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Role of Livestock Sector in Sustainable Livelihood Security in Bihar: Status and Opportunities

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Abstract

The Livestock Revolution is expected to make a significant contribution towards livelihood security and reducing rural poverty. The rural poor have little access to land and thus there are limited opportunities for them in crop production. On the other hand, livestock wealth is more equitably distributed compared to land, and the expanding demand for animal food products generates significant opportunities for the poor in overcoming poverty through diversifying and intensifying livestock production. Keeping in view the above fact, a survey was conducted in 2006-07 to assess the livestock scenario in Bihar with the help of Sanjay Gandhi Institute of Dairy Technology, Patna to assess the livestock scenario in Bihar. Altogether 9 districts namely, Muzaffarpur, East Champaran, Purnia, Katihar, Banka, Jamui, Gaya, Aurangabad and Patna representing all the agro-climatic zones of Bihar. Survey revealed that the dairy contributed, on an average, about 22.39 percent to total household income in sample villages which was next only to crop production. It was found that livestock besides providing income to landless and marginal farmers also contributes significantly to their income in term of imputed wage of family labour. Findings also indicate that per capita availability of animal protein in the state is about 58 % in case of milk, 54 % in meat and one-fourth in eggs when compared to their respective availability at national level. Survey revealed that private practitioners played a major role in maintenance of general health and management of livestock. Public Animal Health Centres were the second most utilized source for health care services, particularly on medium and large farm households. Dairy sector generated annual per household employment of 831 hrs and goatry provided annual employment of 736 hrs for family members.

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Introduction

Livestock sector plays an important role in Indian economy and is an important sub-sector of Indian Agriculture. The contribution of livestock to Gross Domestic Product was 4.70 percent in 2004-05 at 1999-2000 prices. This is the sector where the poor contribute to growth directly instead of getting benefit from growth generated elsewhere. The overall growth rate in livestock sector is steady and is around 4-5% without adequate investment in the sector. Among rural households, ownership of the livestock is more evenly distributed than land and other assets. The progress in the sector results in balanced development of the rural economy particularly in reducing the poverty amongst the weaker section. The rural women play a significant role in Animal Husbandry and are directly involved in most of the operations relating to feeding, breeding, management and health-care of the livestock.

Census data revealed that India accounts for 20% of the world's goat population with annual growth rate of 1.6 % (Department of Animal Husbandry and Dairying 2005). During the period from 1951 to 1992, there has been a growth of 31.7 % in the cattle population and 92.2 % in buffalo population whereas the population of sheep increased by 30 % and those of goat and pigs increased by about 145 % and 190 %, respectively (Press Information Bureau 2005). The reasons for high growth rate in number of small ruminants are low cost and handy technology to the landless labourers, marginal farmers and industrial workers and requirement of less volume of feed, more resistant to diseases, easily manageable by child or female and easy market accessibility.

Bihar with a geographical area of about 94.2 thousand square Km is divided by river Ganges into two parts, the north Bihar with an area of 53.3 thousand square Km and the south Bihar having an area of 40.9 thousand square Km. About 90 % of the total population is rural and 77 % of total labour force is engaged in agriculture for livelihood against 55 % for the country as a whole. The state is situated between 21⁰58'10" North to 27⁰31'15" latitude and 83⁰19'15" East to 88⁰17'40" East longitude. The minimum temperature varies between 2⁰C to 13⁰C and maximum temperature between 36⁰C to 49⁰C. The annual rainfall varies from 950 mm to 250 mm. Based on soil characterization, rainfall, temperature and terrain, four main agro-climatic zones in Bihar have been

identified, i.e. North West Alluvial Plain (Zone-I), North East Alluvial Plain (Zone-II), South East Alluvial Plain (Zone-III A) and, South West Alluvial Plain (Zone-III B), which have their own unique characteristics.

Animal husbandry is a core sector of the State economy. It provides opportunities for poverty alleviation, development of rural economy, combating rural unemployment and abridges the increasing gap between poor rural and affluent urban society. The economy of 89 % rural population of the state is directly or indirectly linked with this sector. Apart from rural masses, the health, the life-style and the safety too of the affluent people is linked to this sector through dependence on milk, meat, egg, wool, and leather.

In order to achieve livelihoods and environmental sustainability the ruminant livestock-particularly buffalo, cattle and goats are of paramount importance as they are an integral part of the farming systems. Dey et al (2007) while discussing the goat production scenario in Bihar has observed that goat rearing is still to be accepted by all classes of people in Bihar. It is mostly confined to backward classes and landless labourers who are unable to rear large animals. As per an estimate (1999-2000) by the Department of Animal Husbandry, Government of Bihar, around 574000 goats are slaughtered annually in recognized slaughter houses in Bihar. However, monthly per capita consumption of goat meat/ mutton is limited only to 0.04 Kg consumption is limited to 16.6% of households in rural Bihar. In urban areas, 25.6% households reported consumption of goat meat/ mutton of 0.08 kg per month per capita (NSSO 2001). There was shortage of more than 70% of the nutritional requirement of meat in the year 2003 (Singh and Mondal, 2005).

Livestock provides nutritive food to all categories of families both in rural and urban areas. Bullock power continues to be the main source of draught power for agricultural operations and transport of agricultural products to nearby markets and is likely to remain so for a long time to come. Further, agricultural production gets valuable organic manure provided by the livestock. Livestock are the best insurance against the vagaries of nature due to drought, famine and other natural calamities.

Keeping in view the importance of livestock sector in sustainable livelihood security, present study has been undertaken to analyse the generation of employment and income at

one hand and the facilitating factor (health and hygiene) in sustainable livestock production at another in Bihar.

Materials and Methods

Survey was conducted with the help of Sanjay Gandhi Institute of Dairy Technology, Patna in 2006-07 to assess the livestock scenario in Bihar. Altogether 9 districts namely, Muzaffarpur, East Champaran, Purnia, Katihar, Banka, Jamui, Gaya, Aurangabad and Patna representing all the agro-climatic zones of the State were selected for collection of primary information on various aspects of livestock. A sample of two districts from each of the four agro-climatic zones making sample size of 8 districts were identified randomly for drawing sample of villages in each selected district. From each selected district, one village, making a total of 8 sample villages, was selected for selecting the respondents. District Patna was selected purposively to study the peri-urban scenario of livestock products. In peri-urban area, sample of two villages from two different blocks of the district were selected. Information regarding different aspects of livestock was collected by selecting 20 livestock rearing farmers representing different category of farmers from each sample village. Thus, in total 200 farmers were selected, that is, 40 from each four agro-climatic zones and rest 40 from Patna district alone. Data were collected using well developed pre-tested schedule for the purpose.

Results and discussion

The livestock sector has a significant potential for round the year employment generation particularly in rural areas. This provides subsidiary source of livelihood to the people living below the poverty line due to lack of sufficient agricultural land to sustain, particularly in the draught prone, hilly, and tribal and other remote areas where crop production may not provide employment round the year. According to 50th National Sample Survey (NSSO 1998), the employment in the Animal Husbandry sector was 9.8 million (provisional) in the principal status and another 8.6 million (provisional) in the subsidiary status. However, in case of landless labourers and marginal farmers rearing of large ruminants specially the high yielder are mostly not feasible due to gradual shrinkage of common property resources (grazing land) and financial constraints but farming of small ruminants may likely to overcome these problems by contributing additional income for the family.

The multifaceted scope of animal husbandry activities includes - animal protein availability for human consumption, sufficient & sustainable wealth generation for rural people and creation of self employment opportunity for unemployed youth. The overall livestock scenario of the state has been given in Table 1. It shows that Bihar has sizeable number of cattle and buffalo and accounts for about 6 % of respective population of the country. Despite the slow bovine growth in state during 1982 – 2003, growth in milk production has been spectacular, particularly during 2004 - 09. In case of goats, Bihar state accounts for one-third goats of the country next only to West Bengal and Rajasthan. But in spite of this, the per capita availability of animal protein in the state is about 58 % in case of milk, 54 % in meat and one-fourth in eggs when compared to their respective availability at national level (Table 2). One of the possible reasons is the low productivity of available stock in the state – both from the genetic and management point of view.

Generation of dairy income

From analysis of income generated through different sources on sample households it has been observed that the dairy contributed, on an average, about 22.39 percent to total household income in studied villages which was next only to crop production. On landless household, dairy was second important source of income but it contributed only 16.92 percent of total income of these households which was only due to low productive animal and their poor management. Dairy income increased with increase in land base of households mainly due to fact that the large farmers could afford to have high yielding livestock and they had more access to better quality feed, fodder and animal health and hygiene services. Hence, it may be said that livestock income has a positive relationship with land base of farmers in Bihar.

Distribution of labour

The household category wise labour utilized in livestock sector and wages of sample households have been presented in Table 4. Dairy sector generated annual per household employment of 831 hrs and goatry provided annual employment of 736 hrs for family members in studied villages. Household category wise analysis revealed that the comparatively higher level of employment in dairy and goatry sectors was generated on landless households which declined with increase in land base of households. It was mainly due to more dependence of landless households on livestock sector and thus do not engage hired labour for maintenance of dairy and goatry. On the other hand, medium and

large farm household generally managed their livestock by hiring labour for feeding and grazing. In addition to income through livestock products, landless and marginal farmers could earn substantial income in term of imputed wage from livestock enterprise. Hence, it may be inferred that the livestock not only provides income to landless and marginal farmers but contributes significantly to their income in term of imputed wage of family labour.

Animal health and hygiene

Animal health facilities in Bihar are not well developed and popularised. As evident from Table 5, the vaccination of animals is not done timely by landless, medium and large farmers in case of bovines and goat both as no cost has been incurred towards it. Although, this doesn't mean that it is not done by these category of farmers but actually it is done at Public Animal Health Centres. This tendency of the farmers sometimes cause delay in vaccination which ultimately affect the general health of their animals. However, the farmers were approaching the private practitioners and other health centres for artificial insemination and maintenance of general health of their animals. It is evident from Table 5 that medium and large category of farmers incurred comparatively less expenses in artificial insemination, vaccination and general health services because they had better access to public A.I. centre, Govt. hospitals, and Veterinary doctors. On the other hand, households of weaker section of society do not have easy access to public veterinary health system in Bihar. The category wise sources of Livestock Health and Management Facilities utilized in Bihar has been analysed and it was found that private practitioners are playing the major role in maintenance of general health and management of livestock. Public Animal Health Centres is the second most utilized source for health care services, particularly for medium and large farm households. It is preferred mostly for vaccination purpose. The other source approached by only a few farmers is COMFED.

Conclusions

On the basis of above it may be summarised that Bihar is still deficient in livestock products. Despite having a large population of livestock, the state is not able to produce required quantity of livestock products to meet its domestic demand. It has been mainly due to higher proportion of nondescript animals and poor maintenance and health services. Despite aggressive livestock development programme launched by state government, all the blocks are still to be covered by artificial insemination programme. Marginal and small

farmers do not have easy access to public A. I. centres and veterinary health and hygiene facilities. Thus, there is an urgent need to make sincere and effective efforts in providing A. I. and health & hygiene facilities to all categories of households for sustainable livestock development in Bihar.

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Table 1. Animal Scenario in Bihar

S.No	Specification	No. in Bihar (In lakh)	% of national figure
1.	Cattle	105	5.90
2.	Buffalo	58	6.20
3.	Breedable Cattle & Buffalo	67	8.40
4.	Sheep	05	0.80
5.	Goat	96	8.40
6.	Pigs	06	4.40
7.	Others	02	0.90
8.	Poultry	140	3.26

(Source: Livestock census, Bihar, 2003)

Table 2. Per Capita availability of Animal Protein

S.No	Item	Bihar	India	ICMR recommendation	Improvement required
1.	Meat	2.58 kg/yr	4.74 kg/yr	10.95 kg / yr	4 Times
2.	Milk	138 gm/day	238 ml/day	300 ml / day	3 Times
3.	Eggs	10.30 / yr	45 / yr	180 / yr	17 Times

Table 3: Average income (in ₹) from different enterprises in Bihar

Source of income	Landless (46)	Marginal (84)	Small (42)	Medium (17)	Large (11)	Total (200)
Crop Production	0.00 (0.00)	19539.12 (28.67)	49874.67 (44.73)	77375.29 (45.84)	133147.64 (58.78)	32580.13 (37.87)
Dairy	5291.85 (16.92)	14552.50 (21.35)	30398.33 (27.26)	38123.24 (22.59)	42085.82 (18.58)	19268.02 (22.39)
Wages	12279.35 (39.27)	7237.50 (10.62)	1364.29 (1.22)	352.94 (0.21)	0.00 (0.00)	6180.50 (7.18)
Salary	1173.91 (3.75)	5338.14 (7.83)	14777.43 (13.25)	27882.35 (16.52)	32727.27 (14.45)	9785.28 (11.37)
Pension	78.26 (.25)	1428.57 (2.10)	5642.57 (5.06)	5647.06 (3.35)	12000.00 (5.30)	2942.94 (3.42)
Remittances	1852.17 (5.92)	1021.43 (1.50)	1285.71 (1.15)	3529.41 (2.09)	0.00 (0.00)	1425.00 (1.66)
Rent	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	1764.71 (1.05)	0.00 (0.00)	150.00 (0.17)
Miscellaneous*	10591.30 (33.87)	19042.14 (27.94)	8171.43 (7.33)	14117.65 (8.36)	6545.45 (2.89)	13709.70 (15.93)
TOTAL	31267	68159	111514	168793	226506	86042

* Miscellaneous includes income from grocery shop, tea/pan shop, rickshaw pulling, auto rickshaw, petty contract, tailoring and other sources.

Table 4. Per Household category wise annual family labour employment in livestock sector and imputed wages of sample households in Bihar

Particular	Bovine		Goat	
	Hr.	Wage (in ₹)	Hr.	Wage (in ₹)
Landless	982	4911	931	3725
Marginal	870	4350	859	3437
Small	820	4100	664	2654
Medium	452	2259	251	1002
Large	524	2618	0	0
Overall Avg./Animal	235	5.87	522	10.44
Overall Avg./HH	831	4153.5	736	2943

Table 5. Animal health service cost (in ₹) in Bihar

Particulars	Bovine					Goat			
	Number of bovines	AI	Vaccination	General Health	Natural Breeding	Number of goats	Vaccination	General Health	Natural Breeding
Landless	37	100	0	290.45	21.95	118	0	50.26	0
Marginal	124	97.10	12.82	321.46	31.3	111	50	68.46	0
Small	107	145	11.88	443	14.28	46	20	91.07	0
Medium	38	70	0	133	93	7	0	53.33	0
Large	49	70	0	295	56.5	0	0	50	0