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ASSESSING THE ROLE OF LIVESTOCK TOWARDS FOOD SECURITY IN INDIA

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ABSTRACT

Livestock rearing is being practiced in India since time immemorial. Livestock play a crucial role in the food security of India. In this paper attempt was made to assess the role of livestock towards food security in India. The data for the study were analyzed by percentage analysis and Annual compound growth rate analysis. The results of the study revealed that both energy and protein intake level in the country is lower than the world average. The animal protein intake in India is only one third of the world average. In rural areas, foods dominate the consumption expenditure. Within foods, cereals dominate. The percentage of expenditure on cereals within food has dropped from a dominant 54.4% to 24.37% during the same period. However, the livestock products increased their share from 15.5 % to an impressive 21.74 % for the and this group becomes the second largest in the consumption share. In urban areas, the share of expenditure on food has also dropped but still remains substantial at 44.39%. However, the importance (share) of livestock products has increased to 23.73%, surpassing the share of cereals which has fallen to 18.62%. The results show that, in both rural and urban areas, livestock products have risen substantially in importance. The positive growth rates for per capita availability of milk and egg indicated that the milk and egg production were increasing at a faster rate than the human population in the country.

Keywords: *Livestock, Production, Food Security, Per Capita Availability*

INTRODUCTION

The livestock sector is one of the fastest growing segments of the agricultural economy in India. It contributes nearly 29.7 per cent of the total value of agriculture GDP and accounts for about 4.07 per cent of the total GDP. The overall growth of livestock sector is steady and is around 6 per cent and this has been achieved despite the fact that the investment in this sector was not substantial. Livestock are central to the livelihoods of the poor and often form the major capital reserve of farming household and enhance the economic viability and sustainability of the farming system (Gandhi and Mani, 1995). In addition to income and employment generation, livestock provide manure, draught power and more importantly the quality food – milk, egg and meat.

MATERIALS AND METHODS

The data for the study were analyzed by percentage analysis and Annual compound growth rate analysis. Annual compound growth rate (ACGR) analysis

$$Y_t = b_0 (b_1)^t$$

$$\ln Y_t = \ln b_0 + t \ln (b_1)$$

Y_t = livestock production in time 't'

The annual compound growth rate (r) was given by

$$r = \text{Anti-}\ln (b) - 1$$

RESULTS AND DISCUSSION

Food Security and Nutritional Status

Under-nutrition remains a persistent problem in many developing countries. The latest FAO figures (2010) indicate that about one billion people in the World are undernourished and in India nearly 225 million people are undernourished (19 per cent of population). This is much higher than the world

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average of 13 per cent. Food security exists when all people at all times have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Livestock products make a significant contribution to household food security and they are particularly important in meeting the micronutrient requirements for women and young children in developing countries like India. Adding a small amount of animal based foods to a plant based diet can result in larger improvements in maternal health and child development. Livestock play an impotent role in all four dimensions of food security viz., availability, access, stability and utilization (Gandhi and Zhou, 2010). Animal proteins are nutritionally complete as they contain all the essential amino acids that our bodies cannot synthesis and must obtain from our diet. Most plant sources are having incomplete proteins. The dietary energy and protein intake for the country and the world is given in Table 1 and 2.

Table 1: Energy intake at World and Country level (Kcal/person/day)

Year	World			India		
	Plant	Animal	Total	Plant	Animal	Total
1987	2211	409	2620	2038	154	2192
	(84.39)	(15.61)	(100.00)	(92.97)	(7.03)	(100.00)
2007	2315	481	2796	2155	197	2352
	(82.80)	(17.20)	(100.00)	(91.63)	(8.37)	(100.00)

Note: Figures in parentheses indicate percentage values to the total
 Source: FAO STAT, 2010

Table 2: Protein intake at World and Country level (Kcal/person/day)

Year	World			India		
	Plant	Animal	Total	Plant	Animal	Total
1987	45.60	24.90	70.50	46.00	8.40	54.40
	(64.68)	(35.32)	(100.00)	(84.56)	(15.44)	(100.00)
2007	47.30	29.80	77.10	47.20	10.20	57.40
	(61.35)	(38.65)	(100.00)	(82.23)	(17.77)	(100.00)

Note: Figures in parentheses indicate percentage values to the total
 Source: FAO STAT, 2010

From the Tables 1 and 2 it could be seen that both energy and protein intake level of the country is lower than the world average. The animal protein intake in India is only one third of the world average. However, while comparing with 1987 data, the share of animal protein in the total protein intake is increasing indicating the consumer preference towards animal products in the country.

Consumption of Livestock Products

To know the actual consumption status in rural and urban India, the quantity consumed and the consumption expenditure towards food and non-food items were examined using National Sample Survey (NSS) data.

In rural areas, foods dominate the consumption expenditure. Within foods, cereals dominate. Nevertheless, the percentage of expenditure on foods has dropped from 73.6% in 1970-71 to 56.97% in 2009-10. The percentage of expenditure on cereals within food has dropped from a dominant 54.4% to 24.37% during the same period. However, the livestock products increased their share from 15.5 % to an impressive 21.74 % for the same period and this group becomes the second largest in the consumption share. Pulses, edible oils and vegetables and fruits lag considerably behind in importance compared to livestock products. It is noted that the growth in expenditure share on livestock products, edible oils and vegetables and fruits was quite impressive between 1970-71 and 2009-10 in rural India.

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Table 3: Per Capita Consumption of Livestock Products in India (Quantity and Value per Month - 2009/10)

Item	Rural		Urban	
	Quantity (Kg)	Value (Rs.)	Quantity (Kg)	Value (Rs.)
Milk & milk products total	4.27	80.55	5.63	137.01
Egg, fish & meat total	-	49.89	-	71.98
Egg (in numbers)	1.733	5.35	2.674	8.15
Fish	0.269	18.81	0.238	20.74
Meat total	0.22	25.74	0.329	43.09
Livestock products total	-	130.44	-	208.99

Source: NSSO 2009-10, 66th Round

In urban areas, the share of expenditure on food has also dropped but still remains substantial at 44.39%. However, the importance (share) of livestock products has increased to 23.73% by 2009-10, surpassing the share of cereals which has fallen to 18.62%. The cross-over is recent and took place between the last two surveys. Other foods such as pulses, edible oils, and vegetables and fruits lag substantially behind livestock products. The results show that, in both rural and urban areas, livestock products have risen substantially in importance.

Table 3 shows the quantity and value of per capita monthly consumption of livestock products in 2009-10. Livestock product expenditure in urban areas at Rs. 209 is significantly higher than that in rural areas, being Rs.130. A substantial part of this difference comes from milk and milk products which stand at Rs. 80.55 in rural areas and Rs. 137.01 in urban areas.

Livestock Production

Earlier discussions have indicated that livestock product consumption has experienced increases in India in the past three decades or so.

Also, India's demand for livestock products will increase when consumer income further increases. It is also useful to examine the supply of livestock products in India, and in particular, its future capacity to meet the likely strong demand for livestock products. The details of production of various livestock products and per capita availability are given in Table 4 and 5.

Table 4: Production and Per Capita Availability of Milk and Egg in India

Year	Milk production (in million tonnes)	Milk Per Capita Availability (gm/day)	Egg Production (million No.)	Egg Per Capita Availability (No.)
1950-51	17.0	130	1832	5
1960-61	20.0	126	2881	7
1973-74	23.2	110	7755	13
1980-81	31.6	128	10060	15
1990-91	53.9	176	21101	25
2000-01	80.6	217	36632	36
2009-10	112.5	263	59844	51
Annual Compound Growth Rate (%)				
(2000-01 to 2009-10)	3.83	1.99	5.70	3.74

Source: Ministry of Agriculture, Basic Animal Husbandry Statistics, 2007 and 2010

The livestock production in India has undergone a major shift mainly due to the introduction of new technologies. Average annual milk production in India has grown more than six times since independence.

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The average annual growth rate in milk production has been close to 4 per cent. The per capita availability of milk is 263 g/day which is lower than the world average of 279.4 g/day. As far as the poultry sector is concerned, it is one of the most resilient sector in the country, fast depending itself to the bio security, health and food security needs. India produces more than 59.8 billion eggs per year with per capita availability of 51 eggs/annum.

The annual compound growth rates for milk and egg were calculated for the period 2000-01 to 2009-10. Milk production has registered a moderate growth of 3.83 per cent whereas egg production showed an impressive growth rate of 5.7 per cent. The positive growth rates for per capita availability of milk and egg indicated that the milk and egg production were increasing at a faster rate than the human population in the country. The current growth rate of milk production will not be sufficient to meet the future economic demand of the country. A growth rate of 7.5 per cent is required to meet the future demand (Dastagiri, 2004).

Meat production in India in the recent decade is tabulated in Table 5. Among different types of meat, chicken meat production in the country exhibited a remarkable growth rate of 22.62 per cent. This is mainly because of the growth of broiler industry in the country. Barring beef, all other types of meat production revealed a positive compound growth rates and the total meat production (including fish) showed a marked growth rate of 5.12 per cent.

Table 5: Meat Production in India ('000 tonnes)

Year	Bovine		Ovine				Poultry	Total meat	Fish	Total	
	Cattle	Buffalo	meat	Sheep	Goat	meat					Pig
2000-01	340.75	413.93	754.68	191.94	401.01	592.95	139.74	364.06	1851.43	5660	7511.43
2001-02	338.05	394.43	732.48	224.26	433.19	657.45	157.77	393.51	1941.21	5960	7901.21
2002-03	347	419.06	766.06	253.67	468.92	722.59	185.51	439.05	2113.21	6200	8313.21
2003-04	252	361	613	216	398	614	125	507	1859	6400	8259
2004-05	335	415	750	225	509	734	221	507	2212	6310	8522
2005-06	328	403	731	241	521	762	233	537	2263	6580	8843
2006-07	199	461	660	237	459	696	195	623	2174	6870	9044
2007-08	213	776	989	263	488	751	204	1713	3657	7120	10777
2008-09	249	676	925	291	517	808	233	1815	3781	7600	11381
2009-10	223	647	870	299	531	830	236	2026	3962	7850	11812
Growth rate (%)	-5.38	7.27	2.69	3.92	2.71	3.12	5.80	22.61	9.35	3.45	

Meat Production from the year 2007-08 onwards includes registered and unregistered sectors

Source: *Basic Animal Husbandry Statistics, 2007 and 2010*

Conclusions

With the higher growth of economy, increase in human population, urbanization and awareness in health consciousness, the demand for livestock products will increase leading the proportion of income spent on livestock products to increase.

Hence a strong supply response with focus on production and productivity is required to meet the domestic demand of the country. Long term breeding policy, enhancement of good quality fodder availability, improvement in livestock services and proper price policy for livestock products will help to improve the livestock production, productivity and consumption. Since, the livestock sector contribute to food security and poverty reduction, the public investment in the livestock sector need to be enhanced to help the small and marginal farmers as well as the consumers.

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