

Review Article

Present Status of Indian Meat Industry – A Review

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ABSTRACT

India has the largest livestock population throughout the country. It has 512.0 million of animal population excluding poultry. India is the largest exporter of buffalo meat and third largest exporter of meat after Brazil & Australia. It accounts for about 58% of the world buffalo population and 14.7% of cattle population. There are about 300 million bovines, 65.07million sheep, 135.2 million goats and about 10.3million pigs and 729.2 million poultry in the country as per 19th Livestock Census. There are many constraints for the slow growth of the Indian meat industry, including lack of scientific approach to rearing of meat animals, unorganized nature of meat production and marketing, socio-economic taboo and inadequate infrastructure facilities and poor harvest management. Meat exports from India commenced in 1969. For over four decades, it has built an enviable reputation of being a reliable exporter of risk-free, lean, nutritious and competitively priced meat. This has led to consistent, high compound growth rate in the export volumes. Among the important buyers of Indian bovine and other meat are Vietnam, Malaysia, Thailand, Australia, UAE, Saudi Arabia and Egypt. India exports both frozen and fresh chilled meat. Among Indian states, Uttar Pradesh (UP) has emerged as the major exporter of buffalo meat, followed by Punjab and Maharashtra. Besides having the country's largest buffalo population, U P also has the highest number of abattoirs cum meat processing export units.

Keywords

Livestock, Poultry,
Meat, Export

Introduction

Meat is animal flesh and worldwide eaten as a food (Lawrie *et al.*, 2006). Meat consumption varies worldwide, depending on cultural or religious preferences, as well as economic conditions. The livestock sector is floating for revolution in developing countries where the major increase in meat and milk production is anticipated in next few decades. Livestock production is a vital activity in rural areas, which provide employment, livelihood and income for farmers, rural poorer and weaker sections of

society. Meat sector plays an important role in India as it not only provides meat and by-products for human consumption but also contributes towards sustainable livestock development and livelihood security for millions of men and women from weaker sections. Vegetarians choose not to eat meat because of ethical, economic, environmental, and religious or health concerns that are associated with meat production and consumption. Animal food is considered as good source of quality

nutrients viz. fat, protein, carbohydrates and minerals. Digestibility of animal source protein is 90-97% while vegetable origin proteins have 75-99%. However, proteins of animal origin are more completely digested and nutritionally superior than those of plant origin. Humans are omnivorous and have hunted and killed animals for meat since prehistoric times (John, 2013). The advent of civilization allowed the domestication of animals such as chickens, sheep, pigs and cattle, and eventually their use in meat production on an industrial scale.

Meat is mainly composed of water, fat and a good source of protein, vitamins and minerals, such as iron, selenium, zinc, and vitamin B-complex. It is also one of the main sources of vitamin B₁₂ and is usually eaten together with other food. It is edible raw, but is normally eaten after it has been cooked and seasoned or processed in a variety of ways. Unprocessed meat will spoil within hours or days as a result of infection with and decomposition by bacteria and fungi (Truswell, 2002). Population growth, urbanization, changed life styles and increased per capita income are fuelling a massive increase in demand for food of animal origin all around the world. As per World Bank projection, worldwide demand for food will increase by 50% and for meat by 85% by 2030. Governments and industries must prepare for meeting demand of meat in the country with long run policies and investments to satisfy ever rising consumer demand, improve nutritional status, generation of income opportunities and alleviate environment stress. Government of India has already recognized livestock and poultry as an important sector for the socio-economic development of the country. Ministry of Food Processing Industries (MFPI) has established National Meat and Poultry Processing Board (NMPPB) at New Delhi to

support the healthy and organized development of meat sector for clean and wholesome meat production. NMPPB formulates uniform and effective meat quality testing systems and looks for reduction of environmental pollution due to meat industry. Further, Food Safety and Standards Act, 2006 regulates and ensures the processed meat sector to produce safe and quality products in order to meet the requirements of International trade and make the Indian food and meat industry competitive in the global market. In fact, in spite of big potential because of large livestock population, the meat industry in India has not taken its due share. There are many constraints for the slow growth of the Indian meat industry, including lack of scientific approach to rearing of meat animals, unorganized nature of meat production and marketing, socio-economic taboo and inadequate infrastructure facilities and poor harvest management. During the last three to four decades, India has witnessed the green, white, yellow and blue revolutions and now the time has come to realize one more revolution i.e. red revolution in the form of meat production.

Components of Meat industry

Various distinct components of meat and meat by-product related industries, it includes

Trade in live animals:
Weekly/daily/monthly/yearly Cattle markets dealing in Buffaloes, Sheep, Goats, Pigs and Poultry.

Slaughtering the animals by trained & skilled butchers for retail in domestic markets.

Slaughtering the animals in the modern abattoirs in export oriented units for exports.

Transportation of fresh frozen meat in refrigerated trucks/ containers from the point of production to the port for export to various countries.

Processing of raw hides and skins for leather goods industries.

Production of meat-cum-bone meal and tallow in the rendering plants from offals and bones

Casings production from the intestines of large and small ruminants.

Processing of animal body fat for making of tallow.

Marketing and processing of hooves and horns.

Production of pet foods.

Raw material availability

Livestock sector is an important sub-sector of the agriculture of Indian economy. It forms an important livelihood activity for most of the farmers, supporting agriculture in the form of critical inputs, contributing to the health and nutrition of the household, supplementing incomes, offering employment opportunities.

It acts as a supplementary and complementary enterprise. India has vast resource of livestock and poultry, which play a vital role in improving the socio-economic conditions of rural masses. There are about 300.00 million bovines, 65.07 million sheep, 135.2 million goats, about 10.3 million pigs and 729.2 million poultry as per 19th Livestock Census in the country. The species wise population of meat producing animals and Poultry during the last three Censuses is given in Table 1.

The factors favoring meat sector development

Low cost of production of meat type of animals to a desired age of 2 years.

Leanness of Indian meat: contains less fat and the present international trend is favorable for low fat meat.

Green fodder feeding, absence of animal protein (carcass meal; meat and bone meal) in the ration are favorable factors for Indian meat industry.

Price structure of various meats in international market. Beef price is the highest followed by pork, mutton, and chicken.

The absence of hormones, antibiotics and growth promoters' in the feed, the Indian meat is considered not only lean but also clean and organic.

There is no incidence of Bovine Spongiform Encephalopathy (BSE) in India.

Close proximity to promising Middle East market.

Constraints of Indian Meat Industry

There are many reasons for slow growth rate of meat industry in India:

Myths about meat consumption and half-truths in the media against meat consumption.

Celebrity-led campaigns – often run in conjunction with NGOs such as PETA (People for the Ethical Treatment of Animals) - have been a key factor in encouraging consumers to switch to a low meat or meat-free diet.

The reduction in meat consumption is offering unprecedented opportunities for manufacturers of a variety of meat substitutes, vegetarian packaged foods, nuts and pulses, vitamins and dietary supplements and other meat-free products. India has the largest non meat-eating community in the world. It is estimated that 31% of India's largely Hindu population are lacto-vegetarian (consuming milk and honey but no other animal-derived products) while a further 9% consume eggs but no meat.

Insanitary and unhygienic conditions of the slaughterhouses and the meat shops.

Lower carcass weight and dressing percentage of food animals due to the slaughter of spent / aged animals.

Indian consumer prefers fresh meat, resulting in less demand for frozen meat.

Diseases such as Foot and Mouth Disease (FMD) are a major concern

Non availability of good quality livestock in the open market.

Overcrowding of food animals during transport resulting into inferior meat quality.

The lack of a sufficient cold chain infrastructure.

Meat Production

The meat production has registered a healthy growth from 2.3 million tonnes at the end of Tenth Five Year Plan (2006- 07) to 5.5 million tonnes at the end of the Eleventh Five Year Plan (2011-12). Meat production in the beginning of Twelfth Plan (2012-13) was 5.9 million tonnes which has been further increased to 7.0 million tonnes in 2015-16. The production of meat and the

corresponding growth rate (%) per year of the country from 2005-06 to 2016-17 is shown in the Graph 1.

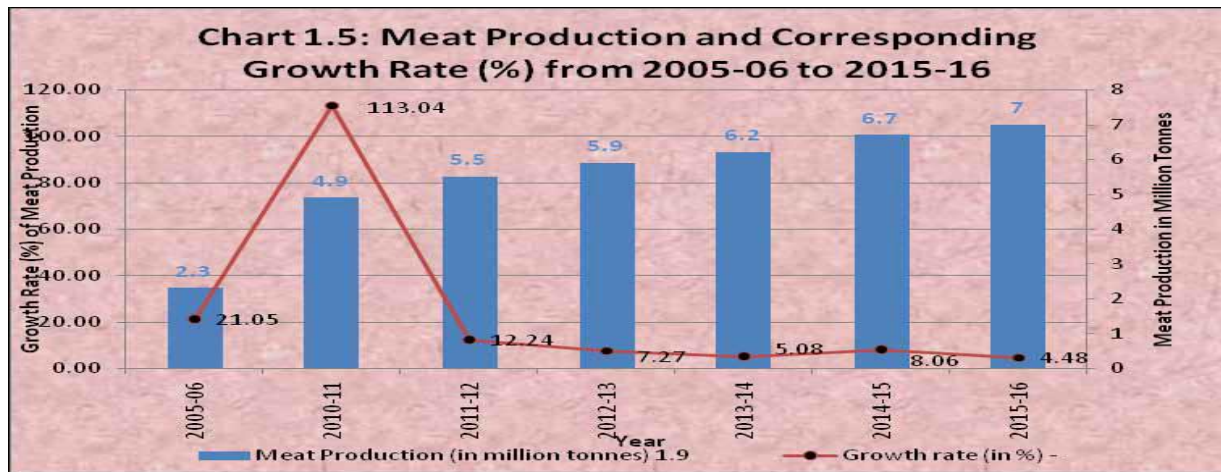
The healthy disease free animals are procured from the livestock markets/farmers/farms and are rested for 24 hours to produce quality meat. Veterinarians subject the animals during rest period to ante-mortem examination. After their approval, they are slaughtered either under Halal/Jhatka procedure depending upon consumers choice. Thereafter, the Veterinarian subjects the carcass to post-mortem examination. After its approval for safety, it is sold in the retail market as fresh meat. The rejected carcasses on post mortem examination are sent to the rendering plant for production of fat, meat cum bone meal and/or buried depending upon the situation. The meat meant for export has to pass through ante-mortem and post-mortem examination and is chilled for 24 hours to bring down the pH below 6. Thereafter, it is deboned and deglanded. The meat is then packed into different cuts, and frozen at - 40 degree Celsius for 12 hours to bring down the deep bone temperature to -18 degree Celsius. The frozen meat is stored in cold storage for export. The meat produced for the domestic market is sold as hot meat. Goat/sheep meat is marketed in villages by slaughtering one or two animals once in a week or as special occasions by a group of people joining together and sharing the cost of the meat so obtained. There is not much overhead cost on meat in villages and realization on the cost of skin, blood etc. In the small towns sheep/goat meat is directly marketed to the consumers from meat shops. Since the time gap between slaughter and the sale is very short, the deterioration of the quality of the meat is less. In the big towns and cities most of the meat is consumed on the same day or kept in a refrigerator in the households.

Table.1 Growth rate of Meat producing animal and Poultry in India

| Sl. No. | Species | Livestock Census 2003 (no.in million) | Livestock Census 2007 (no.in million) | Livestock Census 2012 (no.in million) | Growth rate (%) 2007-12 |
|---------|---------|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------|
| 1 | Cattle | 185.2 | 199.1 | 190.9 | -4.10 |
| 2 | Buffalo | 97.9 | 105.3 | 108.7 | 3.19 |
| 3 | Sheep | 61.5 | 71.6 | 65.07 | -9.07 |
| 4 | Goat | 124.4 | 140.5 | 135.2 | -3.82 |
| 5 | Pigs | 13.5 | 11.1 | 10.3 | -7.54 |
| 6 | Poultry | 489 | 648.8 | 729.2 | 12.39 |

Sources: Annual report 2016-17, Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture & Farmers Welfare, Government of India.

Graph.1 Meat production and corresponding growth rate (%) from 2005-06 to 2015-16



Sources: Annual report 2016-17, Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture & Farmers Welfare, Government of India.

Processing of Meat



A picture of raw meat and processed meat products

Poultry meat is mostly sold by slaughtering the live birds in the presence of the consumers. However, there are a few modern processing plants where poultry is slaughtered; chilled and frozen birds are sold in big cities. The export of poultry meat sector is very poor or insignificant. The reasons are that mortality of birds is high, overhead inventories are abnormal. The greatest disincentive is that exporters find the prices quoted in importing countries are not favorable.

There is very little processing, hardly 1% of the total meat produced in the country and remaining meat sold in fresh or frozen form. Pork and Poultry meat are used for production of ham, sausages, patties etc., for the elite market. The meat processors like Venky, Alchemist foods, Darshan foods, Government Bacon Factories etc, produce these products. Meat from small ruminants, namely, sheep and goat is also used for production of traditional Kebabs (Seekh and Shami Kebab). Buffalo meat is basically used in the household for preparation of curries and Kebabs. It is also mixed with vegetables like potatoes, cabbages, turnips, sugar beet to make delicious dishes, to name a few, besides the irresistible Biryani, which is a mix of meat and rice. Buffalo steaks are also a delicious product. Both Seekh and Shami Kebabs are delicacies prepared from buffalo meat only, which is liked by all classes of people in India. The buffalo meat has a great water holding and binding properties, and is, therefore, used for industrial purposes in the production of sausages, patties, nuggets, corn beef, ham etc.

Export of Meat

Meat industry, which has shown a tremendous development in the last decade, has a greater scope of improvement with

support of the industrialists and government. India's international trade in livestock and livestock products is mainly in live animals (17%), meat and meat products (82%), dairy products and eggs (1%). At the global level, India's exports and imports account for only 0.17% of each. Meat and meat products have dominated the exports from livestock. All the Export oriented Units (EOU) are registered with the agricultural and processed food Products Export Development authority (APEDA) of the government of India after due inspection. It may be seen that export of buffalo meat has increased significantly in the last five years. The country has exported 13,30,660.48 M.T of buffalo meat products to the world for the worth of Rs. 26,307.93 Crores during the year of 2016-17. India exports both frozen and fresh chilled meat to more than 60 countries of the world. The major item of export includes deboned and deglanded frozen buffalo meat, which accounts for 97% of the total meat export. Major market for Indian buffalo meat is Malaysia and Egypt and for sheep and goat meat is UAE, Iran and Jordan. India also exports small quantity of processed meat to Thailand, Yemen, and Japan and poultry products to Saudi Arabia, Oman, Kuwait and Qatar.

Future prospects of meat industry

Strategies for the prosperity of Indian meat industry:

Production of good quality animals for slaughter is must for production of good quality meat. Hence, farmers' cooperative can play a major role in the field of production and marketing of quality animals, extension education and encouragement of backward integration / contract farming as in poultry industry for intensive and semi-intensive system of rearing small ruminants.

Food safety at all stages of production, processing, packing, storage and marketing of meat and meat products, maintenance of standards such as SPS, HACCP certification and others which are prescribed by the importing countries.

Consumer awareness: Priorities must be given to address the myths prevalent among the public regarding meat consumption and diseases (Meat consumption and risk of cancer, Meat consumption associated to increased risk of coronary heart disease due to its fat and cholesterol content) with proper extension programmes.

Meat processing and value addition are key for the prosperity of meat industry. The awareness regarding the processed meats and the convenience to the consumers and households should be improved.

Packaging of meat and meat products: Most of meat is sold in India is in unpacked form. Meat is packed only in some organized meat factories and in bacon factories. For safe delivery of the meat and various value added meat products through the various stages of processing, storage, transport, distribution and marketing packaging is of utmost importance.

Breeding strategies: Meat scientists and animal geneticists should collaborate their research for developing a potential cross bred buffalo for meat purpose. Meat production potential under extensive and intensive system should be adequately exploited through cross breeding of selected local breeds/ nondescript breeds with specific exotic and improved breeds.

At present buffalo meat is obtained as a byproduct of buffalo milk production. There is vast scope for increasing carabeef export consequent to cattle slaughter ban act,

availability of male buffalo calves and the steady demand for the same from the importing countries. It is high time to consider growing/fattening of male buffalo calves for veal production. Sufficient nutrition and improved levels of hygiene and sanitation at meat handling will enable India a quantum jump in meat production by utilizing the surplus male calves.

Meat sector plays an important role in India as it not only provides meat and by-products for human consumption but also contributes towards sustainable livestock development, employment, developed secondary industries and livelihood security for millions of men and women from weaker sections. Major portion of meat from sheep, goat, pig and poultry is primarily used for domestic consumption in the form of fresh meat. Certain portion of meat from buffaloes, cattle and sheep is exported in frozen and chilled form. Meat production and supply of meat for local consumption is the most neglected sector in the country. Meat is sold in open premises leading to contamination from dirt, dust, flies and other pollutants.

The traditional production systems and the unorganized practices have ruined and flawed the image of the Indian meat industry. Indian meat industry on scientific and mechanized lines is need for benefiting livestock producers, processors and finally consumers. Indian meat contains less fat and the present international trend is favourable for low fat meat.

Average fat content of Indian meat (buffalo/poultry) is around 4% compared to 15-20% in most of the developed countries. Moreover, meat is free from growth promoters of other therapeutic residues and mad cow disease, which favours Indian meat in international trading.

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