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## Mixed-feed manufacturing in Egypt

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**SUMMARY** - The animal production sector is growing rapidly in Egypt. Livestock and poultry production reached 16.4 and 161.5 million head, respectively, in 1996. As a result, mixed-feed manufacturing has gained great momentum in recent years. The local availability of feed ingredients at low prices in addition to governmental subsidies made animal feed industry highly feasible. Currently, there are 28 governmental feed mills -belonging to 9 major companies- producing livestock and poultry feeds. The total production of feed amounted 1.25 million mt in 1996, valuing about 250 million US \$. Mixed-animal feed manufacturing and marketing are controlled by the government, represented by the Agricultural Development and Credit Bank and Agricultural Cooperatives. The contribution of the private sector to the animal feed industry is still limited. The public sector accounts for 88% of animal feed output.

**Key words:** Livestock, poultry, mixed-feed, manufacturing, Egypt.

**RESUME** - "Fabrication d'aliment composé en Egypte". Le secteur de la production animale est en expansion rapide en Egypte. La production de bétail et de volaille a atteint 16,4 et 161,5 millions de têtes, respectivement, en 1996. Comme résultat, la fabrication d'aliment composé a pris un grand essor pendant ces dernières années. La disponibilité locale d'ingrédients alimentaires à de faibles prix en plus des subventions gouvernementales, a rendu l'industrie de l'aliment composé hautement performante. Actuellement, il existe 28 usines gouvernementales - appartenant à 9 grandes compagnies - qui produisent de l'aliment pour bétail et volaille. La production totale d'aliment s'est élevée à 1,25 million de tm en 1996, pour une valeur d'environ 250 millions US \$. La fabrication et la commercialisation d'aliment composé pour la production animale sont contrôlées par le gouvernement, représenté par la Banque de Crédit et de Développement Agricole et les Coopératives agricoles. La contribution du secteur privé à l'industrie de l'aliment composé est encore limitée. Le secteur public représente 88% de la production d'aliment composé.

**Mots-clés :** Bétail, volaille, aliment composé, fabrication, Egypte.

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### Introduction

Egypt is a subtropical country occupying the north east corner of Africa and Sinai Peninsula in Asia, with an area of one million km<sup>2</sup>. The country is located between Lat. 31°36' and 22° N and Long. 25 and 35.5° E. It consists of 26 administrative regions named *governorates*.

The estimated population of Egypt was 61.5 million persons in 1996, including Egyptian manpower abroad (about 2.18 millions). About 40.1% of the population are Less than 15 years old and the force power (20-60 years old) represents 43.4%. About 57% of the population live in rural areas, while the rest 43% inhabit urban regions (Central Agency for Public Mobilization and Statistics; CAPMS, 1997).

### Animal resources

Agriculture is one of the major human activities in Egypt. It accounted for 19% of the gross domestic product (GDP) in 1996 (CAPMS, 1997). Therefore, a great attention has been paid to animal resources development in recent years. Animal production trends in Egypt during 1991-1996 are given in Table 1. The number of livestock heads (cows, buffalo, sheep, goats, camel and pigs) reached about 16.4 million heads in 1996, with an 40.83% increase compared to 1991 production.

Table 1. Livestock production (1000 heads) in Egypt during 1991-1996<sup>†</sup>

| Livestock | 1991  | 1992  | 1993  | 1994  | 1995  | 1996  | % change<br>1991-1996 |
|-----------|-------|-------|-------|-------|-------|-------|-----------------------|
| Buffaloes | 3162  | 3642  | 2823  | 2189  | 2245  | 2302  | -27.27                |
| Cows      | 2719  | 2478  | 2752  | 2728  | 2704  | 2737  | 0.66                  |
| Camels    | 147   | 185   | 232   | 290   | 363   | 454   | 208.84                |
| Goats     | 2442  | 2865  | 3027  | 3198  | 3379  | 3570  | 46.19                 |
| Sheep     | 3184  | 3111  | 3924  | 4951  | 5961  | 7346  | 130.72                |
| Pigs      | 25    | 27    | 30    | 33    | 36    | 39    | 56                    |
| Total     | 11679 | 12308 | 12788 | 13389 | 14688 | 16448 | 40.88                 |

<sup>†</sup>Source: CAPMS (1997)

The trends of poultry production (chicken, ducks, turkey, geese and pigeons) during 1991-1996 are given in Table 2. The number of poultry produced in 1996 reached 161.5 million, with a 120% increase compared to 1991 production. Chicken are the most dominant, representing more than 50% of the total numbers of produced poultry.

 Table 2. Poultry production (x 1000) during 1991-1996<sup>†</sup>

| Poultry               | 1991  | 1992  | 1993   | 1994   | 1995   | 1996   | % change<br>compared<br>to<br>1991 |
|-----------------------|-------|-------|--------|--------|--------|--------|------------------------------------|
| Chicken               | 43533 | 50933 | 59591  | 69720  | 76692  | 84361  | 65.60                              |
| Ducks                 | 9795  | 11790 | 14191  | 17082  | 18790  | 20668  | 75.30                              |
| Geese                 | 8014  | 9646  | 11611  | 13976  | 15374  | 16911  | 75.30                              |
| Pigeons <sup>††</sup> | 10732 | 12459 | 14464  | 16792  | 18471  | 20317  | 63.10                              |
| Turkey                | 1315  | 1365  | 1418   | 1472   | 1517   | 1563   | 14.50                              |
| Total                 | 73389 | 86193 | 101275 | 119042 | 130844 | 161572 | 120.00                             |

<sup>†</sup>Source: CAPMS (1997)

<sup>††</sup>In pairs

## Animal feed resources

### Natural food

Natural animal food consists mainly of green roughages (alfalfa and grasses) and dry roughages (hays, grains, grain stalks and straw). Alfalfa is by far the most important natural food. About 2.4 million feddans (one feddan = 0.4 hectare) were cultivated with alfalfa in 1996, valuing 1,100 million \$ and representing 70% of the total value of natural food consumed.

### Supplemental feeds

Wheat bran and rice bran are the major supplemental by-products used in animal feeds. About 1.77 and 0.081 million mt of what bran and rice bran were produced in 1996, with a value of 100 and 1.2 million US \$, respectively. The production and consumption of major animal feed ingredients are represented in Fig. 1.

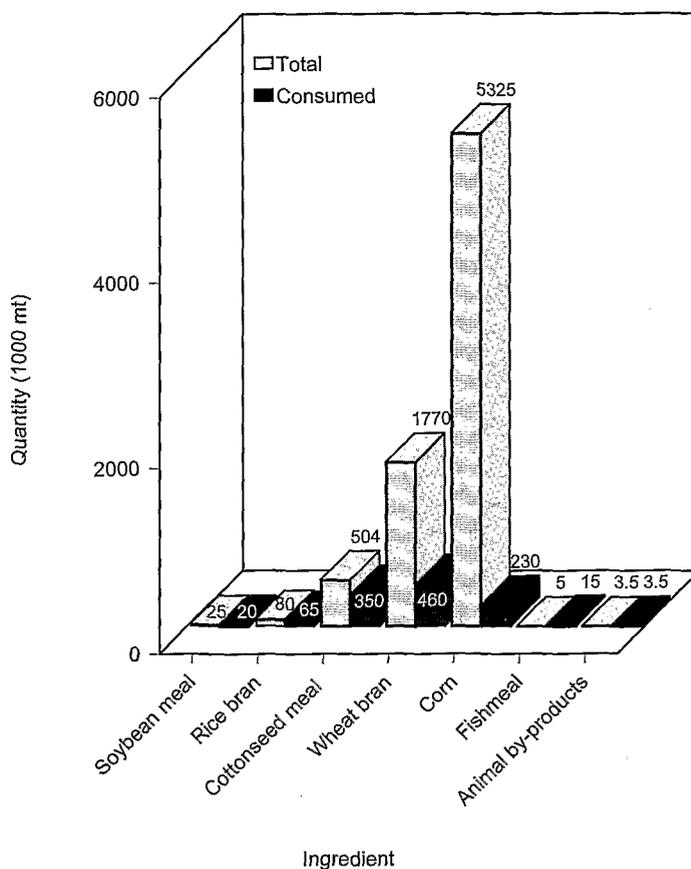


Fig. 1. Production and consumption of major feed ingredients in 1996.

### Manufactured mixed-feed

The rapid expansion and development of animal production industry in Egypt has been accompanied by a parallel development of animal feed industry. The local availability of feed ingredients at low prices makes animal feed industry highly feasible. Currently, there are 28 governmental feed mills, belonging to 9 major companies, located in different geographical regions of the country (Table 3). The total production reached 1.25 million mt in 1996, valuing about 250 million US \$.

The origin and prices of feed ingredients commonly used in mixed-feed manufacturing are listed in Table 4. These feed ingredients are subsidized by the government. Therefore, public sector represented by the Holding Company for Food Industries accounts for 88% of total mixed-feed manufacturing. Consequently, mixed-feed industry including manufacturing, import, export and marketing, is fully monopolized by the government.

### Marketing and distribution

Mixed-animal feeds and feed ingredients are marketed and distributed mainly by the governmental Agricultural Development and Credit Bank (ADCB). ADCB has 18 headquarters (governorates) and 158 main branches distributed in all governorates. In addition, there are 4,000 agricultural cooperatives distributed in all Egyptian villages. These cooperatives are responsible for the distribution of subsidized mixed-animal feeds. Manufactured mixed-feed is packed in 50 kg woven polypropylene bags with. The bags are closed either manually or with a string or heat-sealed mechanically.

Table 3. Animal feed manufacturers and estimated production in 1996†

| Company                                         | Feed mills locations                      | Capacity<br>(10 <sup>3</sup> mt) | Production<br>(10 <sup>3</sup> mt) | Products/feed lines                                                                                                                               |
|-------------------------------------------------|-------------------------------------------|----------------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Alexandria oils and soap                        | Kafr El-zayyat (Gharbia)                  | 165                              | 123                                | Poultry mash and pellets.<br>(starter, broiler, finisher<br>and layers. Livestock feed<br>Beef and dairy pellets (8-18<br>mm pellets, 17-20% cp). |
|                                                 | Alexandria                                | 115                              | 50                                 |                                                                                                                                                   |
| Salt and soda<br>(Alexandria)                   | Kafr El-Zayyat (Gharbia)                  | 316                              |                                    | Livestock starter, fattening<br>and dairy feeds.                                                                                                  |
|                                                 | El-Amyria (Alexandria)                    | 50                               |                                    | Livestock feed (pellets and<br>fodder, 17% cp).                                                                                                   |
| Alexandria extracted<br>oils and derivatives    | Damanhour (Behaira)                       | 140                              | 103                                | Pressed fodder, meat and<br>weaners feeds (18% cp)<br>Cotton seed and soy<br>bean oils                                                            |
| Tanta oils and soap                             | Tanta (Gharbia)                           | 95                               | 150                                | Pressed cotton seed<br>fodder, broilers and<br>layers feed (18% CP),<br>livestock feeds. Cotton<br>seed oil, soy bean oil.                        |
|                                                 | El-Mehalla (Gharbia)                      |                                  |                                    |                                                                                                                                                   |
|                                                 | Banha (Kaliobia)<br>Zanara, Tala, Minofia | 90<br>15                         |                                    |                                                                                                                                                   |
| Egypt oils and soap                             | Zagazig Sharkia                           | 80                               | 235                                | Poultry (starter, broiler,<br>finisher) feed (18-21% cp).<br>Livestock feeds, cotton<br>seed fodder and oil.                                      |
|                                                 | Belkas (Dakahlia)                         | 80                               |                                    |                                                                                                                                                   |
|                                                 | Meet Ghamr (Dakahlia)                     | 80                               |                                    |                                                                                                                                                   |
|                                                 | Kafr Saad (Damietta)                      | 60                               |                                    |                                                                                                                                                   |
| Cairo oils                                      | El-Ayyat, Giza                            | 65                               | 111                                | Dairy, meat and weaning<br>pellets<br>Dairy, meat and weaning<br>pellets (17% cp).                                                                |
|                                                 | El-Badrashin (Giza)                       | 65                               |                                    |                                                                                                                                                   |
| Nile oils and soap                              | Bany Korrah (Assut)                       | 10                               | 110                                | Pressed soybean cake,<br>dairy, meat and weaning<br>cattle feed, cotton seed<br>fodder and oil, soy bean<br>oil.                                  |
|                                                 | Kiman Saied (Assut)                       | 15                               |                                    |                                                                                                                                                   |
|                                                 | Akhmim (Sohag)                            | 15                               |                                    |                                                                                                                                                   |
|                                                 | Sohag                                     | 135                              |                                    |                                                                                                                                                   |
| Egyptian Co. for starch<br>and glucose industry | Mostorod                                  | 40                               | 20                                 | livestock feeds (dairy and<br>poultry feeds (starter, meat<br>pellets) broiler, finisher)<br>corn oil, starch                                     |
|                                                 | Tora                                      |                                  |                                    |                                                                                                                                                   |
| <i>Rice milling</i><br>Gharbia Rice Milling Co. | Shabsheer (Gharbia)                       | 102                              | 50                                 | Pellets (10-18 mm):<br>Fattening and dairy pellets<br>(17-20% cp)                                                                                 |
|                                                 | Meet Ghamr (Dakahlia)                     | 50                               | 28                                 | Livestock (dairy and<br>fattening) pellets (18% cp)                                                                                               |
|                                                 | El-Mehalla El-Kobra                       | 100                              | 50                                 | dairy and fattening pellets<br>(18% cp)                                                                                                           |
|                                                 | Zagazig (Sharkia)                         | 120                              | 50                                 | Dairy and fattening pellets<br>(17% cp)                                                                                                           |

Table 3. (Cont.) Animal feed manufacturers and estimated production in 1996<sup>†</sup>

| Company                | Feed mills locations | Capacity<br>(10 <sup>3</sup> mt) | Production<br>(10 <sup>3</sup> mt) | Products/feed lines                                                                   |
|------------------------|----------------------|----------------------------------|------------------------------------|---------------------------------------------------------------------------------------|
| Alexandria Milling Co. | Rositta (Behaira)    | 100                              | 60                                 | Livestock pellets (17% cp),<br>Livestock pellets (dairy,<br>meat and weaning pellets) |
|                        | Dalangat (Behaira)   | 100                              | 60                                 |                                                                                       |
| North Rice Milling Co. | Shirbeen (Dakahlia)  | 102                              | 50                                 | Livestock pellets (dairy,<br>meat, weaning).                                          |
| Total                  |                      | 2305                             | 1250                               |                                                                                       |

<sup>†</sup>The only shareholder is the Holding Company for Food Industries, Ministry of Public Enterprise  
Source: CAPMS (1996); Holding Company for Food Industries (1997)

Table 4. Sources and prices of feed ingredients commonly used in animal feed manufacturing in Egypt in 1996

| Ingredient                      | Origin   | Price<br>(US \$/mt) |
|---------------------------------|----------|---------------------|
| <b>Animal sources</b>           |          |                     |
| Blood meal                      | Local    | 250                 |
| Fishmeal                        | Local    | 500                 |
| Fishmeal                        | Imported | 900                 |
| Gelatin                         | Local    | 4500                |
| Meat meal                       | Imported | 500                 |
| Meat and bone meal              | Local    | 300                 |
| Poultry by-product meal         | Local    | 300                 |
| Shrimp meal                     | Local    | 250                 |
| <b>Plant sources</b>            |          |                     |
| Cottonseed meal (with hulls)    | Local    | 170                 |
| Cottonseed meal (without hulls) | Local    | 270                 |
| Yellow corn                     | Imported | 200                 |
| Corn gluten (grade 1)           | Local    | 230                 |
| Corn gluten (grade 2)           | Local    | 150                 |
| Corn starch                     | Local    | 300                 |
| Rice bran                       | Local    | 150                 |
| Rice mill run                   | Local    | 150                 |
| Soybean meal                    | Local    | 270                 |
| Soybean meal                    | Imported | 300                 |
| Coarse wheat bran               | Local    | 120                 |
| Fine wheat bran                 | Local    | 170                 |
| <b>Others</b>                   |          |                     |
| Cod liver oil                   | Imported | 1000                |
| Fish (sardine) oil              | Local    | 350                 |
| Corn oil                        | Local    | 1000                |
| Vitamin and mineral premix      | Imported | 8000                |
| Vitamin and mineral premix      | Local    | 7000                |

Just recently, the private sector has been allowed to invest in mixed feed manufacturing and marketing. A number of private feed mills has been constructed, or under construction. Most of these mills produce poultry feeds. Therefore, the private sector annual capacity for poultry feed

manufacturing is currently about 283,298 mt compared to only 13,827 mt from the public sector (Feed and Grain in the Middle East, 1997). The quality of private sector feed products is usually higher than that of governmental sector.

Medium-to-large sized companies operating in dairy and livestock industries generally install their own feed mills. In addition, most farmers produce their own on-farm feeds from crops residues and grains. Therefore, it is difficult to accurately estimate the amount of feed or feed ingredients currently used in animal feed industry (Feed and Grain in the Middle East, 1997).

The technology used in mixed-feed manufacturing is generally manual or semi-automatic. There is no full automation, especially in public sector feed mills, mainly due to: (i) the cheap and available labour; and (ii) easy and simple maintenance.

The local availability of feed ingredients at low prices makes mixed-feed manufacturing highly profitable. However, there are some constraints that hamper the development of mixed-feed manufacturing in Egypt. These include:

(i) The lack of quality control measurements. The quality of manufactured mixed-feed varies from feed mill to another. Generally, the quality of public sector production is inferior to that of private feed mills. Feed ingredients are also varying in their quality from location to another. The lack of quality control measurements sometimes lead to using ingredients (e.g., fish meal) of poor quality and even spoiled in some instances.

(ii) The increasing prices of imported ingredients (mainly fish meal and yellow corn).

(iii) Poor processing and handling techniques. The processing and handling methods of some of animal feed sources, specially animal proteins (fish meal, shrimp meal, poultry by-products, blood, meat and bone) and oils are primitive. This adversely affects the quality of these sources.

(iv) Poor storage of feed ingredients and produced mixed-feeds. The storage systems of animal feeds and feed ingredients lack the basic requirements for proper storing. Thermal control and ventilation regimes are totally lacking. Instead, feed ingredients and produced feeds are stored mainly outdoor (in many cases uncovered). Extreme weather conditions, rodents, insects and wild birds cause a great loss of these sources and seriously affect their quality and durability.

(v) Poor marketing and distribution channels. As mentioned earlier, subsidized mixed-animal feeds are marketed and distributed by the governmental ADCB. This situation usually creates black markets in some governorates and during certain seasons where natural food (mainly alfalfa) is available.

## Prospects

Egyptian government has recently adopted the policy of privatization of a number of governmental sectors for the sake of improving their performance, increasing their profits and encouraging the private sector to participate in national development. Animal feed industry was given a special attention. This initially began by renting a number of flour and rice mills owned by the government to private businessmen. They were allowed to import wheat, mill rice and wheat and manufacture animal feeds. Afterwards, private buyers started buying their own mills and manufacturing good quality feeds. In the mean time, the private sector was allowed to take part in marketing and distribution of mixed-feed. Therefore, marketing channels are expected to improve substantially.

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