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REVIEW ARTICLE

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Dairy, Poultry and Fisheries for Overcoming Food Security: A Review

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ABSTRACT

India is home to 194.6 million undernourished people, the highest in the world, surpassing China's 138.8 million according to the annual report by the Food and Agriculture Organization of the United Nations. The United Nations Food and Agriculture Organization estimates that about 805 million people of the 7.3 billion people in the world, or one in nine, were suffering from chronic undernourishment in 2012-2014 (FAO, 2014). Almost all the hungry people, 791 million, live in developing countries, representing 13.5 percent, or one in eight, of the population of developing countries. There are 11 million people undernourished in developed countries (FAO, 2015). India has seen impressive economic growth in recent years,; the country still struggles with widespread poverty and hunger.

India's poor population amounts to more than 300 million people, with almost 30 percent of India's rural population living in poverty. Livestock sector is also playing a very important role in generating additional gainful employment for the rural youth, women and farmers. In additions, this sector provides a continuous flow of essential food products like milk, meat, eggs besides draught power, raw materials like wool and hides for industries and manure. According to recent estimates about Animal Husbandry, dairying and fisheries sector engage 23.68 million persons of the country is engaged in animal husbandry sector. Poultry sector provides direct and indirect employment to over 3 million people in the country and has great potential to create employment opportunities with every increase of egg/meat consumption. This increased demand of poultry products is expected to create more than 10 million jobs of various categories in poultry industry in future. Fisheries sector is providing employment to around 14 million populations in the country.

Key words: Dairy, Fisheries, Food security and Poultry.

INTRODUCTION

India has been achieved substantial economic growth since independence. But, during the same period it hasn't shown same pace of growth in terms of its social sector development. Findings of HUNGaMA (*Hunger and Malnutrition*) survey in 2001 in 100 focus districts on Hunger and Malnutrition in India, revealed that 42 percent of children (<5 years) who are underweight, 59 percent of the children are stunted. Prevalence of underweight in children born with a weight below 2.5 kg is 50 per cent, 39 percent of babies are born underweight, malnourishment accounts for 50 percent of the child deaths and the prevalence of malnutrition is significantly higher among children from low income families. Every third adult (15-49 years) is reported to be thin (BMI is <18.5), 70 percent of the children suffering from anemia and more than 1.5 million children in India are at risk of becoming malnourished because of raising global food prices. (HUNGaMA Report, 2011). The number of hungry people has declined in India with its score on the Global Hunger Index (GHI) improving to 55th position in 2014 due to progress made in addressing underweight in children but still ranks behind Nepal and Sri Lanka on the Global Hunger Index. In order to overcome these problems India has been putting outstanding efforts by giving much importance to agriculture and allied fields for the last many years. The "National Mission for Protein Supplements" has been launched in 2011-12 with distribution of 300 crore. It is taking up activities to promote animal based protein production through livestock development, dairy farming, poultry, piggyery, goat, sheep and fisheries rearing .

Food Security

It is a condition when all people at all times have both physical and economic access to sufficient, safe and nutritious food that meets their dietary needs for an active and healthy life [Raj Patel , 2013 ; FAO(1996)]

1) Food security through Dairying

Dairying has become an important secondary source of income for millions of rural families and has assumed the most important role in providing employment and income generating opportunities particularly for women, marginal and landless farmers. The overall contribution of livestock Sector in total GDP is nearly 4.11 % at current prices during 2012-13. The total

livestock population 512.05 million numbers in 2012. The total livestock population has decreased by about 3.33% over the previous census (19th Livestock Census, 2012). The number of animals in milk in cows and buffaloes has increased from 77.04 million to 80.52 million showing a growth of 4.51%. India ranks first in milk production, accounting for 17 per cent of world production, increasing its production from 17 million tonnes in 1950-51 to about 137.69 million tonnes in 2013-14. The per capita availability of milk in India in 2013-14 was around 307 grams which is more than the world average 294 grams per day. The average year on- year growth rate of milk, at 4.18 per cent visà- vis the world average of 2.2 per cent, shows sustained growth in availability of milk and milk products for the growing population, thus becoming an important secondary source of income for 70 million rural households engaged in dairying. A major programme for genetic improvement called the 'National Project for Cattle and Buffalo Breeding' (NPCBB) was launched in October 2000 to be implemented over a period of 10 years in two phases of five years each. The NPCBB envisages genetic up gradation and development of indigenous breeds on priority basis. At present, 28 States and one Union Territory are participating in the project. 'National Livestock Mission' has been launched in 2014-15 with the objective of sustainable development of the livestock sector, focusing on improving availability of quality feed and fodder, risk coverage, effective extension, improved flow of credit and organization of livestock farmers. The analysis shows nearly 51% of milk production is contributed by Buffalo followed by 24%, 21% and 4% for Cow Exotic/Crossbred, Cow Non-Descript and Goats respectively.

2) Food security through Poultry

Poultry has a crucial place in India as the eggs and chicken meat are important and rich sources of protein, vitamins and minerals. Poultry provides rich organic manure and is an important source of income and employment to millions of farmers and other persons engaged in allied activities in the poultry industry. Chicken is the most widely accepted meat in India. Unlike beef or pork, it does not have a religious taboo. The prices of chicken meat are lower than those of mutton or goat meat. Many Indian families, especially the educated people in urban areas, have begun to accept eggs as a regular supplemental part of their vegetarian diet. The forecast surveys indicate that as the present younger generation goes to the adulthood, the acceptability and demand for eggs and chicken meat in next 2-3 decades is likely to increase many-folds very rapid. Currently the total Poultry population in our country is 729.21 million numbers (19th Livestock Census-2012) which is 12.39 percent higher than numbers in the previous census (19th Livestock Census, 2012) and egg productions around 74.75 billion numbers during 2013-14. The current per capita availability (2013-14) of egg is around 61 eggs per year against the requirement of 180 eggs. The Poultry is one of the fastest growing sectors of Indian agriculture today, with annual growth rates of 5.57 percent and 11.44 percent in egg and broiler production, respectively. The sector is providing direct or indirect employment to 6.5 million people. About 80 percent of the employment is generated directly by poultry farms remaining by the feed, pharmaceutical, equipment and other support services (Rajendran *et al.*, 2014). The organized poultry sector is contributing nearly 70 percent of the total output, with the rest from the unorganized sector. Within the poultry sector, two thirds of the output (about 66.7 percent) is contributed by the broiler sector and the other third (about 33.3 percent) by egg production. Broiler production has been more energetic than layer production

within the poultry sector, with an annual growth rate of 11.44 percent, production of 3.725 million tons and employment of 4.29 million people (Index Mundi, 2015). India is the fourth largest producer of poultry meat in the world. Poultry meat production increased from 0.069 million tons in 1961 to 3.725 million tons in 2014. The per capita availability of poultry meat is 2.8 kg against recommended level of 11 kg per year. Poultry development is one of the most flexible sectors in the country, fast adapting itself to the changing bio security, health and food safety needs. It is one of the fastest growing segments of the agricultural sector in India with an average growth rate of 8 to 10 per cent per annum. Production of agricultural crops has been rising at a rate of 1.5 to 2 percent per annum that of eggs and broilers has been rising at a rate of 8 to 10 percent per annum. As a result, India is now the world's 3rd largest egg producer (next to China and USA) and 5th major producer of broiler chicken meat (after USA, China, Brazil and Mexico). Currently the total Poultry population in our country is 729.21 million numbers (19th Livestock Census-2012) and egg productions around 74.75 billion numbers during 2013-14. The current per capita availability (2013-14) of egg is around 61 eggs per year against the requirement of 180 eggs. The poultry meat production is estimated to be 2.69 million metric tones. Exports of poultry products are currently at around Rs. 566 crore in 2013-14 as per Agricultural and Processed Food Products Export Development Authority (APEDA). (Annual Report 2014-15). Meat is the rich source of animal protein. The poultry meat production is estimated to be 2.68 million tones in 2013-14. About 1.8 kg poultry meat is available per head against the yearly per capita requirement of 11 kg of meat. To provide necessary services to the farmers, four regional Central Poultry Development Organizations (CPDOs) have been restructured. These are located at Chandigarh, Bhubaneswar, Mumbai and Hessarghatta. They impart training to farmers to upgrade their technical skills. The Central Poultry Performance Testing Center (CPPTC) located at Gurgaon is entrusted with responsibility of testing the performance of layer and broiler varieties. This Center gives valuable information relating to different genetic stocks available in the country. The Centrally sponsored Poultry Development scheme has three components, Assistance to State Poultry Farms, Rural Backyard Poultry Development, and Poultry Estates. Assistance to State Poultry Farms aims at strengthening existing State poultry farms to enable them to provide improved stocks suitable for rural backyard rearing. The main objective of the Rural Backyard Poultry Development component is to provide supplementary income and nutritional support to below poverty line (BPL) people. Poultry Estates are aimed primarily at educated, unemployed youth and small farmers with some margin money to make profitable ventures out of various poultry related activities. The Central-sector, Poultry Venture Capital Fund scheme encourages entrepreneurship skills of individuals, covering various poultry activities.

Food security through Meat

Meat is a highly nutritious source and versatile food, which has become an integral part component of human diet. Meat animals comprising cattle, buffalo, sheep, goat, pigs and poultry are important categories that provide substantial income to the livestock producers through their sale for meat production purposes. The demand for meat is ever increasing with increase in population and awareness about nutrition. It is capable with high satiety value, which influences the size and frequency of meals. Meat is the rich source of the proteins of high biological value, various minerals, micronutrients, vitamins and fats. The growth in meat

production has been faster as compared to milk production. Meat production in the beginning of Twelfth Plan (2012-13) was 5.9 million tones which have been further increased to 6.2 million tons in 2013-14.

Food security through fisheries

Fisheries constituting about 5.68% of the global fish production, India today is third largest producer of fisheries and second largest producer in aquaculture after China at global level. India is the second largest producer of freshwater fish in the world, but compared to China our fish production is only about ten per cent of that country. The total fish production during 2013-14 is at 9.58 million tones (MT) with a contribution of 6.14 MT from inland sector and 3.44 MT from marine sector respectively. The fish production during first two quarters of 2014-15 has also shown an increasing trend and is estimated at 4.37 Million Tones. The existing per capita availability of fish is 6.5 kg and is expected to reach 9.0 kg by 2030. Indian fisheries and aquaculture is an important sector of food production, providing nutritional security. The country has been showing continuous and sustained increments in fish production since fish production has increased from 41.57 lakh tones (24.47 lakh tones for marine and 17.10 lakh tones for inland fisheries) in 1991-92 to 95.79 lakh tones (34.43 lakh tones for marine and 61.36 lakh tones for inland fisheries) in 2013-14 . Fishery is source of livelihood for about 14 million people and contributed to Rs 30,213 through exports during 2013-14. Fisheries constitute about 1 per cent of the GDP of the country and 4.75 per cent of agriculture GDP. The total fish production during 2013-14 was 9.58 MT, an increase of 5.96 per cent over 2012-13. Fish production during the first two quarters of 2014-15 has also shown an increasing trend and is estimated at 4.37 MT.

Future challenges

Despite the significant growth in the milk, meat, egg, fish and poultry production in the last six decades, the productivity of our animals is still low. Our marketing systems are also not modernized or developed to a satisfactory level. Other issues in this sector are ineffective breeding programmes, limited availability and affordability of quality breeding bulls, poor feed and fodder, improper veterinary infrastructure, lack of vaccinations, inadequate access to formal credit mechanisms, inadequate research capacity, limited processing capacity and lack of transportation facilities. Considering that the requirement of milk in 2021-22 is expected to be 180 million tonnes and the current level of milk production is 137.69 million tones, the milk production must increase in the next years. If it fails to do so, India may need an alternative to imports from the world market. Hence it is practical that we depend on the domestic market and develop the dairying and animal husbandry sector scientifically with the right attention, focus and the required investment.

Strategies to overcome the challenges

The important strategies to be adopted to overcome the challenges includes genetic improvement of the quality animals, augmenting feed and fodder resources, standardization of Assisted reproductive technology (ART's) in the dairy animals, raising productivity through fertility improvements, intensive dairy production systems, improvement in quality of milk and milk products, application of new and emerging dairy processing technologies, value addition

with buffalo milk, switching over to functional foods and biotechnological applications in dairy, poultry and fishery to improve the production and productivity which ensures food security in the country. There is need to provide direction for restructuring the government policies to enhance competitiveness of the milk production and the processing sectors through vertical integration in production, processing, value addition, and marketing of dairy products in domestic as well as global markets. The technology dissemination approach in Dairy Extension has to be changed from supply driven to the demand driven by providing farmers with access to linkage mechanisms through which they can communicate their needs. Strategic research and extension work on knowledge management and information system is required to reach out to the diversified population of dairy farmers in various agroclimatic regions. Setting up of knowledge portals connecting to village level hubs and Learning Management System (LMS) deserve due attention while setting up strategies to meet the future requirement in dairy extension which would help in improving the production and productivity of the animals.

CONCLUSION

Animal Husbandry, dairying and fisheries sector play an important role in food security as well as providing employment and income generation to millions of peoples in the country. Therefore, development of these sectors important to avoid malnutrition to these day by day increasing populations of India.

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