



Pink Revolution via Buffalo in the third millennium

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Livestock sector is one of the most important components of agriculture in India. The value of output from livestock and fisheries sectors together form about Rs. 148,954 crores during 1998-99 crores (Planning Commission, 2001). At present, India is the largest producer of milk in the world reaching 86 million tonnes in 2001-2002 (Kurien, 2002). Meat production is estimated at 4.9 million tonnes, standing eighth rank in the world's meat production. Buffalo in India contribute about 55% and 30% of total milk and meat production, respectively. There has been an increase in buffalo population during the last two decades in Asia (33.2%) and the world (22.3%). In India, it is growing at 1.7% annually and is over 98 million.

Meat and Meat Products

Meat and its by-products have played an important role in man's development from the early times. At current

prices (1998-99) meat contributed Rs. 21,900 crores (US \$ 4,600 million), and meat products Rs. 828 crores (US \$ 173 million), while by-products comprising largely of hides and skins, contributed Rs. 2,232 crores (US \$ 467 million). Meat production was estimated at 4.9 MTs (1998), and annual growth rate of 4.1% was achieved during the last ten years compared to 4.3% for milk.

Cattle and buffaloes contribute about 60% of the total meat production in India where buffaloes are primarily reared for milk and meat purposes. India produces the largest amount of buffalo meat as compared to other countries which is 50 percent of total buffalo meat produced in Asia

Extraction Rates of Buffaloes

The extraction rate of buffaloes ranges between 9 and 41% in Indonesia and Egypt, respectively. In India, it is 11% (2000). There is, however, a big scope to increase the extraction rate up to 30% without affecting the milk production or draught production. This would increase meat production three folds to 3.6 million tonnes by the year 2010 AD.

Present Export and Future Scenario of Meat Production

Of all the animal products exported from India buffalo meat has the largest share in export namely 82% (Table 1), shows that India is the major exporter of buffalo meat in the world. It has special qualities as it blends well with the other meats in the meat processing industry for production of corn beef, sausages, hams etc. At present India is the only country in Asia which is exporting buffalo meat in substantial quantities.





Table 1: Export of buffalo meat (MT) from India to different countries

Countries	1999	2000-01	2001-02
Malaysia	53,192	77,153	67,251
U.A.E.	41,557	41,516	19,988
Jordan	5,877	12,442	15,327
Yemen	2,760	3,733	3,938
Oman	3,690	-	-
Kuwait	4,150	4,596	3,726
Mauritius	2,968	3,192	3,004
South Africa		52	154
Bahrain		2217	2391
Philippines	27,640	47,447	50,356
Iran	8,022	12,576	10,741
Qatar	564	617	852
Egypt	2,457	48,716	17,808
Others	1,627	1,500	500
Total	1,67,291	2,88,027	2,43,356

Source: APEDA-2002, New Delhi, India

India has a market advantage since it is strategically located, has large number of animals with modern abattoirs using advanced technology having been established. Indian meat exports had a modest start with just 2000 tonnes in 1973-74, valued at Rs.100 crores. Following the rise in demand in international markets, it has increased to 300,000 tonnes in 2000-2001 valued at Rs.1375 crores (US \$ 292.55 millions; APEDA, 2001). In 2002, due to slump in the industry because of Black Tuesday 9 September 2001, the exports dropped to 250,000 tonnes valued at Rs. 1200 crores (US \$ 240 millions). Livestock population, slaughter rate and meat production data indicate that although the buffalo population is less than half of cattle population, buffalo meat production is equal to that of beef from cattle. This is due to effective culling practised in buffaloes for meat, both for domestic and export markets.

The 'Pink' Revolution

If India had the "Green" Revolution, the "White" Revolution, and the "Blue" Revolution, can the "Pink Revolution" be far behind? The Green Revolution had led to self-sufficiency in food grains, the White Revolution saw India occupy the number one position in milk production in the world, and the Blue Revolution brought about increase in fish production. This proves that the Indian farmer is progressive. What

he needs, is the lead in the right direction. Contribution of buffalo in bringing about the White Revolution in India is well known. India is now poised to achieve the Pink Revolution through buffalo. If this could be done, India can also achieve the number one position in meat production. This could be achieved by reducing the mortality rate in male buffalo calves (80%), and rearing the animals scientifically for quality meat production. For example, about ten million buffalo calves which were otherwise eliminated in their very infancy, would become available for quality meat production. This will raise the standard of living of small and marginal farmers in the long run. Meat production has been neglected, and has not been given adequate attention by the scientists, policy makers, entrepreneurs, coupled with lack of political will. If all these are combined, the meat production can be greatly enhanced. Meat production is intimately linked to quality leather production in which India has acquired number two position in the world after Italy. If substantive support is given by the Government, both meat and leather can also achieve number one position in the world, like milk.

In order to achieve the Pink Revolution, the following steps should be taken by the Government and the entrepreneurs in India. Many of the steps have already been initiated by the Government and the Private Sector.

(i) Setting up of the state of art-abattoir-cum-meat processing plants.

The recent trend in India is to establish latest state-of-art abattoirs-cum-meat processing plants. India has already established 10 most modern state-of-art mechanized abattoirs-cum-meat processing plants in various states based on slaughtering buffaloes. These plants are environment friendly, where all the slaughter house byproducts are utilized in production of meat-cum-bone meal, tallow, bone chips etc. They are also adopting appropriate technologies to obtain value added products. These plants have effluent treatment devices which treat all the washings of abattoirs, lairage etc. to safe water discharge having 30 PPM of BOD.

The plants follow all the sanitary and phytosanitary (SPS) measures required by the International Animal Health code of O.I.E. having no social taboo, like the cow in India, with buffalo slaughter, these plants mostly produce buffalo meat for export. India is becoming a major buffalo meat producing country and will be a main player in the international market with additional establishment of the state-of-art-abattoirs cum meat processing plants in few years from now.





(ii) Packaging of technologies to raise male buffalo calves for meat production

In India, every year, about 5.5 million male calves are removed from the buffalo production system due to intentional killing by the farmers to save dam's milk due to non remunerative cost of raising male animals, thus incurring a loss of about US \$ 11 million per annum. These calves could be salvaged for meat production which will not only improve the economic condition of the farmers but would also increase meat production for domestic consumption and export market.

Hind Agro Industries Limited (HAIL) has started intensive feeding of male buffalo calves for meat. The male calves at the age of 10 - 12 months purchased from the farmers are quarantined for 15 days during which vaccination and de-worming are provided. Thereafter, they are fed on high protein/high energy diet to put on a weight of 100 kg in 3 months to produce quality meat. They are never fed on antibiotics, hormones and growth promoters. They are raised in organic farming. Meat from such animals is tender, lean and juicy.

(iii) Buffalo rearing under contractual farming as backward integration to the modern abattoirs for meat production

A strong need has been felt to establish a production base around each modern abattoir to produce quality disease-free animals as per the sanitary and phytosanitary (SPS) requirements of O.I.E.

(iv) Establishing disease-free zones for rearing animals

India is now fortunately free from most of the trade related diseases listed at List 'A' of the Office International des Epizooties (OIE), namely, Rinderpest, Contagious Bovine Pleuropneumonia (CBPP), etc. India has also not reported Bovine Spongiform Encephalopathy (BSE - Mad Cow Disease). However, Foot and Mouth Disease (FMD) is still prevalent in an endemic form in some states in India. There is an urgent need to create FMD free zones with regular vaccination. The Tenth Five Year Plan (2002 - 2007) has provided funds for creating at least 3 disease free zones, one each in North, South and Central Zones of the country with vaccination.

(v) Utilization of slaughter house by-products

The mechanized slaughter houses produce huge quantities of offals and digesta from the slaughtered animals which could be profitably utilized for production of value added products, like Meat-cum-Bone Meal (MBM), Tallow, Bone Chips, Pet Foods and methane as a source of energy for value addition.

(vi) Pet food production

India has large number of dogs and cats which are kept as pet animals; however, there are only very few companies which have recently come forward for producing pet food. The international market is vast and demand for pet foods runs into billions of dollars. The slaughter houses produce large quantities of raw material for pet food which need to be commercially exploited.

(vii) Employment generation

About 40 million people are engaged in meat sector, namely, trade of live animals, hides, bones, casings, horns and hooves etc. This sector when organized on scientific lines will generate more employment in rearing of animals on scientific lines and processing of slaughter-house by products for allied industries.

(viii) Globalization of trade and removal of trade barriers under WTO agreement

Most of the Asian countries are developing countries. They are put at a great disadvantage on account of globalization of trade and removal of trade barriers under WTO Agreement. Although they have plenty of natural resources, they have not developed technologies to harness them. With the removal of quantitative restrictions on imports, many developed countries are dumping their produce at a very low price compared to indigenous products, as they have the twin advantage of subsidies from their country as well as ultra modern technologies with nil or very little production losses. Take the example of chicken legs being produced in developed countries giving lot of subsidies in production as against Asian countries. The Government of the developing Asian countries should, therefore, give at least 10% subsidy to the meat and milk industry, and also establish R & D units so that the benefits should percolate to entrepreneurs. Simultaneously, some agency must be formed which should exercise quality control on imported items in the larger interest of indigenous industry.

Issues for Buffalo Meat Development

The following issues deserve a serious consideration by the persons engaged in buffalo research and development.

Discrimination against the buffalo

Buffalo is a great friend of man. It is not a draught animal only. It also gives milk and meat to the teeming millions at affordable prices. However, this animal has not been given its due place in the livestock sector. Paradoxically, it is discriminated against merely on account of its dark colour. This is clear apartheid against





buffalo in relation to its other cousins. On the other hand, it will not be an exaggeration if buffalo is recognized as black gold. Even the theme of the 4th Asian Buffalo Congress seeks to exploit buffalo for food security and rural employment. This would be possible only if its byproducts are exploited ingeniously for benefit of mankind. Buffalo produces good quality of milk and meat. Its meat is lean, low in cholesterol and has excellent blending quality for production of corn beef, hot dogs and sausages.

Price parity with cattle beef

The international prices of buffalo meat are low as compared to the cattle beef. On the contrary, the prices of buffalo meat should be higher as it is lean, has low cholesterol and there has been no incidence of BSE from any part of Asia in buffalo. When raised in feedlot on high protein/high energy diet, the buffalo meat is tender and juicy compared to that of beef.

Organization of meat sector - harmonization of standards for buffalo meat

There is a need for harmonization of national standards for buffalo meat on the lines of beef.

Research and development in meat sector

In India, there are many research institutions, namely, National Dairy Research Institute, Karnal, and National Dairy Development Board, Pradeshik Dairy Development Federation etc. However, in meat there is none so far. Recently, a National Research Centre on Meat has been established in Hyderabad by the Indian Council of Agricultural Research (ICAR). A good beginning has been made. However, it needs a full fledged Research Institute on the lines of NDRI, Karnal.

Changing role of buffalo in the third millennium

Large scale farming is likely to come up in case of riverine buffaloes in the form of peri-urban dairy farms where specialized buffalo dairy farming, integration among the related activities will develop in fodder production, milk collection and its processing and marketing.

Meat production from buffaloes will increase considerably in India and Pakistan. More and more farmers will rear the male calves for meat production as quality of buffalo meat is considered good since it is lean as fat and cholesterol contents are lower than the cattle beef. In India, due to religious bias, cattle beef is

not very popular, but buffalo meat has no such religious skepticism and hence its production is increasing at the rate of 10% annually.

Challenges and Opportunities in the Third Millennium

The Third Millennium has thrown both challenges and opportunities to the developing Asian countries. It has ushered in an era of fast food syndrome. It calls for development of appropriate technologies for value added products with longer shelf life without compromising the nutrient value of the products. Sustained R & D is required to up-grade technologies and cost effectiveness.

Third Millennium poses a challenge and an opportunity to animal scientists world over to find ways and means to maintain steady increase in buffalo population and production to match to the needs of growing human population. Buffalo jibes very well with present farming systems as well as the future farming systems in Asia. They can utilize the farm by-products like crop residues much better than any other species of livestock. Therefore the status of buffalo stands quite high in major parts of the world where density of population is high.

There is a need for the National Meat Development Board so as to promote the meat industry in India with an eye on food processing. Buffalo is remarkably versatile and has been adopted in many countries. However, it cannot tolerate the extreme cold and hot conditions. Body temperature of buffalo is actually lower than that of cattle. Having a black skin, and one-sixth the density of sweat glands than that of cattle skin, it dissipates heat poorly by skin. Therefore it prefers to cool off in wallow rather than seeking shade. They have, however, adapted very well in Italy, Greece, Bulgaria, Nepal etc. with varied climate. They digest food of poor quality better than cattle.

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