

Libya's poultry industry on its

Libya's poultry industry is becoming a major aspect of the agricultural sector and its economy. The country is sustained by oil and agriculture. After many years of economic sanctions it is now possible to improve and expand its poultry industry.

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Prior to the Al-Fatih Revolution in September 1969, which was the end of the monarchy, poultry meat and eggs were produced in Libya only on small-scale (family) farms using local or indigenous breeds. Since then, Libya's poultry industry has become established on a large-scale and commercial basis. The commercial poultry sub-sector has become a considerable protein source for consumers as well as a substantial source of income for poultry keepers with steadily increasing poultry produce. The expansion has resulted from increased public and private investment in the industry. The commercial poultry sub-sector is also a source of employment. It is estimated that about 14,000 people (of 180,000 people working in the agricultural sector) are directly involved in this sub-sector.

Poultry statistics

Livestock population statistics in Libya indicate poultry to be the most numerous species of farm animals. Chickens largely dominate poultry flock composition. The total chicken population of Libya tends however to be constant (Table 1), whereas statistics on ducks, geese and turkeys are not available. Between 1985 and 2003, growth in chicken population was higher in Libya, compared with Africa and the world. Nevertheless, over the same period, the ratio of chicken to human population was estimated at 3.66 in Libya, compared with 1.44 in Africa and 2.23 in the world. This ratio increased from 1985 to 1995 before decreasing after 1995. The period of no growth in chicken numbers coincided with the U.N. Security Council Resolution 748 (on April 15, 1992) imposing economic sanctions on Libya for refusing to extradite two Libyan nationals accused of carrying out the 1988 bombing of Pan Am flight 103 over Lockerbie, Scotland, and for not cooperating in the investigations of other bombings.

In family (small-scale) poultry produc-



For many years Libya has seen little development in poultry production.



A Libyan poultry worker in a poultry house with 4-week old ISA 30 parent stock in Al-Hira Poultry Complex, near Tripoli, Libya.



A private poultry farm. Note the very small size of these 3-week old broilers (low performance).

tion, average chicken flock size is estimated at 10-30 birds per household. In the industrial poultry sub-sector, poultry flock size is estimated at 5,000-15,000 broilers per farm and 10,000-20,000 layers per farm.

Poultry complexes

The contribution of Libya's poultry industry to meat and egg production has been increasing substantially since 1970 (Table 2). In 2003, about 80% of the 106,000 MT chicken meat and more than 95% of 1.2 billion table eggs are supplied by the private poultry sub-sector, the respective remaining percentages being supplied by government-supported poultry projects (now called poultry complexes). There are six poultry complexes in the country. For instance, production performance of the Al-Hurriyah Poultry Complex in Touayshah (situated about 35 km south of Tripoli) is provided in Table 3.

Poultry complexes contribute more than 40% of Libya's needs of chicken meat, and the total number of projects' manpower amounts to around 3,000 persons, including engineers, technicians, and workers.

All poultry complexes are equipped with all necessary specialized means for transporting live poultry, in addition to mobile maintenance and veterinary units.

The bulk of production (52% for broilers and 58% for layers) is sited in the west of the country, followed by the east with 19% and 18% respectively, the north with 17% and 14%, while the south accounts for only 12% of all broilers and 10% of the layers. This production spreads broadly depending on the pattern of poultry meat and egg consumption, alternative protein sources such as mutton and camel having a higher preference among consumers outside the western part of Libya.

Breeds and breeding

The performance of local chickens is far below that of exotic (genetically improved) chickens (Table 4). This has led to imports of hybrid lines such as Hubbard-ISA, Hendrix and Hy-Line into Libya. Seven central units devoted to the production of both broiler and layer breeding stock are available in the country, four of these being located in Tripoli and the others in Benghazi.

way to large-scale privatization



Laying quails reared in cages on a government quail farm. This poultry species is being introduced into Libya.

The total annual production of hatching eggs and broiler chicks is estimated at 135 million and 93 million, respectively. When production does not meet the demand of farmers, imported hatching eggs fill the gap. Hatchability rate usually varies between 70% in summer (May to September) and 90% in winter (November to January). For imported eggs, this figure can however fall as low as 30% or less due to stress factors exerted on the eggs together with long distance road transport, which can last four days or more. The majority of broiler/layer chicks are sold directly to private farmers in quantities ranging from 3,000 to 10,000 per farmer, and the rest is delivered to poultry complexes. Performance of poultry stocks reared in these government-supported poultry complexes tends to be higher, compared to the results obtained from private farms.

Meat and egg consumption

Before the introduction of commercial poultry farming in Libya, the per capita consumption of poultry products (meat and eggs) was low (Table 5). It then shows a very rapid increase, especially with the consumption of eggs. Libyan consumers prefer brown-shelled eggs. This determines egg-laying strains that are adopted. Since very recently, negative media coverage especially in relation with the cholesterol issue and the occurrence of new and unknown diseases in poultry has raised concern among egg consumers. Consumption of poultry products is not constrained by purchasing power, which turned out to be adequate in Libya.

Marketing

Prior to 1969, poultry meat or eggs were rarely offered in the market or included in meals. In recent years, poultry products have gained in popularity among many Libyans. Consumption of poultry products however follows a seasonal pattern, being higher in winter and lower in summer. As a result, prices of poultry products shows

Table 1 - Numbers of chickens in Libya, Africa and the world

	1985	1990	1995	2000	2003	Δ%
Numbers (millions)*						
Libya	10.0	16.5	25.5	24.8	25.0	150.0
Africa	701.1	921.2	1,052.6	1,228.2	1,339.7	91.1
World	8,626.7	10,680.0	12,983.0	14,833.1	16,605.1	92.5
Ratio of chicken population to human population**						

Table 2 - Ready-to-eat chicken meat and egg production in Libya

Chicken meat (MT)	Eggs (million)
1970	1,900
1982	37,700
2003	106,000
2007 (expectations)	150,000

Source: Libya's Secretariat of Agricultural, Land Development and Animal Resources.

Table 3 - Production performance of Al-Hurriyah Poultry Complex in Touayshah, Libya

Product*	Quantity**
Hatching eggs	8,000,000 eggs
Day-old chicks	5,000,000 chicks
Broiler meat	6,000 MT
Automatic slaughter plant	97,095 broilers and parent stocks slaughtered weekly (3,000 birds/hour)
Manufactured feeds	20,000 MT

* With personnel of around 700 workers, including engineers and technicians. ** Data published in 2004

the same trend. In summer, prices of poultry products are estimated at Libyan Dinar (LD) 1.5-2.0 per kg chicken meat and LD 1.25-1.50 per one tray of (30) eggs (US\$1 = LD1.35). In winter, prices are LD 2.50-2.75 per kg chicken meat and LD 2.5-3.0 per one crate of eggs. In addition, compared with eggs and chicken meat from intensively raised flocks derived from imported stocks, those from indigenous stocks are preferred by Libyan consumers. They therefore fetch premium prices. For example, the average price of an indigenous chicken egg amounts to LD 0.25. This represents more than 3 times of the price of an egg from genetically improved hens (LD 0.075/egg). Libyan dishes prepared using indigenous chickens are often regarded as delicacies and meat and eggs from indigenous chickens are considered to be tastier and healthier (because synthetic drugs, such as antibiotics, are rarely used).

Broilers from both poultry complexes and private farms are marketed through slaughterhouses, small butcheries, wholesalers and brokers. However, while broilers from the poultry complexes are sold at 45 days of age, those from private farms are usually sold at 30-35 days old as this can reduce the risk of disease outbreaks. Moreover, butcheries tend to prefer these smaller birds. About 90% of consumers are estimated to buy slaughtered chickens, while the remaining 10% buy live birds. Table eggs as well as hens at the end of their laying cycle of around 82 weeks of age are usually sold through wholesalers or brokers. Because no storage facilities are available on most farms, table eggs are sold on a daily basis or every two days.

Husbandry conditions

In the poultry complexes, closed-house systems are usually adopted for parent stocks,

Table 4 - Comparative performance of local and exotic chicken breeds in Libya

	Local	Exotic (genetically improved)
Broilers		
Body weight at 45 days (kg)	0.9	1.8
Feed conversion ratio*	4.5	2.3
Mortality (%)	15.0	7.0
Layers		
Age at sexual maturity (weeks)	22.7	21.5
% egg production over 12 weeks	72.3	90.0
Feed conversion ratio**	160.5	140.2
Egg weight (g)	40.0	55.2

* Feed consumed (g) per weight gain (g); ** Feed consumed (g) per eggs produced (g)

Table 5 - Ready-to-eat chicken meat and egg consumption in Libya, Africa and the world

	1970	1982	2003
Chicken meat consumption (kg/person/year)			
Libya*	1.3	9.5	10.7
Africa**	3.0	3.2	3.8
World**	2.3	5.5	12.2
Egg consumption (No. of eggs/person/year)			
Libya*	42	98	223
Africa**	40	42	41
World**	100	118	195

Source: * Libya's Secretariat of Agricultural, Land Development and Animal Resources; ** Author's estimate.

layers and broilers. In general, each house is 100 metres long by 12 m wide and is fully equipped with automated feeding, drinking, lighting, ventilation and heating/cooling systems. There are windows on the sides but these are opened only in cases of elevated temperatures, excessive ammonia concentration or when there is an

emergency associated with an electricity failure or a breakdown of automatic ventilators. In contrast, open-house systems are usually adopted in the private poultry farms. The houses are operated either manually or automatically, depending on the farm size and the financial resources available. The houses are generally single-floored though sometimes multi-floored houses are built in areas where land is a limiting factor or when other activities such as livestock or farm machinery are accommodated with the same enterprise. It was found out that the state-of-the-facility is much better in poultry complexes, compared with the private poultry farms. In poultry complexes, there are often huge and sophisticated poultry facilities, which require highly skilled manpower. These facilities are difficult to maintain and require the availability of suitable spare parts. Because of economic sanctions imposed on Libya, it was not possible to easily import spare parts into the country.

In most cases, flocks of birds are floor-reared on standard types of litter including straw and sawdust. Stocking density rates usually adopted are 9-12 birds/square metre for broilers and 4-5 birds/m² for layers. These figures however depend largely on the season, being higher in winter and lower in summer.

For broilers and also for layers, light is provided night and day up to 16 weeks of age after which it is reduced to 10 hours/day and gradually increased to 14 hours/day at 20 weeks of age. This latter lighting regime is then maintained con-

Libya lives on oil and farming

Libya, whose official long name is The Great Socialist People's Libyan Arab Jamahiriya, is a country that produces and exports oil. Oil contributed to more than 45% of GDP in 2000 and more than 90% of foreign currency earnings. Libya's human population was estimated at about 6.4 million in 2000 and is growing at an annual rate of about 3.1%. It is expected to reach 10.1 million in the year 2015. Most of this population is concentrated in the coastal area. The per capita income is estimated at US\$ 6,434 in 2000. Up until the discovery of oil in the late sixties, Libya was an agricultural society and was classified among the poorest nations in Africa with more than 80% of the human population working in agriculture and related activities/services.

In most parts of Libya, there are harsh climatic conditions. Libya has a total area of about 1.76 million km². Arable land is estimated at 3.6 million hectares, representing only 2% of total land area in Libya. More than 90% of the country is desert or semi-desert, and average annual rainfall is very low (about 26 mm). Limited natural resources of land and water are among the most constraining factors for agricultural production.

Indigenous chickens are a consumer preference and fetch premium prices.

stant until the flock is removed at 82 weeks of age.

Heating is very important in poultry rearing, especially for young birds. Gas provides the cheapest source of heating. It is provided through a range of equipment including gas brooders, propane heaters and also kitchen stoves. Such conventional heating methods are used in private poultry farms and more advanced methods are adopted in poultry complexes.

Feed resources and feeding

As in most African countries, one of the principal constraints to poultry industry development in Libya is related to feed resources and feeding aspects. Feed costs usually represent 60 to 70% of the economic inputs in the Libya's poultry industry, and in many cases, poultry business failures can be traced to poor feeding of the birds. Feed resources of high quality and at attractive prices should be made available. This will allow the formulation and mixing of poultry rations that are as balanced and as inexpensive as possible. There are 11 central feed manufacturing plants in Libya, operating at 10-20 MT/hour.

The total capacity of production of poultry feeds in Libya is about 750,000 MT. Most of the feedmills belong to the government. Main components of commercial poultry rations frequently used include maize, barley, wheat bran, alfalfa meal, cottonseed meal, soybean meal and salt, most of which are imported. Most of the cereal grains are imported from Latin America. A few like soybean meal and salt are produced locally, but production is not sufficient. In addition, premixes containing amino acids (lysine and methionine), magnesium oxide, vitamins, minerals and coccidiostats are often incorporated into the poultry rations. Poultry feeds were traditionally produced in mash form containing a metabolizable energy (ME) of 2,940 kcal/kg feed. However, in recent years, there has been some shift towards the production of pelleted feeds. This can be explained by the fact that pelleted feeds usually contain higher ME

values (3,180 kcal/kg feed) since more fat or oil could be incorporated in the pellets without causing problems to the feed delivery system. The increased energy density of the pellets has led to improved bird performance, especially for broilers. In some cases, the average body weight of broilers fed on pellets was 1,900 g at 49 days, compared with 1,600 g when fed mash.

Unfortunately, the central plants can barely produce sufficient feed to meet the poultry industry's requirements in Libya. This has forced most private farmers to buy rations from unauthorized and uncontrolled feedmills. In most cases, such feeds have a fixed nutrient composition throughout the production cycle for both broilers and layers, in part to minimise labour costs. Such poultry feeds usually contain low protein value with an imbalance in the supply of other nutrients, inadequate feed additives and often a high level of mould. This is largely responsible for modest performances observed in birds and wet droppings that increase the moisture content of the litter, contributing to high ammonia levels in poultry houses.

Final conclusions

Since Libya's Al-Fatih Revolution in September 1969, its government has been paying due attention to the country's poultry industry. This is part of Libya's continuous endeavour to realize self-sufficiency in foodstuffs of animal origin, such as poultry meat and eggs. Various poultry complexes were set up and supported to achieve this goal. In addition to producing laying poultry and hatching eggs, poultry complexes supply more than 40% of Libya's chicken meat requirements. Consequently, poultry products have gained in popularity among many people and the industry is becoming a major aspect of the agricultural sector and of the country's economy.

Some of the poultry complexes are facing various constraints such as high number of salaried personnel, difficulty in managing too high numbers of birds, low competitiveness of poultry products and high mortality rates especially during hot seasons. It is encouraging to notice that initial steps are being made to adopt a more market-based economy, by reducing some subsidies and providing institutional enabling environment for foreign investors. ■

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