milk production/unit labour (Kg)            | 120.7   |

Source: Abdel-Aziz, FAO 1997.

(1) Feddan = 4200 m<sup>2</sup> (2) LE = Egyptian pounds.

Figure 3 below summarizes the characteristics of the three types of small farms in the New Land and their relative efficiency in terms of output/input ratios.

Most surveys showed that one third of the farm area, regardless of the total area, is cultivated with clover in winter, and that 15% of the farm area is cultivated with summer fodders. Winter and summer cash crops are also cultivated.

Analysis of socio-economic data showed that small farmers who own less than five feddans achieved higher income from milk yield per unit of land, per unit of labour, and per animal. This is mainly due to better utilization of their limited resources.

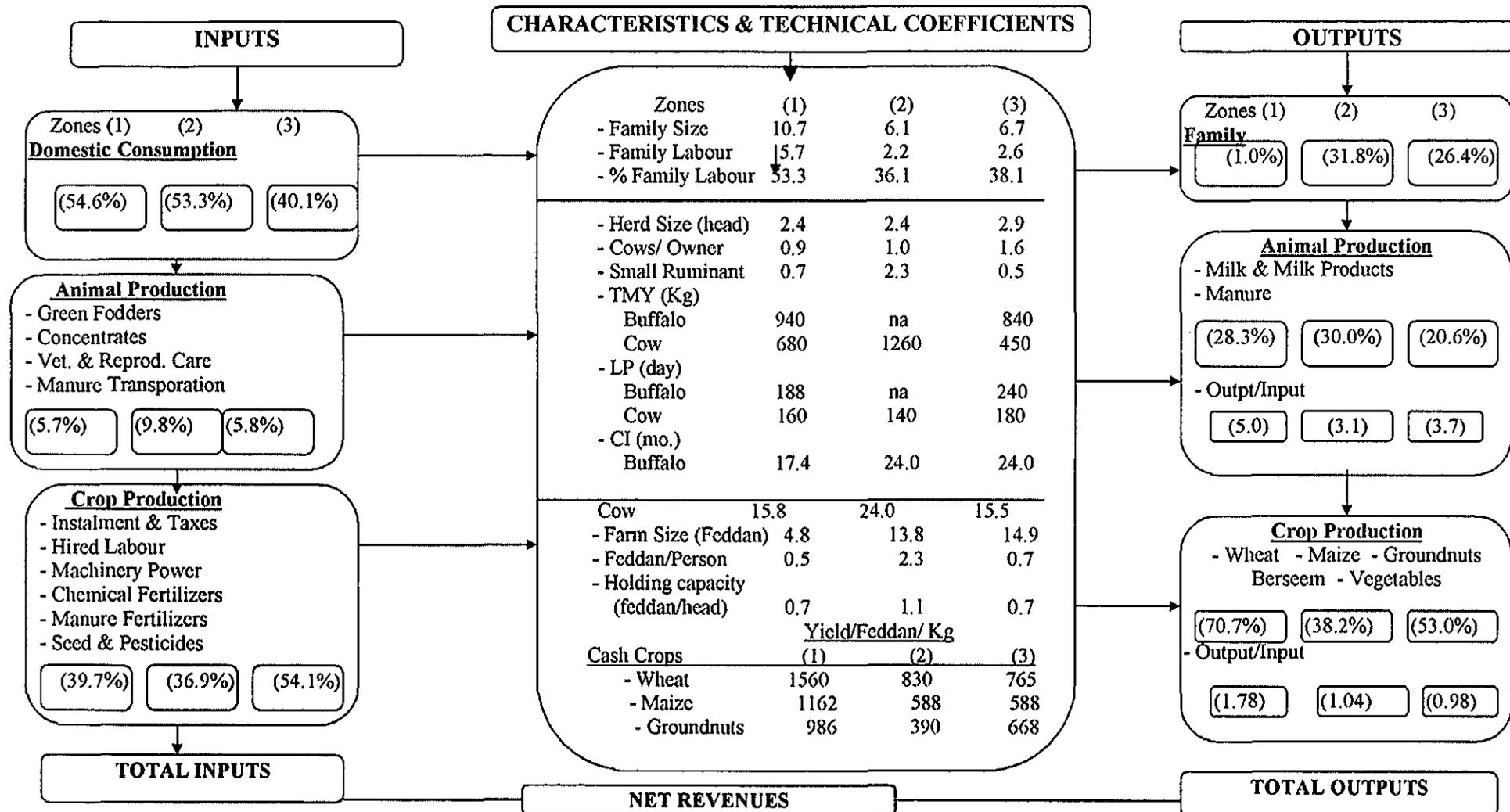
## 2. Commercial Dairy Farms in the Industrial Intensive System

There is a wide disparity among the levels of technical and economic efficiency of the commercial dairy farms as well as their methods of supply and marketing. However, there are some features common to all large-scale commercial dairy farms. Purebred cows (mainly Holsteins or Friesians and a few Jersey and Brown Swiss cows) are kept under an intensive system for milk production. Table 13 shows the number of commercial dairy farms and their status. Only 80% of the large farms are in operation.

Table 13. Total number of commercial dairy farms\* in Egypt.

|                             |      |
|-----------------------------|------|
| Total number of farms       | 1245 |
| Working farms               | 1002 |
| Not working farms           | 243  |
| Percentage of working farms | 80%  |

\* Farms of 50 head and more. MALR, 1997.



Source: R.R. Sadek, A.M. Ahmed and A.S. Abdel-Aziz, 1994. Cattle Information System Project, College of Agriculture, Cairo University.\* Zone 1,2 and 3 comprise ordinary farmers, Univ. graduates, and early retired employees, respectively. Fig. 3. Analysis of the Annual Input and Output Components of the Livestock/Crop System in the New Land.

Most farms are suitably equipped with milking parlors and cooling tanks, and some use advanced automation for milking and feeding. Artificial insemination is used in most herds, and semen straws are usually imported (mainly from USA and Canada). About one-fifth of the farms use machine milking and artificial insemination (Table 14). Most farms keep records, and some of them use computerized packages for performance recording and farm management. Some farms grow fodder on owned land but purchase concentrates (either as ingredients or meals) and roughages. Farms are operated by skilled labour and experienced management staff. Milk is sold fresh and cooled at farm gate, and disposed animals are sold alive.

Table 14. Machine milking and artificial insemination (A.I.) in commercial dairy farms.\*

|                                     |       |
|-------------------------------------|-------|
| Total number of farms               | 1245  |
| % of farms applying machine milking | 20%   |
| % of farms applying A.I.            | 22.5% |

\* Farms of 50 head and more. MALR, 1997.

Large-scale farms belong either to specialized companies or cooperatives or are privately owned. Some large dairy production companies have their own dairy processing plants and feed mills, which increases the investment cost dramatically. Most large dairy farmers are members of the General Cooperative for the Development of Animal Wealth located in Cairo, and/or other associations such as Buffalo Breeders or Milk Producers.

### 3. Flying Herds (Zaraba)

In another, rarer type of farm, buffaloes are put under very intensive feeding regimes to produce high-fat milk which is delivered directly to consumers. These farms have relatively smaller buffalo herds, are located at the outskirts of large cities, and operate under a strictly commercial milk production system. The buffaloes are bought in milk and are sold for slaughter immediately after drying off. Many of the best animals are lost due to this practice.

## Constraints to the Development of Milk Production

The data compiled from field visits, interviews, the questionnaire and the workshop were used to identify constraints to development, which can be summarized as follows:

### 1. High risk associated with investing in dairy farms

- High investment cost of dairy farms.
- Limited acquaintance with available services and legislation.
- Inconvenient policies of pricing of raw milk.
- Inefficient market information and structure.
- High cost of production.

### 2. Weakness of existing services

- Inefficient dissemination of field services for small and medium dairy farms:
  - Veterinary services.
  - Artificial Insemination.
  - Extension.

- Information.
- Animal insurance.
- Insufficient number of well-trained animal production and veterinarian specialists at field level.
- Absence of specialized publications and periodicals on practical dairy technologies.
- Incomplete control on feed quality.

### **3. Weakness of dairy sub-sector productivity**

- Low genetic ability and reproductive efficiency of local breeds.
- Lack of genetic evaluation and improvement policies for commercial dairy farms.
- Inefficient milk collection and marketing schemes.
- Small herd sizes in the major (crop/livestock) system.

### **4. Insufficient supervision to ensure production of high quality (clean) milk**

- Poor traditional milking systems.
- Absence of cooling tanks.
- Weakness of milk-handling tools and cold transportation facilities.

### **5. Lack of common entity among different parities in the dairy sub-sector**

- No direct connection between producing, processing and marketing enterprises.
- Weakness of institutional linkages among official and private components of the dairy sub-sector.

## **Recommendations for Improving Milk Production**

The following recommendations were proposed by farmers and were agreed to in the workshop:

### **1. Stimulate private sector investment**

- Improve financing facilities.
  - Develop new credit lines.
  - Establish reasonable criteria for collateral and loans.
- Revise legislation, customs and taxes.
  - Taxes codification for dairy farms (per kg milk or per head).
  - Customs on inputs
- Provide efficient systems for disseminating services and information.
- Optimize use of resources.
- Encourage women's participation in dairying.

### **2. Strengthen existing service systems**

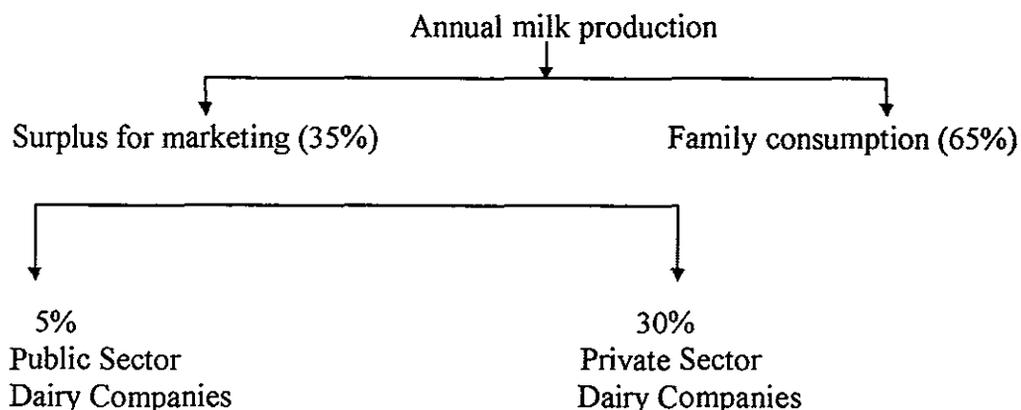
- Review disease control policy.
- Artificial Insemination Network.
- Extension services.
- Milk recording.
- Animal insurance.
- Revise education and training policies.

- Establish market information network.
    - Issue specialized journal (s).
    - Establish database and expert systems.
  - Set standards and quality control mechanisms for feed stuff.
- 3. Set well-defined breeding policy**
- Set different breeding programs for different production systems.
  - Design selection and crossbreeding programs.
  - Set policies for foreign animals and genetic material importation.
  - Perform economic evaluation of genetic improvement programs.
  - Review important quarantine regulations of genetic materials and live animals.
  - Implement efficient systems for:
    - Animal identification.
    - Milk recording
    - A.I.
  - Optimize herd size
  - Organize milk marketing.
- 4. Improve supervision and control on private dairy processing units**
- Establish milking and cooling schemes.
  - Make milk handling tools and transportation facilities available.
  - Apply effective rules for controlling milk quality and handling.
- 5. Establish the Egyptian Dairy Federation (EDF) to carry out the following tasks:**
- Organize the sub-sector
  - Represent all parties.
  - Identify different issues of common interest to the dairy sub-sector.
  - Establish institutional linkages with different parties.
  - Suggest research and development (R & D) programs.
  - Carry out improvement programs for increasing the efficiency of the sub-sector.

## **Milk Marketing**

As previously mentioned, milk is produced under two main systems. The two systems have different objectives, outlets and marketing channels. The first is the small-scale livestock/crop system; the second is the industrial system, which contains large-scale commercial farms. In addition to these systems, there are temporary (flying) dairy herds, which exist in the outskirts of large cities, and produce only buffalo milk. The surplus milk available for marketing represents about 35% of the total buffalo and cattle milk production. The balance (about 65%) goes to family consumption in rural areas (Fig. 4).

**Figure 4: Shares of public and private sector companies of surplus buffalo and cattle milk for marketing**



Source: Abdel Aziz, FAO, 1997.

### **Milk Market Structure**

Small farms are defined in this report as those with buffalo and cattle herds of less than 50 head raised under the livestock/crop system. The major part of the milk produced under this system, the majority of which is actually produced in herds of less than five head, goes directly to family consumption as fresh milk and home processed dairy products. The surplus milk is purchased by wholesalers who are responsible for the collection of fresh milk from rural areas, sometimes with the assistance of middlemen in small villages, through village collection points. This channel has a number of problems concerning milk hygiene, collection, and distribution.

The market share of the large commercial farms (farms of more than 50 head raised under the industrial production system) is 25% of the total milk output. Most of the milk provided by this source is used for processing by dairy companies. Figure 5, on the following page, illustrates the various marketing routes for milk and milk products.

### **Milk Market Performance**

The demand for milk and milk products in Egypt is mainly satisfied by local production, which represents about 86% of the total market supply. Importation of milk covers about 14% of the total market supply, out of which 10% is imported in the form of dairy products and 4% in the form of skim milk powder for local manufacturing. A small amount of dairy products is exported, mainly in the form of cheese, to countries where these products enjoy tariff concessions, (e.g. Saudi Arabia, Libya and Lebanon). Table 15 shows the amounts and values of imports and exports of dairy products in the last two years.

**Fig. 5. Milk Market Structure.**

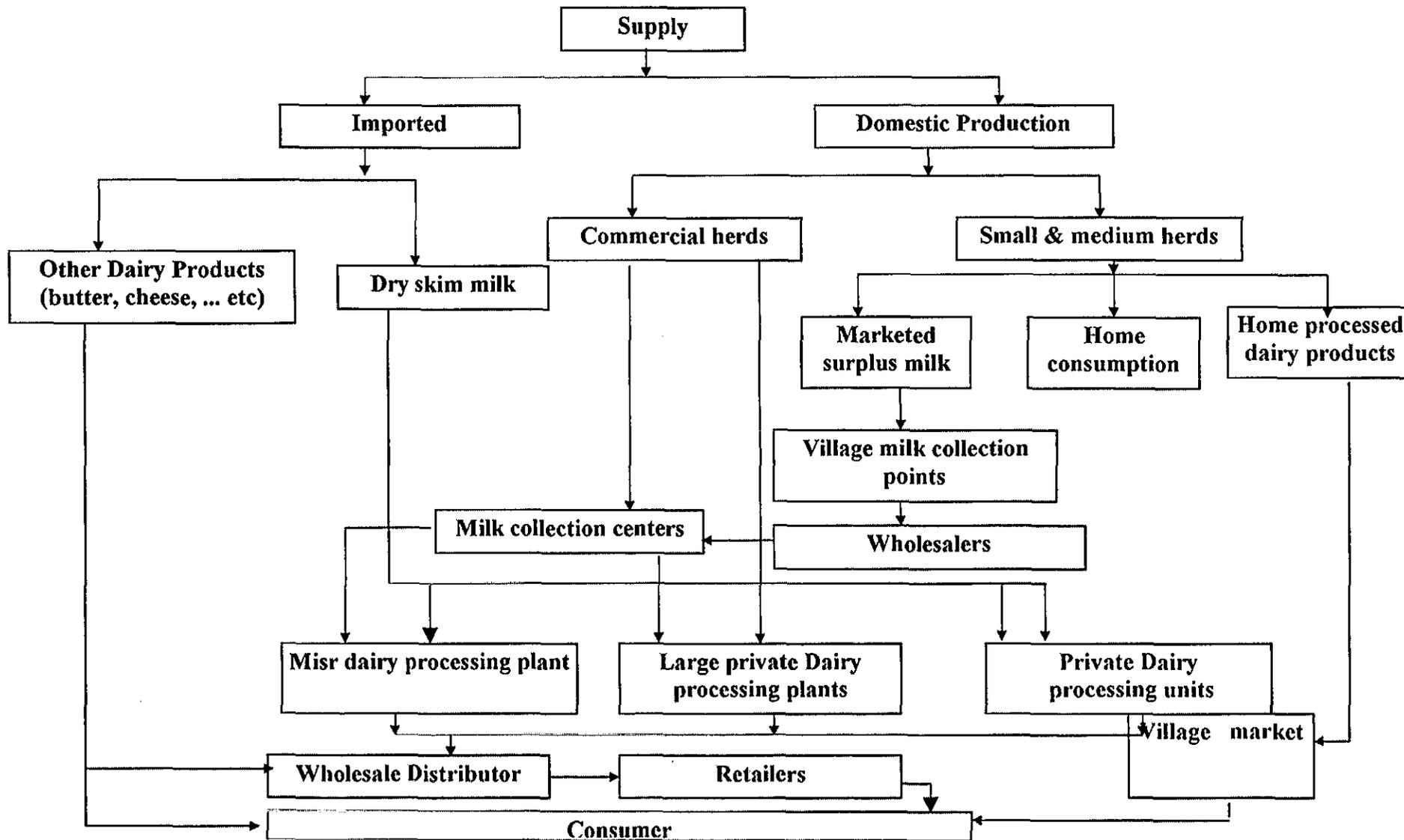


Table 15. Quantities and values of imports and exports of dairy products, 1996-1998.

| Year  | Imports              |                   | Exports              |                   |
|-------|----------------------|-------------------|----------------------|-------------------|
|       | Quantity<br>(tonnes) | Value<br>(000 LE) | Quantity<br>(tonnes) | Value<br>(000 LE) |
| 96/97 | 87,212               | 557,090           | 3,122                | 16,761            |
| 97/98 | 69,401               | 461,281           | 2,799                | 13,483            |

Source: Food Industries Chamber, Dairy Industry Branch, 1999.

The contribution of the traditional crop/livestock system to the milk market does not exceed 22% of this system's total output. The balance is directed to fresh family consumption and home processed dairy products: cream, ghee, butter and cottage cheese.

Fresh milk is collected from small farms by rural collection points and wholesalers. However, the collection points do not provide a safe or efficient way of handling milk given hygiene problems, the high cost of collection from large numbers of very small herds, and the low milk price at farm gate. Marketing incentives, if applied, will be an important factor in increasing the market share of the system's milk output, improving milk quality, and encouraging farmers to increase their milk production.

The market share of the industrial system is about 21%, which is almost equal to its contribution to the total domestic output (the balance goes to calf suckling and losses of delivery). This sector faces some problems in cooling, handling, and transportation of milk, which increase the cost of milk production and marketing.

Standards and specifications of raw milk and milk products should be established and controlled by regular tests. Quality has to be considered in raw milk pricing.

Little or no attention has been given to the issue of dairy product exports given current regional and international economic agreements such as the WTO<sup>1</sup> treaties on COMESA<sup>2</sup> (free zone trade agreement among African Nations) and GAFTA<sup>3</sup> (Free Zone Trade Agreement among Arab countries). Bilateral agreements between Egypt and Libya, Lebanon, and Saudi Arabia provide for tariff concessions and removal of custom barriers for dairy products. However, the impact of the current economic reform policy and GAAT on the dairy sub-sector discussed later.

### Constraints to Better Milk Marketing

The policy-based marketing constraints to the development of sound milk marketing can be summarized as follows:

#### 1. High risk associated with investing in marketing of milk and dairy products

- Limited acquaintance with the available GOE milk marketing legislation.
- Lack of information about local and foreign markets.

<sup>1</sup> - World Trade Organization.

<sup>2</sup> - Common Market for Eastern and Southern Africa.

<sup>3</sup> - Greater Arab Free Trade Agreement

- Inconvenient pricing and tax policies for the dairy producers and milk collectors.
  - Lack of marketing and export policies.
- 2. Loss in raw milk produced by small and medium dairy farms**
- Small herd sizes.
  - Weakness of milk collecting and marketing systems.
  - Incomplete knowledge of rules and specifications for handling of milk and milk products.
  - Irregular supply of milk and dairy products.
- 3. Low export competitiveness of dairy products**
- Lack of information on potential foreign markets.
  - Dairy products do not meet export standards.
  - Improper processing and packing of dairy products.
  - High production cost.
- 4. Insufficient supervision of milk marketing**
- Limited knowledge of milk hygiene.
  - Few cooling tanks at farm level.
  - Weakness of milk handling tools and cool transportation channels.
  - Lack of milk test facilities (e.g. milk contents, SCC test).
- 5. Lack of common entity among different parities in the dairy sub-sector**
- No direct connections between producing, marketing and processing.

### **Recommendations for Improving Milk Marketing**

#### **1. Stimulate private sector investment**

- Revise available milk marketing legislation, customs and taxes.
- Protect domestic milk and dairy products, within the rules of WTO and GATT.
- Develop a sound market information system.
- Make an efficient financing mechanism available for milk collection and delivery.

#### **2. Increase the contribution of small and medium farms to the milk supply**

- Optimize herd size.
- Develop efficient milk collection, cooling, transportation and marketing systems.
- Strengthen the role of extension and dairy information.
- Move from marketing of raw milk to value added products.
- Establish financing facilities for milk collection and processing units in rural areas.
- Encourage rural women participation.

#### **3. Produce new varieties and attain standards of dairy products for export in view of WTO agreements and local market legislation**

- Strengthen market information systems.
- Identify potential export products.

- Use better processing and packing technologies.
  - Implement promotion campaigns.
  - Revise taxes and fees on exports.
- 4. Improve supervision and control on fresh milk marketing**
- Provide extension and training on clean milking.
  - Provide on-farm cooling tanks.
  - Improve milking techniques, milk handling tools and cold transportation systems.
  - Strengthen milk testing facilities and quality control systems.
  - Pay incentives for clean milk.
- 5. Establish the Egyptian Dairy Federation (EDF) to carry out the following:**
- Organize milk marketing.
  - Set standards and specifications for the domestic market and for export.
  - Establish links with milk testing facilities.
  - Promote exports.
  - Revise rules and legislation.
  - Represent interests of all parties.

## **Milk Processing**

A large proportion of the annual milk production is consumed by families as fresh milk or processed in villages into cottage cheese, butter, and ghee using simple home processing techniques.

### **Dairy Manufacturing**

Large private sector and public sector companies produce UHT and pasteurized milk, yogurt and fresh white cheese, which represent the major products of the private sector (Table 16). Butter manufacturing is confined to packaging of butter imported in bulk.

Table 16. Percentage of dairy products to total production.

| <u>Product</u>           | <u>%</u>   |
|--------------------------|------------|
| White cheese             | 68         |
| UHT and pasteurized milk | 7          |
| Soft cooked cheese       | 4          |
| Yogurt                   | 3          |
| Others                   | 18         |
| <b>Total</b>             | <b>100</b> |

Source: Food Industries Chamber, Dairy Industry Branch, 1999.

Small private sector plants collect milk from rural areas and process it into hard cheese and white cheese. The major public sector company's (Misr Dairy) market share, for all products, declined rapidly during the last period because the company stopped distributing subsidized feed as an incentive to its suppliers of raw milk.

Competition with private sector dairy plants on the limited milk supply has been in favor of the private companies lately.

The private sector dairy companies are relatively new, as most of these companies were established in the last 15 years. In most cases, operations were designed to make use of the low-price milk powder which was donated or heavily subsidized by international organizations or exporting countries, but they have since shifted to fresh, locally-produced milk, as subsidies on milk powder were reduced. Manufacturers tend to produce products characterized by rapid turnover with minimum storage requirements (e.g. UHT milk, fresh white cheese, ice cream, and yogurt). Obviously, these dairy products have small or no export potential.

### **The Major Dairy Companies in Egypt**

There are 119 dairy plants with a total manufacturing capacity of 931 thousand tonnes. The major dairy companies in Egypt and their main products are listed below:

#### **Misr Dairy & Food (Public Sector)**

Location of Dairy Plants:

Alexandria  
Tanta  
Cairo  
Damietta  
Mansoura  
Ismailia  
Kafr El-Sheikh (Sakha)  
Aswan (Kom-Ombu)

Major Products:

Pasteurized milk, White cheese, Hard cheese (Romano), Processed cheese (Nesto), Yogurt, Ice Cream.

#### **Eskimo (Kimo)**

Location of Dairy Plant:

Giza

Major Products:

Ice Cream, Yogurt

#### **International for Animal Wealth**

Location of Dairy Plant:

Giza

Major Products:

Pasteurized milk, UHT Milk,  
White cheese, Cream cheese, Yogurt, Ghee

#### **United**

Location Dairy Plant:

Giza

Major Products:

Yogurt

### **Nile Industrial (Dolce)**

Location of Dairy Plant:

Giza

Major Products:

Ice Cream, Yogurt

### **International Dairy (Milky Land)**

Location of Dairy Plant:

10th of Ramadan City

Major Products:

Ice Cream

### **Juhina Dairy**

Location of Dairy plant:

6th of October

Major products:

UHT Milk, Yogurt

### **Nestle**

Location of Dairy Plant:

Menofia (Sendion)

Major products:

UHT Milk, Yogurt

### **Hawaii**

Location of Dairy plant:

Cairo

Major products:

Ice Cream

### **Dallah for Agricultural Investment and Animal Production**

Location of Dairy plant:

Nubaria

Major products:

UHT Milk, White cheese, Yogurt, Sour Milk

### **El-Masrieen Co.**

Location Dairy Plant

6 October City

Major Products:

White cheese

## **Constraints to Improving Milk Processing**

### **1. High risk associated with investing in dairy processing**

- High investment cost of the dairy processing plants.
- Seasonal fluctuations in the fresh milk supply.
- Limited knowledge of available GOE legislation.
- Lack of information about local and foreign markets.

- Inconvenient pricing and tax policies for dairy processors.
- 2. Loss in raw milk produced by small and medium dairy farms**
    - Small herd sizes.
    - Weakness of milk collecting and marketing systems.
    - Irregular supply of milk and dairy products.
    - Incomplete knowledge of milk supplies legislation.
  - 3. Low export competitiveness of dairy products**
    - High cost of production inputs.
    - Lack of information on potential foreign markets.
    - Use of low technologies in milk processing.
    - Dairy products do not meet export standards.
    - Improper packing of dairy products.
  - 4. Absence of supervision on producing high quality (clean) milk and dairy products**
    - Poor traditional milking practices.
    - Absence of cooling tanks and cold transportation channels.
    - Weakness of milk handling tools and transportation systems.
  - 5. Absence of common interest among different parities in the dairy sub-sector**
    - No coordination among production, marketing and processing.

## **Recommendations for Improving Milk Processing**

- 1. Stimulate private sector investment in dairy processing**
  - Develop financing mechanism for dairy plants.
  - Establish cold storage facilities.
  - Revise legislation and rules, customs and taxes.
    - Tax codification for dairy plants (on the basis of the amount of processed milk).
    - Protect local dairy products from unfair competition from imported products.
  - Provide efficient information about local and foreign markets.
  - Promote export campaigns.
- 2. Increase the contribution of small and medium farms to the milk supply**
  - Optimize herd size.
  - Develop efficient milk collection, cooling and marketing systems.
  - Move from marketing of raw milk to value added products:
    - Establish financing mechanism for dairy plants.
    - Establish financing mechanism for milk processing units in rural areas.
  - Encourage participation of rural women

**3. Produce new varieties and attain standards of production for export, in view of WTO agreements and local market legislation**

- Revise tariffs on inputs.
- Strengthen market information systems.
- Identify potential export products.
- Use better processing and packing technologies.
- Revise taxes and fees on exports.
- Implement promotion campaigns.

**4. Improve supervision and control on private dairy processing units**

- Improve milking systems and cooling channels.
- Improve milk handling tools and cold transportation systems.
- Strengthen milk testing facilities and quality control systems.

**5. Establish the Egyptian Dairy Federation (EDF) to carry out the following tasks:**

- Organize the milk market.
- Set standards and specifications for dairy products.
- Revise rules, legislation, tariffs and treaties.
- Promote exports of dairy products.

**Impact of Current Policies on the Dairy Sub-sector**

**Effect of Recent Policy Reforms on Milk Production<sup>(1)</sup>**

Table 17 expresses the effect of four major policy reforms on the two main milk production systems in Egypt. Removal or reduction of subsidies was the only action to which the production systems responded differently. The reason may be that the small traditional farms are more self-dependent.

Table 17. Response of the two major production systems to policy reforms

| Policy action   | Milk & dairy products |
|---|-----------------------|
| <b><u>Removal/reduction of subsidies</u></b>                          |                       |
| Industrial system (Commercial farms)                                  | —                     |
| Crop/livestock system (Small traditional farms)                       | N.A.                  |
| <b><u>No price control on outputs (Free pricing)</u></b>              |                       |
| Industrial system   | +                     |
| Crop/livestock system   | ++                    |
| <b><u>No crop area allotment (Free cropping pattern)</u></b>          |                       |
| Industrial system   | ..                    |
| Crop/livestock system   | ..                    |
| <b><u>Adjusting land tenancy system (Free price of land rent)</u></b> |                       |
| Industrial system   | ..                    |
| Crop/livestock system   | ..                    |

(1) + Positively affected    — Negatively affected    .. Slightly    N.A. not affected

### Egypt's Commitments Within the GATT

In the Uruguay agreement, Egypt committed to the following:

- Removal of trade barriers on imports of livestock and poultry products and inputs, with the exception of very few commodities. Bans would be replaced by appropriate tariffs for the protection of local production for 10 years.
- Gradual decrease of tariffs on imports of agricultural goods, including livestock commodities, over 10 years.
- Subsidies to livestock and poultry products and inputs have been completely removed or drastically reduced. The GOE is committed to remove, in a period of 10 years, any subsidy that is less than 10% of the total value of the commodity.
- The agreement permits some farms to support activities such as research, training, consulting, inspection, marketing, disease control infrastructure, investment, and inputs for low-income producers.

### Benefits for Livestock Production Under the GATT

- As Egypt is considered a developing country, the Uruguay Pact provides for donations in terms of grants, soft loans, imports on credit and food for six years to cushion the effects of GATT. It was also stated that Egypt should benefit from international donors and financing organizations to improve and modernize productivity and infrastructure for the agricultural sector.
- As the average per-capita income in Egypt is less than \$1000 per year, Egypt is exempted from any extra tolls on exports.

### Expected Hazards to Livestock Production Under GATT

- Increased price of imports, including red meat and dairy products, by about 18% by the year 2000 (the expected increase in the value of red meat imports alone is estimated at \$34 million per year). Imports of live animals and meat require approvals, which are restricted to certain quotas.
- Exposure of local production, especially poultry, red meat and milk products, to unfair competition with imports.
- Deficit in financial balance (now \$250 million) due to the prices of agricultural imports and reduced tariffs on them.

As a member of GATT, Egypt has committed to making considerable progress in the liberalization of domestic and international trade. Variables influencing livestock and poultry trade are expected to be affected. This is illustrated in Table 18.

Table 18. Expected changes in variables of dairy production in response to GATT.

|                    | Dairy products <sup>(1)</sup> |
|--------------------|-------------------------------|
| Local products     | --                            |
| Imports            | +                             |
| Exports            | ..                            |
| World price        | +++                           |
| Subsidizes         | --                            |
| Cost of production | +                             |
| Retail price       | ++                            |
| Consumption        | +                             |

(1) + Positively affected – Negatively affected .. Slightly N.A. not affected

Studies on the effect of GATT on international prices of food commodities indicated an expected increase of 17% and 31% in the prices of red meat and dairy products by the year 2000.

As the rate of growth of local production is not expected to cope with growing consumption, at least in the short run, increasing imports seems to be the only solution to fill the food gap. Removal of subsidies on inputs will add to the production cost and retail price.

## **Policy Issues that Need to be Addressed for the Development of the Dairy Sub-sector**

### **1. Resource development**

- Encourage investment in dairying.
- Optimize herd size.
- Set breeding objectives and programs.
- Attain international standards of production.
- Move from marketing of raw material to value added products.
- Encourage rural women's participation in dairying.

### **2. Organization**

- Activate the role of the private sector.
- Expand the activities of the animal dairy specialized farms and co-operatives.
- Strengthen existing service schemes.
- Strengthen milk market structure.
- Establish an Egyptian Dairy Federation.

### **3. Systems**

- Increase the overall efficiency of the existing production systems.
- Stratify different production systems for different types of production.
- Encourage the concept of modern dairy farming.
- Encourage market-oriented milk production.
- Encourage export of dairy products.

### **4. Finance**

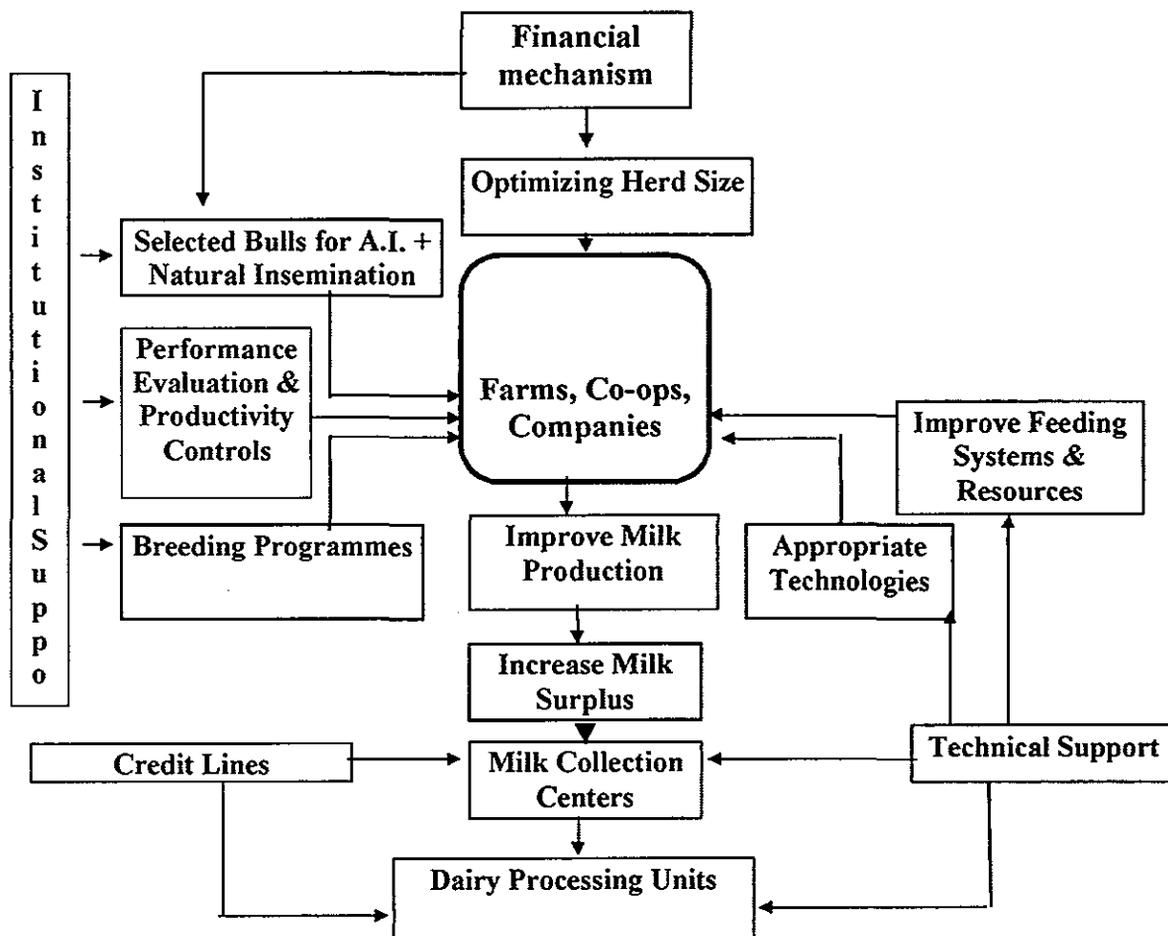
- Establish financial policies for a sustainable dairy production sub-sector.
- Establish criteria for collateral and loan systems to facilitate financial mechanisms.

### **5. Legislation, rules and standards**

- Revise legislation governing the dairy sub-sector.
- Set standards and specifications for domestic products and exports.
- Activate quality control and testing facilities at all levels.
- Revise taxes, tariffs and fees in views of current economic reform policy and GATT.

The following diagram (Fig. 6) shows proposed interventions needed to alleviate major policy-based constraints to dairy production and to increase the overall efficiency of the dairy sub-sector.

**Fig. 6. Proposed Interventions for removing policy-based constraints to improve the efficiency of the dairy sub-sector.**



### Policy Issues for Improving Supporting Services to the Dairy Sub-sector

#### Technical services

The Animal Production Department of the MALR, in cooperation with the Animal Research Institute and the EU-Supported Food Sector Development Project (FSDP), provides farmers with a variety of services including extension, promotion of new technologies, and implementation of technical packages for dairy development. The packages include provision of artificial insemination, marketing services, milk and dairy product quality control and improvement. There is also, within the FSDP, provision of credit for establishing dairy farms, modernizing commercial farms and expanding small farms. The project, which is carried out in five targeted governorates, has an activity related to data collection and milk recording and testing.

The College of Agriculture at Cairo University, with the support of IDRC and FAO, has established a national milk recording system called Cattle Information System / Egypt (CISE) to process and disseminate data collected from all sizes of farms. Processed data could be used in genetic improvement programs, improving management standards and developing databases for the benefit of the dairy farmers. Cooperation among these agencies and delivery of their services on a cost-recovery basis would increase the efficiency and sustainability of the services.

### **Veterinary services**

Local veterinary units have a network that is connected with The Central Authority for Veterinary Services (CAVS) in Cairo through Governorate Veterinary Departments. A wide variety of services is provided to all farmers. Services include health control, treatment of sick animals, curing fertility problems, animal insurance, artificial insemination and veterinary extension. Many of these services are the monopoly of CAVS, and are provided free of charge or heavily subsidized.

However, the EU has been financing an ambitious project since 1994 to support the privatization of many of these services. The MALR has been taking measures for the legalization and financing of private sector, village-based veterinarians to work as custom-cooperator entrepreneurs for delivering paid services.

### **Credit**

Access to credit for establishing and improving dairy enterprises has always been offered by the Principal Bank for Agricultural Development and Credit (PBDAC). Recently, through the USAID-supported Agricultural and Credit Project (APCP), new credit lines were added to the PBDAC's portfolio to go towards better technology and purchase of better animals, and to encourage private sector entrepreneurs to supply dairy farms with inputs and services.

Through the FSDP's credit component, commercial banks provide relatively low-interest loans to support implementing policy actions adopted by the MALR for improving the dairy sub-sector.

The collateral-based system used by the participating banks may need revision in order to increase the rate of lending, especially in circumstances where not enough collateral is available, such as in the case of the New Lands, young entrepreneurs and small farmers.

## **ANNEXES**

**ANNEX 1 - Personal Communications**

**ANNEX 2 - List of Field Trips and Interviewers**

**ANNEX 3 - List of participants of the workshop**

**ANNEX 4 - List of Legislation and Rules**

(Made available in Arabic to participants of the workshop)

## ANNEX 1 - PERSONAL COMMUNICATIONS

- 1- Prof. M. Sharafeldin, Technical Consultant, MALR.
- 2- Prof. H. Soliman, Chairman, Animal Production Sector, MALR.
- 3- Eng. Abdel-Hamid Said, Executive Director, CFAWD.
- 4- Dr. Fekery El-Keraby, Director, APRI.
- 5- Mr. Ahmed Howedi, President, Co-op. of Animal Wealth and Animal Product Development.
- 6- Mr. Adel Kamal , D.G., Co-op. of Animal Wealth and Animal Products Development.
- 7- Prof. A. Abu-Akkada, Consultant, Alexandria Copenhagen Dairy Company.
- 8- Dr. Ali Attia Nigm, D.G., Cattle Information System/Egypt (CISE)
- 9- Dr. Mahmoud Hussein, Associate Professor, College of Vet. Sci., Beni-Suef..
- 10- Dr. Abdel-Baset El-Sebaey, D.G., Egyptian Industries Union.

## Annex 2 - List of Field Trips and Interviewers

### Small Buffalo and Cattle Farms, Beihera:

1. Saied Abdel-Azim Hassona, Owner.  
Omar Makram Village.
2. Mostafa El-Sayed Amer, Owner.  
Omar Shahin Village.
3. Mammdoh Mohanmed El-Awadi, Owner.  
Omar Shahin Village.
4. Salah Abdel-Fatah Ramadan, Owner.  
Omar Shahin Village.
5. Hamdi El-Sayed El-Gaabri, Owner  
Omar Makram Village.
6. El-Sayed El-Gaabari, Owner.  
Omar Makram Village.
7. Gaber El-Sayed Ahmed, Owner.  
Omar Shahin Village.
8. Abdel-Hamid Morsy Mahmoud, Owner.  
Omar Makram Village.
9. Goerge Fahmy Abdeer, Owner.  
Badr Center.
10. Fathy Salma, Owner.  
El-Maged Village.

**Medium Buffalo and Cattle Farms:**

1. Ahmed Abdel Magid Salam, Owner.  
Oseem, Giza..
2. Youssef Abdalah Mohamed, Owner.  
Zawit Abou-Mosalem, Giza.
3. Mohmoud El-Samanodi, Owner.  
Zawit Abou-Mosalem, Giza.
4. Dr. Mahmoud Gad, Manager.  
Kombera, Giza.
- 5- Derr Baramos,  
El-Natroun Valley.
6. Abdel-Gaied Shahata, Owner.  
Tamia, Fayoum.
7. Shaaban Abdel-Hamid, Owner.  
Henis, Fayoum.
8. Secondary Agric. School, Behera

### Large Cattle Farms:

1. Dina Co., Alex- Cairo desert road.  
Dr. Mohamed Waaer, Vice manager.
  
2. Alexandria Copenhagen Co., Alex- Cairo desert road.  
Dr. Abdel-Kader Abou-Akkada, Consultant.  
Dr. Abdel-Karim Biumy, Director.
  
3. El-Tobgy Farms, (Tecdap Co.), Fayoum  
Eng. Salah El-Tobgy, Owner,
  
4. Arab Co. for Agric. Development, Alex- Cairo desert road.  
Eng. Ahmed Soltan, Manager.
  
5. Unity for Agric. Prod., Ismailia.  
Eng. Magdi
  
6. Arab Co. for Animal Prod., Ismailia.  
Dr. Abdel-Fattah Hussein, Director .

**Milk Collection Centers:**

1. El-Ataby Milk Collection Center,  
Bortos, Oseem, Giza.
2. El-Masreieen Milk Collection Center,  
Fayoum.
3. El-Gabri Milk Collection Center,  
El-Manawat, Giza.

### **Milk Processing Plants:**

1. El-Masreieen Co.,

Mr. Mohamed El-Desouki, General Manager.

Mr. Mahmoud Ghoneim, Plant Manager

6 October City,

2. Dina Processing Plant,

Desert Road (Alex. - Cairo)

3. International Co. for Animal Wealth, (Sabeh)

Abou-Rawash, Giza.

**Annex 3 - List of participants at the workshop on production, processing, and marketing policy issues in the dairy sub-sector, held on 28, November 1999 at the Pyramisa Hotel, Giza.**

| <b>Participants</b>            |
|--------------------------------|
| <b>Organizers</b>              |
| Fatma Khattab *                |
| Amr Moussa                     |
| Lawrence Kent                  |
| Rich Magnani                   |
| Max Goldenshon                 |
| Mahmoud Nour El-Sayed Nour     |
|                                |
| <b>Speakers</b>                |
| Ahmed Said Abdel-Aziz *        |
| Rabie Ragab Sadek *            |
|                                |
| <b>Ministry of Agriculture</b> |
| Laila Abdel-Aziz El-Kousy      |
| Tawfik Hassan Ali Shalby       |
| Rafat Abdel-Fattah Khalifah    |
| Mostafa Bosilah                |
| Yousef Abdelah Hassan          |
| Waliam Azmy Ibraheem           |
| Sameir Yousef Abdel-Meseeh     |
| Mohamed Mohamed Zakria         |
|                                |
| <b>Faculty of Veterinary</b>   |
| Farouk Ibraheem El-Dosuky      |
| Abdel-Kareem Mahmoud           |
| Abou-Bakr Abdel-Kader El-Weshy |
| Mohamed Samy Sayed Abduh       |
| Mohamed Hassan Moustafa Yousef |
| Kamal El-Deen Salem            |
| Mahmoud Mohamed Hussein        |
|                                |
| <b>Dairy Producers</b>         |
| Hesham Ali Ayoub               |
| Mohi El-Deen Hashad            |
| Mohamed Nabeel El-Kholy        |
| Mohamed Ahmed Aly              |
| Mohamed Galal Saber Shehaa     |

\* Were nominated by the participants to formulate a workgroup to follow up the establishment of the Egyptian Dairy Federation.

|                                  |
|----------------------------------|
| Abdel Kareem Mohamed Bayomi      |
| Salah El-Tobgy *                 |
| Susan Anjly Basedos              |
| Hassan Mohamed Kassem *          |
| Abdel-Kader Mohamed El-Hraky*    |
| Mahmoud El-Sayed Mahmoud Gad *   |
| Ahmed Sultan                     |
| Mohamed Mahmoud Ezzo             |
|                                  |
| <b>Milk Collection Centers</b>   |
| Ahmed Mahmoud Mohamed Ataby *    |
| Abou-Bakr Mahmoud Ataby          |
|                                  |
| <b>Faculty of Agriculture</b>    |
| Mohamed Ali Ibraheem Salem       |
| Sameir Ahmed Mokhtar             |
| Salah Abou Rayah                 |
| Salah El-Zoghby                  |
|                                  |
|                                  |
| <b>Cattle Information Center</b> |
| Ali Atia Nigm                    |
| Ali Mostafa Ahmed                |
| Samy Abou- Bakr Mahmoud          |
| Mohamed Ahmed Ragab              |
| Marwa Ahmed Abdel-Hameid         |
|                                  |
|                                  |
| <b>Dairy Processing Plants</b>   |
| Khalid Mohamed El-Damaty *       |
|                                  |
|                                  |
| <b>Relevant Organizations</b>    |
| Hany Abou Ali                    |
| Abdel-Baset El-Sebaay            |
| Fawzy Abdel-Hameed Taha          |
| Samy Tantawy                     |
|                                  |

\* Were nominated by the participants to formulate a workgroup to follow up the establishment of the Egyptian Dairy Union.

## **Annex 4 - List of Legislation and Rules**

**(Made available in Arabic to participants of the workshop)**

### **I. Importation Rules and Conditions**

1. MALR Decree no. 248, 1990. Rules for establishing livestock and poultry farms.
2. MALR Decree no. 1505, 1989. Rules and conditions of importing frozen semen and frozen embryos.
3. MALR Decree no. 1355, 1990. Rules and conditions of importing breeding heifers and cows.
4. MALR Decree no. 1659, 1990. Rules and conditions of importing breeding bulls.
5. MALR Decree no. 9, 1997. Rules and conditions of importing live slaughter animals, frozen beef, offals, and meat products.
6. General Authority for Veterinary Services:  
Guide to the Egyptian Quarantine Rules.  
Includes:
  - Importation of Live Animals.
  - Importation of Frozen Semen.
  - Importation of Meat.
  - Importation of Milk and Milk Products.

### **II. Standard and Specifications of Milk and Milk Products Processed in Egypt**

Decrees issued by the Egyptian Authority for standards and quality control specifications.

- Decree no. 1623, 1990. Raw Milk.
- Decree no. 1008, 1970. Soft cheese, including white cheese, cream cheese, low-fat cottage cheese.
- Decree no. 1007, 1970. Hard cheese, including Romano cheese, Swiss cheese, cheddar cheese, Brick cheese.

### **III. A Report on the International, Regional and Bilateral Agreements concerned with milk and Dairy Products.**