

Poultry production in the Middle East and African States: situation, future and strategies

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Abstract

The statistics of poultry production in the Middle Eastern and African States will be examined. The future and strategies for each country or region will be discussed. As for the Middle Eastern States, they went through a very rapid growth in the poultry sector since the last two decades of the 20th century. Massive investments were made in the development of environmentally controlled poultry houses equipped with evaporative cooling systems. The annual average per capita consumption of poultry meat and eggs in this region is below world averages. There are several constraints to the future development of the poultry industry including the development of the various supporting industries necessary for commercial poultry production and combating poultry diseases. It can be stated that within Africa, the demand for the livestock and poultry products is increasing. Africa experiences the fastest population growth with more than double any other region. The main components of the poultry sector, in Africa, are the family and rural sectors which make around 80% of poultry stocks in many African developing countries. The smallholder production is mainly free-range systems. Women are the care takers and decision makers of most chicken flocks, and chicken meat is eaten more than any other meat. In the African continent, chicken egg production and chicken meat production, as a whole, went up during the last decade.

Keywords: Poultry meat; egg production; broiler; chicken diseases

Introduction

The United States Department of Agriculture divides Africa into North Africa and Sub-Saharan Africa. North Africa includes the countries of Algeria, Egypt, Libya, Morocco and Tunisia with the balance of countries in Africa in the Sub-Saharan Region. Africans human population in 2006 was estimated to as 1162 million, with around 730 million living in sub-Saharan African and 432 million in the Near East within North Africa. It's expected that in 2015, the Africa population will reach 1416 million with 912 million in Sub-Saharan African population and 504 million in the Near East within North Africa (Alexandratos and Bruinsma, 2012).

In 2012, the global meat production expanded by nearly 2% to 302 million metric tonnes, according to estimates from the Food and Agriculture Organization of the United Nations. This growth was driven by gains in pig meat production and poultry production. For the first time in history poultry production exceeded 100 million metric tonnes, reaching a record 101.6 million metric tonnes in 2011. Global poultry production increased 1.8% by the end of 2012 to 103.5 million metric tonnes. Rising domestic demand with an increasing population will continue to raise imports in Africa. In Egypt, a country also hit by the spread of Avian influenza outbreaks in early 2012, as well as in Angola, Benin and Ghana, the regional dependency on

imports is currently estimated at 24% of the domestic consumption, up from 18% in 2009. However, production in South Africa will continue to increase due to imposed anti-dumping duties on US and Brazilian poultry imports (Conway, 2012).

On the other hand, Middle East and North African demand is expected to increase, benefiting key suppliers as India and Brazil. Higher imports are expected for Algeria (20%), Saudi Arabia (5%), Israel (8%) as well as a wide section of smaller markets such as Oman, Libya and the United Arab Emirates. Growing populations, limited domestic supplies, domestic resource constraints and ample Indian and Brazilian supplies at competitive prices are driving regional demand. Only Egypt is expected to lower its poultry imports by 2% to reach 225 thousand tonnes as a rise in domestic production offsets consumption growth (USDA, 2012a).

Poultry production in Africa and the Middle East

The poultry industry is highly developed in South Africa and has seen a great deal of development in other African countries. Eggs and poultry meat are beginning to make a substantial contribution to relieving the protein insufficiency in many African countries (Daghir, 2008). However, Sonaiya (1997) and Gueye (1998) reported that almost 80% of poultry production in Africa is found in the rural and peri-urban areas, where birds are raised in small numbers by the traditional extensive or semi-intensive, low-input–low-output systems. According to a study by Mcainsh *et al.* (2004), chickens are the most commonly kept livestock species in Zimbabwe. Chicken production is divided into large-scale and smallholder chicken production. The smallholder production is mainly free-range systems. Women are the care takers and decision makers of most chicken flocks, and chicken meat is eaten more than any other meat. Adegbola (1988) reported that only 44 eggs were produced in the African continent per person per year. Per capita consumption of eggs and chicken meat has increased significantly in certain African countries, particularly where production has been rising, as one would expect. For example, per capita egg consumption in South Africa went up from 104 eggs in 2005 to 117 eggs in 2009, and poultry meat consumption from 21.5 kg in 2005 to 28.4 Kg in 2009 (FAOSTAT, 2012).

Chicken meat production in Africa as a whole went up from 3297 thousand tonnes in 2005 to 4592 thousand tonnes in 2011. The leading countries in chicken meat production in Africa are Algeria, Egypt, Morocco, South Africa, and Nigeria (FAOSTAT, 2012). There is very little statistical information on the industry from other African countries, with few exceptions. In spite of the expansion that Nigeria has seen in its poultry meat industry, per capita consumption is still below 1.7 kg in 2009 (FAOSTAT, 2012). The Moroccan industry had undergone tremendous growth since the early 2000s, when per capita consumption was estimated at 133 eggs and 9.3 kg of poultry meat. In 2009, per capita consumption in Morocco is 98 eggs and 17.3 kg of poultry meat (FAOSTAT, 2012). Egypt industry had also undergone tremendous growth since the early 2000. Per capita consumption was estimated at 100 eggs and 10 kg of poultry meat in 2005 before the Avian Influenza epidemic. In 2009, per capita consumption in Egypt was estimated at 63 eggs and 10 kg of poultry meat. The top egg-producing countries of Africa (Nigeria, South Africa, Egypt, morocco, and Algeria) have increased their production from 1501 thousand tonnes in 2005 to 1,857 thousand tonnes in 2009 (FAOSTAT, 2012).

The Middle East has gone through very rapid growth in the poultry sector during the last two decades of the 20th century. Massive investments were made in the development of environmentally controlled poultry houses equipped with evaporative cooling systems. In the Arab world alone, over 22 billion table eggs are produced annually, which account for over 2.5% of the total world production of table eggs (Morocco, Algeria, Egypt and Syria being the highest producers) (Daghir, 2008). Poultry meat production in these countries amounted to over 2500 thousand tonnes in

2005, with Saudi Arabia in the lead followed by Egypt and Morocco (Freiji, 2005). The annual average per capita consumption of poultry meat and eggs in the Arab world is 8 kg and 70 eggs respectively, which is below world averages of 11.2 kg and 145 eggs. The potential for increased needs for poultry products in those countries is very obvious. Even in countries where production has increased significantly, the demand is still higher than the supply. Kuwait, for example, still imports over 50% of its needs for poultry meat and 45% of its table eggs (Al-Nasser, 2006).

Poultry consumption in the Middle East reached 4.7 million metric tonnes in 2005 in comparison with 4.5 million metric tonnes in 2003, where the main consumers, per capita, were the Saudi Arabia, Jordan, Lebanon, and Iran. Poultry production reached 2.8 million metric tonnes in 2005 in comparison with 2.7 million metric tonnes in 2003. The main production countries were Iran (30%), Egypt (20%) and Saudi Arabia (18%). Iran has been rated 1st producer and also 1st exporter of poultry meat in the Middle Eastern region. The poultry industry, with nearly 2.3 million tons of output ranked 8th in Asia and 18th in the world (Mahjoor, 2013). In Iran, Poultry production from poultry meat was 1671 thousand tonnes in 2012 in comparison to 1681 thousand tonnes in 2013 (FAO, 2013). In Iran annually, per capita poultry meat consumption rose from 12.7 kg in 2000 to 22.2 kg in 2009. Also, per capita egg consumption rose from 6.8 kg in 2000 to 7.7 kg in 2009 (FAOSTAT, 2012).

Poultry production systems in Egypt are quite diverse, ranging from rural very small-scale, extensive poultry production to highly intensive caged systems with over 70,000 birds per house in industrial commercial systems. In 2000, 63% of Egypt's chicken meat output was produced by the commercial sector. In contrast, traditional operations produce 22% of chicken meat, 64% of ducks, 34% of turkeys, and all geese and pigeons (Hosny, 2008). Recently there has been a general trend towards more vertical integration and the establishment of large scale production multi-nationals (e.g. Cairo Poultry Company, El-Watania Poultry Company, El-Wadi Poultry Company,...etc. Integrated poultry companies have highly mechanized feeding, watering and environmental control systems such as heating, cooling and ventilation. There are a few highly automated, large-scale poultry enterprises with an annual broiler production of over 25 million broilers annually. However, currently these enterprises are planning on doubling their annual broiler production. El-Watania Poultry Company has merged with Al-Rajhe, which is a Saudi Arabian Poultry Company, with an initial plan to produce in Egypt 30 to 40 million broilers per year in 2007 to reach 100 million broilers in 2009 (Hosny, 2008). In 2005, the Egyptian poultry meat production was 654900 tonnes which rose to 900733 tonnes in 2011. Also, there was an increase in egg production in 2011 which was 5.8 billion eggs in comparison to 5.2 billion eggs in 2005 (FAOSTAT, 2012)

Poultry meat production in Saudi Arabia is forecasted to reach 642,000 metric tonnes in 2013, an increase of 8% compared to its production in 2012. Almost, all poultry meat production in Saudi Arabia is broiler chicken, with the exception of about 1,500 metric tonnes of quail meat produced by one specialized farm known as Astra Farms (USDA, 2012b). In Saudi Arabia per capita poultry meat consumption rose from 39.5 kg in 2000 to 42 kg in 2009 (FAOSTAT, 2012). On the other hand, South Africa will slaughter about 1,010 million broilers, equal to 1.42 million tons of meat, in 2013; only marginally more than the 997 million broilers slaughtered in 2012. This is because the cost of poultry feed is expected to remain at relatively high levels. South Africa consumed approximately 1.8 million tons of broiler meat in 2012, a rise of almost 70% since 2000. A seven percent increase (to 395,000 metric tonnes) in broiler meat imports for 2013 is expected. This is due to a relatively weaker exchange rate, after a 13% increase the previous year. The United States supplies only three percent of South Africa's total poultry meat imports (USDA, 2013a).

In Turkey, the proportion of chicken meat production to total meat production was 34.9 % in 1980 that rose to 60.3 % in 2004. This was very high compared to a 19.5 % increase for European Countries during the same period. The proportion of chicken meat production to total meat production was 57.7 % in Turkey in 2006. Chicken meat production quantities in Turkey rose from 401.6 thousand tonnes in 1990 to nearly 1.06 million tonnes in 2007, which corresponds to yearly average of 38.1 thousand tonnes increase during the period (Terin *et al.*, 2009). In 2009, approximately 16.6 kg of poultry meat and 9.4 kg eggs were consumed annually per capita in Turkey (FAOSTAT, 2012). The poultry meat sector has doubled during size in the last 10 years, while an export, which was 248,000 tonnes last year, are on target to reach 535,000 tonnes by 2016. Production is in the hands of 28 integrated companies and contributes 6.3% to Turkish agricultural output. The Turkey poultry industry produced 1.73 million tonnes of poultry meat in 2011. The Turkish egg industry, although more fractured than the broiler sector, is also growing fast. It is the world's 11th largest operator, producing almost 14 billion eggs in 2011. Egg exports have increased by over 200% from the end of 2009 to 2012 (Carlton, 2012).

Israel's poultry sector accounts for about 19 % of the country's total agricultural output. Israel's world ranking is 8th in Turkey production, 11th in geese production and 35th in chicken meat production. Broilers account for 61% of Israel's total poultry production, including broilers breeder. Turkey represents 18 % and eggs accounted for about 20% of the total poultry production. In 2005 Israel produced 335,000 metric tonnes of chicken meat, 125,316 metric tonnes of turkey meat and 90,700 metric tonnes of table eggs. Chicken meat ranked first, turkey meat fourth, and hen eggs seventh in Israel are ranking of agricultural commodities in 2005 by value. About 80% of Israel's poultry consumption comprises fresh meat (USDA, 2007) Consumption of poultry meat and eggs per capita, on a ready-to-cook basis, is among the highest in the world. Approximately 66 kg of poultry meat and 9.6 kg eggs are consumed per capita in Israel annually (FAOSTAT, 2012).

Poultry meat and egg Imports and production in Africa and the Middle East

The majority of the United States poultry exports to Africa go to the Sub-Saharan Region. During January 2013 the total U.S. broiler meat exports to Sub-Saharan Africa was 29,508 thousand metric tonnes which was up 32% over January 2011 which was 22,382 thousand metric tonnes. The Sub-Saharan ranks 4th for U.S. broiler meat exports. What is significant about U.S. broiler meat exports to North Africa, even though the region ranks 13th for U.S. broiler meat, is their U.S. broiler meat imports for January 2013 was 1,320 thousand metric tonnes. This was also considerably above January 2012 levels which was 614 thousand metric tonnes. The Sub-Saharan Region in Africa continues to be the dominant region in Africa for January 2013 U.S. turkey meat exports with nothing of significance going to the North Africa Region. Sub-Saharan Africa currently ranks 3rd behind North America and East Asia in regions of the world for January 2013 U.S. turkey meat exports. Total January 2013, U.S. turkey meat exports were 40 thousand metric tonnes in comparison to 32 thousand metric tons in January 2012. North Africa and Sub-Saharan Africa ranked 9th and 11th in regions of the world for January 2013 U.S. egg product exports. The U.S. January 2013 egg product exports were 57.2 and 16.1 metric tonnes to Sub-Saharan and North Africa, respectively (USDA, 2013b).

In addition, Brazil's broiler meat production reached 13.3 million metric tonnes in 2012, driven mostly by domestic demand and a small recovery in exports. Broiler meat production is influenced by the world economic uncertainties impacting some major Brazilian export markets, as well as issues with some trade partners. Other important factors include an overvalued Brazilian currency, a slowdown in the

growth rate of domestic consumption, and higher costs of production due to higher corn prices. In January 2011 the total Brazilian broiler meat exports was 99 thousand metric tonnes to Angola, 72 thousand metric tonnes to Egypt, 38 thousand metric tonnes to Ghana, 623 thousand metric tonnes to Saudi Arabia, 195 thousand metric tonnes to South Africa (USDA, 2012c)

Constraints to Increasing Poultry Production in Africa and the Middle East countries

Poultry production systems in the Middle East and some African countries are quite diverse, ranging from rural very small-scale, extensive poultry production to highly intensive caged systems. Recently there has been a general trend towards more vertical integration and the establishment of large scale production multi-nationals companies. Integrated poultry companies have highly mechanized feeding, watering and environmental control systems such as heating, cooling and ventilation. Dwinger *et al.* (2003) reported that other countries in Africa depend on family poultry production. There are many factors affecting the poultry production in these countries such as:

DISEASE

One of the constraints for increasing poultry production is poor health. Newcastle disease (ND) is regarded as the principal factor limiting rural poultry production in Africa (Awan *et al.*, 1994). The ND can typically kill up to 80% of household poultry in Africa (Spradbrow, 1993-94). The survivors have high antibody levels and are resistant for a while, but as the level of antibodies and the level of protection fall, the population becomes susceptible again, and the cycle is repeated. The disease is spread by contact between birds, which is exacerbated by the practice of taking birds to market from a flock where disease is incubating. However, many aspects of the epidemiology of the disease in the village situation have not been fully understood (Awan *et al.*, 1994).

Another important disease, especially for smallscale intensive broiler flocks, is Gumboro or Infectious Bursal Disease (IBD). This can kill up to half the chickens in a susceptible flock. IBD also has an immuno-suppressive effect, resulting in a poor response to vaccination and increased susceptibility towards other pathogens. Much less is known about the importance of IBD in African village chickens compared to ND, but in the few countries from which reports are available, the sero-prevalence seems to be high (Bell and Abdou, 1990).

Intestinal and ecto-parasites are also of importance in traditional poultry production and can cause high mortality (Permin, 1997). Other pathogens that have been shown to be present in family poultry include *Salmonella*, *Mycoplasma*, infectious laryngotracheitis, chicken anemia agent, *E. coli* and fowl pox virus (Bouzoubaa *et al.*, 1992). Very little is known about the effects of these pathogens on poultry populations in rural Africa and in the Middle East. In addition, highly pathogenic H₅N₁ Avian Influenza detection in number of African and in the Middle Eastern countries led to a significant reduction in consumer poultry demand during 2006. However, consumption increased during 2007 as consumer confidence and education have improved.

HOUSING

Other constraints to increasing poultry production in rural areas are losses due to predators and insufficient feeding. In some African countries, a large proportion of village poultry are lost due to nocturnal predators (Bell and Abdou 1995). In other countries, simple night shelters are constructed from locally available materials. Attention should be given to the possibility of providing overnight shelter to family

poultry. This will involve assessment of the availability and cost of local building materials as well as an assessment of the benefits of overnight protection (resulting in a lower mortality).

FEEDING

Family poultry survive by scavenging and generally, no feed supplements are provided. However, sometimes, household waste is fed to the birds and under other circumstances; the diet is supplemented with grains. If losses due to disease and predators are removed, it is very likely that the feed resource base will become the major factor limiting production increase. Small amounts of strategically administered supplements are likely to increase production and minimize mortality once the other constraints have been removed. Various locally available food supplements can be tested for their effect on production levels (Gunaratne *et al.*, 1993). Supplementation protocols will vary according to production system, ecological zone and the availability and cost of foodstuffs. The interaction of the three constraints, disease, housing and feeding, underlines the necessity for a holistic approach to interventions. However, other constraints to poultry production should also be considered, such as marketing. A cost-benefit analysis should also form part of the activities to assess the economic advantage of this system.

Future of the poultry production in Africa and the Middle East

Population growth in African and Middle East countries will increase in the next decades which demand more food supply to cover its need from animal proteins. Multiple changes in meat and egg production in African and the Middle Eastern countries are expected in the future decades (Tables 1 and 2) to increase the production quantity. However, meat production will not cover the population needs from animal protein. Poultry imports by Africa and the Middle East currently account for about 45 percent of imports by the major importers. Income and population growth boosts demand in the projections. In addition, ongoing animal-disease concerns in a number of countries are expected to slow growth in production and to increase demand for imports. As a result, the region's imports grow more than the rest of the world combined and by 2022 account for 52 % of world imports (Table 3). The Middle East accounts for more than half of the region have projected increase in imports. Imports by the Economic Community of West African States grow much more rapidly in percentage terms, but from a small base.

Table 1. Meat production: number of animals and carcass weight.

	Number of animals (million)			Number of animals Annual Growth (% percent annual)		Carcass weight (Kg/animal)		
	1961/ 1963	2005/ 2007	2050	1961/ 2007	2005/2007- 2050	1961/ 1963	2005/ 2007	2050
Sub-Saharan Africa								
Poultry	218	790	2625	2.8	2.8	0.9	1.0	1.4
Near East / North Africa								
Poultry	133	1534	3248	6.0	1.7	1.1	1.3	1.5

*Source: Alexandratos and Bruinsma (2012).

Table 2. Egg production by commodity in the past and projected.

	Egg Production Million tonnes			Egg Production % percent annual		
	1997- 1999	2015	2030	1989-1999	1995/1999 -2015	2015- 2030
Sub-Saharan Africa	0.9	1.8	3.4	2.6	4.0	4.1
Near East /North Africa	2.2	3.6	5.3	4.1	3.0	2.6

*Source: Bruinsma, 2003.

Table 3. Long-term projection of broiler and turkey's meat imports by African and Middle Eastern countries.

	Imports, thousand metric tons, ready to cook									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Importers										
Saudi Arabia	750	781	803	826	839	860	874	887	901	917
Other Middle East	1,272	1,326	1,366	1,406	1,447	1,491	1,535	1,580	1,625	1,670
North Africa	170	153	142	142	146	155	165	176	188	200
West Africa	300	393	425	459	495	523	559	591	617	640
Other Sub- Saharan Africa	563	481	499	539	564	595	627	648	671	702

Source: USDA, *USDA Long-term Projections, February 2013c*.

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