

POULTRY PRODUCTION SYSTEMS IN IRAN

A. Kamalzadeh^{1†}, M. Rajabbaigy¹, H. Moslehi¹ and R. Torkashvand²

¹Institute of Scientific - Applied Higher Education of Jihad-e-Agriculture,
P.O. Box: 13145 – 1783, Tehran, I.R. Iran · ²Deputy Ministry for Livestock Affairs,
Ministry of Jihad-e-Agriculture

az_kamalzadeh@yahoo.com

Abstract

The livestock sector in Iran is under pressure to adapt and expand. The adaptation involves mainly a shift in livestock species and functions, with the greatest change being the increase in the number of poultry. There is a general trend towards expansion with the formation of product-specific, which threatens the breakdown of traditional systems and mixed farming elsewhere. There is a trend from multipurpose to single-purpose animals. Livestock production is growing faster in the moister parts and is moving closer to more densely populated regions. Technological changes are creating modern and capital-intensive production chains for poultry meat and eggs. Industrial production of poultry is increasing relative to the reduction in production from grazing and mixed farming systems. The growth in demand for livestock products suggests that there will be a consequent rise in demand for animal feed, not only of cereals but also of other feeds and particularly proteins. The development, transfer and adaptation of technologies will focus on improving the efficiency of feed utilization and increasing animal productivity. Poultry production developed from a simple farm operation to a complex vertical operation of related industries and enterprises, including grain production for animal feeds, feed mills and slaughterhouses and processing plants, food chain stores and wholesale enterprises. In the last three decades, large amounts of capital have been invested in this sector. The poultry industry is private and some services are provided through the cooperatives. Few poultry farms are under government management and according to the government policy for supporting privatization, these farms are planned to be sold to the cooperatives and private sectors.

Key words: Production System, Adaptation, Poultry industry, Productivity, Management.

Introduction

The global poultry meat production will increase to 130 million tons in 2030 (Table 1), (Simons, 2005). Egg production will also increase by 40%. Milk production and consumption will rise from 568 million tons (2000) to 700 million tons (2020), meat from 233 to 300 million tons (2020) and chicken meat production from 73 million tons (2006) to 86 million tons in 2020 (Figure 1) (Delgado et al., 1999). Much of the growth will take place in developing countries. These predictions show a massive increase in animal feed demand, needed to satisfy the growth in the animal production. On the other side, the developing countries faces tremendous challenges in the next quarter century, including feeding and improving population diets, increasing employment, protecting and enhancing natural resources, and ensuring security.

Similar to most Asian countries, the livestock sector in Iran is under pressure to adapt and expand. The adaptation involves mainly a shift in livestock species and functions, with the greatest change being the increase in the number of poultry. There is a general trend towards expansion with the formation of product-specific, which threatens the breakdown of traditional pastoral systems and mixed farming elsewhere. The use of animals for draught power and the non-food functions of livestock are generally declining. Technological changes are creating modern and capital-intensive production chains for poultry meat, eggs and dairy products, leaving the traditional and labor-intensive sector to smallholder farms. The contribution of livestock to the economy have been largely underestimated in the past and although it is clear that the relative importance of the livestock will decrease, nevertheless livestock provide for a wide range of human needs (Hoffmann, 1998). The major challenge now is to increase the livestock productivity and the quality of products and provide access to markets to assist in maintaining food security and relieving poverty, while protecting the environment and human health.

In Iran, the majority of livestock is still kept by small holders; the livestock are fed on crop residues and are opportunistic feeders grazing and scavenging on common-and wastelands. In most cases, therefore this does

not involve the producer in any expenditure. In contrast to the small-scale farmers, commercial production is generally intensive and mainly based on the use of imported feeds. In many cases, livestock are an integral part of the system of sustainable mixed farming. This system enables farmers to make maximum use of outputs such as crop residues and animal manure, which are often considered to be of low value but can represent a significant proportion of the value of keeping livestock. Increasing demand for livestock products, together with changes in international trade, is placing pressure on Iran's livestock sector to both adapt and expand. There is an increasing tendency to greater selectivity as to parts of the animal used for food and therefore, there is a trend from multi-purpose to single-purpose animals, with the production of animal protein the overriding objective. Another trend is the growing importance of poultry as economic converters of concentrated feed. Livestock production is moving closer to urban settlements and is growing faster in the moister parts of the region. The growth potential for extensive grazing and roughage production is limited. Industrial production of poultry is increasing relative to the reduction in production from grazing and mixed farming systems. Better conversion efficiencies of concentrate feed, broiler production will also increase relative to ruminant meat production.

The growth in demand for livestock products suggests that there will be a consequent rise in demand for animal feed, not only of cereals but also of other feeds and particularly proteins. The development, transfer, and adaptation of technologies will focus on improving the efficiency of feed utilization and increasing animal productivity. Feed requires land for production and this continues to be the limiting factor to the sector's expansion even if country resorts to feed imports.

The Iranian Perspective

The total population of Iran is about 72.5 million. The population is young with about 50 percent aged less than 25 years old. The population growth rate was 3.2 percent in 1988 but fell down to 1.3 percent in 2006, respectively. The urban population and villagers account for 67 percent and 33 percent of the total population, respectively.

A wide spectrum of environmental conditions exist, from the areas of higher rainfall around the Caspian sea, high elevations in the north and west, and the subtropical climates in the south, to the drier steppe and desert areas in the central region. Temperatures vary greatly, ranging from -30°C in certain parts of the northwest, to $+55^{\circ}\text{C}$ in the desert areas and the Persian Gulf region. Iran has made important progress in health, education and population control during the last 2 decade. The government aims at reducing economic dependence on the hydrocarbons sector and vulnerability to oil price movements by promoting other sectors, in particular agriculture.

Agriculture is a major economic sector in Iran, with great potential for development and, as such, seen as a key strategic policy area. It contributes more than 25% of GDP and one third of total employment. It also contributes substantial export earnings, i.e. one third of total non-oil exports. Iran's population can be considered largely free from food insecurity. The food balanced sheet showed an increased in net energy supplies from 2800 to 3160 cal per capita per day. The quantity of per capita protein went up from 73 to 80 g per day. About 90% of the population food requirements are covered by domestic production, and domestic supplies cover 95 % of agro-industry needs.

Livestock Production

Livestock is an important national resource in Iran. More than half of the rural population depends at least in part on livestock for their livelihood. Livestock plays a key role in the lives of the rural poor, generating employment and often providing about 80 percent of their cash income. On average, 31.8 percent of the gross value of agricultural production attributed to livestock production, which provides the main source of income and an important component of the average diet. Production of poultry meat, eggs, milk and red meat has increased during the last decade by 11, 5.5, 8.2 and 2.9 % annually, respectively (Table 2). Guaranteed and remunerative producer-prices for major commodities have been the essential policy tool behind such performances. Poultry meat and egg production have grown because of improved yields, expanding medium and large commercial operations. Animal production has the advantage of a large workforce and relatively powerful cooperatives and associations, as well as a large private sector.

Poultry production

Traditionally, native breeds of poultry were reared in villages under extensive and mixed systems. The poultry marketed alive by the villagers and there was not organized commercial marketing and distribution. About fifty six years ago, the exotic breeds imported to the country. The imported poultry introduced the New-Castle disease. At that time vaccination of the native poultry was not common, and they were not immune to the disease. The virus infected the local breeds and caused very high mortality. Since then the poultry farms have been established and

day old broiler chicks were imported. Poultry production developed from a simple farm operation to a complex vertical operation of related industries and enterprises, including grain production for animal feeds, feed mills, and slaughterhouses and processing plants, food chain stores and wholesale enterprises.

In the last four decades, large amounts of capital have been invested in this sector and poultry production becomes one of the most important economic activities in Iran. The poultry farming industry, which was one of the under-developed industries, has gained growth and is currently one of the principal meat production sectors. Investment and employment levels and the role of this sector in the production of protein requirements of the nation have attained high proportions in the national economy. The poultry industry, with nearly 2.3 million tons of output, is the largest in the Middle East, ranked eighth in Asia and 18th in the world. The system moved a long way from the setting of the backyard to become a multibillion-euro business. Its output has increased threefold over the last decade alone, and its products have changed from being a one-time luxury food to something that is found on everyone's table.

At present, there is a pure broiler line farm and many farms for rearing grandparents (GP), parent stock (PS), broilers and layers. There are about 15 GP farms, which can supply the required PS flocks. The pure broiler line farm is established well now, and has the capacity to supply high quality GP flocks for the local market and export. In year 2008 the numbers of broiler and layer PS farms were 490 and 18 units, respectively, and the numbers of commercial broiler and layer farms were 17168 and 1448 units, respectively (Table 3). Meanwhile, different European breeding companies are also in the market and present their products such as GP and PS.

The size of poultry enterprises ranges from small farm flocks to large commercial operations. Most of the poultry raised in Iran is produced in medium commercial operations. Regardless of the size of the enterprise, success in poultry production depends on three important factors: good management, proper nutrition and sanitation. In general, there are three types of chicken enterprises: broiler production, egg production and raising replacement pullets. Most of the turkeys, ducks, quails and geese in Iran are raised for meat production. Since 15 years ago, the trend in ostrich rearing has been upward. In egg production operations, laying hens are kept to produce eggs. Laying hens mostly confined in cages and in a few cases, the farmers may use a floor-pen system. Cleaning, grading, and packaging of eggs usually occurs on the farm. When the production cycle is completed, the hens are sold for meat. Broiler production operations involve raising chickens for meat. High-quality rations are fed to secure efficient and rapid gains.

Numbers and Trends in Production and Consumption

The production of broilers in Iran has more than doubled since 1999. The per person consumption of poultry meat has also increased significantly since 1999 (Table 4). The greatest increase in per person consumption of poultry meat occurred since 1999, as the price of poultry meat was suitable compare to red meat and consumers became increasingly concerned about the level of cholesterol in their diet.

Much of the broiler production industry is located closer to more densely populated regions and in the north (the moister) part of the country. The six leading provinces in broiler production in 2008 are Esfahan, Mazandaran, Tehran, Razavi Khorasan, Fars and Khuzestan (Figure 2). These six states produce approximately 44 percent of the total broiler production in Iran.

The production of eggs has more than doubled since 1991 (Table 5). However, during last decade, the growth rate of production and consumption was lower compare to the period of 1978 to 1999. Much of the egg production is concentrated in large commercial operations. The six leading provinces in numbers of laying hens are Tehran, East Azarbayjan, Razavi Khorasan, Esfahan, Ghazvin and Qom. These six states produce approximately 70 percent of the total egg production in Iran (Figure 3).

In 1975, the population of native chickens was estimated to be about 16 million pieces. A project for increasing the number of native poultry breeds started in 1983. In this project, various native breeds were reared in 14 poultry center in different parts of the country and the vaccinated pullets distributed to the villagers. One important assumption for the native poultry sector is that, they do not rely on formulated feed, which the most ingredients of which are imported from abroad. The project caused, the number of native poultry increased rapidly, which was 66 million pieces in year 2007.

The poultry industry is private and some services are provided through the cooperatives. Few poultry farms are under government management and according to the government policy for supporting privatization, these farms are planned to be sold to the cooperatives and private sectors.

At present Iran has the potential of designing and constructing poultry and livestock slaughterhouse units and producing eggs and meat with industrial facilities to manufacture poultry hatcheries and operations stations and equipments. Now, regarding to high rang of poultry meat and egg producing, Iran has a good potential to export egg and poultry meat to the other countries. Due to this way, Iran can use the priority of competitive prices.

Table 1: World poultry meat production

Year	1995	2000	2015	2030
Poultry meat (Million MT)	56	74	94	130

Table 2: Livestock production, 2002-2008 (1000 tons)

	2002	2004	2006	2008	Annual growth (%)
Poultry meat	941.5	1237	1329	1565	11
Eggs	547	645	699	727	5.5
Milk	5877	6720	7749	8772	8.2
Red meat	741.6	774.9	838.1	870	2.9

Table 3: Numbers of broilers, layers and parent stock farms, 1978-2008

	1978	1991	1999	2004	2008	Annual growth (%)
Broiler farms	3335	10655	15587	16475	17168	13.8
Layer farms	391	712	1356	1402	1448	9
Parent stock (Broiler)	21	130	207	336	490	74.4
Parent stock (Broiler)	5	5	14	15	18	43.3

Table 4: Broiler meat production and per capita consumption, 1979-2008

Year	Quantity		Per Capita Consumption	
	Broiler meat (1000 kg)	Percentage of 1979	(kg)	Percentage of 1979
1979	168.000	100	4.2	100
1991	340.000	202.4	6.1	145.2
1999	570.000	339.3	8.8	209.5
2004	655.000	389.9	9.7	230.9
2008	727.000	432.7	10	238

Table 5: Egg production and per capita consumption, 1979-2008

Year	Quantity		Per Capita Consumption	
	Egg (1000 kg)	Percentage of 1979	(kg)	Percentage of 1979
1979	195.000	100	5.14	100
1991	420.000	215.4	7.52	146.3
1999	736.000	377.4	11.7	227.6
2004	1.152.000	590.8	17.06	331.9
2008	1.565.000	802.6	21.8	424.1

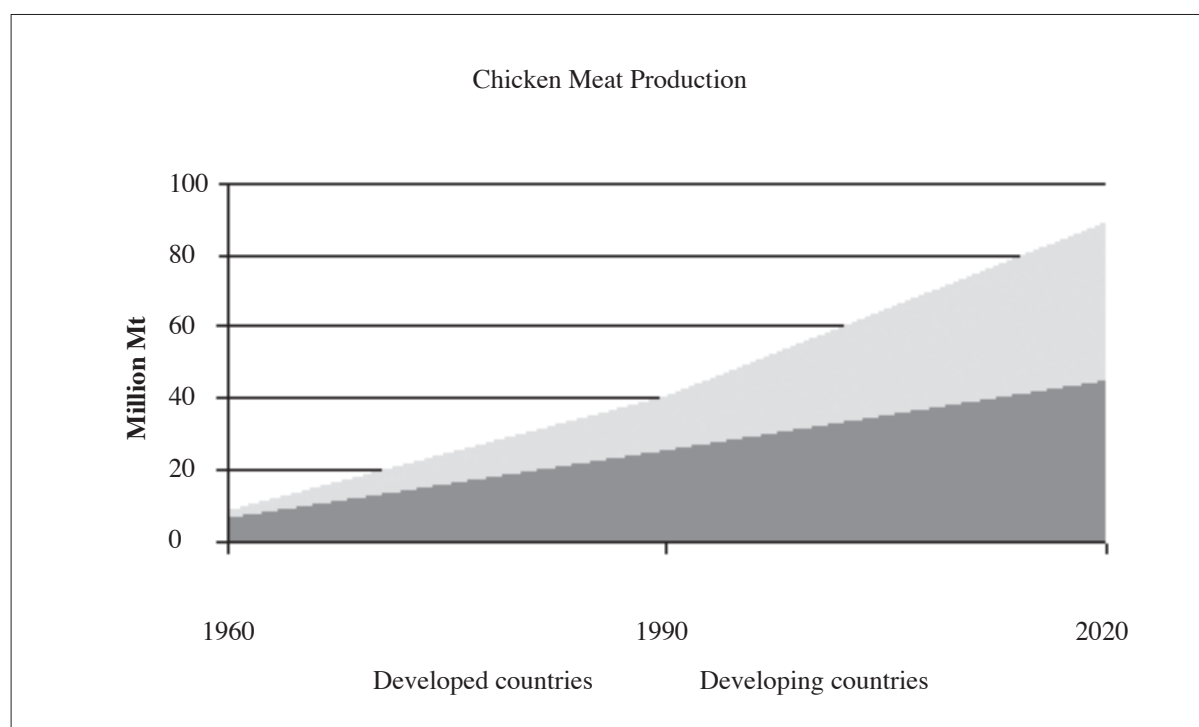


Figure 1: Historical and predicted world production of chicken meat



Figure 2: Broiler meat production (tons) in different provinces.



Figure 3: Egg production (tons) in different provinces.

References

- DELGADO, C., M.W. ROSEGRANT, H. STEINFELD, S.EHUI, and C.B. CAOURBOIS. 1999. *Livestock to 2020: The next food revolution. Food, Agriculture, and the Environment Discussion Paper 28*. Washington, D.C.: International Food Policy Research Institute.
- HOFFMANN, D. 1998. Factors in the Emergence of Disease in Man and Animals: *Implication for Area-wide Integration. Proceeding of the Regional Workshop on Area-wide Integration of Crop-Livestock Activities*. RAP Publication: 1998/99, pp. 59-62.
- SIMONS, P. 2005. Commercial Egg and Poultry Meat Production and Consumption Worldwide. Poultry Nutrition Conference, June 2005, Tehran. I.R. of Iran.